Proceedings of the Science Summit at UNGA78

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Session 1: Climate and Health change evidence in South America

Session Convenor
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Country
Peru

3.1.1 Abstract

The science is unequivocal in relation to the negative effects that climate change has caused and will continue to cause on population health in South America. In this session, we will advance in the discussion about climate change and population health by taking into account key regional evidence that analyses this intersection from complementary perspectives, recognising that tackling climate change needs multidisciplinary collaboration.

The evidence covers a broad understanding of the intersection between climate change and health by analysing the following areas: i) health hazards, exposures, and impacts; ii) adaptation, planning, and resilience for health; iii) mitigation actions and health co-benefits; iv) economics and finance; and v) public and political engagement.

The aims of this session are:

1) To analyse key regional evidence on the intersection between climate change and population health considering a multidisciplinary approach

2) To discuss main challenges in facing climate hazards and how people in South America can overcome these challenges by planning and implementing different climate adaptation strategies, as well as mitigation strategies to potentiate health co-benefits.

3) To explore potential future pathways of adaptation and mitigation actions that can be followed in South America, as well as their main challenges, opportunities, and mechanisms associated.

Methods :

The session will have four main sections:

1) The first session will be 40 minutes long and be focused on analysing current evidence on the five areas mentioned in the introduction. These indicators have been obtained for South American countries; therefore, they provide regional and local evidence to inform decision making at different levels. The indicators have also been already reviewed by scientists, researchers, and experts in their fields, ensuring that the evidence is valid and robust.

Session 2: Research Networks for Health Innovations in Sub-Saharan Africa (RHISSA) with DLR-PT

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Position
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DLR-PT
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Country
Germany

3.1.2 Abstract

Under RHISSA, the networks will implement research programs that target neglected tropical diseases (filariasis, podoconiosis, onchocerciasis) and high-burden diseases (sepsis, breast and cervical cancer, post-tuberculosis lung disease) and address challenges around adolescent health and One Health (with a focus on antibiotic resistance). Through African-led partnerships between African and German academic and non-government organizations, the networks build and strengthen research capacity in 14 sub-Saharan countries and Germany, support the career development of junior and senior researchers and engage in discussions about research uptake. To address local and regional needs, the networks have aligned their research plans with regional policy strategies.

With their programs, the networks aim to contribute to the achievement not only of Sustainable Development Goal (SDG) 3 “Ensure healthy lives and promote well-being for all”, but also other SDGs, such as education, innovation, decent work, strong institutions, gender equality and partnerships for the goals.

The networks will present their plans across four work packages: research, capacity building, networking and policy engagement and research transfer.

We will conclude the session with a panel discussion about achieving SDG3 and other SDGs until 2030, about what has to follow and about how we can pave the way now for positive change in global health for all people.

Expected Outcomes

A fruitful discussion on what we can achieve in health until 2030 and beyond and on what we have to initialize now for positive change.

Increased visibility for the networks and their research topics

Interdisciplinary exchange with other researchers having similar goals, such as contributing to the achievement of the SDG3

Networking with stakeholders, such as government, industry and civil society representatives, interested in bringing research results into policy and practice

3.1.3 Key messages

The Science Summit at UNGA is a unique platform for advancing our understanding of science and innovation in the context of achieving the SDGs and shaping the post-SDG Agenda. We need to make sure that policymakers are provided with the most recent and important knowledge and insights to inform their policies, investments, and collaborations, ensuring that science and innovation play a central role in addressing the world's most pressing challenges. Please find a few essential messages, examples, and outcomes that can contribute to these objectives below.

1. Capacity Building, Resilience and Preparedness: Without capacity building, there is neither resilience nor preparedness. Policymakers should invest in capacity building research that strengthens resilience as a safety net, which equals preparedness for future crises, including pandemics and climate change. One example is building health research and administrative capacity in remote areas, where pandemics often occur and neglected tropical diseases can be a high burden. In RHISSA, a funding measure of the German Federal Ministry of Education and Research, research networks also address capacity building. Partners in larger cities, rural and remote areas in several African countries and Germany research together, share knowledge, and learn from each other to achieve more.

2. Multidisciplinary Collaboration and Informed Decision-Making: Multidisciplinary collaboration among scientists, policymakers, and stakeholders fosters a comprehensive understanding of complex global challenges and the development of innovative solutions. As an example, RHISSA is an initiative funded by the German Federal Ministry of Education and Research, in which research networks with partners in sub-Saharan Africa and Germany also address networking and policy engagement. Making such work packages mandatory will ensure that the research results and new insights will be disseminated and reach the people.

3. Building Careers: Engaging and empowering young scientists and innovators is crucial for the future. Policymakers should support educational programs, mentorships, and funding opportunities for youth in science and technology fields, as they will be key drivers of progress towards the post-SDG Agenda.

4. Inclusive Innovation: Policymakers should promote innovation that benefits marginalized and underserved communities. Affordable and accessible technologies are vital to leave no one behind.

5. Ethical and Sustainable Science: Policymakers should promote ethical and sustainable scientific practices, including considering the ethical implications of emerging technologies such as biotechnology and artificial intelligence. Ethical considerations are critical in ensuring that scientific advancements align with the principles of responsible innovation.

6. Measurable Goals and Accountability: Policymakers should set clear and measurable goals for science and innovation initiatives related to the SDGs. Regular reporting and accountability mechanisms are essential to track progress and ensure that resources are effectively utilized.

7. Stop the Use of Stereotypical Language: We should stop using terms such as "developed", "underdeveloped", and "developing" when addressing nations, which breeds stereotyping. We are all developed, and we are all still developing.

1. In sub-Saharan Africa, advance sustainable eye-level partnerships, capacity building, research flexibility, and careers. Involve patient communities and key stakeholders to address local needs.
2. Think globally and act locally. Build scientific communities in sub-Saharan Africa which are familiar with local needs and challenges.
3. Capacity building strategies need to be tailored to the local needs, as disease distribution and the health systems in sub-Saharan African countries are too different for generalized approaches.
4. Identify resources in sub-Saharan Africa and create networking and integration platforms with local structures and multidimensional collaboration.
5. Take a holistic and sustainable approach to disease control and health in general by collaborating across borders, disciplines and responsibilities. Improve surveillance.
6. Advance personalized medicine (PM) in sub-Saharan Africa to help better tailor treatments to patients. Ensure fair access to treatments, vaccines, and PM to leave no one behind.
7. Even during pandemics or other crises, continue investing in research, diagnostics, and treatments of other diseases, which is essential to avoid serious setbacks in their achievements.
8. Set up global health programs in a resilient and robust way to empower scientific communities so that they can keep up their work in times of crises.

3.1.4 Collaboration outcomes

• The RHISSA research networks connected with EDCTP, FIND, the SFA Foundation and the European Commission and exchanged experiences and perspectives on various research topics, agendas, capacity building, networking, alignment and policy engagement.

• The networks also connected with Dr. Magdalena Skipper, Editor in Chief of Nature, and discussed capacity building measures for PhD and postdoctoral students to foster writing skills.

• The RHISSA research networks also connected excellently among themselves and found much potential for synergies in their research, capacity building, networking, and policy engagement.

3.1.5 Building inclusion and equity

The session speakers and panelists were gender diverse and came from low-, middle-, and high-income countries. Stakeholders from various disciplines and areas of research, politics, the private sector and civil society were invited to the session. The in-person and virtual audiences were included into the discussions with questions and answers, and the in-person participants before and after the session provided room for detailed bilateral and group discussions.

3.1.6 Key lessons learnt

Policymakers and researchers do not often have the chance to exchange, which is why events such as the Science Summit at UNGA78 are so valuable. Once brought together, there was a lively exchange, pointing toward synergies for long-term and sustainable collaboration.

The link between science and politics, which has been strengthened by the Summit, must be further promoted so that research strategies can be aligned with local policies and results and innovations implemented and finally brought to policy and practice to benefit the people.

There are many scientific innovations that could lead to promising improvements in global health systems, but the people who should benefit from these innovations often do not have access. Therefore, the inclusion of the affected communities/countries must be improved.

Session 3: Innovative approaches in achieving sustainable access to healthcare for pediatric non-communicable..

Session Convenor
Jean-Pierre Chanoine

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Country
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3.1.7 Abstract

Introduction and aims

Care of pediatric patients in resource poor settings is overwhelmed by health and healthcare disparities. The inequitable morbidity and mortality experienced by children and adolescents living with non-communicable diseases (NCDs) in resource-limited settings was acknowledged at the 66th World Health Assembly in 2013.

As we approach the second High Level Meeting (HLM) on Universal Health Coverage (UHC) (2023); the fourth HLM on NCDs (2025); and close of the United Nations’ Sustainable Development Goals (SDGs) in 2030, urgent action is needed to redress child health inequities. The SDGs commit Member States to action that will end preventable infant and child mortality (SDGs 3.2.1 and 3.2.2); and reduce the preventable mortality associated with NCDs by 30% (SDG 3.4).

In this context, affordable and equitable access to healthcare and essential medicines, newborn screening and other diagnostics are critical and pressing priorities for every child.

This session will review successful collaborative, rights-based, community development efforts by our group that have been shown to improve sustainable access to medicines and quality of life for children living with chronic NCDs in resource-limited environments.

Abstract

Established in 2021, @MATES4Kids (Maximising Access To Essential Supplies) is an international movement of like-minded organisations committed to reducing the preventable mortality associated with childhood NCDs. With a focus on one particular chronic health condition (CAH - Congenital Adrenal Hyperplasia), the @MATES4Kids movement seeks to contribute in a practical way to efforts to achieve SDGs 3.2.1, 3.2.2 and 3.4 and to serve as a proof of concept for access to medicines for other NCDs.

Panelists will report on the activities of the @MATES4Kids Community of Practice to date. As an international movement (hosted on the World Health Organization’s Knowledge Action Portal), @MATES4Kids is committed to collaborative action, leveraging existing technology and scaling innovation to #LeaveNoChildBehind.

The @MATES4Kids movement is informed by several key frameworks, including the:

- United Nations Convention on the Rights of the Child

- Ottawa Charter

- Strategic Framework for Action and Five Pillars of CLAN (Caring & Living As Neighbours)

- Knowledge to Action Framework

@MATES4Kids proposes to reduce the preventable mortality associated with CAH and promote efforts to achieve the SDGs through three key objectives:

1) Improve access to essential medicines (as per the WHO’s Essential Medicines List for Children)

2) Scale access to Newborn Screening and other diagnostics (as per the WHO’s Essential Diagnostics List) and

3) Strengthen childhood NCD Communities

A panel of stakeholders will share key activities and achievements to date, as well as acknowledge barriers to the broader social, cultural and economic determinants of health for children living with NCDs in LMICs. Speakers will share updates on efforts across each of the WHO’s six regions to:

- Scale up Newborn Screening and improve access to other essential diagnostic procedures

- Improve access to essential medicines

- Monitor and evaluate progress using agreed indicators

- Expand professional Healthcare training and

- Empower patients and families

;The attendees will hear about practical approaches that helped our group achieve success in key areas and have the opportunity to provide feedback and contribute through their personal experience:

- A sentence on Pakistan and Zimbabwe

- A sentence on inclusion of drugs in the WHO

- A sentence on inclusion of laboratory tests in the EDL and the opportunities and obstacles to Newbron screening for Congenital Adrenal Hyperplasia

- A sentence on identification of most important issues

Expected outcomes

Discussion of key learnings and successful approaches to date will inform the development of practical recommendations to help United Nations Member States scale action that will reduce the preventable and inequitable mortality currently experienced by infants and children living with chronic health conditions in resource poor settings, and thus contribute to SDG 3 “Ensure healthy lives and promote well-being for all at all ages” by 2030. Participants will be invited to join the @MATES4Kids Community of Practice on the WHO’s Knowledge to Action Portal (https://www.knowledge-action-portal.com/en/communities/overview), access existing tools and resources, and engage in ongoing collaborative efforts to reduce preventable child mortality around the world.

Program

Introduction: Kate Armstrong, Jean-Pierre Chanoine and Rodolfo Rey

Access to hydrocortisone and fludrocortisone in Latin America:

Successes and challenges in Southeast and Middle-East Asian countries: Aman Pulungan, Jamal Raza

Successes and challenges in Africa: Salwa Albuldagi

WHO Essential Medicines List and Essential Diagnostics List: Jean-Pierre Chanoine

Training specialists for and in Sub-Saharan countries: Thomas Ngwiri

3.1.8 Key messages

We focus on access to medicines for children with NCDs.

Collaboration between stakeholders

Development of communities of patients

Healthcare authorities leadership

1. Hear from colleagues with different experiences to learn faster and design better
2. Work with your health authorities
3. Be persistent
4. Think outside the box

3.1.9 Collaboration outcomes

Access to medicines:

1. in order to achieve better access to medicines (availability of affordable medicines), all participants are gattering information on smaller pharmaceutical companies that will, in contrast to well known pharmaceutical giants, have an interest in providing access to low cost medicines.

2. In a second step, we will put in touch these smaller companies with health professionals, communities of families and health care leaders in specific countries

3. In a 3rd step, we will write a step by step booklet to support practical and succesful approaches for health professionals and families to achieve access to medicinesin their country. Grassroot approach.

3.1.10 Building inclusion and equity

We ensured that representatives of countries in most WHO regions were present: Mexico, Bolivi, Canada, Argentina, Australia, Kenya, Pakistan, Indonesia

We also included male and female colleagues

Session 4: Evolution of Science Policy in Africa: How is African Regulation and Policy Synced with the rest of

Session Convenor
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Position
Strategic Designer

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ThinkPlace Kenya

Country
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3.1.11 Abstract

A considerable amount of interest is mounting in African capabilities for conducting various kinds of scientific research and enterprise, for example, the push to have vaccine manufacturing facilities and expertise be present on the continent. However, on a global scale, there is still a significant amount of consideration that needs to be given to African leaders, researchers and policy makers as the landscape shifts towards a broader involvement of Africans within the scientific realm, and as adjustments are made in recognition of the contributions and collaborations with African scientists that have been instrumental in fields ranging from agriculture to molecular medicine. By bringing together experts in their respective fields, this panel seeks to provide a platform to discuss the ways African regulatory landscapes can begin to assume form in anticipation of an accelerated technological future on the continent.

3.1.12 Key messages

Fuller community participation and agenda-setting that involves them.

1. Fuller, more purposeful community participation
2. Prioritized self-driven agenda setting for typically underrepresented countries
3. Recognition and visibility of efforts made by African countries towards robust science and technology governance

3.1.13 Collaboration outcomes

The connection between African policy making and supporting funding and resourcing for the same.

3.1.14 Building inclusion and equity

By including majority women speakers.

3.1.15 Key lessons learnt

The global, interconnected nature of science and technology issues.

Session 5: Experiences of Landslides Early Warning Systems in Latin America: Landaware network

Session Convenor
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President Antioquia Chapter

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Geological Society of Colombia

Country
Colombia

3.1.16 Abstract

The increase in landslides is a direct consequence of extreme weather events, as well as poorly planned anthropic interventions in the territory. For this reason, the United Nations promotes the development and implementation of Landslide Early Warning Systems - EWS, in order to contribute to the reduction of fatalities to these events.

The exchange of experiences is key to identify the most appropriate way to implement a EWS in different territories. The LandAware multidisciplinary network was created to meet this need.

LandAware is a non-profit, voluntary, multidisciplinary network that unites scientists from multiple sectors (academia, government, communities, social organizations) interested in the development and implementation of Early Warning Systems (EWS) for landslides. The main purpose of LandAware is to share experiences, needs and innovations, as well as to develop and promote guidelines and best practices for the future EWS, whether regional or local. The actions of the network are carried out by means of work groups that operate based on predetermined work objectives. Currently there are about 292 members from 52 countries.

In this session we will present generalities of the network, and examples of some of the EWS in the Latin American region. We will close the session with a discussion forum where the speakers will discuss which are the biggest challenges incurred in the implementation of EWS in the Latin American region.

The aims of this session include:

- Present examples of EWS operational or in the experimental phase.

- Promote sharing and integration of methods, technologies and communication between the different institutions in the región

- Strengthen scientific collaboration between EWS specialists in the region.

- Invite other actors working on EWS in the region to join LandAware network

3.1.17 Key messages

In spite of all the possible technological development we can ever achieve, we still need to focus on developing the capacities of the population.

Technological dependency is a big concern

1. It's essential to partner with local NGO in order to reach communities
2. Regarding climate change its key to invest in adaptation strategies locally adapted
3. Early warning systems for multiple hazards are essential for development. However, they can't focus only on helping saving lives but should focus on reduce risks factors

3.1.18 Collaboration outcomes

The strengthening of the LandAware network in Latin American

3.1.19 Building inclusion and equity

It was virtual si everyone with the link could attend.

Well live the revising so who couldn't connect live could see it later.

We reach gender balance

We had simultaneous translation English - Spanish

3.1.20 Key lessons learnt

Summits are great venues to connect

Virtual session make possible the exchange for those who can't attend in person

Despite the learnings of Corona pandemic, we still need to strengthen the virtual tools.

Having diverse voices is key to gain knowledge and find integral solutions.

Session 6: Defeating Acanthamoeba: Uniting for Health

Session Convenor
Sonia Oliveira

Position
Researcher / Lecturer

Organisation
CICECO - Aveiro Institute of Materials, University of Aveiro

Country
Portugal

3.1.21 Abstract

Introduction and aims

The Acanthamoeba parasite is a global problem, and understanding its epidemiology and pathogenesis is crucial for intervention and prevention. This discussion aims to explore treatment strategies, trends in dissemination, diagnosis techniques, personalized treatment approaches, and genetic diversity, and raise awareness about the global impact of Acanthamoeba infections.

Abstract

This panel brings together a distinguished panel of international researchers and experts to shed light on the global problem of the Acanthamoeba parasite and explore potential solutions for better health outcomes. The researchers will present their latest findings, share experiences, and discuss challenges in combating this parasite.

Prof. Veeranoot Nissapatorn from Wailailak University, Thailand, will provide valuable insights into the epidemiology and pathogenesis of Acanthamoeba infections, highlighting critical areas for intervention and prevention.

Prof. Rachasak Boonhok) from Walailak University, Thailand, will present groundbreaking research on novel treatment strategies, the development of effective therapeutic interventions, and current trends in the parasite’s dissemination.

Prof. ML Pereira will address current tools for diagnosing this parasite, including microscopy.

Dr Tooba Mahboob from UCSI University, Malaysia, will contribute her expertise in diagnosing and managing Acanthamoeba-related diseases, focusing on advancements in diagnostic techniques and personalized treatment approaches, including nanotechnology.

Prof. Naveed Ahmed Khan from the University of Sharjah, UAE, will provide further insights to explore public health awareness measures and their effectiveness.

Additionally, we will have MSc candidate sharing her fresh perspectives and innovative ideas on treatment strategies using plant extracts.

Through their collective expertise, the panellists aim to raise awareness about the Acanthamoeba menace, discuss the global impact of Acanthamoeba infections, identify research gaps, and discuss the importance of fostering collaborations to tackle this public and global concern more effectively.

3.1.22 Key messages

In the context of achieving the Sustainable Development Goals (SDGs), the UN Summit of the Future in September 2024, and the post-SDG Agenda, the discussion on the Acanthamoeba parasite and its global impact carries several essential messages, examples, and potential outcomes that can contribute to a greater understanding of science and innovation for global health. Some of the key points discussed included:

Global Health Challenges: To Highlight the Acanthamoeba parasite as a global health challenge, emphasizing that infectious diseases like this can have a significant impact on public health and well-being. Importantly, raising awareness to this issue that seems to be on the rise, particularly in the so called developed countries.

Global Awareness: Emphasize the need to raise global awareness about Acanthamoeba infections and their impact on different regions. We discussed the need for awareness campaigns and their effectiveness.

Interdisciplinary Collaboration: We highlight the importance of interdisciplinary collaboration by bringing together experts from various fields (epidemiology, treatment strategies, diagnostics, nanotechnology, and public health) to address a complex health issue.

Research Innovation: Emphasize the role of research and innovation in understanding the epidemiology and pathogenesis of Acanthamoeba infections, as well as in developing novel treatment strategies.

Prevention and Intervention: Stress the significance of identifying critical areas for intervention and prevention. Discuss how research findings can guide or suggest public health measures to reduce the burden of Acanthamoeba infections.

Cutting-Edge Diagnostics: Highlight the importance of advanced diagnostic techniques, such as nanotechnology and microscopy, in early detection and management of Acanthamoeba-related diseases.

Personalized Medicine: Discuss the potential of personalized treatment approaches, which can improve patient outcomes and reduce the spread of the parasite; as well, as potentially, national health budget expense.

Research Gaps: Identify research gaps in the understanding of Acanthamoeba infections and emphasize the importance of continued research to fill these gaps.

Innovative Solutions: Present innovative ideas, such as the use of plant extracts in treatment strategies, as examples of creative approaches to combat the parasite.

International Collaboration: Highlight the importance of fostering international collaborations to tackle global health concerns effectively. Discuss how collaboration can lead to shared knowledge and resources.

Engaging the Next Generation: Showcase the involvement of young researchers, like MSc candidate Diana Mendonça, to inspire and engage the next generation of scientists in addressing global health challenges.

Advocacy and Policy: Discuss how research outcomes can inform advocacy efforts and influence policy decisions at the national and international levels to combat Acanthamoeba infections.

Long-Term Sustainability: Stress the need for sustainable solutions and strategies in the post-SDG Agenda to ensure continued progress in global health.

By addressing these points during the session, we hope to have contributed to a greater understanding of how science and innovation can play a crucial role in achieving the SDGs and addressing global health challenges, particularly in what concerns to clean water, basic conditions of hygiene, equity of access to healthcare, awareness of the public but also clinicians and health professionals, and last but not least the importance of fostering international collaborations, unite resources and experiences and develop efficient strategies to prevent, prepare and treat parasitic infections. We recognized the importance of collaboration, research, and advocacy in tackling complex health issues like Acanthamoeba infections.

1. Promote (Novel) Interdisciplinary Research Centers and Networks (funding and support from international bodies should be established within the next 2-3 years)
2. Global Awareness and Education Campaigns: awareness and education campaigns regarding Acanthamoeba and other neglected "tropical" diseases. UN, NGOs, educational institutions and health authorities
3. Research and Development Incentives for Innovative Solutions: create incentives and funding to support innovative and sustainable approaches, incl. personalized treatments and diagnostics.
4. International Task Force on Neglected Tropical Diseases
5. Incentivize Accessible and Affordable Diagnostics and Treatments
6. Community-Based Surveillance and Reporting Systems
7. Introduce research and development (R&D) tax credits and incentives at the national and regional levels to encourage private sector involvement in research related to Acanthamoeba infections.
8. Develop and fund capacity building and training programs for healthcare workers and researchers in regions heavily affected by Acanthamoeba infections.

3.1.23 Collaboration outcomes

Global Research Consortium on Parasitic Infections: Prof. Veeranoot Nissapatorn from Wailailak University, Thailand, Prof. Maria de Lourdes Pereira from the University of Aveiro and Prof. Naveed Ahmed Khan from the University of Sharjah, UAE, express interest in establishing a global research consortium focused on parasitic infections, including Acanthamoeba. They recognize the value of collaboration between Asian, Europe and Middle Eastern institutions to address these health challenges effectively. In fact, all speakers agree in the advantages of this collaborations, and these events to discuss while also raising awareness for the issue. This consortium could seek to partner with universities, research institutions, and health ministries in both regions, potentially collaborating with international organizations like the World Health Organization (WHO). In fact, this consortium could be World Union for Herbal Drug Discovery (WUHeDD) and/or Southeast Asia Water Team (SEA Water Team); already established groups.

Advanced Diagnostic Tools Development: Prof. Rachasak Boonhok from Walailak University, Thailand, and Dr. Tooba Mahboob from UCSI University, Malaysia, have identified a common interest in advancing diagnostic techniques for Acanthamoeba infections. They believe that combining their expertise in treatment strategies and diagnostic technologies can lead to innovative solutions. This initiative aims to collaborate with medical device companies, nanotechnology research centers, and public health authorities to secure funding and resources for research and development.

Public Health Awareness Campaign: Prof. ML Pereira, with expertise in microscopy for Acanthamoeba diagnosis, expresses the need for a global awareness campaign about the parasite's threat. MSc candidate Diana Mendonça is eager to contribute her innovative ideas to this campaign. This collaboration intends to work with international health organizations, NGOs, and educational institutions to design and implement a comprehensive awareness campaign targeting both healthcare professionals and the general public.

3.1.24 Building inclusion and equity

Diverse Panel of Speakers: Ensure that your panel of speakers represents diverse backgrounds, including gender, ethnicity, and geographical representation. This diversity promotes a variety of perspectives and experiences, making the session more inclusive. Unfortunately, we were not able to secure translation or interpretation services to accommodate attendees who may not be fluent in the session's primary language. We wish that that would have been made available by the UN.

It was a virtual session, with the accessibility features provided by Zoom.

Engagement Opportunities: We encouraged active participation from the audience. Allowed attendees to ask questions, share their experiences, and provide input. Diverse Examples and Case Studies: Speakers Incorporated case studies and examples from various regions and communities to illustrate the global impact of Acanthamoeba infections. We intended to highlight how this issue affects people from different backgrounds.

I, as a convenor, acted as moderator, ensuring that the session remained respectful and inclusive, also the disclaimer, informing that the session was recorded for documentation and

review purposes. I will be working on some resources to upload for the attendees who missed the live event (majority!).

3.1.25 Key lessons learnt

One of the key lessons is the stark disparities in access to treatment for parasitic infections like Acanthamoeba. These disparities highlight the need for global health policies and initiatives that prioritize equitable access to healthcare resources, especially in regions where access is limited. The lack of awareness and knowledge about Acanthamoeba infections among point-of-care professionals and health workers is a critical issue.

This underscores the importance of education and training programs to ensure that healthcare providers can accurately diagnose and treat these infections. The differences in research focus between developed and developing countries, despite infectious diseases becoming more prominent in developed regions, emphasize the need for collaborative and inclusive research efforts. It's essential to bridge this gap to address global health challenges effectively.

The paradox of tropical areas, which are less affected by certain infections but spend more on research and development, compared to wealthier regions that allocate significant budgets to treatment due to a lack of prevention and concern, highlights the need for a more balanced approach to healthcare funding. It suggests that investing in prevention and early intervention can be more cost-effective in the long run.

The summit underscores the critical importance of prevention in global health. Preventive measures, such as public health campaigns, access to clean water, and sanitation improvements, can significantly reduce the burden of parasitic infections and other neglected tropical diseases. Collaboration between regions and countries, irrespective of their economic status, is essential to address global health challenges effectively. It's vital to pool resources, knowledge, and expertise to tackle infectious diseases on a global scale. The summit highlights the need for advocacy efforts to promote research into neglected diseases and to advocate for greater investment in prevention measures. This advocacy should target both policymakers and the general public.

Session 7: Inclusive Science for Global Sustainable Development in a Climate-changing World

Session Convenor
Beatrice Opeolu

Position
Director

Organisation
BEE Solutions & Consultancy Services

Country
South Africa & Nigeria

3.1.26 Abstract

Inclusive Science for Global Sustainable Development in a Climate-changing World

Man has been striving to improve its well-being over centuries. Production of goods and services is needed for the economic growth and well-being of nations. Several inventions over many centuries have resulted in longer life expectancies, wealth creation, industrialization, urbanization, etc. However, these achievements come at invaluable costs to man and the environment. Anthropogenic activities are necessary for human existence, dignity, and quality of life. Unfortunately, this comes with detrimental consequences to man and the environment. Sustainable utilization and management of human and natural resources, therefore, becomes imperative. It implies resource use in justifiable ways without compromising its use in perpetuity. Sustainable utilization and management of resources is, therefore, the responsibility of all.

The 17 sustainable development goals (SDGs) adopted by the United Nations aim to address key socio-economic global challenges as part of the UN's Agenda 2030 for Sustainable Development. Each of the 17 goals targets a global challenge that member countries are expected to address. Poverty, environmental pollution, and climate crisis exacerbate the impacts of these global challenges across the globe. The global south is particularly at higher risk of these effects. The UN and the developed world over the past two decades have attempted to mitigate these challenges. Support in different forms is being provided to developing countries across the globe to tackle some of the challenges. The big question though is the local relevance and optimal benefits of those interventions, especially in scientific discourses. For example, the expected norm of the occurrence of legacy and emerging contaminants in environmental compartments after rainfall and/or flooding episodes will be different in developed and developing countries for many reasons.

Five key issues that have been identified recently by the UN include (1) Rescuing the Sustainable Development Goals, (2) Taking stock of an intensifying climate crisis (3) Managing the fallout from COVID-19’s long tail, (4) Delivering record levels of humanitarian need driven by conflicts and disaster and (5) Building more inclusive systems for international cooperation. These five global issues speak mainly to three major themes - socioeconomic equities, inclusivity, and environmental sustainability.

The 17 SDGs may be grouped into three categories that are needed to tackle the triple challenges of socioeconomic, inclusivity and relevant partnerships, Goals 1 (No Poverty), 2 (Zero Hunger) 3 (Good Health and Well-being), 4 (Quality Education), 6 (Clean Water and Sanitation), 7 (Affordable and Clean Energy) 8 (Decent Work and Economic Growth) and 9 (Industry, Innovation, and Infrastructure) seek to address socio-economic issues.

Inclusivity goals include 5 (Gender Equality), 10 (reduced Inequalities), 16 (Peace, Justice, and Strong Institutions) and 17 (Partnerships for the Goals).

The other SDGs - 11 (Sustainable Cities and Communities), 12 (Responsible Consumption and Production), 13 (Climate Action), 14 (Life Below Water), and 15 (Life on Land) speak to environmental sustainability.

The scientific community is key to the successful accomplishment of the set goals. The need to foster strategic partnerships, promote inclusivity (gender, race, geography, knowledge systems, etc.) and ensure sustainability (economic, environmental, and social) in a climate-changing world becomes imperative. This session, therefore, aims to invite experts across the globe to address the challenges associated with inclusive science, environmental pollution issues, and strategic partnerships necessary to deliver on the SDGs in a climate-changing world. Research findings, interventions, and project case studies will be discussed. Additionally, a recommended roadmap for a possible paradigm shift towards optimal resource allocation and use will be presented as an output of the session.

3.1.27 Key messages

Environmental Degradation Issues in a Climate-changing World

Increasing human population, urbanisation and industrialisation are key drivers of environmental degradation. The growing demand for goods and services exerts pressure on global renewable and non-renewable resources. The global south, especially Africa, is most vulnerable to the impacts of environmental degradation due to poverty, lack of infrastructure and limited awareness about the fragility of the environment. Deforestation, overexploitation of natural resources, air, soil and water pollution, erosion and epidemics are some of the challenges in Africa. These are exacerbated by human-induced climate change effects such as frequent wildfires, floods, and hurricanes that continue destroying the limited infrastructure and natural resources. Most African rural communities rely on natural resources for livelihoods, resulting in over-exploitation and environmental degradation issues.

The Delta region in Nigeria has been subjected to conflicts, poverty and pollution resulting from oil exploration in the area over several decades. Anthropogenic disturbances such as crude oil pollution result in colossal damage to the soil ecosystem, thereby hampering useful

ecological processes and derivable benefits in this environmental medium. The terrain of the Niger Delta region in Nigeria is such that the deleterious effects of decades of oil pollution have caused serious public health and environmental problems. Huge expanses of arable land rendered barren with lost ecosystem services are very unpleasant sights to behold in this region. As such, food security and sources of livelihood for the peasant inhabitants of this rich agrarian haven have been greatly affected. Globally, soil health is a topical issue since plant growth and food production depend mainly on the edaphic environment for sustainability, and as such, the soil is a living resource, home to more than 25% of the Earth's biodiversity, according to FAO (2020).

Bioremediation, which relies on microbial versatility in substrate utilisation, is an eco-friendly, cost-effective, and acceptable treatment option suitable for tropical soils with abundant rainfall and rich microbial diversity for removing petroleum contaminants through the biochemical activities of indigenous hydrocarbon degraders. Usually, large inputs of petroleum hydrocarbons into the soil result in essential nutrient depletion, especially biogenic nutrients such as nitrogen, oxygen, and phosphorus, critical to sustaining soil biodiversity.

Adding chemical fertilisers to stimulate microbial growth in polluted environmental media usually leaves undesirable outcomes such as chemical overdose. But in recent times, with the UN global drivers and advocacies for ecosystem restoration through the use of natural resources and processes to halt, reduce and reverse the negative impacts of human activities on the environment as enshrined in the UN SDGs (e.g. goals 13 & 15 champion climate action & protection of life on land), it has become clear that nature-based solutions (NbS) can be used in mitigating the impacts of oil pollution on the soil ecosystem. A case study showcased bioremediation projects at the pilot and field-scale levels using NbS, such as valorized plant biomass, poultry litter and virgin topsoil to stimulate microbial degradation of crude oil hydrocarbons in impacted soil ecosystem with full biodiversity and ecosystem restoration post-remediation.

Microbial analyses were done with molecular biology techniques such as Sanger and 16S amplicon sequencing techniques to elucidate the microbial community composition and structure following treatment, while physicochemical parameters linked with both biotic and abiotic factors underpinning contaminant dissipation were determined using standard analytical methods. Biodiversity recovery was evident from robust vegetation, rewilding, microbial diversity, and improved soil health.

Interventions at local, national, regional, and global levels are necessary. Afforestation programs, capacity development initiatives for rural dwellers, enforcement of natural resources conservation laws, partnerships between local, business and government, empowerment programmes for women, environmental education, and awareness campaigns, among others, are some interventions that will be beneficial for the achievement of the UN SDGs in developing countries. Policy interventions in Ondo State, Nigeria. demonstrate the difference governments can make by fostering programmes in African rural areas. Focus on women and children will particularly enhance environmental quality and management initiatives in communities

Circular Economy, Innovative Technologies, and Industry Stewardship as Drivers of SDGs

The waste produced worldwide is anticipated to rise from 2.0 billion tonnes in 2016 to 2.2 billion tonnes by 2025 and then to 3.4 billion tonnes by 2050. The "Waste to Wealth" concept promotes waste, once regarded as a liability, now being recognised as a resource that can be transformed into wealth through innovative technologies and sustainable practices. Valuable resources may be derived from industrial by-products and municipal waste through recycling, upcycling, and waste-to-energy processes. This is a viable option for addressing energy and environmental crises towards achieving Sustainable Development Goal (SDG) 7, which is pivotal to the attainment of other SDGs, including improved health outcomes (SDG 3) reduced poverty (SDG 1) and climate action (SDG 13).

Circular economy strategies may be used to minimise raw material extraction and lessen the environmental impacts of waste disposal. Integrating this with decentralised waste management solutions may improve local communities and promote inclusivity. We can foster a sense of shared environmental responsibility by including citizens in waste reduction and management. The green energy revolution, encompassing solar, wind, hydro, and geothermal power, also appears as a key factor in developing climate-resilient energy solutions, minimising negative environmental effects and fostering economic growth. These concepts complement one another to reduce waste, encourage the use of renewable energy sources, and—most importantly—promote inclusive growth.

The key to a sustainable future lies in harnessing the nexus between waste management, renewable energy, and inclusive development. For instance, waste-to-energy technologies may explore the potential of organic waste to produce biogas, which is then used for heating and electricity. These technologies cut down on waste while giving communities sustainable energy sources. The realisation of the concepts, which advocate a transformative path to a more sustainable and prosperous future for all in the face of climate change, depends heavily on collaboration across governments, academics, industry, and civil society. Companies and industry sectors are increasingly making commitments towards environmental stewardship and social responsibility linked to their operations and communities of interest. To this end, the UN SDGs have become a tool for companies to understand their opportunities. The International Zinc Association developed a roadmap for the global zinc industry in 2019, which identified 10 areas for impact opportunities based on the importance of zinc as a material in health and technology and overall corporate responsibility (SDGs 2, 3, 7, 8, 9, 11, 12, 13, 15, and 17).

Industry Participation in Sustainable Nutrition Initiatives

A unique aspect of the zinc industry is development of programs to address SDG 2 – Zero Hunger (Zinc Nutrient Initiative) and SDG 3 – Good Health and Well-Being (Zinc Saves Kids). Recent estimates suggest over 2 billion people at risk due to micro-nutrient deficiency. The Zinc Saves Kids foundation has raised over $4 million in the last decade to support zinc treatment, food fortification, and supplementation programs. Similarly, approximately 50% of worldwide agricultural soils are deficient in zinc, impacting growth, nutritional content, and value for farmers. The Zinc Nutrient Initiative is working with public and private partners to recognize the importance of zinc in agriculture. Together these zinc industry programs have touched the lives of millions of children and farmers across the globe.

OpenVerseLab: Forging Sustainable and Environmentally Friendly Technologies for the Future Web

In the past few decades, we've witnessed a remarkable rise in the use of network devices. This trend is evident in the proliferation of cellphones, virtual worlds, gaming consoles, Internet of Things (IoT) devices, spatial web, and more. The original principles that underpinned the development of the internet—openness, peer-to-peer infrastructure, policies, and standards—enabled its success. However, the landscape has evolved. While strides have been made in networking infrastructure, it hasn't experienced the same exponential growth.

Large corporations have constructed closed and centralized network infrastructures. Unfortunately, this approach comes with environmental consequences. The demand for high-performance server farms has led to concerns about energy consumption, carbon emissions, and resource depletion, such as water and e-waste. To contextualize this, a single hyperscale data center can store 100 petabytes of data and handle 100 terabits of traffic per second on approximately a million square feet of land—equivalent to the space occupied by three AT&T stadiums. Over 500 hyperscale centers exist, with projections indicating a doubling by 2025. Despite stringent regulations in developed nations, deforestation persists in underdeveloped countries due to corporations seeking unconstrained environments. This has severe repercussions on these regions.

With Web4 predictions on the horizon, demand is set to surge exponentially. This highlights the need to revisit the fundamentals of network development, which brings us to the concept of OpenVerseLab. OpenVerseLab is an open testbed for the Metaverse, or spatial web (Web 4.0). It offers a global platform for researchers to collaboratively develop sustainable open-source VR/AR technologies, whether software or hardware. By fostering collaboration and resource sharing, OpenVerseLab aims to advance VR/AR technology and create standardized, scalable, sustainable, and reliable solutions that drive the growth of virtual worlds.

Two significant technologies have been proposed:

- Spatial Publish Subscribe (SPS), a network algorithm enhancing communication in scenarios with numerous network devices. (https://vastverse.net)

- FVV Live, a technology providing real-time, low-latency video systems using cost-effective devices. (https://www.gti.ssr.upm.es/fvvlive)

We invite collaborators from industry, academia, and government sectors to join us in this collective endeavour and journey. We also welcome contributors who align with our values to share their technologies within this global testbed. Also, we would like to ask individuals with expertise in policy development to ensure ethical considerations. Our goal is not to impede progress, but rather to establish the groundwork for sustainable technology development.

From Vision to Reality: UAVs Pioneering UN SDGs' Progress

The United Nations' Sustainable Development Goals (SDGs) outline a visionary roadmap for a better future, but turning vision into reality demands innovative solutions. Unmanned Aerial Vehicles (UAVs), or drones, are becoming instrumental in bridging this gap.

UAVs are transcending technology's confines, directly addressing SDGs. In "No Poverty" (SDG 1), UAVs optimize crop yields through precision farming, combating hunger – “Zero Hunger” (SDG 2). For "Good Health and Well-Being" (SDG 3), they revolutionize medical supply delivery to remote areas.

UAVs are being used as an innovative tool to promote STEM education in underserved communities, contributing to "Quality Education" for all (SDG 4) and also aiding environmental monitoring for "Life on Land" (SDG 15) and "Life Below Water" (SDG 14).

However, challenges remain. Regulatory complexities and technological barriers must be navigated. Collaborative efforts involving governments, tech pioneers, and communities are critical to success.

As we stand on the cusp of unprecedented transformation, UAVs and SDGs harmonize. This union propels the world closer to realizing a sustainable, equitable future. UAVs are more than flying technology; they are the embodiment of hope, translating the global promise into actionable change. The journey from vision to reality has taken flight, led by UAVs and a shared commitment to a better world.

The need for African Science and Indigenous Knowledge Systems in Supporting SDGs

Environmental challenges are multi-scaled– they are driven by global and local consumption, waste, and land management choices, with drivers and effects often separated in space and time. However, many specific solutions are local – these should be tailored to the reality and needs of local conditions and people. Thus, to support UN SGDs, the voices and needs of all stakeholders should be reflected in decision-making, and the science that underlies it. Practices such as “helicopter science” and “ethics dumping”, and historical bias and inequitable power structures in publication have driven calls for the “decolonization” of science. With a goal of amplifying a global voice for global problems, systemic strategies are being developed to combat these historical inequities; these include the critical examination of existing scholarship and the power dynamics within which it is embedded, seeking to break down bias and traditional power structures, engaging and serving global science and scientists. These changes must recognize the complexity of the global challenges society is facing and science seeks to support, moving research and communication efforts from narrow disciplinary silos towards cross-, multi-, inter- and trans-disciplinary collaboration, utilizing disparate data and knowledge systems. The active participation of African science and scientists, via scientific societies and journals (as reviewers, editors, mentors and authors) enriches the quality and relevance of science in support of environmental management and decision-making.

Research Partnerships and Collaborations

Research and innovation are pivotal for guiding sustainable development as our planet struggles with the urgency of climate change. Climate change stands as one of the most profound challenges of our era, magnifying its impact on the world's most vulnerable populations, particularly in the least developed countries. The repercussions reverberate as new diseases proliferate at an alarming pace, seasons shift unpredictably, and ecosystem are insufficiently resilient to keep pace with the changing rhythms of nature. This cascade culminates in reduced productivity, escalating food insecurity, compromised health, and the

unsettling migration of species to new territories, thereby intensifying the risk to human well-being. To address these multifaceted challenges head-on, collaborative research and innovation needs to be strengthened, and to bring together the diverse strengths of early career researchers, industry, government, and civil society, fusing collective knowledge and expertise. Further, recognition needs to be given to the value of Indigenous Knowledge Systems towards our fight to rebalance our world, as the integration of traditional wisdom with cutting-edge scientific advancements can move us fast towards our goals of adaptation and mitigation. By focusing our research endeavours on solutions that directly address society's pressing and emergent concerns, we pave the way for a more resilient future. In addition, our approaches must be inclusive, inviting voices from underrepresented groups. By forging these partnerships, we not only confront climate change head-on but also catalyse a transformative shift towards a more sustainable and equitable world.

1. Promotion of inclusivity in terms of gender, generation, race and locations
2. Women empowerment
3. Capacity development in rural communities
4. Education and awareness campaigns

3.1.28 Collaboration outcomes

The UN General Assembly Science Summit addresses the critical role of science in achieving the SDGs. It emphasises the need for inclusive, sustainable practices to tackle global challenges while considering local contexts. By fostering collaborations and recognising the value of indigenous knowledge, humanity can forge pathways to a more resilient, equitable, and sustainable future in the face of a changing climate.

Possible collaborations with the following entities:

BEE Solutions and Consultancy Services, South Africa

Ondo State Government, Nigeria

University of Port Harcourt, Nigeria

University of South Africa

International Zinc Association, USA

Integrated Aeriel Precision, Nigeria

Carinalis Consulting and Research, USA

Nelson Mandela University, South Africa

SEA Environmental Decisions Ltd, UK.

Stellenbosch University, Stellenbosch, South Africa

Office of the Chief Scientist of Quebec

3.1.29 Building inclusion and equity

The session panel consisted of four generations of scientists. Of the ten speakers, four were men and six women. Speakers were from Africa< Europe, and the USA to cover issues of inclusivity across continents.

3.1.30 Key lessons learnt

The world is full of opportunities for sustainable development through collaborations and partnerships.

Session 8: Strategic Dialogue on Climate Action, Biodiversity Conservation and Sustainable Investment in Latin

Session Convenor
Patrícia Iglecias

Position
Head of Environment at University of São Paulo

Organisation
University of São Paulo

Country
Brazil

3.1.31 Abstract

Strategic Dialogue on Climate Action, Biodiversity Conservation and Sustainable Investment in Latin America". All over the world, public policies are trying to face the challenge of providing efficient responses to global environmental and socioeconomic challenges posed by climate change and biodiversity loss. Possible responses require a multidisciplinary approach.

Aiming to discuss how to bridge reduce the gap between theory and practice in addressing these challenges, particularly in the context of Brazil and Latin America, the summit will have two sessions, the first one focusing on what is currently being done by organizations to advance the climate, biodiversity, and sustainable investment agendas, while the second one intends to face the complexity of the themes related to justice and exploit the nexus between climate, criminality and social inequalities.

Both sessions will be co-chaired by Professor Patrícia Iglecias and Martina Muller, Programme Manager, Partnerships UN Officer for Disaster Risk Reduction.

The program will feature:

Welcome remarks: Professor Lisa Sachs, Director, Columbia Center on Sustainable Investment Professor Patrícia Iglecias, University of São Paulo, President of the Law for a Green Planet Institute and partner at Wald Law Firm.

Opening Speakers:

Professor Michael Gerrard, Columbia University, "Climate litigation in Latin America"Professor Paulo Artaxo, University of São Paulo, "The Carbon Market and its role in protect biodiversity in the Amazon rainforest"

[TBD] "SDG-aligned finance and its role in achieving climate and sustainable development goals"

Martin Dietrich Brauch, LL.M. Researcher, Columbia University, “A comprehensive climate policy toolkit for less net and more zero”

Round Table 1: CLIMATE AND BIODIVERSITY SOLUTIONS

Professor Paula Pereda, University of São Paulo, School of Economics, Business and Accounting, "Carbon pricing in food systems: issues and targets as support for Article 6 of the Paris Agreement"

Ediléu Cardoso Junior, CEO, KWP Energia. "The use of solar energy in water reservoirs and its contribution to climate agenda and mitigation of CO2 emissions"

Professor Julio Romano Meneghini, University of São Paulo, Engineering School "Technical potential production of green hydrogen using surplus electricity from sugarcane biorefineries in Brazil"

Artur Villela Ferreira, CEO of GFB Green Forest Bond Company, "Enhancing the role and coverage of carbon pricing and green bonds"

Marcus William Oliveira, CEO of Circular Brain, “The use of technology for e-waste circularity and the contribution for a net-zero production”

Rafael Tello, Head of Sustainability of Ambipar, “The private sector strategies for a circular economy”

Round Table 2: CLIMATE JUSTICE

Professor Ana Cristina Limongi França, University of São Paulo, School of Economics, Business and Accounting "The connection between education, quality of life, poverty eradication, and the climate agenda"

Professor Christiano Jorge Santos, Judge at São Paulo Tribunal of Justice and Professor at PUC São Paulo: "Organized crime: impacts for the environment and human health"

Caroline Marques: Lawyer at Wald Law Firm, Far-reaching impacts of wildlife trafficking: from the biodiversity decline to climate injustices.

Camila Valverde, Director of Impact, Global Compact UN Brazil, "Public policies to promote climate justice in Brazil"

Maria Antonia Tigre, Senior Fellow, Sabin Center for Climate Change Law, “The status of climate litigation in Latin America”

Professor Gabriel Wedy, Federal Judge, Vice-President of the Law for a Green Planet Institute and Environmental Law Professor (Unisinos University), "Climate Justice in Latin America"

The environmental summit will connect experts to discuss public policies that can be implemented in Latin America along climate-aligned sustainable development.

3.1.32 Key messages

These have certainly been two very thought-provoking roundtables this afternoon, with such renowned panelists joining us to deepen the discussion around efficient responses to global environmental and socioeconomic challenges.

Currently, the picture looks bleak. To take just one example, climate change is increasing the frequency and intensity of extreme weather events around the world, and effects are clear: there has been an 80% increase in the number of people affected by disasters since 2005. Recent examples that hit home are the cyclone in the southern part of Brazil just last week, and the more intense hurricane seasons we are experiencing in the US in the recent past. These events are greatly undermining sustainable development gains and putting the achievement of the 2030 Agenda at risk.

At the same time, if we take care of nature and keep ecosystems healthy, they can contribute to mitigating hazards and buffering impacts from climate change. For instance, the Dasgupta Review, an independent, global review on the Economics of Biodiversity, found that during Hurricane Sandy in 2012, an estimated 625 million US dollars in flood damages were avoided because of wetlands.

It is clear that we need to scale up solutions to achieve the 2030 Agenda while also acting on climate and protecting biodiversity. And was pleased to have heard many great examples of these solutions from our esteemed panelists today. I hope we can leave this event today inspired to further develop collaborations to support the achievement of the UN SDGs and the 2030 Agenda, in Latin America and beyond.

1. To reduce GHG emissions from food systems, we need to make changes on both the demand and supply sides and implement the regulated carbon market.
2. The ongoing global impetus toward sustainable and low-carbon energy systems necessitates innovative solutions that can be efficiently integrated into existing infrastructures.
3. New technologies must be accepted, such as artificial intelligence in the production of evidence.
4. voluntary markets also have a role to fulfill, allowing countries that have potential to achieve more than their NDC contributions to do it .
5. Wildlife trafficking must be faced as the social problem that it is in Brazil, and accordingly reflected in legal systems and public policies.
6. Considering the lack of administrative structures for effective environmental monitoring, combating organized crime can be a strategic pathway to also contribute to environmental protection.

3.1.33 Collaboration outcomes

We're going to establish a cooperation with Columbia University on sustainable investments research.

3.1.34 Building inclusion and equity

Gender inclusive

3.1.35 Key lessons learnt

Develop and launch science collaborations to demonstrate global science mechanisms and activities to support the achievement of the SDGs and the 2030 Agenda.

Session 9: Climate-smart Approaches to enhance Ruminant/Livestock production efficiency and Food production sys

Session Convenor
Mahlako Makgahlela

Position
Research Team Manager - Animal Breeding and Genetics

Organisation
Agricultural Research Council

Country
South Africa

3.1.36 Abstract

The state of Africa livestock agriculture and its vulnerability to climate risk is an ongoing matter of importance, not only for the continent but also for the global world. Climate change is a reality that will result in higher temperatures and more extreme events such as droughts, floods, higher temperatures and more heat waves, which will affect the wellbeing and stability on the continent and the attainment of the Sustainable Development Goals.

In the case of livestock in tropical and sub-tropical African countries this will result in (1) a decrease in production (meat and milk), (2) lower fertility (in both males and females) that will affect reproduction, (2) more diseases, especially the host transmittable diseases and (4) lower quality of the grazing. In these African countries, climate change represents a feedback-loop in which livestock production both contributes to climate change and suffers from the consequences. That is why adaptation, resilience and mitigation strategies are critical for sustainability.

This is in contrast to developed countries in temperate regions where the focus is mainly on mitigation.

This session will highlight some of the climate-smart approaches, food production systems and climate responses that are essential in terms of required actions/interventions from the United Nations and at a global level to prioritize agricultural research and involvement of farmers in terms of agenda setting and related investments.

The speakers will highlight the need for evidence-based decisions around complex issues related to climate change, with relevant indicators. Therefore, science becomes a fundamental part to enhance resilience of people, production and food systems. This makes relationships between scientists, collaborating regions, farmers and farmer’s organizations important.

Programme (2h30min)

Opening remarks (5 min): Dr Andrew Magadlela (Group Executive: Animal Sciences, ARC);

Welcome and Introduction (10 min): Prof Azwihangwisi Maiwashe (General Manager: ARC-Animal Production);

Presentation (20 min): Dr. Ackim Mwape (New Zealand Agricultural Greenhouse Gas Research Centre);

Overview of the Global Research Alliance on Agricultural Greenhouse Gases and partnerships in Africa.

Presentation (20 min) - Dr Claudia Arndt (ILRI, Kenia); Current State of Research on Livestock GHG Emissions and Mitigation in Sub-Saharan Africa

Presentation (20 min): Prof Michiel Scholtz: (ARC-Animal Production, South Africa), ;Climate-smart research: Current and planned projects, challenges and opportunities for southern-Africa

Presentation (15 min): Dr Sithembile Ndemi Mwamakamba (FANRPAN); ;Analysis of policy for climate change mitigation and adaptation

Presentation (15 min): Ms Minky Groenewald (Eswatini);. An overview of NDCs (Nationally Determined Contributions) in southern African and the role of farmers organizations

Panel discussion (20 min): Prof Mahlako Makgahlela (Research Team Manager: Animal Breeding and Genetics, ARC-Animal Production)

Closure (10 min): Prof Mahlako Makgahlela (Research Team Manager: Animal Breeding and Genetics, ARC-Animal Production)

3.1.37 Key messages

Evidence-based decisions in tackling complex issues related to climate change, and the critical role of science to enhance resilience of people, production and food systems will greatly depend on Synergistic collaboration between all agrifood role-players:

1. Gap reduction between actual and estimated decarbonization targets, especially for Africa, will require Partnerships and Collaboration, Capacity development at varying levels of the value chain e.g., scientists, extension and farmers and Measurement hubs for accurate recording of region-based GHGs (or enteric methane emissions)

2. Research shows that the IPCC data and formulae are inflating enteric methane emissions for African. These countries are highly unlikely to meet the 1.5 degr C target by 2030 or 2050. This highlights the need for localized data collection. However, there are only 3 countries in African with infrastructure for GHGs data collection.

3. Research shows that multi strategies of climate-smart farming systems/practices have cumulative effect in reducing enteric methane emissions.

4. African's adaptation and mitigation strategies includes Structured crossbreeding to enhance productivity, more use of adapted with less plastic genotypes for sustainable food production and early-warning systems to advice farmers in the short- medium and long-term

5. Improved delivery of science and innovations to the farmers to effectively implement the climate smart agriculture practices. There is more need for improved public awareness, with currently ad hoc implementation that is often duplicated due to competition by various role players. Climate smart agriculture practices will be improved through structured Research Agenda, multi stakeholder joint public awareness and collaboration.

6. In terms of policy framework, there is still greater need for a platform for improved alignment of national, regional and global policy framework that integrates linkages between Climate smart agriculture practices, financing and institutional capacity that also supports institutional actors.

All the session messages underlined the critical need for

1. Region specific GHGs data

2. Value of partnership and collaboration

3. Joint and multistakeholder public awareness

4. Need for capacity development of all role players

5. Improved alignment of national policy frameworks that possibly aligns with regional and globally

1. Alignment of national, regional and global policy framework
2. Integrated system that links Climate smart agriculture practices, financing and institutional capacity that also supports institutional actors.
3. Joint multistakeholder public awareness on Climate smart agriculture practices
4. Capacity development of all role players, especially farmers
5. Region specific GHGs data collection for accurate 1.5 degr C target monitoring
6. Implementation of accurate and structures Climate smart agriculture practices

3.1.38 Collaboration outcomes

Collaboration on cross-cutting issues - training, skills & infrastructure for research, public engagement and dialogue. The Agricultural Research Council has been participating on the GRA initiatives, and South Africa will be hosting the 2024 (Global Research Alliance (GRA) Council meeting. The hosting will facilitate the GRA's Engagement with SADC and regional scientists to enhance capacities & foster collaboration

3.1.39 Building inclusion and equity

The session included animal scientists

Representation from the Global Research Alliance (GRA)

Representation from Farmer Organization (NFO)

The Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN)

The set up allowed for better discussion along the animal science research and climate-smart agriculture practices along the ruminant production valuae chain

3.1.40 Key lessons learnt

The pivotal need to align national adaptation and mitigation strategies policy framework with regional and global stakeholders

Incentivizing institutional actors that play an active role in climate action policy coordination, through technical assistance, increased finance and institutional capacity.

Develop research agenda and strengthen collaboration and public awareness on climate smart agriculture

Session 10: Investing in Research and Development of Innovative Digital Health Solutions for Africa

Session Convenor
Michelle Nderu

Position
EDCTP Project Officer

Organisation
European and Developing Countries Clinical Trial Partnership (EDCTP)

Country
South Africa

3.1.41 Abstract

As we strive towards achieving the Sustainable Development Goals (SDGs) and Universal Health Coverage (UHC), and laying the foundation for the post-2030 Sustainable Development Agenda, health systems in low- and middle-income countries (LMICs) need to embrace the opportunities presented by digital health solutions. Working smarter and faster is key to harnessing more efficient, equitable and contextualised healthcare in an integrated manner.

Combining health technologies with other scientific innovations such as mobile and digital technologies (mHealth and eHealth), artificial intelligence (AI), big data processing, and other emerging technologies offers the potential for widespread transformation of health systems. Despite large-scale investments in product development for poverty and related infectious diseases (PRDs), progress in achieving public health gain remains slow, while sub-Saharan Africa bears the highest burden of these diseases.

Moreover, these diseases co-exist with a growing burden of other morbidities, requiring improved systems that facilitate surveillance for multiple diseases and the ability to support the introduction of several medical interventions. There is a need to provide sustained support to research and development and to encourage the use of new, innovative approaches and emerging health technologies in sub-Saharan Africa to achieve rapid progress and impact.

The COVID-19 pandemic has unveiled the use of digital health and the generation of novel knowledge that could advance prevention, treatment or diagnosis of PRDs in this part of the world with rapidly growing ‘digital–hungry’ urban populations and mainly young people with a median age of under 20 years.

The European Developing Countries Clinical Trials Partnership (EDCTP) is investing in innovative approaches to enhance research on PRDs in sub-Saharan Africa. As a partnership between currently 24 African and 15 European countries, EDCTP aims to accelerate the development of new or improved medical interventions for the identification, treatment and prevention of PRDs.

Launched in 2003 and renewed in 2014 and 2021, EDCTP has been the focal point of European Union (EU) support for global health research in Africa and is a visible sign of commitment to the SDGs. By December 2022, the second EDCTP programme (EDCTP2; 2014-2024) portfolio comprised 436 grants awarded through 60 calls for proposals, representing a total investment of EUR 823 million. Clinical trials supported by EDCTP2 involve international collaborations spanning >60 countries and 350 institutions in Europe and sub-Saharan Africa, with broader global collaboration. Results from these clinical trials have generated pivotal evidence which has informed national and international policy and practice. On 10 May 2022, the European Commission and the EDCTP Association launched the Global Health EDCTP3 Joint Undertaking, highlighting the importance of ensuring research and innovation collaboration, cooperation and funding in the area of infectious diseases, and the commitment of the partners.

As part of the 9th edition of the Science Summit around the 78th United Nations General Assembly (UNGA78), and on the occasion of EDCTPs 20th anniversary, this session aims to illustrate the value of investing in research and development of innovative digital health solutions for addressing unmet medical needs in Africa through a global partnership such as EDCTP. The objectives of the session will be:

Promoting awareness about EDCTP and its role and contribution towards attaining the SDGs

Showcasing practical examples of how EDCTP and its partners are supporting clinical research using smart, highly innovative health technologies or concepts to prevent, treat or diagnose PRDs in sub-Saharan Africa, and the development of solutions that are easily integrated or linked to existing electronic or digital systems used in the implementation of clinical research and health systems’ patient management

Demonstrating how the use of digital technology in public health interventions can serve as a driver for the development of African health systems, improving access to health data and research evidence to better develop and implement informed health policies and improved clinical guidelines for healthcare in sub-Saharan Africa

Discussing the role of digital health solutions in addressing Africa’s health challenges and opportunities, including lessons learned from the COVID-19 pandemic response and the enabling research, policy, regulatory and financial environments that are needed.

Agenda

Chairs:

Harleen Grewal, Professor of Microbiology and Global health, University of Bergen, Norway; Chairperson of the EDCTP Scientific Advisory Committee

John Gyapong, Adjunct Professor of Global Health, Georgetown University, USA; Chairperson of the Scientific Committee of Global Health EDCTP3 Joint Undertaking

09:00 -09:05; Welcome and introduction from the co-Chairs and Michelle Nderu (EDCTP)

09:05-09:15; Unleashing the role of medical technologies in combatting the unmet medical challenges attributed to PRDs in sub-Saharan Africa towards attaining the SDGs and UHC- Michael Makanga, Executive Director; EDCTP (Netherlands)

09:15-09:25; Case study 1 – Blockchain high coverage rabies post-exposure prophylaxis to achieve zero human rabies deaths in Africa (BlockRabies)- Jakob Zinsstag, Swiss Tropical and Public Health Institute (Swiss TPH), Switzerland

09:25-09:35; Case study 2 - Improving access to SARS-CoV-2 screening and testing through community-based COVID-19 case-finding and the use of digital solutions in Lesotho and Zambia (TREATS-COVID & Mitral)- Kwame Shanaube, Zambart, Zambia

09:35-09:45; Case study 3 - Dual diagnosis by Spectral Artificial Visual Examination for Female Genital Schistosomiasis and cervical cancer. Digital, new, low-cost, and simple diagnosis and training (DUALSAVE-FGS) -;Santiago G. Martinez, Associate Professor in Digital Health at the University of Agder, Norway

09:45-09:55; Case study 4 – Expanding digital data capacities of African clinical trial centres through a cloud-based global health research platform - Gadi Lachman, CEO and President, TriNetX LLC, USA

09:55-10:10; Audience

10:10-11:00; Panel discussion: The role of digital technology in addressing Africa's health challenges

Irene Norstedt, Director, People Directorate, Directorate-General for Research and Innovation, European Commission and Vice Chair of the Governing Board of the Global Health EDCTP3 Joint Undertaking

Roseanne Rotondo, Head of Global Health Access, Novartis, USA

Gadi Lachman, CEO and President, TriNetX LLC, USA

Jean Philbert Nsengimana, Chief Digital Advisor, African Centres for Disease Control (Africa CDC), Ethiopia

Lindiwe Makubalo, Assistant Regional Director, WHO Regional Office for Africa (WHO / AFRO), Congo

11:00 -11:20; Audience Q&A and discussion

11:20 -11:30; Closing remarks - Marcel Tanner, EDCTP High Representative (Europe)

3.1.42 Key messages

- There is a need to increase the understanding of how improved access to health data and research evidence can lead to the formulation of informed health policies and enhanced clinical guidelines, thereby improving healthcare outcomes in Africa. Data driven technology can enhance decision making.

- There has to be an increased understanding of the support required from stakeholders to create a conducive ecosystem for successful deployment and adoption of digital health solutions. Collaboration between governments, private sector, and civil society is essential for scaling up innovations.

- Collaboration amongst scientists, innovators , policymakers and communities is important for problem solving. The One Health approach, which integrates human, animal, and environmental health, is crucial for achieving SDG 3 (Good Health and Well-being).

-Scientific and technological advancements need robust ethical guidelines and regulatory frameworks

- Global health security can only be achieved with scientific collaboration.

- Science and innovation are factors that can help us find solutions to complicated challenges.

- Use of digital technology in public health interventions can serve as a driver for the development of African health systems; improved integrated access to health data and research evidence; and in the implementation of health policies and guidelines in Africa.

- The economic and environmental impact and cost of supporting the digital health ecosystem needs to be further explored and pushed to the fore as this has consequences on the sustainability of such systems.

1. To address health systems' challenges and strengthen regional health systems for the SDGs, we need to use integrated digital solutions that align with the needs of countries.
2. To increase the health potential of the whole population including communities in vulnerable conditions, we need to be aware of the risks, collaborate , implement and share digital health initiatives
3. A conducive digital health ecosystem with robust policy, regulatory and financial systems is required for succesful deployment and adoption of digital health solutions
4. Institutionalize transdisciplinary participatory stakeholder processes in health planning
5. Develop sustainable models of upscaling digital literacy and training among HCWs and more investment is required into implementation research
6. Research partnership has to be equitable. One has to understand the ecosystem, it should be a 2-way learning model.
7. Policy and decision making should be based on Real-World Data. Promote collaborative academic publications with access to regional Real-World Data networks
8. Digital health systems need to have be interoperable and have a universal language.

3.1.43 Collaboration outcomes

There is interest from one of the private technology companies to partner up with different research sites in Africa.

3.1.44 Building inclusion and equity

The session had stakeholders from different implementers within the digital health community and from different parts of the world.

3.1.45 Key lessons learnt

Collaboration and open honest dialogue amongst different actors within the scientific space; from researchers to policymakers is a key factor that will drive policy change.

Session 11: Youth Changemakers in STEM

Session Convenor
Sahil Sood

Position
Co-Founder/CEO

Organisation
HY{E

Country
United States

3.1.46 Abstract

This session delves deeper into the journeys of several different youth STEM advocates, exemplifying how they lead education, activism, and awareness efforts in different areas of STEM, while still targeting the UN SDGs in their communities.

From a scientific innovation perspective, Sahil Sood's research into developing a potential COVID-19 therapeutic is at the forefront of medicine. As one of the youngest COVID-19 researchers globally, his work investigates the development of a novel drug delivery system to provide a long-term treatment option for the virus. Similarly, Hector Martinez has utilized field research and discrete statistics to help create a platform that diminishes the incidence of drug-resistant Tuberculosis. This directly elevates SDG 3, as his research is currently being deployed in low-income communities to help promote good health in areas with high COVID-19 mortality.

In terms of technological advancements, Bautista Martinez's work illustrates the applications of STEM in non-STEM sectors. By working with local legislators in Uruguay to strengthen privacy laws and fostering technological advancements that curb the spread of misinformation, his work directly aligns with SDG 9, as he helps develop infrastructure that empowers individuals, rather than furthering the digital and socioeconomic divide. Similarly, Shreen Shavkani has collaborated with teens across the United States to distribute ignition interlocks, innovative technology that prevents substance-impaired driving. She worked with local legislators to pass legislation regarding this technology, which relates to SDG 3.

From an environmental perspective, Aritro Chatterjee leads a podcast alongside leading environmental figures, raising visibility for innovative climate solutions and providing practical advice for climate-conscious youth. This helps inspire youth changemakers to target SDG 13, which helps secure a greener planet for the future.

When looking at educational efforts, Ahmed Piracha has founded the Photon Report, an online magazine dedicated to the spread and awareness of science and mathematics within Pakistan through novel engagement strategies. Similarly, Sahil has founded HYPE, a nonprofit that has

provided over $100,000 towards advancing STEM education through virtual courses, work that Tony He has been a part of. Michelle Bok has also promoted STEM education by founding the Global STEM Youth Journal, which works with students from 17 different member nations to make STEM more accessible and break the paradigm that STEM fields are solely for academia. Through Ashmit Singh’s counterterrorism efforts with national governments, access to education for communities is secured. These initiatives promote SDG 4, as they help provide specialized STEM education, enriching the quality of education for these students.

Finally, Nilay Ersoy’s efforts to advance cross-cultural advocacy and build communication skills help students equip the soft skills that are the foundation of STEM. Dashel Myers synthesizes all of this work into written form, as he is publishing a mathematics textbook incorporating the aforementioned skills. Building the infrastructure for students to better understand STEM–as these two leaders have done–relates to SDG 9, as the approaches they utilize are innovative.

Overall, the wide variety of endeavors that these youth leaders engage in illustrates how multiple STEM perspectives are critical to tackling the SDGs.

3.1.47 Key messages

Understanding the importance of youth in STEM

1. More youth
2. Higher diversity
3. Quicker time frame

3.1.48 Building inclusion and equity

I had perspectives from people across 8 countries

3.1.49 Key lessons learnt

The importance of youth in STEM is paramount!

Session 12: Innovative approaches in achieving sustainable access to healthcare for pediatric NCDs

Session Convenor
Kate Armstrong

Position
Public Health Physician
President, CLAN (Caring & Living As Neighbours)
Co-Founder, @MATES4Kids (Maximising Access To Essential Supplies for Children)

Organisation
CLAN (Caring & Living As Neighbours)
www.clanchildhealth.org

Country
Australia

3.1.50 Abstract

Introduction and aims

Care of pediatric patients in resource poor settings is overwhelmed by health and healthcare disparities. The inequitable morbidity and mortality experienced by children and adolescents living with non-communicable diseases (NCDs) in resource-limited settings was acknowledged at the 66th World Health Assembly in 2013.

As we approach the second High Level Meeting (HLM) on Universal Health Coverage (UHC) (2023); the fourth HLM on NCDs (2025); and close of the United Nations’ Sustainable Development Goals (SDGs) in 2030, urgent action is needed to redress child health inequities. The SDGs commit Member States to action that will end preventable infant and child mortality (SDGs 3.2.1 and 3.2.2); and reduce the preventable mortality associated with NCDs by 30% (SDG 3.4).

In this context, affordable and equitable access to healthcare and essential medicines, newborn screening and other diagnostics are critical and pressing priorities for every child.

This session will review successful collaborative, rights-based, community development efforts by our group that have been shown to improve sustainable access to medicines and quality of life for children living with chronic NCDs in resource-limited environments.

Abstract

Established in 2021, @MATES4Kids (Maximising Access To Essential Supplies) is an international movement of like-minded organisations committed to reducing the preventable mortality associated with childhood NCDs. With a focus on one particular chronic health condition (CAH - Congenital Adrenal Hyperplasia), the @MATES4Kids movement seeks to

contribute in a practical way to efforts to achieve SDGs 3.2.1, 3.2.2 and 3.4 and to serve as a proof of concept for access to medicines for other NCDs.

Panelists will report on the activities of the @MATES4Kids Community of Practice to date. As an international movement (hosted on the World Health Organization’s Knowledge Action Portal), @MATES4Kids is committed to collaborative action, leveraging existing technology and scaling innovation to #LeaveNoChildBehind.

The @MATES4Kids movement is informed by several key frameworks, including the:

- United Nations Convention on the Rights of the Child

- Ottawa Charter

- Strategic Framework for Action and Five Pillars of CLAN (Caring & Living As Neighbours)

- Knowledge to Action Framework

@MATES4Kids proposes to reduce the preventable mortality associated with CAH and promote efforts to achieve the SDGs through three key objectives:

1) Improve access to essential medicines (as per the WHO’s Essential Medicines List for Children)

2) Scale access to Newborn Screening and other diagnostics (as per the WHO’s Essential Diagnostics List) and

3) Strengthen childhood NCD Communities

A panel of stakeholders will share key activities and achievements to date, as well as acknowledge barriers to the broader social, cultural and economic determinants of health for children living with NCDs in LMICs. Speakers will share updates on efforts across each of the WHO’s six regions to:

- Scale up Newborn Screening and improve access to other essential diagnostic procedures

- Improve access to essential medicines

- Monitor and evaluate progress using agreed indicators

- Expand professional Healthcare training and

- Empower patients and families

The attendees will hear about practical approaches that helped our group achieve success in key areas and have the opportunity to provide feedback and contribute through their personal experience:

- A sentence on Pakistan and Zimbabwe

- A sentence on inclusion of drugs in the WHO

- A sentence on inclusion of laboratory tests in the EDL and the opportunities and obstacles to Newbron screening for Congenital Adrenal Hyperplasia

- A sentence on identification of most important issues

Expected outcomes

Discussion of key learnings and successful approaches to date will inform the development of practical recommendations to help United Nations Member States scale action that will reduce the preventable and inequitable mortality currently experienced by infants and children living with chronic health conditions in resource poor settings, and thus contribute to SDG 3 “Ensure healthy lives and promote well-being for all at all ages” by 2030. Participants will be invited to join the @MATES4Kids Community of Practice on the WHO’s Knowledge to Action Portal (https://www.knowledge-action-portal.com/en/communities/overview), access existing tools and resources, and engage in ongoing collaborative efforts to reduce preventable child mortality around the world.

Program

Introduction: Kate Armstrong, Jean-Pierre Chanoine and Rodolfo Rey

Access to hydrocortisone and fludrocortisone in Latin America: Paola Duran

Successes and challenges in Southeast and Middle-East Asian countries: Aman Pulungan, Jamal Raza

Successes and challenges in Africa: Salwa Albuldagi

WHO Essential Medicines List and Essential Diagnostics List: Jean-Pierre Chanoine

Training specialists for and in Sub-Saharan countries: Thomas Ngwiri

3.1.51 Key messages

Care of pediatric patients in resource poor settings is overwhelmed by health and healthcare disparities. The inequitable morbidity and mortality experienced by children and adolescents living with non-communicable diseases (NCDs) in resource-limited settings was acknowledged at the 66th World Health Assembly in 2013.

As we approach the second High Level Meeting (HLM) on Universal Health Coverage (UHC) (2023); the fourth HLM on NCDs (2025); and close of the United Nations' Sustainable Development Goals (SDGs) in 2030, urgent action is needed to redress child health inequities. The SDGs commit Member States to action that will end preventable infant and child mortality (SDGs 3.2.1 and 3.2.2); and reduce the preventable mortality associated with NCDs by 30% (SDG 3.4).

In this context, affordable and equitable access to healthcare and essential medicines, newborn screening and other diagnostics are critical and pressing priorities for every child.

This session will review successful collaborative, rights-based, community development efforts by our group that have been shown to improve sustainable access to medicines and quality of life for children living with chronic NCDs in resource-limited environments.

Panelists from Mexico, Colombia, Kenya, Sudan, Indonesia, Canada, Pakistan, Argentina and Australia shared examples of challenges and achievements improving access to essential medicines, equipment and newborn screening services for children in resource poor settings. Local manufacture of essential medicines, training of health professionals, community development initiatives (to empower families and children living with NCDs) and national commitment to scale newborn screening programs were amongst the successes shared.

1. There is an urgent need to make Newborn Screening available to every newborn to reduce preventable mortality and morbidity.
2. Every Member State should be supported to ensure all medicines on the WHO Essential Medicines List are universally and affordably available to all.
3. Health professionals have a role to play in supporting policy makers to strengthen health systems. Ministries of Health and paediatricians must work together to identify and implement solutions.
4. The WHO's Knowledge Action Portal for NCDs can support international collaboration and partnerships for action.
5. International collaboration has powerful role to play in health professional development and training.

3.1.52 Collaboration outcomes

The @MATES4Kids movement - https://knowledge-action-portal.com/en/cop-categories/mates4kids-—-maximising-access-essential-supplies-children-living-ncds - is bringing together a broad range of stakeholders from around the world to scale action to reduce the preventable mortality associated with childhood NCDs.

@MATES4Kids has a Community of Practice that is housed on the WHO KAP.

@MATES4Kids released their 2022-23 Activity Report at the UN Science Summit - it is available online here - https://knowledge-action-portal.com/sites/default/files/doc/mates4kids_annual_report.pdf

3.1.53 Building inclusion and equity

Representatives from each of the six WHO Regions participated in the session and shared successes and challenges from around the world. There were equal numbers of men and women presenting. @MATES4Kids relies on the contributions of young people to be successful.

3.1.54 Key lessons learnt

Newborn Screening involves a simple heelprick of a newborn baby in the first few days of life. It has been universally available in high-income countries since the 1970s, but is not yet available in the majority of LMICs. This is contributing to enormous preventable mortality and morbidity.

The world must commit to equity for #EVERYchild and NBS is an existing, cost-effective, sustainable solution that must be available to all.

Session 13: Closing the science-policy-practice gaps for Climate Resilience and sustainable Food Syste

Session Convenor
Petronella Chaminuka

Position
Impact and Partnerships Executive

Organisation
Agricultural Research Council of South Africa

Country
South Africa

3.1.55 Abstract

The state of Africa’s agriculture, and its vulnerability to climate risk are an ongoing matter of importance, not only for the continent but the global world. Climate change related hazards such as drought, shifting patterns of pests and diseases incidence impact wellbeing and stability on the continent and the attainment of Sustainable Development Goals. Agricultural Research and Innovation plays a pivotal role in developing climate resilient food systems, and enabling Africa to reduce the agricultural productivity gap and deliver on the SDGs. Despite the pivotal role of agricultural science, investments in research have declined over time, and in Africa, most of the countries are not able to meet their commitments for investment in agriculture. Amidst many international competing priorities such as geo-political peace and security tensions, migration, communicable diseases and technological hazards, there is need to amplify voices for agricultural research investments across the globe.

The session will highlight some of the key scientific innovations emerging from Agricultural Research & Innovation, and share best practices in closing the science-policy and science-practice gaps to deal with the challenges of climate change and food systems. Key priorities to accelerate the science-led climate resilient food systems in Africa will be identified and speakers will highlight the required actions/interventions from a UN and global level to prioritize agricultural research in terms of agenda setting and related investments.

Programme (2h5min)

Opening remarks (5mins)- Petronella Chaminuka

Presentation (15 mins)- Dr Litha Magingxa- Agricultural research technologies for climate resilience

Presentation (10mins) –Dr Rose Omari (Coordinating the development and adoption of the national policy for aflatoxin control in food and feed in Ghana.)

Presentation (10mins)- Triona Mccormack (Ireland’s experience in Sustainable Food and Agriculture)

Q&A discussion- 10 mins

Panel discussion (60 mins)- How do we close the science-policy and science-practice gaps and prioritisation of agricultural research in the post SDG agenda for climate resilience and sustainable food systems?

Influencing policy through evidence (Triona Mccormack (PhD) University College Dublin)

Gendered perspectives- Mariamme Maiga (PhD)- Regional Gender and Social Development Adviser at ;West and Central African Council for Agricultural Research and Development (CORAF)-

Meeting bread and butter needs through science- Michael Bairu (PhD), Agricultural Research Council)

Prof A Mushunje- Developing capacities for science- University of Fort Hare, South Africa

Genna Tesdall- Young Professionals for Agricultural Development

Summary and closing remarks (10mins)- Petronella Chaminuka

3.1.56 Key messages

1. Addressing the science-policy gaps through better information dissemination, more inclusive approaches to research, and demonstrating in practical ways the value that science adds to address day to day challenges. This can include setting up of net zero demonstration farms that include government, industry and academia as stakeholders.
2. The importance of including gender and youth in science and innovation, and in policy making cannot be overemphasised
3. Academic curricula should normalise transdisciplinary collaboration
4. Global South scientists have registered major scientific breakthroughs and cutting-edge research in One Health, Climate Change, Increasing Crop yields and Improving Nutrition and Food Safety. Thus there is capacity to address SDGs through Southern Solutions that are localised and relevant
5. There should be more focus put into scaling existing innovations for impact- there are already many solutions out there that have been proven to work but not enough attention is put towards scaling
6. Gender and youth inclusion present entry points for development that are not yet fully exploited and supported. There must be increased efforts to develop capacities and amplify voices of women a
7. Increased funding support for research in Africa by African researchers through equitable partnerships and investing in capacities for science
8. Equity in addressing emerging global challenges post SDGs, and ensuring that no one is left behind in the digital era.

9. Explore long-term sustainable models for financing research and innovation. This includes harnessing the role of the private sector
10. The AU-EU FNSSA partnership should be more inclusive and move from a project approach towards more long term sustainable and impactful programmes

3.1.57 Collaboration outcomes

We agreed to organised more sessions for the 2024 Science Summit, and we will also be accelerating existing collaborations (in climate smart agriculture, and other areas to further explore some of the suggested best practices emanating from our session.

3.1.58 Building inclusion and equity

We had speakers from 5 Countries, more than 50% speakers were women, we also had a speaker from a youth organisation

3.1.59 Key lessons learnt

Key priorities such as One Health, Climate Change should be mainstreamed into curricula at universities, and we should have more efforts invested to make the technical language around these topics to be simplified and better packaged for more impact

Without concerted efforts for collaboration and multidisciplinary it will be difficult to solve the global challenges we face.

Session 14: Expanding scientific frontiers via international cooperation and networking with COST and NSF

Session Convenor
Katalin Alföldi, COST Association, Policy and Communications Department; Katalin.alfoldi@cost.eu
Kara C. Hoover, US National Science Foundation, Office of International Science and Engineering; kchoover@nsf.gov

Position
Katalin Alföldi, COST Association, Policy officer, Task Leader for International Cooperation
Kara C. Hoover, US National Science Foundation, Office of International Science and Engineering, Program Director

Organisation
COST Association, National Science Foundation

Country
European Union, United States of America

3.1.60 Abstract

The session is co-organized by the US National Science Foundation AccelNet Program and the European Cooperation in Science and Technology, the COST Programme. We aim to promote the value of international networking to the advancement of science using examples from funding programs. The session includes an overview of the model used by each program, the scope of international collaboration, and informal presentations by teams funded through both programs about their collaboration and building international networks of networks. We also aim to offer perspectives from additional funding mechanisms from the Global South and as part of a larger forum on multilateral scientific collaboration. The session will end with a “meet & greet” opportunity for interested participants to talk to funded teams about their experience or learn more about the models and details of the various funding schemes discussed.

COST (European Cooperation in Science and Technology) is a European funding organisation for research and innovation networks. Its Actions help connect research initiatives across Europe and over the globe while enabling researchers and innovators to grow their ideas in any science and technology field and share them with their peers.

The open and inclusive characteristic of COST Actions establishes and maintains the international research partners’ long-term collaboration built on trust and achieving breakthrough scientific results. COST Actions are bottom-up networks with a duration of four years that boost research and innovation while providing opportunities for researcher mobility and career advancement.

The AccelNet program funds networking activities to coordinate the efforts of multiple independent research networks at the international level in cooperative team science. The program welcomes proposals in any area funded by the National Science Foundation, particularly those addressing grand research challenges identified within research communities and/or NSF. The program is based on a model of science as a global effort resulting in highly cited papers featuring diverse research teams working for mutual benefit. The program emphasizes collaboration rather than competition in the pooling of expertise and resources that accelerate science and scientific exchanges that foster science diplomacy.

3.1.61 Key messages

International scientific networking is crucial for science to progress since no single country has access to all the necessary facilities and expertise. SDGs, while focused on particular topics, more broadly include how science is conducted. Through international collaboration, AccelNet and COST help teams make connections to leverage resources, exchange talent, and coordinate efforts in an unprecedented way to advance science. Such cooperation reduces fragmentation that arises from replicating efforts by pooling knowledge and resources, identifying most productive pathways forward and assigning tasks to teams best equipped. It also lifts barriers to science due to global inequities in research infrastructure and diversifies participation—a key factor in innovation and cutting-edge science.

Our teams, funded in each country by either COST or AccelNet provided their specific examples of how international networking funds have advanced their science in way that would not have been possible through ordinary research grant support. The ChETEC COST Action developed an Infrastructure sharing platform that opened access to data across networked teams. NexusNet COST Action and Accelnet Sustain Food highlight the importance of the interactions between these systems through the Water-Energy-Food Nexus concept by focusing on recognizing the interconnected risks to water, energy and food security and connecting the research and policy-making communities over continents. Accelnet IReNA expanded scientific scope (e.g. towards simulations of galaxies) and geographical reach (with the addition of countries like Canada, Brazil and Mexico) and exchanged data and researchers to more effectively advance key questions share across their networks. Such cooperation creates opportunities for early career researchers through collaboration with global experts.

International scientific networking expands resource access, which reduce barriers to participation. AccelNet Irena has managed to leverage resources (access to equipment and data access for example) to partners who previously were scientifically isolated. Reduction in barriers benefits teams mutually through the new perspectives brought by sharing resources and larger number of researchers working on the core problems, which promotes sustainability. SustainFood centers Africa as a partner and brings together African researchers in Africa through workshops that expose regional approaches to localized challenges—efforts that NexusNet is part of as well. These networks of networks are growing exponentially and creating a global web of researchers directly focused on meeting SDGs in their applied multi-disciplinary fields of research. These networks demonstrate the power of removing disciplinary silos to address complex global problems. Without the time and space

to bring together leading experts taking different approaches to different aspects of the problem, the science will not be advanced as rapidly.

Science is not a universal language. There are tremendous benefits to international research coordination but the first step is learning to listen to other views--of how to conduct science and who the stakeholders and partners are. Making meaningful connections before engaging in advancing science is the critical lesson learned across teams--and that lesson makes them stronger!

The three most important takeaway:

1) To have ambitious goals and a visions as it brings people together and the group always wins versus working isolated and alone. Learning to learn again, scientists must learn to be humble and realize that they need to listen more to connect and advance their goals. International scientific networking require enthusiasm and commitment and it brings results which show that 2+2 > 4. Collaboration and international cooperation are the crucial to share expertise and it accelerates the opportunities to go further. Collaboration teaches to keep trying despite failure and get to the results and breakthroughs needed.

2) To work against fragmentation and duplication of research efforts, build trust and create a web of communication channels, allow science to happen outside politics and break down the silos.

3) To have more space and funding available for international scientific networking, to talk f2f and get inspired across interdisciplinary teams having basic and applied researchers on board. A key challenge to this (beyond funding) is political interference with scientific aims—a critical example is the Russian war with Ukraine and concerns regarding China. These political issues disrupt, and often suspend, collaboration which harms scientific progress. By highlighting successes obtained through international networking that are not otherwise possible, policy-makers may see reason to find ways to continue and support international collaboration.

- to find ways to continue and support international collaboration, to have ambitious goals and a visions as it brings people together and the group always wins versus working isolated and alone
- to understand that international scientific networking require enthusiasm and commitment and it brings results which show that 2+2 > 4
- to understand that collaboration and international cooperation are the crucial to share expertise and it accelerates the opportunities to go further
- to see that collaboration teaches to keep trying despite failure and get to the results and breakthroughs needed
- to build trust and create a web of communication channels, allow science to happen outside politics and break down the silos
- to have more space and funding available for international scientific networking, to talk f2f and get inspired across interdisciplinary teams having basic and applied researchers on board

- to avoid political interference with scientific aims—a critical example is the Russian war with Ukraine and concerns regarding China
- to understand that political issues disrupt, and often suspend, collaboration which harms scientific progress

3.1.62 Collaboration outcomes

The session was co-convened by two funding organizations that see the event as the first concrete step towards a possible formal agreement between them, building on their synergies. Such an agreement would have important implications for reinforcing international scientific networking by facilitating network of networks creation. Another possible outcome is facilitated join PI meetings to help teams make connections. We observed here and in our PI meetings, that teams learn from each even if the questions asked are as different as astrophysics and sustainability.

3.1.63 Building inclusion and equity

The session's inclusivity was characterized by the involvement of funding schemes from different continents, having a gender and age balance among the speakers, giving voice to young researchers, running the session online and in person at a venue accessible for reduced mobility.

3.1.64 Key lessons learnt

• Lessons learnt includes the experience of the co-convenorship and the importance and respect of cultural differences when working together with colleagues from different continents.

• Furthermore, the value of advertising the event via diverse mode such us direct channels to targeted audience and via social media for a larger outreach as it resulted in a large number of registration. A disappointment and non-fully understood outcome is that in spite of the great efforts of raising awareness about the session, and the large number of registered people, the actual turn-out was very low.

Session 15: Responsible Education for Sustainable Future

Session Convenor
Virendra Rawat

Position
Founder Director

Organisation
Green Mentors

Country
India

3.1.65 Abstract

"Responsible Education for a Sustainable Future" refers to an educational approach that aims to equip learners with the knowledge, skills, values, and attitudes needed to address the complex environmental, social, and economic challenges facing our world. It focuses on integrating sustainability principles into all levels of education to create environmentally conscious, socially just, and economically viable societies for the long term. Key elements of responsible education for a sustainable future include:

Holistic Understanding: Education emphasizes the interconnections between environmental, social, and economic systems, promoting a holistic view of sustainability.

Critical Thinking: Learners are encouraged to think critically and analytically about global challenges, exploring their causes, impacts, and potential solutions.

Active Learning: Education involves experiential and active learning methods, such as project-based learning, field studies, and simulations, fostering a deeper understanding of sustainability concepts.

Interdisciplinary Approach: Sustainable development is inherently interdisciplinary. Education encourages collaboration between different disciplines to address complex issues effectively.

Ethical Awareness: Learners develop an understanding of ethical considerations related to sustainability, promoting values such as equity, social justice, and responsible decision-making.

Problem-Solving Skills: Education equips individuals with problem-solving skills to innovate and find creative solutions to sustainability challenges.

Empowerment: Learners are empowered to take action by engaging in sustainability projects, community initiatives, and advocacy efforts.

Global and Local Perspective: Education considers both global and local sustainability contexts, acknowledging that solutions need to be tailored to specific regions while addressing global concerns.

Long-Term Thinking: Education cultivates a long-term perspective, encouraging individuals to make choices that consider the well-being of future generations.

Partnerships: Collaboration between educational institutions, governments, NGOs, businesses, and communities is essential to effectively address sustainability challenges.

Lifelong Learning: Responsible education recognizes that sustainability is an ongoing journey requiring continuous learning and adaptation.

Resilience and Adaptation: Education prepares individuals to adapt to changing environmental and societal conditions, promoting resilience.

Cultural Awareness: Sustainability education respects diverse cultural perspectives and integrates traditional knowledge systems when appropriate.

Resource Stewardship: Education emphasizes responsible resource management and consumption patterns to ensure the availability of resources for future generations.

Leadership: Responsible education nurtures sustainability leaders who can drive positive change in various sectors. The goal of responsible education for a sustainable future is to create informed, engaged, and empowered individuals who can contribute to building a more sustainable, equitable, and resilient world.It requires a commitment from educational institutions, educators, policymakers, and learners to embrace sustainability as a guiding principle across all levels of education.

3.1.66 Key messages

This summit will create the pathways to the nation to achieve SDGs before 2030

1. Responsible education is solution of all global challenges
2. Green school for every child is the sustainable future for every child
3. Green University brings ocean of opportunities

3.1.67 Collaboration outcomes

Green Mentors is partnering with international organization to make education affordable and accessible .

3.1.68 Building inclusion and equity

My session is inclusive because it bring nature and future into education.

3.1.69 Key lessons learnt

Inclusiveness

Session 16: Towards inclusivity in international method development for biodiversity assessment

Session Convenor
Kristian Meissner

Position
Development manager, Marine and Freshwater unit

Organisation
Finnish Environment Institute, Syke

Country
Finland

3.1.70 Abstract

The global loss of biodiversity has serious implications for human well-being and can intensify several of the negative facets of global climate change. Data from biological monitoring is the primary source of information to detect and quantify biodiversity loss, as well as to evaluate the effectiveness of biodiversity management actions such as ecological restorations. Many regions and countries do not have nationally accepted or geographically harmonized protocols or quality assurance in place for monitoring and biodiversity assessment and have limited capacity and administrative support for the broad-scale development of monitoring and assessment programs.

The situation is especially challenging for many countries in the Global South that not only represent the bulk of global biodiversity but also host the most endangered fraction of it. Molecular methods such as eDNA for environmental and ecological studies and monitoring programs can support substantially support regional legislative aims and the UN Global biodiversity framework and aid the development and sustainability of environmental stewardship plans in various sectors. To facilitate uptake by agencies and industry, molecular (e.g. eDNA) methods must follow standardization and quality assurance measures.

International standardization has the potential to help individual countries lacking the capacity to entirely develop their own protocols and can overcome the incompatibility of produced results. ISO is a key international standardization organization that provides a pathway for consensus-driven standardization of, e.g. eDNA approaches. While countries and organizations/agencies in the Global North have started planning for molecular method standardization, it is imperative that all future biodiversity standardization efforts are more global and inclusive for the global South.

To help coordinate inclusive efforts dedicated task forces may be needed. For freshwaters, the IUCN Species Survival Commission (SSC) Task Force on Global Freshwater Macroinvertebrate Sampling Protocols (GLOSAM) aims to close gaps in method knowledge and application.

Further, an International eDNA Standardization Task Force (iESTF) to coordinate and execute plans for establishing ISO standards for eDNA approaches formed to champion eDNA methods and standardization in different countries/regions/agencies.

This special session invites contributions from all actors involved in biodiversity assessment and biological monitoring to identify pathways and platforms needed to overcome specific biogeographic barriers to engage in the standardization of

i) sample collection methods, laboratory procedures and data treatment,

ii) central aspects of data quality and

iii) comparable bioassessment schemes.

3.1.71 Key messages

The global loss of biodiversity poses significant challenges, exacerbating the negative impacts of climate change. Biological monitoring is crucial for detecting and quantifying biodiversity loss and assessing the effectiveness of countermeasures and conservation efforts, yet many regions lack standardized protocols and support for monitoring programs, especially in the Global South where most endangered species reside. Without minimum standards for bioassessment methods, we cannot compare results from molecular methods like eDNA that offer great promise for supporting legislative aims and the UN Global biodiversity framework. Standardization and quality assurance processes are essential for the widespread adoption of these methods. International standardization through organizations like ISO can bridge gaps and ensure compatibility of results. Efforts must be inclusive, involving both the Global North and South. The establishment of task forces such as GLOSAM and iESTF help to promote standardization and coordination and ultimately enable us to evaluate progress made for SDG 14 (Life on land) and 15 (Life below water) in particular.

We therefore need to

1. Establish international online platforms to start and prepare the standardization of methods used for biodiversity assessments.

These platforms must

-establish cross- continental dialogue on the minimum requirements of methods used in biodiversity assessment, such as environmental DNA (eDNA). that acknowledges and addresses inequalities in the technological capability of key stakeholders

-be inclusive, facilitating the participation of both individuals, industry and government organizations, especially from the Global South.

-acknowledge and address difference in risks in applying methods related to operator security between the global North and global South

- be established within either well established nonprofit organizations that are dedicated to the long term continuation of this dialogue or be integrated into suitable branches of the e.g. UN, EU or African Union such as GEO BON, EU KCBD or UNEP.

-receive continuous funding from e.g. multinational organizations, foundations of development banks to maintain the structure and technological platforms and facilitate the inclusive dialogue

2. Establish new working groups under ISO standardization that can process molecular method standardization proposals developed in the inclusive platforms into international standards.
3. Integrate the use of international method standards for biodiversity assessments into the UN, EU and national environmental acquis.
4. Establish international online platforms to start and prepare the standardization of methods used for biodiversity assessments.
5. Establish new working groups under ISO standardization that can process molecular method standardization proposals developed in the inclusive platforms into international standards.
6. Integrate the use of international method standards for biodiversity assessments into the UN, EU and national environmental acquis.

3.1.72 Collaboration outcomes

1) The Belmont forum extended an invitation to participate in the scoping of their CRAs in development: https://www.belmontforum.org/cras-in-scoping .

2) The international eDNA Standardization Task Force (IeSTF) (https://iestf.global; website will be officially launched on Oct 10) Lead by Mehrdad Hajibabaei which will convene for the first time during the GEOBON meeting in Montreal. iESTF will facilitate the establishment of inclusive, international and interoperable standards for various eDNA applications and will work closely with different stakeholders as well ISO working groups for timely and efficient implementation of these standards.

3) John Simaika introduced the IUCN SSC Task Force on Global Freshwater Macroinvertebrate Sampling Protocols (GLOSAM) https://glosam.un-ihe.org. The mission of GLOSAM is to foster a community of practitioners, who promote the use of freshwater invertebrates in biodiversity monitoring and ecological condition assessment (bioassessment). GLOSAM is looking for country ambassadors to join a worldwide network of like-minded professionals committed to advancing the application of sampling protocols for biodiversity and bioassessment purposes.

3.1.73 Building inclusion and equity

The session was entirely online and widely promoted, we had over 400 registered participants from around the globe. Inclusivity was the central theme of this session and the platforms that were introduced promote inclusity by design.

3.1.74 Key lessons learnt

I have not been able to attend other sessions due to intensive workload.

Session 17: Utilizing Space Technologies to Advance UN Sustainable Development Goals

Session Convenor
Dr. Marlène M. Losier

Position
Principal, Legal Expert in International Law & Policy

Organisation
Principal, Losier González, PLLC

Country
Mexico & United States of America

3.1.75 Abstract

Utilizing Space Technologies to Advance UN Sustainable Development Goals a high-level panel of experts and decision makers will elaborate on the increasing importance of access to and utilization of space technologies both in and beyond national territories to improve the quality of life and to create more balanced international relationships.

Space agency leaders will share the interest in obtaining satellite technologies and their already experienced benefits for their countries, their regions and other States similarly geo-politically and economically placed. Contributing to the session will also be local practitioners who are successfully utilizing space technologies in their communities; young professionals who have built and rely on these technologies to develop their personal, academic and professional lives; and leaders of the public and private sectors who create and or have benefited from capacity-building opportunities to access space technologies under the principles of the Space for All initiative organized by the United Nations Office for Outer Space Affairs ;(UNOOSA, Vienna).

With improved living conditions on Earth, the possibilities for peace and security become increasingly realizable for more people. Space technologies can contribute to this by supporting means to improve the social and economic well-being of communities often still emerging from ongoing political, economic and social processes of decolonization, from climate change and other destabilizing factors. Chronic challenges endured by communities around the world will be raised and questions will be posed to the panelists regarding their thoughts on the potential use of space technologies to help identify and generate innovative solutions to address those complex circumstances.

Geopolitical leveraging for access to space and its resources, particularly for States in various stages of space faring capacities, will be considered. The session hopes to impress upon the UNGA and civil society the strategic importance of space technologies to the overall geo-political and legal framework existent under the United Nations regime.

3.1.76 Key messages

• Outer Space and the diverse resources it offers can be understood in much the same vein that travel by foot, then, ships, motorized vehicles, airplanes, and now space crafts have ultimately permitted us to improve our lives through discovery and utilization of new resource and means to obtain them, from distant lands, the greatest depths of our majestic oceans and now in all that which lies beyond Earth.

• The utilization of space can be implemented as a strategic tool to improve life on Earth through collaboration in achieving the 17 SDGs and thereby a means to advance the Purposes and Principles set forth in Article 1 of the UN Charter that established the United Nations in 1946. In leveraging the capacity of all of humanity to work towards meeting the UN's 2030 Agenda, Section 3 of Article 1 of the UN Charter is materialized, in the sense that we engage in, "international co-operation to solve international problems of an economic, social, cultural, or humanitarian character."

• Identifying and utilizing space as a strategic tool to achieve the UNGA 17 SDGs contributes also to realizing one of the founding principles of the 1967 Outer Space Treaty established in its Article 1 which sets forth that, "The exploration and use of outer space … shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development."

• Conceiving space as a strategic tool to improve life on Earth creates an integrative mechanism for interdisciplinary undertakings, public-private endeavors and moreover inter-auspices cooperation within the UN regime, which helps to ensure the competence and longevity of the United Nations into the future.

• The benefit of satellite technologies have not only facilitated means of communication and access, which in themselves are elements that bolster culture, economies, education, renewable processes and means of more autonomous forms of governance, but they make our world safer.

•The increasing importance of access to and utilization of space technologies both in and beyond national jurisdictions arguably also creates more balanced geo-political and economic relationships. With improved living conditions on Earth, the possibilities for peace and security become increasingly realizable for more people. Space technologies can contribute to this by supporting means to improve the social and economic well-being of communities often still emerging from ongoing political, economic and social processes of decolonization, from climate change and other destabilizing factors.

• Space technologies and their applications provide an additional element or leverage point to create solutions to challenges that were seemingly insurmountable to move forward from. They can and are being used as a tool to mitigate those challenges and leverage more inclusive geo-political positions reflective of the wealth of human, intellectual, material and territorial resources native to all regions of the word.

1. Losier González, PLLC proposes that the UN General Assembly augment policy and communications initiatives to increase the utilization of space technologies and their applications to improve life on Earth
2. Losier González, PLLC proposes that the UN General Assembly support multidisciplinary and inter-auspices collaboration between the UN Office of Outer Space Affairs ("UNOOSA") and each of its other ent
3. Losier González, PLLC proposes that the UN General Assembly undertake a public promotional campaign evidencing all the ways in which space technologies and their applications have improved life on Ear

3.1.77 Collaboration outcomes

Although Losier González, PLLC's session, Utilizing Space Technologies to Advance UN Sustainable Development Goals, ended not more than 72-hours ago, there are already discussions underway for future collaboration. One such discussion is to undertake between several Speakers a unified endeavor to increase awareness at the UN General Assembly ("UN UNGA") of the importance of the utilization of space technologies and their applications to further each of the UNGA's Sustainable Development Goals.

Another discussion underway for future collaboration is to replicate the theme of our session before the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS) in Vienna. Several speakers have also undertaken to organize a conference in Paris between the UN Educational, Scientific and Cultural Organization ("UNESCO") and the International Astronautical Federation (IAF) to discuss the potential to create a new UN legal and policy instrument to support the development of culture and art beyond Earth under the existing framework of like UNESCO instruments.

Further, several of the Speakers have begun to collaborate outside the session on the LinkedIn platform to provide yet further examples of how space technologies are already being utilized to improve our daily lives on Earth. The Science Summit has been a most appreciated opportunity to further collaboration of research initiatives, knowledge and partnerships.

3.1.78 Building inclusion and equity

Losier González, PLLC's session, Utilizing Space Technologies to Advance UN Sustainable Development Goals, was inclusive for several reasons. To begin, our speakers were from the following countries: Haiti, the Kingdom of Bahrain, Japan, the Kingdom of the Netherlands, France, the United States, Paraguay, Burkina Faso, Ecuador, Austria, Columbia, Mexico, Brazil, Nigeria and Kuwait.

There was an excellent gender balance between our speakers, as well as a diverse distribution of races, ethnicities and generational representations. Our session was inclusive because it was a multidisciplinary discussion that touched on a wide range of subject matters including science, technology, diplomacy, youth engagement, education, communications, history, international collaboration, space, weather, astronomy, private industry, the United Nations regime, law, policy, discovery and many more.

Our session was inclusive also given the range of professional positions held by our speakers, from heads and chief research scientists of national and regional space agencies, professors, scientists, attorneys, policy makers and young professionals, all who collaborated successfully to support our session's objective, which was to demonstrate how space technologies and their applications advance all the UNGA's sustainable development goals. In addition, our session was inclusive because it enabled discussions between private and public entities, including commercial, academic, non-profit and State organizations.

3.1.79 Key lessons learnt

Perhaps the most important lesson we learned from the Science Summit for the 78th Session of the United Nations General Assembly is that the capacity for human innovation is unfathomable. The Science Summit displayed the gargantuan variety of human capacity to collaborate to identify and propose solutions to many of the most significant challenges confronting humanity and our planet. The Science Summit has done an excellent job at drawing such contributions from humanity. Well done!

Session 18: Obesidad en el mundo y en los paises en desarrollo

Session Convenor
Maria Natalia Nachon

Position
Graduated at University of Buenos Aires, a specialist in internal medicine and nutrition.
Staff of the Medical Clinic Service HospitalTornu
University professor
Director of Obesity Barcelo Foundation
Director of the Metabolism and Obesity Council of the A

Organisation
Argentine Society of Medicine (SAM)

Country
Argentina

3.1.80 Abstract

Presentación:

9 a 9.10Hs Prof. Lucio Criado. Problemática del sedentarismo y obesidad en la Salud de la Comunidad.

910 a 9.25 HsProf. Natalia Nachón: Obesidad en el mundo y en los países en desarrollo.

9.25 a 9.40 Hs. Prof. Luis Cámera: Carga de enfermedad asociada a la enfermedad Metabólica

9.40 a 9.55 Hs.Dra. Eugenia Fandiño: Inequidad en el acceso a la salud en los países en desarrollo

9.55 a 10.10 Hs Prof.. Rodrigo Sabio: Consenso Latinoamericano de Manejo de los Factores de Riesgo Cardiovascular asociados Sedentarismo y Obesidad

10.10 a 10.25 Hs. Dra. Adrea Odzak . Beneficios y Estrategias de romper el sedentarismo.

10.25 a 10.40 hs Hs.Dra. Mara Lopez Wortzman: Estrategias para un envejecimiento saludable

10.40 a 10.55 Hs Dra. Adriana Chapperon, La educación como camino sustentable

10.55 a 11.10 Hs.Dra. María Belén Perichon; La Omnimedia como instrumento.

11.10 a 11.20 HsProf. Lucio Criado: Políticas para el envejecimiento saludable y sustentable en países en desarrollo.

11.20 a 11.30 A&Q

3.1.81 Key messages

Educacion alimentaria infantil

Educacion alimentaria en educacion universitaria

Pautas de salud publica preventivas

1. Educacion a la poblacion de prevencion de enfermedad
2. Educacion a la poblacion de medidas saludables
3. Accion de politicas sanitarias acordes a la situacion real.

3.1.82 Collaboration outcomes

Accion conjunta mundial de medidas sanitarias tendientes a educar en pautas saludables a la poblacion

3.1.83 Building inclusion and equity

Obesidad

3.1.84 Key lessons learnt

Encuentro mundial

Session 19: The Space Domain: Exploring Legal and Ethical Considerations to Support the UNGA SDGs

Session Convenor
Lewis, Allison

Position
Chief of Staff

Organisation
For All Moonkind. We are an NGO which is the only organization in the world focused on protecting cultural heritage in outer space. Within For All Moonkind, we recently formed the Institute on Space Law and Ethics.

Country
USA

3.1.85 Abstract

For All Moonkind and its Institute on Space Law and Ethics will host four virtual panels focused on legal, technical and cultural aspects of space exploration to support the United Nations’ 17 Sustainable Development Goals (SDGs) as part of the Science Summit at the United Nations General Assembly (UNGA78.

The United Nations Sustainable Development Goals (SDGs) are a set of 17 goals adopted by the United Nations in 2015 to end poverty, protect the planet and ensure prosperity for all. Space exploration can play a role in achieving all of the SDGs, but it is particularly relevant to SDG 17, which focuses on partnerships for the goals.

Space exploration can help to build partnerships between countries and organizations, and it can also help to promote innovation and development. For example, space-based technologies can be used to monitor climate change, track deforestation and improve disaster response.

The UNGA78's events on space exploration and the 17 SDGs are an opportunity for the international community to come together to discuss the ways in which space can be used to

achieve the SDGs. These events are also an opportunity to build partnerships and to strengthen the international legal framework for space exploration.

Panel 1: hooting for the Moon: How Lunar Exploration Inspires Science and Collaboration to Support SDG 17

Panel 1 will explore the ways in which space exploration can inspire and motivate people around the world, and how it can be used to build partnerships to achieve the SDGs. The event will feature panelists from the space community, as well as educators and youth leaders.

Panel 2: Building Partnerships: the Science, Law and Need for Multilateralism to

Protect Cultural Heritage Beyond Earth

Panel 2 will discuss the need to protect cultural heritage in space, and how this can be done through international cooperation. The event will feature experts on space law, cultural heritage and multilateralism.

Panel 3: Promoting Access to Space to Support Multiple SDGs

Panel 3 will explore the ways in which increasing access to space can help to achieve the SDGs. The event will feature panelists from the space industry, as well as representatives from developing countries.

Panel 4: Building Strong Institutions: a Review of Legal, Ethical and Technological

Considerations of Human Space Exploration

Panel 4 will discuss current law, explore different belief systems and highlight urgent ethical issues arising with respect to human exploration and use of space, how they may be addressed within current institutional frameworks and how institutional frameworks may evolve to support space development.

The four panels evidence For All Moonkind’s efforts to raise awareness of the importance of space exploration and its potential to contribute to sustainable development. They are also an opportunity for the international community to come together to discuss the challenges and opportunities of space exploration, and to build partnerships to ensure that it is used for the benefit of all.

For All Moonkind is the only organization in the world advocating for and developing a framework to protect human cultural heritage in outer space. For All Moonkind’s Institute on Space Law and Ethics promotes the articulation and development of an ethical foundation and framework for responsible space behavior

EXPECTED OUTCOMES:

Introduce the UNGA to the cultural heritage that can be found beyond Earth, suggest that the same must be protected for future generations, and offer legal and technological paths forward.

Share the inspirational effect of historic lunar landings and encourage the UNGA to embrace this new generation and cycle of space exploration to inspire and support STEM education across the globe, growing skill sets and in turn economies.

Provide the UNGA with a toolbox of potential solutions that can be implemented to establish a space ecosystem that ensures equal opportunities for all interested States and parties, regardless of their technological capability, socio-economic background, gender, nationality, or institutional affiliation.

Build momentum for collaboration and peace by recognizing and celebrating the university and global impact of human activities in space.

3.1.86 Key messages

We can build a strong foundation and momentum for collaboration and peace by recognizing and celebrating the universality and global impact of human activities in space. We must harness space as a unifying agent and rid ourselves of the dichotomy of Earth and Space. We exist in space and we have to expand into space for the good of the Earth. Space can let us look not at our differences, but at our similarities and accept that we are all on humanity. We cannot achieve the SDGs without space. However, rather than looking for "giant leaps" we must recognize that we achieve unity in baby steps. All nations on Earth understand the need to protect cultural heritage. Finding agreement on the identification, recognition and ultimately protection of cultural heritage in space -- and developing the science and policy to make it happen -- is our first baby step to unity.

Our panelists took us on a sweeping journey from the very beginning of the space era into a future where we must confront the ethical dilemmas we find at the intersection of science, technology, policy and law. In each case, they underscored the importance of space technology and space diplomacy to support the achievement of the 17 SDGs. The outer space domain is the ideal place to forge the partnerships and strong institutions we need to achieve our terrestrial SDG goals.

Space activities support all of the SDGs and reliance on space assets and resources is not only inevitable but necessary to better the human existence here on Earth and in the communities that are sure to grow in space. By harnessing the opportunities of this newly opening domain, we can build momentum for collaboration and peace by recognizing the universality of our unique human experience. Below are the general

Michelle Hanlon: Space activities support all of the 17 SDGs, however, its most powerful force has not yet been harnessed. History has shown that space activities, like the Apollo 11 lunar landing and the mere existence of the International Space Station, breed collaboration out of necessity. We can and must harness the increased cadence of space activity and capitalize on its collaborative emphasis. A good place to start would be to recognize and work to protect cultural heritage in outer space. Heritage is something protected by all nations on Earth, all nations can agree to protect it in space.

Dr. Frank White: The Apollo mission is a golden thread that rose above the strife at the time. We can find that thread again. We should also remember that all of us are in it together, riding in the universe on a natural spacecraft. The SDGs are interactive variables, entwined with each other and with space activities.

David Gallo: The inspiration of science is unlimited. There is no standard test for passion and curiosity, and this is what science fosters in our youth.

Dr. Tahir Rahman: 650 million people watched the Apollo 11 lunar landing. 74 nations sent messages of peace to the Moon. We can use space to counteract extreme, overvalued belief systems.

Dr. Soyeon Yi: It is vitally important that we give young people their own Apollo moment. History is just YouTube footage; the world needs to witness the triumphs of science and technology in real time in order to benefit from the unifying experience. Technology is not what is hard, it is finding the balance between competition and collaboration that is hard.

Dr. Phillip Metzger: It is impossible to "do no harm" in space because of the different way dust reacts in space. Very different from Earth. 26 years of research and we still do not know exactly what happens. We need to work together to understand celestial body physics to avoid conflict.

Dr. John Rummel: Technological achievements have unintended consequences; we must take the time to do things responsibly and sustainably. Let's do it right the first time.

Elina Morozova: In order to create a better future for our children, we need to recognize and protect our history. Protecting cultural history in space has proven to be a unifying force and can lead to partnership and strong institutions.

Madhu Thangavelu: Science inspires individuals to become global citizens. Outer space percolates into every single SDG. We have proven that we can coexist peacefully in space (through the science of the International Space Station), let's take those lessons and implement them on Earth.

Dan Deevy: As we implement the SDGs we must be adamant about universal equality. We need to understand each other as humans and in order to do so, we should be engaged in dialog, asking each other questions, not shunning what we do not understand. This is the kind of unity we need to achieve the SDGs.

Dr. Namrata Goswami: Access to space needed to achieve the SDGs will not be a reality until the costs come down. National policies must support the technical innovations to reduce the cost of entry.

Dr. Marlene Losier: The increase in space technologies have significantly improved social-economic well-being. The technology developed to explore space has countless "spin-offs" that support Earth.

Olavo Bittencourt: In order to direct the benefits of space to support the SDGs, we must shun nationalism and fragmentation and support multilateralism.

Dr. Marie-Luise Heuser: Development is a human right, and there exists a moral obligation to explore space to benefit our own species and all life. Supporting space exploration is supporting all 17 of the SDGs.

Dr. Andrew Aldrin: The potential for conflict in space is real. One way to prevent it is to build a strong institution (SDG 16) and promote partnerships and collaboration (SDG 17). This can be achieved only by taking baby steps towards multilateralism. The first baby step is to develop norms and protocols, and ultimately a treaty or institution that will protect cultural heritage in outer space. This is an achievable goal because all nations recognize the importance of heritage and ultimately all nations will have heritage in space.

Selected Biographies:

Michelle Hanlon is the Executive Director of the Air and Space Law Program at the University of Mississippi School of Law and its Center for Air and Space Law. She is the Editor-in-Chief of the Journal of Space Law and the Journal of Drone Law and Policy. Michelle is a Co-Founder and President of For All Moonkind, Inc., a nonprofit corporation that is the only organization in the world focused on protecting human cultural heritage in outer space. In

this capacity, she was instrumental in the development of the recently enacted One Small Step Act in the United States. For All Moonkind has been recognized by the United Nations as a Permanent Observer to the United Nations Committee on the Peaceful Uses of Outer Space and recently launched its Institute on Space Law and Ethics. Michelle is also a founding partner of ABH Space Law and an Advisor at the Beyond Earth Institute and The Hague Institute for Global Justice Off-World Project.

Andrew Aldrin: Founding Program Chair, Mater of Space Operations program, Embry Riddle University, CEO and President of the Board, Aldrin Family Foundation. Dr. Aldrin is the Program Chair and Founder of the Masters of Space Operations at Embry Riddle Aeronautical University, the largest graduate space studies program in the world. Previously he was the Founder and Director of the ISU Center for Space Entrepreneurship at Florida Tech and an Associate Professor of Engineering Management at Florida Tech. Before moving into academia, Dr. Aldrin had a distinguished career in industry and government research, including executive positions at Boeing, United Launch Alliance and Moon Express. Dr. Andrew Aldrin is the CEO and President of the Aldrin Family Foundation, a charitable 501 (c)(3) organization dedicated to harnessing the inspiration of space to ignite a passion for STEAM education in students of all ages and backgrounds. He has served in leadership roles in this organization since 2014, during which time he has overseen the extension of educational programs to over 300 elementary schools and universities. Dr. Aldrin was also a member of the research staff at the RAND Corporation and the Institute for Defense Analyses. He serves on the board of several charitable organizations, including The Secure World Foundation, Sea Space Symposium, and the Tau Zero Foundation. He holds a Ph.D. from UCLA in Political Science, an MBA from TRIUM (NYU, LSE, HEC), and an MA from George Washington University in Science, Technology and Public Policy.

Elina Morozova is Executive Director at the Intersputnik International Organization of Space Communications, an intergovernmental satellite telecommunication organization. At Intersputnik, she is responsible for relations with member states and the United Nations system, including the Committee on the Peaceful Uses of Outer Space and the International Telecommunication Union, and manages the International Legal Service.

Ms. Morozova combines her career at Intersputnik with research. She teaches a course on international space law and telecommunications law at St. Petersburg University and is the author (co-author) of publications on international space law and policy, management of radio frequency spectrum and satellite orbits, and satellite telecommunications.

Frank White is a magna cum laude graduate of Harvard College, a member of Phi Beta Kappa, and a Rhodes Scholar. He earned an M.Phil. in Politics from Oxford University. Frank's best-known work, The Overview Effect: Space Exploration and Human Evolution, is considered by many to be a seminal work in the field of space exploration. A film called "Overview," based largely on his work, has had nearly 8 million plays on Vimeo. Since the first edition of his book on the subject was published in 1987, "the Overview Effect" has become a standard term describing the spaceflight experience. The fourth edition of The Overview Effect was published in 2021 by Multiverse Publishing. White's book on the Apollo program, The New Camelot: Quest for the Overview Effect, offers a radical new interpretation of John F. Kennedy's approach to the lunar missions that culminated with the Apollo 11 moon landing in 1969. White considers himself to be a "space philosopher," and has long advocated

developing a new philosophy of space exploration. His book on this topic, The Cosma Hypothesis: Implications of the Overview Effect, was published in 2019. In it, he asks the fundamental question, "What is the purpose of human space exploration? Why has the evolutionary process brought humanity to the brink of becoming a spacefaring species?" In the book, he shares the idea of "the Human Space Program" as a "central project" that will engage all of us in the process of becoming "Citizens of the Universe." White has taught in Harvard's Division of Continuing Education since 1995, and is a professor and dean at Kepler Space Institute.

Dr. Marie-Luise Heuser studied philosophy, history, physics and mathematics. As an academic philosopher, she has been involved in research and teaching at various universities in Germany. Her main focus is the classical philosophy of space travel from antiquity to modern times. The term Transterrestrialism®, which she coined and registered as a word mark, is the name of a new discipline in the cultural sciences and humanities that deals with the philosophical preconditions and the cultural history of the departure into space as well as with the fundamental paradigmatic changes in the image of man, modes of

perception and categories of thought. Research topics also include the future possibilities of new forms of living, being and cooperating in space. She is the Head of the Expert Committee for Spaceflight and Culture in the German Aerospace Society (DGLR).

Dr. John D. Rummel is a Principal Partner with Friday Harbor Partners, LLC, in Washington State. Previously, he was a Senior Scientist with the SETI Institute in Mountain View, California, and was a Visiting Scholar at McGill University's Institute of Air and Space Law in Montréal from 2014-2018. He retired as a Professor of Biology with East Carolina University in 2015. Dr. Rummel is the former (and founding) Chair of COSPAR's Panel on Planetary Protection, and until 2022 was the representative of the International Union of Biological Sciences on the COSPAR Council. As such, he represented COSPAR on The Hague International Space Resources Governance Working Group. A former member of the NASA Advisory Council's Planetary Protection Subcommittee, Rummel worked at NASA Headquarters (1986 to 1993 and 1998 to 2008), as NASA's Senior Scientist for Astrobiology and as NASA's Planetary Protection Officer (PPO). He served NASA as Exobiology Program Manager and Research Programs Branch Chief in the Life Sciences Division beginning in 1986, and was responsible for both the Life Support and Exobiology Implementation Teams under the US-USSR Joint Working Group in Space Biology and Medicine. Between NASA assignments (1994-1998) he was the Director of Research Administration and Education at the Marine Biological Laboratory in Woods Hole, Massachusetts. A holder of eight NASA Group Achievement Awards, Rummel is also a Fellow of the American Association for the Advancement of Science (1990) "for leadership in fostering NASA-sponsored life science research," the recipient of the Life Sciences Award from the International Academy of Astronautics (2005) "for significant and lasting contributions to the advancement of the astronautical sciences," and was awarded the NASA Exceptional Performance Award (2008) "for outstanding management of space science programs..." He is the 2023 recipient of the SETI Institute's Frank Drake Award. He received his PhD in community ecology and evolution from Stanford University, and his undergraduate degree in environmental biology from the University of Colorado.

Dr. Soyeon Yi is South Korea's first and only astronaut. She was selected as an astronaut in December 2006, out of 36,000 contestants vying for the title of South Korea's First Astronaut. On April 8, 2008, she launched into space on-board Soyuz TMA-12. During her 11-day mission at the International

Space Station (ISS), Dr. Yi completed an aggressive number of experiments contributing to South Korea's science textbooks and science channel television lectures. During her historical return to earth on April 19, 2008, she survived a force of nearly 16-G (versus 4-G average) upon the ballistic re-entry. Due to re-entry complications, the first welcome her return to earth were nomads in the plains of Kazakhstan. Dr. Yi received her Bachelor of Science in Mechanical Engineering, Master of Science in Mechanical Engineering and her Ph.D. from KAIST (Korea Advanced Institute of Science and Technology). Her Ph.D. thesis is "DNA Separation Chips Using Temporal Asymmetric Ratchet Effect in Nonuniform E-Fields." In May 2014, Dr. Yi received her MBA with an emphasis on

Technology and Global Leadership at the Haas School of Business, University of California, Berkeley. Recently, Dr. Yi has worked with Noul Co., Ltd., developing the nextgeneration POC (Point-Of-Care) blood testing platform as the Managing Director, Business Development & Partnership. Dr. Yi is passionate about nurturing the next generation of STEM leaders; she is volunteering for various non-profits as an inspiring speaker and lecturing at the University of Washington and local community colleges. When she is not busy with her global speaking engagements, she enjoys singing, playing the piano,

gardening, crafts, and hiking.

Dr. Namrata Goswami is an author, professor and consultant specializing in space policy, international relations and ethnic identity. She teaches at the Thunderbird School of Global Management, Arizona State University, the Joint Special Forces University and is a consultant for Space Fund Intelligence. She is a guest lecturer at Emory University for seminars on Technology, Society & Governance and India today. She worked as Research Fellow at MP-Institute for Defence Studies and Analyses, New Delhi; a visiting Fellow at Peace Research Institute, Oslo, Norway; La Trobe University, Melbourne, Australia; University of Heidelberg, Germany; Jennings-Randolph Senior Fellow, United States Institute of Peace; and was a Fulbright Senior Fellowship Awardee. She was awarded the Minerva grant by Office of the U.S. Secretary of Defense to study great power competition in outer space. In April 2019, Dr. Goswami testified before the U.S-China Economic and Security Review Commission on China's space program. Her co-authored book, Scramble for the Skies: The Great Power Competition to Control the Resources of Outer Space was published 2020 by Lexington Press; Rowman and Littlefield. Her book on The Naga Ethnic Movement for a Separate Homeland was published in 2020 by Oxford University Press. She has published widely to include in The Diplomat, the Economic Times, The Washington Post, Ad Astra, Asia Policy, Live Encounters Magazine, Cairo Review. She was invited in November 2019 to share about her life and her work at a Tedx event held at the Rosa Parks Museum, Montgomery, Alabama. She has appeared on CNN, BBC, Deutsch Welle, France24, Channel 4, to share her research on space policy. She is currently working on two academic book projects, one on China's Grand Strategy and Notions of Territoriality and the other on Spacepower Theory and Practice: Case Studies of U.S. China, India, Russia and Japan.

1. The United Nations should recognize space activities as vital to the achievement of the SDGs.
2. The United Nations Committee on the Peaceful Uses of Outer Space should recognize all of the stakeholders in space, to include civil society and private entities and bring them to the table.
3. The United Nations should work to raise public awareness of space through conferences and campaigns and provide platforms to amplify voices of emerging nations.
4. The United Nations raise awareness of space activities as vital to the achievement of the SDGs.
5. The UNCOPUOS and UNESCO should host a joint conference to look directly at the protection of cultural heritage in outer space.
6. The UNGA should urge the UNCOPUOS to develop a plan to reduce conflict over space resource utilization
7. The UNGA should encourage spacefaring nations to partner with emerging space nations.
8. The UNGA should use the 2024 Science Summit to raise awareness of the use of space to support the achievement of the SDGs

3.1.87 Collaboration outcomes

1. Panelists Michelle Hanlon (USA) and Olavo Bittencourt (Brazil) have agreed to work together to develop a curriculum to build capacity in space law in Latin and South America. This will support SDGs 16 and 17 and encourage partnerships while also reinforcing the institution of the Unite Nations Committee on the Peaceful Purposes of Outer Space.

2. Panelists Michell Hanlon (USA), Elina Morozova (Russia) and Olavo Bittencourt (Brazil) will work together to develop potential next steps at national and multilateral levels to protect human heritage in outer space. This will support SDGs 16 and 17 and encourage partnerships, and perhaps create an institution, to protect cultural heritage in outer space.

3. Several participants indicated an interest in collaborating with For All Moonkind to protect heritage in outer space.

3.1.88 Building inclusion and equity

Our panelists represented more than six nations across three continents. Our convenor and five of the 15 panelists were women. Ethnically, our panel included individuals of African, Asian, South East Asian and South American descent. Our panel also included a representative of the LGBTQIA+ community. Our panels also included a diversity of disciplines including social scientists, philosophers, scientists, engineers and lawyers. We devoted one hour of our panel to discussing access to space and ways increase diversity in space development and activities.

3.1.89 Key lessons learnt

Development is a human right and a collaborative effort. As we face a period of destructive fragmentation, we need to accept that the interests of all nations -- and all peoples -- are intertwined and that the best, and only, way forward to include achieving the 17 SDGs is to work on a multilateral level. The first "baby" step is finding common ground, which is naturally the protection of cultural heritage.

Session 20: AI Governance, Africa and SDGs: Opportunities and Challenges

Session Convenor
Kutoma Wakunuma

Position
Associate Professor

Organisation
De Montfort University

Country
United Kingdom

3.1.90 Abstract

The overall aim of the session is to look at AI governance arrangements that can help achieve SDGs in Africa. Currently, there is very little discussion around the role that AI governance can contribute in the achievement of SDGs in Africa and yet without proper governance arrangements it will be a challenge to realise the UN SDGs. This is problematic if we are to believe that AI can be used for social good and in helping to meet the SDGs, most of which speak to the social and economic challenges faced by the Global South, in particular Africa.

Currently, the AI ecosystem is dominated by data, algorithms and ethics from the Global North which for the most part considers some AI governance arrangements that do not necessarily speak to African experiences and values.For instance, AI regulations currently in development in the EU and US, have the potential to negatively impact African nations under the extraterritorial application principle.

A consideration of AI governance arrangements from an Afrian perspective will ensure an inclusion of the rich and diverse African principles such as Ubuntu and Ujaama that can result in a truly responsible AI for Africa which can subsequently contrite to the achievement of the UN SDGs. ;It is necessary to acknowledge that the adoption of AI in the Global South is fraught with challenges which include infrastructure, lack of proper governance AI policies, representative datasets and dependency on technology giants from the Global North.

The session's main aim is to therefore look at AI cases and the role AI governance can play in contributing to achieving SDGs in many domain areas such as commercial services, education, and public services including partnerships to enable sustainable development. The panel will also focus on policy recommnedations coming from Africa stakeholders and suggest how these can suceed.

There is a dearth of African AI narratives in the global AI discourse which are important in understanding Africa’s AI needs, values, contexts, principles, data and expectations. This dearth is especially reflected in the lack of robust AI governance arrangements which contribute to neglecting and forgetting these narratives through epistemic injustice.

This means that AI systems will be designed and deployed in Africa without embedding critical African values and principles. Such exclusion means that there remains a risk of AI colonialism and neo-colonialism that extrapolates AI governance arrangements from the West to Africa which has implications for real, sustainable development.

AI is as good as the AI governance within which it can operate. Without proper AI governance that does not address the needs and experiences of Africa, the danger is that unfair biases and discrimination will continue. For inclusive benefits and human flourishing, it is therefore imperative not to ignore the role of AI governance in achieving the SDGs.

This session, therefore addresses this by considering African values, principles, data and contexts in a way to allow for the co-creation and development of responsible AI systems through robust AI governance. To do this, the session has four speakers from diverse AI backgrounds that will present individual cases by applying an AI governance lens to illustrate how these cases can contribute to achieving the UN SDGs.

3.1.91 Key messages

The current discussions on AI ethics remains one-sided on many levels, not only in its focus on specific issues, the neglect of ethical traditions from Africa, but also in a lack of balance of considering ethical benefits and concerns. Rebalancing the debate is not just of academic interest but is called for in practical terms as well. AI or data-based systems have some ethical benefits. AI can enable the accomplishment of 134 targets across all the SDG goals, while it may also inhibit 59 targets. That means whereas discussing how to mitigate ethical concerns is necessary, it is important for us to amplify the benefits too. Organisations designing, developing and deploying AI systems need reliable guidance through implementable governance mechanisms and policymakers providing this guidance need to develop it on the basis of a broad-based and academically reliable foundation. The focus on these SDGs demonstrates societal needs and expectations. These are different in different parts of the world. Africa has different societal needs, contexts, expectations, values and principles. The African AI governance ecosystem needs to focus on the unique socio-cultural contexts and needs.

In Africa there is a need to be intentional in terms of focussing on more SDGs in our AI governance frameworks way beyond the ones Europe focuses on. Magdalene also mentioned SDG 14, 15. But there are more such as;

SDG 1: No Poverty- Poverty rates in many African countries are significantly higher than in the global North. Therefore, eradicating poverty and ensuring access to basic necessities like food, clean water, and healthcare are particularly crucial in Africa.

SDG 2: Zero Hunger - Food security is a major concern in many parts of Africa due to issues like drought, famine, and limited access to modern agricultural technologies. Achieving food security and promoting sustainable agriculture are critical in the African context.

SDG 3: Good Health and Well-being - Access to healthcare services, particularly in rural areas of Africa, can be limited. Addressing health disparities and improving healthcare infrastructure are vital in many African countries.

SDG 6: Clean Water and Sanitation Access to clean and safe drinking water is a significant challenge in parts of Africa. Ensuring universal access to clean water and sanitation services is a priority.

SDG 4: Quality Education -Educational disparities are prevalent in many African countries, with limited access to quality education in rural areas. Ensuring equitable access to education and improving educational outcomes are critical in Africa.

SDG 7: Affordable and Clean Energy - Expanding access to affordable and clean energy sources is essential for economic development in Africa, where many people still rely on traditional and inefficient energy sources.

SDG 10: Reduced Inequalities -Inequalities in income, access to resources, and opportunities are often more pronounced in Africa. Reducing these disparities is a key focus.

SDG 16: Peace, Justice, and Strong Institutions Political stability, governance, and the rule of law can be more challenging in some African countries, making the promotion of peace, justice, and strong institutions a high priority.

SDG 17: Partnerships for the Goals Collaboration with international partners and support for African countries' development efforts are crucial to achieving many of the other SDGs in the region.

While all the SDGs have relevance worldwide, some may be more pressing or have different priorities in Africa compared to the global North.

It's important to note that while these SDGs may have more immediate and pronounced relevance in Africa, they are still interconnected with global efforts to achieve sustainable development. Many of these goals have broader implications and can benefit the global community as well. Additionally, the specific priorities and challenges within Africa can vary significantly from one country to another.

Finally, SDG 17 provides an impetus for global cooperation on AI governance. SDG 17 focuses on partnerships for the goals and the idea that addressing AI challenges requires international collaborations.

As has been mentioned, Africa now has a seat at the table - G21. This is a giant step. In the G20 New Delhi Leaders' Declaration titled One Earth, One Family and One Future, the need to harness Artificial Intelligence (AI) Responsibly for Good and for All was emphasised.

Leveraging AI for a number of things including promoting responsible AI for achieving SDGs is critical. How this can be done remains unclear and complex but the fact Africa is on the table to ensure that African needs, contexts and expectations are considered is important. There is

a need for Africa to focus on a pro-innovation governance approach that can maximise benefits and minimise risks.

We need to be intentional about how to practically integrate our African ethical values, societal contexts, expectations, needs into AI governance mechanisms: considering the issues of solidarity, our interconnectedness or the concept of ubuntu. In essence we need AI governance that can not only maximise ethical benefits but also one that can shape ethical responsible, socially acceptable, culturally sensitive and legally compliant AI systems

9. Develop an International data-based systems agency (IDA) that can monitor an enhance human rights when technologies like AI become mainstream in society
10. Adopt a regional and coordinated approach to AI governance which would promote interoperability, and ensure that there is greater certainty for startups and other businesses
11. Develop a dedicated skilled Governance Agency to regulate AI (Regulatory market)
12. Implement a Pan-African data governance infrastructure such as an African Union data policy framework

3.1.92 Collaboration outcomes

Collaboration to introduce the adoption of the International data-based systems agency (IDA)

The creation of an African Scholars (technologists, engineers, social scientist) Movement on Artificial Intelligence

The creation of an African women's AI network

3.1.93 Building inclusion and equity

The session had:

1) Global South and Global North representation

2) Academic and Industry representation

3) It had 2 male and 3 female presenters

4) There was representation from North Africa, Southern Africa, East Africa and Europe

3.1.94 Key lessons learnt

Importance of collaboration

Importance of engagement

Importance of diversity and inclusion

Session 21: Assistive Technology serves People with Disability and improves their Social Inclusion, UNGA78

Session Convenor
Rahma Sophia RACHDI

Position
Correspondent- French Presidency, for United States Press Agency, chief of Bureau (Since 2013), a the only Handy-Journalist in Politics in France
Founder of Union Minority Plus, (since 2017, Paris), a Non Profit (NGO) that promotes the visibility of the p

Organisation
Union Minority Plus is a french non Profit (NGO), based in Paris, founded in 2017, by Rahma Rachdi, dedicated to the people with disabilities to promote their visibility in the Media, Entertainment, Cinema, politics and TECH. Amongst many initiatives Un

Country
France/ USA/Morrocco

3.1.95 Abstract

One billion and three hundred people (1,3Bn), i.e 17% of the world's population, experience forms of disabilities. Among those one-fifth (1/5) of the estimated global total, or between 110 million and 190 million people, experience significant disabilities, around 80 percent (80%) of them are in developing countries. (Source: World Bank, EIB). Disability prevalence is even higher for developing countries and those with disabilities are more likely to experience adverse socio-economic outcomes such as less education, poorer health and employment outcomes, and higher poverty rates, social exclusion. According to WHO, forty (40%) of Africa's population consists of people with disabilities including 10-15 percent (10-15%) of school-age children (Source, WHO, July 2022)What if we told you, that it's possible, for a disabled person, to make a difference in this world, in the TECH area, specifically the Assistive Technology, thanks to the A.I (Artificial Intelligence)?

A.T (Assistive Technology) refers to devices, software, programs or even apps that enable people with Disabilities to perform their usual functions to face their impairments.

Starting from this premise, we will take up this one, of-a-kind and yet necessary topic in the era where AI (Artificial Intelligence), is eyed by all the global politicians, legislators, policymakers, and mostly the blue-chip Companies leaders, caught by surprise, since the recent prompt rise of ChatGPT...What makes this approach symbolic and unique comes from the fact that there is a top duo/benefit in the win-win equation of Assistive Technology versus the people with disabilities.

We intend to decrypt the facts, aiming to change the overall mindset over disability/Inclusion and make it sexier in the public opinion's sight. The session's core is based on empiricism, by

gathering information, data collection and results analysis over the studies conducted on the ground (EU, USA, African countries), combined with relevant testimonies focusing on the power to positively impact society by putting Disability at the heart of 11 out of the 17 SDG's agenda of the UNGA.

Within the hybrid-format session, the distinguished panelists, (Scientists policy-makers, legislators, D&I Managers, AT Expert, civil society actors…) will interact and share their testimonies based on 1st hand experiences based on truthful facts but mostly built on empiricism, data collected, backed by analysis of the results converted into conclusions and perspectives; This methodology intends to show and prove their genuine social impact, in line with 11 out of the 17 S.D.G's of the UNGA.

Topics are to be discussed during the panels, ranging from Assistive Technology, combined to A.I innovations, serving people with disabilities, until the inclusion of the latter: the Disabled beneficiaries, who must be enrolled onboard since the early stage. The chair of the session will also celebrate the super tangible example via the unveiling of an app to be launched soon, called THE GOOD SAMARITAN, designed by her, as a disabled person (inspired by her own experience of struggling in being assisted over her dependency), dedicated to the people with disability, aiming to increase their autonomy and enhance their emancipation, and climb the ladder of social inclusion. The app will also seek to create human ties bond, and reduce de-socialization, if not marginalization of the Disabled and elderly. The app uses the A.I, for geo-locating a "Helpee" to assist a Disabled person (or Elder) in need, due to their dependency "Helpee", anywhere anytime. Once the connection is made, and the Good Deed is done, the "Helpee", can thank the "Helper" via the use of Tokens features, as "fair rewards"…It is also an app, that offers a service of home aid care, in response to the scarcity of the caregivers, in European area.

According to E.U, almost 30 % of the EU elderly population with a huge constraint in personal care or household activities used home care services for personal needs. (Source Eurostat, 5 July 2023). In the USA, due to the ageing of the population as well, the United Disabilities Services Foundation (UDS) expects the national caregiver shortage to reach 151,000 by 2030 and 355,000 by 2040; On average, more than 700,000 caregiving positions are expected to open each year through 2032. (Source AARP, 19 June 2023).

So far, these respective governments are facing this shortage of job services, of medic-care and desperately seek solutions. It is a serious health public issue to be solved. The enhanced Beta Version of THE GOOD SAMARITAN app shall be previewed and exclusively showcased at UNGA78 during this session, with the humble ambition to be a game changer, encouraging the world's leading organizations to trigger the network leaders to support and incentive these initiatives, especially towards the emerging countries. In the European Union, the General Data Protection Regulation (GDPR) protects the personal data of the citizens and the A.I Act regulates the application of AI to personal data. (Source: European Parliament, EPRS, June 2020).

However, the AI Act differs from the GDPR in several areas. The GDPR defines categories of sensitive personal data but does not identify a-priori, sensitive processing. The AI Act goes further by categorizing so-called "high-risk" types of AI, which are therefore subject to specific requirements. (Source: Usine Digitale, 11 August 2023). It will be a question of avoiding biases, and so-called "high risk" uses, such as the exclusion of certain remotely public and/or

underprivileged, like the failure of Amazon's application device in 2014 an A.I for recruitment, which penalized female candidates. They had to give it up later. This bias towards gender equity should then be anticipated, as much as the one amid the 17% minority of People with Disabilities, by including them from Day One. The U.S. Department of Justice, recently (3 August 2023) published a Notice of Proposed Rulemaking (NPRM) proposing to update the regulations for Title II of the Americans with Disabilities. Act (ADA) to better ensure web and mobile app accessibility for people with disabilities. (Source U.S Department of Justice, August 2023).

To do so, Assistive Technology offers more innovative solutions, responding to the needs of people with disabilities, with great engagement and inclusion of the beneficiaries, if enrolled in the process itself of designing the devices, to tailor the solutions/versus/needs. This approach concerns not only improving the understanding, but also sharing knowledge between countries, making connections across the differences, (Diversity & Inclusion) and better the workplace, but also represents a powerful niche, in the digital ecosystem. It plays the game of raising a great awareness for the major European and US policymakers, but from now on, even the stakeholders, are co-constructing beyond their regions, overlapping their zone of comfort, via the reverse mentoring programming towards African countries, for example, such as the EIB does (European Investment Bank).

This European Bank joined recently, proudly the 500 Valuable, international platform that connects the most renowned, multinationals, placing Disability/Inclusion at the top of their management agenda. (Source EIB, July 2021). Hence, it is important to elaborate a strategy in prior and to convince the innovators and start-uppers to include them in the very early stage of their device's design, and innovative software, for a fairer and genuine inclusion. This will increase the pragmatic improvements in its systems policies and practices, in line with the UNGA's 17 S.D.G's, across the worldwide leading organizations, by including the emerging countries, more now than ever for a fair and sustainable future.

PERSPECTIVES The future will tell, if this approach succeeded in seeing the Disabled differently, from a new perspective and has brought about great success.

3.1.96 Key messages

In our Session 221402, UNGA78, we intend to decrypt the facts, aiming to change the overall mindset over disability/Inclusion and make it sexier in the public opinion's sight. The session's core is based on empiricism, by gathering information, data collection and results analysis over the studies conducted on the ground (EU, USA, African countries), combined with relevant testimonies focusing on the power to positively impact society by putting Disability at the heart of 11 out of the 17 SDG's agenda of the UNGA.

A renowned expert in regulation GDPR, founder of Feral Law Firm will stress on the importance of Transparency and ethics to avoid bias, amid the vulnerable target population when it comes to using Assistive Tech, and I.A devices.

Proposals will be made by the end of the session, for a better perspective in the next UNGA79, to be taken into account and a focus son some specific SDGs, in the name o a fairer inclusive society and equal opportunities for all. Within the hybrid-format session, the distinguished panelists, (Scientists policy-makers, legislators, D&I Managers, AT Expert, civil

society actors…) will interact and share their testimonies based on 1st hand experiences based on truthful facts but mostly built on empiricism, data collected, backed by analysis of the results converted into conclusions and perspectives; This methodology intends to show and prove their genuine social impact, in line with 11 out of the 17 S.D.Gs of the UNGA. Topics are to be discussed during the panels, ranging from Assistive Technology, combined to A.I innovations, serving people with disabilities, until the inclusion of the latter: the Disabled beneficiaries, who must be enrolled onboard since the early stage.

The chairwoman of the session, Rahma Rachdi, will also demonstrate the super tangible example by unveiling of an app to be launched soon, called THE GOOD SAMARITAN, designed by herself, as a disabled person (inspired by her own experience of struggling in being assisted over her dependency). It is dedicated to the people with disability, aiming to increase their autonomy and enhance their emancipation, and climb the ladder of social inclusion.

The app will also seek to create human ties bond, and reduce de-socialization, if not marginalization of the Disabled and elderly. The app uses the A.I, for geo-locating a “Helpee” to assist a Disabled person (or Elder) in need, due to their dependency “Helpee”, anywhere anytime. Once the connection is made, and the Good Deed is done, the “Helpee”, can thank the “Helper” via the use of Tokens features, as “fair rewards”…It is also an app, that offers a service of home aid care, in response to the scarcity of the caregivers, in European area.

PERSPECTIVES

Mrs Christiane Feral Schuhl, Founder-Partner Lawyer form Feral Law Firm stressed on two key elements during her talk in this session, the Transparence y and Ethics, to be highly considered, to avoid bias and discrimination amid the vulnerable target population using the AI, as Assistive Technology in the future. She also suggested to create a label “Security by Design”. The future will tell, if this approach succeeded in seeing the Disabled differently, from a new perspective and has brought about great sustainable changes, has improved the too-low rate of inclusion of people with disabilities; who should be renamed "People Different-Able”, rather than “People Dis-Abled", since this minority of 17% of the world, does matter. Never has semantics been so relevant as when it comes to naming this often-declassed minority, and stigmatized by the very denomination of their condition.

As a matter, of fact, these people are not Dis-Abled, but they are "Able" differently, and they have a lot to offer to the majority within a fair society that seizes their value and takes part in the common progress, for the sake of the human kind’s sustainability. At that moment, the word "Inclusion" will be no more than an element of language and unnecessary, after having paved the way, for the generations to come. Aided by the AI's exponential growth, which should enroll them, the Different-Able will be offered a fantastic window for their talent to shine, as much as they will benefit from the Assistive Technology's innovations and being a contributor, despite their impairment, yet also thanks to this Different'Ability!

1. Encourage (Incentives)Public Institutions to enroll Disabled in the New Tech, and AI
2. Encourage (Incentives)Private Corporations to enroll Disabled in the New Tech, and AI
3. Create a plateforme that connects UN, African Union, EU, for AI Startuppers, for innovation Pole

4. Set ups steering Comitees including MEP's, Experts and Scientists, around the same AI topic
5. Encourage and launch campaign about Disability/Inclusion, with EU versus UN, a AU
6. Exchange of BEst practices to harmonize the Icnkusion of the DIsbaled, within the Scientific Community
7. Create a Label of Security Design for the AI, innovations, to better monitoring of GDPR
8. Intitaite more co-development and scientific co -construction between UN, EU and African Counrties

3.1.97 Collaboration outcomes

1- Exchanges between PARIS SACLAY Campus (The French Silicon Valley) with Scientific bodies and Universities, in the rest of EU and African countries

2- Collaboration between La Sorbonne and Institut of France over Bio-Ethics and French Scientific Academy versus the Members States of Europe and African Countries

3- Aérospatial research, CNES and African countries

3.1.98 Building inclusion and equity

Half of the speakers of my session are Disabled, and the gender equity is perfectly respected.

3.1.99 Key lessons learnt

- To plan the organisation at least 6 months ahead of the event (UNGA78, 12-29 Sept)

- Anticipate the sponsorship few month ahead for logistic and accomodation fees

- Obtain assistance to have the adjustment due to my disability when preparing the session

- inviting Patrons, to boost the value of the session,

- Anticipate the media coverage, few weeks ahead of the session istelf

Session 22: Exploring the Value of Living Labs in Co-Creation and Open Innovation Ecosystems within a Global Sca

Session Convenor
Valentino Piana

Position
Senior Academic Associate at HES-SO Valais / Wallis. Coordinator of the Energy and Environment WG at ENoLL

Organisation
HES-SO and ENoLL

Country
Switzerland

3.1.100 Abstract

The session "Exploring the Value of Living Labs in Co-Creation and Open Innovation Ecosystems within a Global Scale" at SSUNGA78 aims to delve into the dynamic realm of living labs and their pivotal role in driving co-creation and open innovation across diverse domains. Living labs, as real-world experimentation environments, have proven to be essential platforms for fostering collaboration, enabling rapid learning, and creating value for stakeholders. This session will uncover the unique potential of living labs to accelerate innovation, enhance stakeholder engagement, and contribute to sustainable development within the framework of co-creation and open innovation by serving as vital connectors between technology and human-centric societal goals, fostering collaborative solutions for the challenges of the digital era and supporting the attaining of the SDGs.

Key Objectives

Unveiling Living Lab Principles: Understand the core principles that define living labs and their relevance as powerful tools for co-creation and open innovation.

;Showcasing Collaborative Potential: Explore how living labs create an ecosystem that brings together stakeholders from academia, industry, government, and civil society to collaboratively address complex challenges.

;Real-World Impact: Discover real-world case studies that highlight the tangible outcomes and transformative impact of living labs on innovation, learning, and sustainable development.

;Stakeholder Engagement: Discuss the critical role of stakeholder engagement within living labs and its significance in driving co-creation and open innovation processes.

Expected Outcomes:

Participants in the session will gain a comprehensive understanding of how living labs serve as catalysts for co-creation and open innovation. By exploring real-world success stories and

engaging with experts, attendees will take away insights on how to harness the potential of living labs to foster collaboration, drive innovation, and achieve sustainable outcomes.

Target Audience:

This session is tailored for individuals from academia, industry, government, research institutions, and civil society interested in understanding the transformative impact of living labs in co-creation and open innovation. Attendees seeking insights into collaborative methodologies, stakeholder engagement, and innovation ecosystems will find this session particularly relevant.

Agenda

15:00-15:05 Welcome by the Organizer - ;Declan Kirrane Iscintielligence

15.05 - 15.15 Defining living labs and introducing their significance in fostering co-creation and open innovation

Evdokimos Kostantinins, Chiar at ENoLL. Martina Desole, Director ENoLL

15:15-15:30 Living Labs as research infrastructures for New way for Science

Living Lab principles & methods in science diplomacy for rebuilding trust with underrepresented communities & improving decision-making efficiency.

Evdokimos Kostantinins, Chair at ENoLL, AUTH

15:30-15:45 The role of living labs in supporting innovative economic policies for Climate Change mitigation towards Zero pollution & ENoLL’s model of citizen-centric policymaking

Valentino Piana, HES-SO - Lantern Project

15.45-16.00 Living Labs enabling Open Innovation Communities & digital transition to improve readiness for sustainable and innovative urban mobility and logistics.

Georgia Ayfantopoulou Research Director Center of Research & Technology Hellas, Coordinator of Thessaloniki Smart Mobility Living Lab (ThessM@LL)

16.00 -16.15 Living Labs as a social technology for global digital cooperation. The case of Living Labs project in Senegal between FDSUT and i2cat.

Artur Serra, Director i2CAT Foundation

16.15 -16.30 Actively Engaging and Empowering Citizens through Citizen Science and Living Lab approaches. How Living Labs can help to develop a global healthcare research and innovation infrastructure after the COVID lessons?.

Panagiotis Bamidis Professor, Director, Medical Physics & Digital Innovation Lab, Aristotle University of ThessalonikiFounder, Thessaloniki Action for Health and Well-being Living Lab (ThessAHALL)

16.30 - 17.00 Round Table Discussion

How Living Labs are supporting the attaining of the Sustainable Development Goals (SDGs) and beyond?

Moderated by Martina Desole

ENoLL Director

17:00-17:15

Q&A and Conclusions

he Organizer:

European Network of Living Labs (ENoLL)

Founded in 2006 under the Finnish Presidency of the Council of the European Union, ENoLL is globally active to support and certify Living Labs. The role of living labs in advancing has been formally recognized by the IPCC, the United Nations body for assessing the science related to climate change, in their 2022 Climate Change Report: Global adoption of living lab methods can drive co-created solutions to existing problems by integrating scientific and expert knowledge with local knowledge and common values. The report has also formally recognized ENoLL’s model of open and citizen-centric innovation for policy-making globally.

3.1.101 Key messages

Living labs can bring change at the scale necessary to achieve the SDG by removing obstacles to the adoption of key technologies, lifestyles and social norms: applied scientists work there with citizens (activists, people resistant to change, etc.), authorities, business and all the necessary stakeholders.

- Leverage Living Labs to remove obstacles to sustainable development.
- Recognise the networks and the activities of Living Labs for sustainable development.
- Enhance the existing)and favour the birth of new) Living Labs.
- Involve Living Labs in the design of policies and cooperation platforms.
- Climate mitigation actions at urban scale need to involve Living labs and local stakeholders.
- Leverage the new global dataspace for best practices "Urban Transitions Mission Centre"
- Leverage projects as www.sweet-lantern.ch, 2isecap, score and other Horizon projects involving Living Labs.

3.1.102 Collaboration outcomes

From the panel it was launched to the audience the opportunity to join forces with projects as www.sweet-lantern.ch and networks as the enoll.org. Several people in the audience responded to a questionnaire about whether they have already a Living Lab or not, and which could be field of common interests (e.g. capacity-building for new and existing Living Labs).

3.1.103 Building inclusion and equity

Geographically we had speakers and in the audience from all types of countries. Speakers and people in the audience taking active part were of all genders.

3.1.104 Key lessons learnt

Many people book the event. Some share does participate. A smaller share is actively responding to the suggestions of the panel. Frontal panel do not completely convey the type of interaction we need. However, already a simple Google form for questionnaire is helpful. Slides and interactive tools need to be presented earlier and after the event to reach the people that expressed interest but could not come because of the parellel sessions.

Session 23: Evidencia actual sobre clima y salud en América del Sur

Session Convenor
Yasna Palmeiro Silva

Position
Programme Manager

Organisation
Lancet Countdown Latin America

Country
Chile

3.1.105 Abstract

The science is unequivocal in relation to the negative effects that climate change has caused and will continue to cause on population health in South America. In this session, we will advance in the discussion about climate change and population health by taking into account key regional evidence that analyses this intersection from complementary perspectives, recognising that tackling climate change needs multidisciplinary collaboration.

The evidence covers a broad understanding of the intersection between climate change and health by analysing the following areas: i) health hazards, exposures, and impacts; ii) adaptation, planning, and resilience for health; iii) mitigation actions and health co-benefits; iv) economics and finance; and v) public and political engagement.

The aims of this session are:

1) To analyse key regional evidence on the intersection between climate change and population health considering a multidisciplinary approach

2) To discuss main challenges in facing climate hazards and how people in South America can overcome these challenges by planning and implementing different climate adaptation strategies, as well as mitigation strategies to potentiate health co-benefits.

3) To explore potential future pathways of adaptation and mitigation actions that can be followed in South America, as well as their main challenges, opportunities, and mechanisms associated.

3.1.106 Key messages

Science and policy are intrinsecally linked; however, our systems tend to work in silos, affecting the potential capacity of synergies

Interdisciplinarity and transdisciplinary work is essential for advancing in the sustainability agenda

We need to understand and comprehend local needs for better climate action

We need to break silos

We need to closely work with communities and local leaders

We need to open spaces for debate

3.1.107 Collaboration outcomes

There is a possibility to widen social participation by promoting new dialogues with people at local levels and affected communties.

3.1.108 Building inclusion and equity

Sorry, I don't understand this question

3.1.109 Key lessons learnt

Dialogues are relevant for participation and creation of community

Session 24: Transformative Digital Diagnostic Technologies with Imperial College London

Session Convenor
Mari da Veiga

Position
Programmes and Partnerships Manager

Organisation
Imperial College London

Country
United Kingdom

3.1.110 Abstract

The recent 2023 World Health Assembly passed a resolution highlighting the importance of diagnostics for improving health at a global level. New diagnostic technologies have the potential to revolutionise healthcare in low- and middle-income countries, by bring fast, accurate, cheap, and connected diagnostics and decision support to where they are most needed. In this session we will showcase several projects developing and testing transformative digital diagnostics technologies in Africa and will discuss why they are important to achieve UN sustainable development goals.

Aims:

Illustrate different approaches to digital diagnostic development

Explain the potential of digital diagnostics to create new models of healthcare

Discuss the opportunities and challenges for digital diagnostics, and the role that policy makers can play

Most of the population of sub-Saharan Africa do not have access to adequate diagnostics for important health problems like infectious diseases. The infrastructure and training needed for everyone to have easy access to high quality “bricks and mortar” diagnostic laboratories are currently unaffordable and may be unnecessary. A new generation of digital diagnostic approaches offer a solution to this problem which could underpin more efficient and equitable healthcare, delivered at the point of need. However, these new technologies will only be able to leapfrog traditional approaches if they are enabled by a conducive policy and regulatory environment.

Bringing together policy and strategy expertise with researchers from six large international consortium projects, we will present integrated digital solutions utilising diverse approaches, including:

- Point-of-care molecular detection methods for infectious diseases
- Artificial intelligence image analysis for diagnosis of tuberculosis and other diseases ;
- Data-driven decision support tools for infections in newborn infants

We will discuss the application of digital diagnostic tools to other diseases, and we will illustrate the power of data generated from digital diagnostics, for disease surveillance and real time decision making. We will discuss facilitators and barriers to integration of digital diagnostics into health systems, including regulatory challenges, and will share our experience of building successful partnerships to develop novel solutions and overcome barriers.

Expected Outcomes

Attendees will gain increased knowledge of the types of digital diagnostic technologies which are in advanced development. This will be invaluable as countries and international organisations develop diagnostic strategies for the future.

Attendees will understand the potential benefits of digital diagnostic tools over current diagnostic approaches for individuals, health systems, and global health, and how they can help to achieve sustainable development goals.

Attendees will have an opportunity to explore the barriers to realising the benefits of digital diagnostic tools, including policy and regulatory challenges

Attendees will identify how they can help to remove these barriers and support the successful implementation of transformative digital diagnostic technologies

3.1.111 Key messages

The recent 2023 World Health Assembly passed a resolution highlighting the importance of diagnostics for improving health at a global level. New diagnostic technologies have the potential to revolutionise healthcare in low- and middle-income countries, by bringing fast, accurate, cheap, and connected diagnostics and decision support to where they are most needed. Digital technologies can be applied to different health problems ranging from malaria to neonatal care to tuberculosis.

In the case of sub-Saharan Africa, most of the population does not have access to adequate diagnostics for important health problems like infectious diseases. The infrastructure and training needed for everyone to have easy access to high quality “bricks and mortar” diagnostic laboratories are currently unaffordable and may be unnecessary.

A new generation of digital diagnostic approaches offer a solution to this problem which could underpin more efficient and equitable healthcare, delivered at the point of need. However, these new technologies will only be able to leapfrog traditional approaches if they are enabled by a conducive policy and regulatory environment.

The summary of talks presented in this event discussed the application of digital diagnostic tools and illustrated the power of data generated from digital diagnostics, for disease surveillance and real time decision making, also addressing some facilitators and barriers for adoption of these solutions.

Key messages

Africa CDC Connected Diagnostics Initiative

Dr Jean-Philbert Nsengimana

- According to the African Development Bank, only 15% of the African population have access to diagnostic services. Where diagnostics are available, there are often gaps in data quality, which in some settings can take weeks to reach central level. Mainstreaming of digital diagnostics can only happen when public health institutions are stronger, when health facilities are connected, and when there is capacity to collect and analyze data.

- Africa CDC put out a New Public Health Order in 2022, which sits at the center of the African Union's long-term 2063 vision - the New Africa Citizen Strategy. This strategy focuses on strengthening Member States' capabilities to take ownership in evaluating and implementing those diagnostics and then to support fast tracking, to scale in selected countries. The sustainability and scalability of digital systems relies on national ownership, and on a culture of collaboration and co-creation that brings the technology sector closer to policy, technical and delivery levels.

- The New Public Health Order embraces a new vision which came from the lessons and experiences learned during the Covid 19 pandemic:

o Some of the key points in this strategy include the role technology has in scaling up interventions, supporting pandemic responsiveness and the need to address constraints in accessing vaccines, diagnostics and consumables in the African continent.

o Its five key pillars are: strengthening public institutions, strengthening the health workforce, expanding the capacity for equitable, sustainable and affordable manufacturing of vaccines, diagnostics, and therapeutics in Africa, increasing domestic resources for health security and increasing respectful and action-oriented partnerships.

- The Health Tech Summit happening in Kigali from Oct 17th-19th 2023 will be an opportunity to deepen some of the ongoing discussions around digital diagnostics in the African continent.

Digital Integration of Infectious Disease Diagnostic Data

Professor Jonathan Cooper

Emmanuel Milimo

Dr Harriet Mpairwe

- Digital Innovations and Diagnostics for Infectious Diseases in Africa project, or DIDIDA,

is supported by £6.75m in funding from the European Union and UKRI, with partners in five African countries: Reunion Island, Senegal, Uganda, Kenya, and Tanzania.

- This network is developing new ways to use lateral flow tests, similar to those used to diagnose COVID-19, to diagnose more than one disease at the same time in even the most remote locations.

- The technology aims to diagnose multiple infectious conditions including the five leading causes of death in sub-Saharan Africa: severe respiratory infections, HIV/AIDS, diarrhoea, malaria, and tuberculosis. Together, they kill more than six million people each year, many of which in rural and underserved communities.

- The tests are run on portable devices which use a process called loop-mediated isothermal amplification to test DNA samples collected on lateral flow strips with remarkable sensitivity, with the data being collected into digital systems. The processing of results relies on mobile phones and allows for GPS geolocation, which creates spatial and temporal data. The system also embeds decision-support models for healthcare agents.

- By being able to remove the necessity for fixed infrastructure and laboratories, the project hopes to broaden the access not only to the diagnostics, but to be able to integrate the information that arises with medical data in central databases through digital connectivity, to enable centralized health care facilities to make informed decisions.

- Digital dashboards can be used to detect and evaluate outbreaks, with the possibility of connectivity to broader datasets, such as tracing multiple diseases and comorbidities, the possibility of linking maternal and children health and connecting changes in climate to public health trends. These systems will be able to correlate disease patterns with changes in climate and allow a for the development of models which will be able to predict future impacts of climate change on human health.

- Some of the solutions under development include a molecular point of care test that will enable clinicians to differentiate malaria from other causes of fever that includes bacterial and viral infections, and a blood test to detect the 2 endemic species of schistosomiasis, which are currently detected separately through stool and urine tests.

Revolutionizing Healthcare: Transformative Diagnostics for Global Impact

Dr Kasia Szostak-Lipowicz

- ProtonDX is a health technology company based in London that was founded in 2020 as a spin-out from Imperial College London's Centre for Bioinspired Technology. Its mission is to change diagnosis, but also improve the tools used in molecular biology research.

- There is currently a lack of rapid, accurate, truly point-of-care tests that can differentiate among multiple infections at one time. ProtonDX are currently focusing on the creation of diagnostic tests that can deliver that, and, by doing so, reach remote, rural and oftentimes underserved areas in the African continent.

- They are commercializing quick (<30 mins), portable, multi-pathogen differentiating, accurate (PCR quality), point-of-care diagnostic devices with two product platforms: Dragonfly and Lacewing.

The company is currently developing new assays, including Mpox, Parainfluenza, Adenovirus, gastrointestinal and bacterial pathogens.

- Working with partners like the Digital Diagnostics for Africa Network, ProtonDX aims to increase accessibility and reduce diagnostic costs, while halting the spread of communicable diseases which remain undiagnosed or underdiagnosed by offering rapid

point-of-care use; accurate, rapid multi-pathogen results and portable, affordable and automated diagnostic devices.

- Changes in the policy environment are crucial to enable the successful adoption of such emerging solutions. Some of the existing challenges include: the lack of harmonization of medical devices across countries, with standards across the African region differing a lot between countries; unclear regulatory pathways and market requirements for new products, including rules on different commercialization models (e.g local manufacturing and assembly) ; limited pre-market assessment capacity; limited public understanding and acceptance of these technologies and issues around cost subsidization and overall reliance on NGO support to enable the introduction of new technologies.

Catalysing the digital transformation of newborn care in Malawi and Zimbabwe to end preventable newborn deaths

Dr Michelle Heys

Dr Simbarashe Chimhuya

Dr Msandeni Chiume-Kayuni

- Neotree's mission is to end preventable newborn mortality and give every child the chance to survive and thrive, no matter where they're born. Today alone, over 6,400 babies won't reach their second month of life. That’s 2.3 million newborn deaths each year. But with improved care, two-thirds of these needless deaths can be prevented – and that is what Neotree aims to do.

- Neotree is an accessible app system which bridges cutting-edge technology to daily clinical care in neonatal units in low-resource settings. With its open-source technology operating on low-cost hardware, such as tablets, this system empowers healthcare providers to make the right checks and provide the right care to babies at the right time.

- Neotree is affordable, practical, and ready to go, with early data showing up to a 50% reduction in newborn deaths. The app prompts clinical actions, notifying medical professionals on what needs to be checked and tested, and guides diagnostic decisions and clinical management. It helps doctors, for example, identify if a baby is at risk of a particular condition, and what should be done about it. It also provides education and training at the bedside and in the classroom, collects data, and produces reporting and dashboards, allowing clinicians, hospitals and public health bodies to use this reliable data to drive decision-making and identify opportunities to improve newborn care.

- The design and delivery of an interdisciplinary approach by Neotree,working closely with doctors, nurses, software developers, researchers, families, artists and Ministries of Health, is one of the success factors to create the most effective and sustainable solution.

- Open source coding was deliberatley chosen to enhance accessibility and flexible development, while working with technicians and existing staff from the Ministry of Health and healthcare facilities was recommended to create ownership and amplify existing knowledge.

Digital Diagnostics in Genomics & Gene Therapy

Professor Julie Makani

- The clinical description of sickle cell disease (SCD) was more than a hundred years ago, and since then some important milestones in sickle cell research and treatment include the completion of the Human Genome, the characterization of the molecular basis of sickle cell disease and the development of gene therapy treatments, resulting in the first patient cured from SCD in Africa, where this condition is most common.

- In the context of sickle cell disease, appropriate diagnosis at childbirth or by the third year of age results in 70% reduction in childhood mortality. In African countries, increasing access to diagnostics plays a crucial role in avoiding compliations and mortality. One of the major breakthroughs that have been made in the last 2 years in terms of diagnostics is the development of point of care tests. By using rapid diagnostic kits, primary and secondary health care workers have been able to diagnose sickle cell disease.

- The need to increase diagnostic capacity also covers the mapping of secondary complications of sickle cell disease, the capacity to quick-stream the communication of image-based exams and the availability of emergency diagnostics for conditions like hypoxia, an acute symptom of SCD associated with a high rate of mortaility.

- The use of DNA-based diagnostics can also support the identification of factors that are associated with the amelioration of the disease, through specific tests such as fetal hemoglobin testing and accurate phenotyping of individuals.

- The need to develop local professional capacity in diagnostics and African genomic networks is critical to advance healthcare and research capacity -an example is Muhimbili University's professional training programme.

- In order for there to be sustainable investments in digital diagnostics for sickle cell, national governments must be mobilized, relying on the necessary articulation of input from local and regional sources alongside multilateral and philantropical agents, health professionals and research partners to inform and engage local policymakers. Involving the private sector is not only key in terms of of policy consultation and investment - the buy-in from global pharma and diagnostics manufacturers is also fundamental to ensure proper circulation and interfacing of data.

minoHealth AI Labs

Darlington Akogo

- Pneumonia is the single largest infectious cause of death in children worldwide - a child dies from pneumonia every 40 seconds in Sub-Saharan Africa. A contributing factor, and major challenge for tackling these deaths, is the limited number of clinicians in Africa. In Ghana, for example, there is one doctor for every 11,000 patients. In Malawi there is one doctor for every 60,000 patients. In specific domains, such as radiology, the ratios are even more daunting, with 1 radiologist for every 100,000 people in South Africa for every 800,000 people in Ghana. In Liberia, for example, there are less than 5 registered radiologists in the whole country.

- mino Health AI Labs was created to tackle this challenge with the objective of automating medical diagnosis, prognosis and forecast, becoming an internationally

recognised player in this field. Their focus is to enhance the ability to help patients, cutting across everything from radiology, infectious diseases, and much more broadly biomedical science, or even biomedical research.

- One key focus of mino Health AI Labs is the training of AI to interpret X-Ray results following the upload of an image and basic patient record data. The accuracy and cost-effectiveness of this solution are some of its main attractions. In research studies the AI tool had an accuracy of 90-97% compared to 70-80% accuracy by individual human physicians.

- Democratising early disease detection for all citizens supports early intervention and, as an extension, increases survival rates and quality of life. This could be enabled by reducing user costs as much as possible through economies of scale, and tiered pricing so that those least able to afford diagnostics are charged as little as possible.

Artificial Intelligence Image Analysis for the Diagnosis of Tuberculosis in Children

Dr James Seddon

- Each year 210,000 children die of tuberculosis (TB) around the world, of which 96% are undiagnosed. That is one of the top 10 causes of <5 year mortality in the world. To make an impact on global child mortality, the improvement of diagnosis of tuberculosis in children is critical. For adults, diagnosis of TB is usually made by collecting a sputum sample and testing for M. tuberculosis. The same approach is often not possible in children, however – not only samples are difficult to obtain, but the current testing often gives negative results even when the infection is present. Thus TB diagnosis in children currently is made using a combination of history, symptoms, signs, imaging and microbiology.

- Chest X rays play a critical role in discriminating TB from other diseases and helping doctors decide on the severity of disease. Currently, chest x-rays are unavailable in many contexts, with some other issues such as low quality, insufficient X-ray reading skills and features of TB being very different in children to adults, all compromising diagnosis.

- AI can play a critical role in boosting TB childhood diagnostics, having been incorporated into WHO guidelines. About 10 developers have products on the market, while work with children is still an area of development, with no published work at the moment.

- Ongoing research by Prof. Seddon's group is working on training AI models to effectively read TB X-Ray results in children, improving current models to capture nuances between adult and childhood TB. They have brought together a consortium of 20 partners from multiple countries and used nearly 10,000 images of children evaluated for TB. The team is now evaluating current computer-aided detection products on the market, and will then work with developers to improve algorithms for paediatric TB reading before retesting of those products.

- As chest x-rays are a critical component for detection of TB in children, there is an urgent need to make chest x-rays more accessible and cheaper. Furthermore, the development of computer-aided detection algorithms specifically for children can allow expert chest x-ray reading to be more widespread and generate evidence to allow for more adequate and early-stage medical interventions.

- Developing a comprehensive Digital Health Strategy under the auspices of the United Nations
- Promoting harmonization and interoperability between diagnostic technologies at national, regional and global levels
- Creating mechanisms to promote technology transfer and capacity building in local, regional and international research and development ecosystems

3.1.112 Collaboration outcomes

The presenters have all become part of the expanding Digital Diagnostics for Africa Network.

3.1.113 Building inclusion and equity

- Promoting gender balance of speakers: 5 female and 6 male speakers
- Including early career researchers working in partner countries in Africa and in the UK
- Balancing speakers and partners from Global South/North
- Encouraging the use of plain language to make science content relatable to non-scientific audiences

3.1.114 Key lessons learnt

We have improved our coordination ability with presenters in multiple countries using Zoom and raised awareness of the DIDA network around policy recommendations and communicating in global fora, which is quite valuable to us.

The summit is not over and we are still observing other talks, but also learned so far different approaches to structuring presentations and recommendations (esp. from the Brazil day)

Session 25: Global Impact of Frugal Innovation on Healthcare Systems

Session Convenor
Ayesha Ishtiaq

Position
PhD Scholar

Organisation
Quaid-i-Azam University, Islamabad

Country
Pakistan

3.1.115 Abstract

Non-communicable diseases (NCDs) are a set of long-term health situations that are not transmitted from person to person. NCDs are a foremost international health concern, responsible for over 74% of fatalities worldwide. They are a growing cause of mortality and disability in underdeveloped countries. NCDs are often chronic conditions that require ongoing medical treatment and management, and they can have a remarkable effect on the living standard of individuals and their capacity to engage in socioeconomic activities.

NCDs include a wide range of conditions, such as “cardiovascular diseases (heart attacks and stroke), cancer, diabetes, chronic respiratory diseases (asthma and chronic obstructive pulmonary disease), and mental health disorders”. The increased mortality rate and economic burden due to NCDs provide a link that technology is pivotal in the advancement of disease diagnostics and therapeutics.

However, the advancement is not only limited to the high technological tools and the new state-of-the-art procedures. In limited environments, frugal innovations serve as an inexpensive strategy to healthcare systems, that ensures the SDG-3 “Well-being for all”.

Frugal innovation is not only restricted to low-resource settings but these ingenious recommendations can also be reconciled to offer disruptive substitutes to disease diagnosis and management around the globe.

3.1.116 Key messages

Frugal innovation plays a key role in the science diplomacy by developing scientific collaborations and knowledge exchange between different nations to promote the peaceful cooperation and to enhance the capacity building. It focuses on creation of cost effective, simple and efficacious solutions to the health issues, that can make scientific research and technology more affordable and accessible for the people from different backgrounds. There are various policies in place around the world to address health issues including early diagnosis and treatment.

For SDG-3; "universal good health and well-being" there is a need for awareness programs at "grass-roots level". By addressing the key factors of global impact and implementing effective strategies to reduce mortality, it will be possible to significantly improve the healthful lifestyle and well-being of individuals and communities around the world. Frugal innovation in healthcare system will develop the better diagnostics and therapeutic interventions.

In developing countries scientists and policymakers can work together to address common challenges and foster mutual understanding and cooperation. Conclusively, it has the potential to stimulate a more comprehensive and collaborative approach to science diplomacy, helping to build stronger relationships between nations and contribute to global progress.

- Build flexibility into administrative and regulatory processes to accommodate changing circumstances, emergencies, or unique situations that may arise during UN operations.
- Establish a platform or system for sharing best practices and lessons learned in administrative and regulatory processes among UN agencies and departments.
- Strengthen academia-industry linkages through collaboration, research, internships, advisory boards, and supportive policies.
- UN can streamline its regulatory and administrative processes, improve efficiency, reduce delays, enhance transparency, and ultimately better serve its mission and the communities it supports

3.1.117 Collaboration outcomes

• It will help in the attainment of SDGs by building up the collaboration between different countries to enhance the capacity building of low-middle income countries.

• The different research areas were addressed during the session that may serve as the key players in reducing the global health burden.

• The findings of Scientists and the Entrepreneur will promote frugal innovations as disruptive substitutes to disease diagnosis and management around the globe.

3.1.118 Building inclusion and equity

Frugal innovations in healthcare aim to provide cost-effective and accessible solutions, especially in low-resource settings. These innovations can promote inclusivity in healthcare systems by making healthcare more affordable, simpler to use, scalable, and community-engaged. They often leverage existing technologies and prioritize health equity, ultimately contributing to more inclusive healthcare systems globally.

3.1.119 Key lessons learnt

• Capacity Building: The process of developing skills, knowledge, and resources to effectively address challenges and achieve goals, often through training and knowledge transfer.

• Collaboration: Working together with others to achieve a common goal, which can involve partnerships, alliances, or joint initiatives, and often includes sharing information and resources.

• Science Diplomacy: Using scientific and technical collaborations to foster international relations and address global problems, recognizing the power of science to transcend political boundaries and promote cooperation among nations.

Session 26: NCDs and Partnerships- The CARICOM Caribbean Story

Session Convenor
Janice Gaspard

Position
Senior Technical Officer - Planning and Coordination

Organisation
Caribbean Public Health Agency (CARPHA)

Country
Trinidad and Tobago

3.1.120 Abstract

The CARICOM Caribbean is a melting pot of cultures, languages and customs and as a result, the Caribbean Public Health Agency is home to the Caribbean interpretation of the World Health Organization’s dictates for health policies and public health research.

The CARICOM region is known globally for its landmark Port of Spain Declaration “Uniting to stop the epidemic of chronic NCDs”. Even then, this was a demonstration of partnership with the Heads of Government of CARICOM.

Through this two-hour session, you will journey with us to understand how CARPHA has leveraged partnerships in battling the non-communicable disease burden in CARICOM. It is an ongoing battle but there have been many innovations, best practices and lessons learned.

9:00 am - 9:05 am Welcome and introduction

9:05 am - 9:15am Overview of CARPHA

Dr. Joy St. John Executive Director – CARPHA

9:15am -9:30am Overview of The Six-point policy package (6PPP)

Ms. Abigail Caleb Senior Senior Technical Officer – Food Security and Nutrition CARPHA

9:30 am; 9:45 am Cancer Register Hub

Ms. Sarah Quesnel-Crooks Program Coordinator – IARC Cancer Registry Hub

9:45am -10:30am Moderated Panel Discussion “NCDs and Partnerships Forum- Our Story

Ms. Dionne Browne : Communications Officer - CARPHA

Panelist:

Dr. Heather Armstrong; Head Chronic Disease and Injury, Non-Communicable ;Diseases - CARPHA

Ms. Cherril Sobers; Specialist, Resource Mobilisation and Partnerships -CARPHA

Ms. Abby Eligon; Project Officer – CARPHA

Ms. Maisha Hutton; Executive Director - Healthy Caribbean Coalition (HCC)

Dr. Pierre Yves BELLO; Public Health Programme Manager – Agence Francaise de Development (AFD)

10:30am - 10:45am Caribbean Moves Segment

Dr. Heather Armstrong; Senior Technical Officer – Non-Communicable Diseases – CARPHA

10:45 am- 10:55 Question and Answer/Wrap-up 10:55am

11:00am Call to action

Dr St. John; Executive Director - CARPHA

3.1.121 Key messages

Partnerships are essential to achieving health for all.

Whole of society approaches have proven to ease the burden on implementing successful initiatives that yield long-term results

Using the most updated technologies for the advancement of health and well-being should be made a priority.

Health diplomacy in addressing some of the health-related issues must be treated with care and attention.

- Include potential partners in planning the strategic direction of the organization
- Involve the political directorate in helping to shape and influence the community to change behaviour
- Engage all of society in the planning and coordination of activities

3.1.122 Collaboration outcomes

The Partners on the Panel have pledged their commitment to working more collaboratively to advancing the needs of the CARPHA Member States in NCDs. They have also committed to including CARPHA in more projects in an effort to continue the partnership.

3.1.123 Building inclusion and equity

The session was open to anyone who was interested in participating and participants had an opportunity to pose questions to the presenters. There was representation from a Civil Society Organization and another from an International Development Partner on the panel.

The speakers spoke with knowledge of projects happening across many sectors and different partners.

3.1.124 Key lessons learnt

Coordination is important in order to have a successful event.

Session 27: From global goals to greener plates: Empowering nature with sustainable diets

Session Convenor
Jeanne Nel

Position
Programme Lead: Biodiverse Environment

Organisation
Wageningen University & Research

Country
Netherlands

3.1.125 Abstract

Armed with the Kunming-Montreal Global Biodiversity Framework, we embark on an immense and urgent challenge to bend the curve of biodiversity loss by 2030. No matter how ambitious our conventional efforts are for protecting and restoring nature, these efforts alone will not be enough to bend this curve. Crucial transformative changes are needed in the way society produces and consumes.

Biodiversity efforts tend to focus on sustainable production, but sustainable consumption is increasingly acknowledged, especially at the global level. When it comes to sustainable consumption, the food we eat really matters. Shifts to healthy and environmentally sustainable diets will simultaneously address climate change and biodiversity loss, and enhance human health and longevity.

One immediate opportunity to leverage these benefits is to connect often overlooked allies working on National Dietary Guidelines, National Biodiversity Strategies and Action Plans, and Nationally Determined Contributions to climate action. These tools represent country-level short- to medium-term plans to realize commitments to food, biodiversity and climate goals. Connecting these will help to combine conventional actions with new courses of action, mobilise new collaborations and allies, and shape change together with greater and faster effect.

This session will explore how to connect these important processes: What is needed for national governments to play a more central role in shaping dietary choices that are more in line with global health, biodiversity and climate targets? What dilemmas do different countries face, given their local realities and contexts? The purpose of the session will be to share knowledge across different countries, strengthen collaborations between science, policy and practice, and encourage country commitment in connecting their national dietary, biodiversity and climate plans and commitments. This is the beginning of a WUR-WWF collaboration to weave together interdisciplinary science, cross-sectoral policies and diverse societal values on

food and nature. The insights in this session will be used to provide science and policy perspectives that can inform the 2024 Summit of the Future on how to better connect dietary, biodiversity and climate goals to positively impact people's lives.

Expected outcomes

Inspired participants, researchers, civil society, Mission representatives, who can stimulate people in their own networks to create a critical momentum towards dietary, biodiversity and climate futures that positively impact people's lives.

Collaboration and governance perspectives to inform the Summit of the Future in 2024 on how to enhance cooperation for food, climate and nature transformations that positively impact people’s lives.

Coordination and strengthening of national-level commitments for transformations needed to tackle biodiversity, climate and food challenges.

The start of collaboration process between WUR and WWF to work together with their networks to connect interdisciplinary science, cross-sectoral policies and diverse societal values on food and nature.

3.1.126 Key messages

1. Include interdisciplinary scientists when delivering science-based advice on consumption and diet for policy processes, such as in development of national transformation pathways, food-based dietary guidelines, food labelling and pricing, regulation of the food environment.

2. Develop guiding evidence-based and sound principles and tools to operationalize the safe and just operating space for food systems at national and local levels, in which ecosystem condition and biodiversity are explicit criteria in the 'environmental sustainability' and 'planetary health' narratives. The guiding principles should provide guidance on how to contextualize global and regional criteria for planetary boundaries and 'safe and just operating space'.

3. Develop research agendas at the interface of nutritional health, consumer behaviour and environmental sustainability (including biodiversity and climate change). This should enable research on how food supply chains, food environment, dietary and behavioural drivers impact consumer acceptance, nutritional health and environmental sustainability.

4. Develop research agendas for improving the genetic, agrobiodiversity of food and their usage. Including research how agro-biodiversity impacts health (from individual to local, national and global levels) and environmental sustainability.

Develop inter- and transdisciplinary educational and training services that span nutritional health, consumer behaviour, environmental sustainability and climate science, both in student curricula and in 'life-time education' or executive education courses that target public policy-makers and professionals

5. Biodiversity community to give more attention to consumption drivers are critical to reaching Kunming-Montreal targets and providing healthy diet to everyone. As part of this,

guiding principles are co-developed for operating sustainable and healthy food systems within the 30% of the 30 x 30 target (what does the 30/70 boundary)

6. Establish a transdisciplinary, interoperable research and data infrastructure to measure social, environmental, climate and health impacts of food. Such research infrastructure should be able to integrally analyse food supply chains, food environment, and consumer behavioural determinants across national and regional food systems. The data should allow research to address what people currently eat around the world (in different contexts); what the impacts of this are at sub-national, national and global levels; and how the characteristics of food environments modify consumer choice in different contexts. The infrastructure should also combine both long-term patterns and habits, with immediate (real-time) choice determinants. It should enable analysis of determinants within same the individuals.

7. Provide the science for credible and legitimate eco-labelling through tools for tracking, tracing and declaring the environmental impact of food supply chains

8. Innovations for eliminating food system waste and trade-offs with some technologies, e.g. harvest tech, circular tech, sharing Apps

9. Integrated assessment scenarios and models, capable of considering multiple pathway interactions and feedbacks and systems dynamics at different levels of organization. This to deliver on policy assessment scenarios (ex ante, and ex-post) which investigate interrelations between demand and supply side measures: e.g. taxes and pricing; consumer behaviours; and supply-side changes required

- Include biodiversity and climate impacts in food & nutrition policy, e.g. national transformation pathways or National Dietary Guidelines
- Include dietary shifts in biodiversity policy, e.g. National Biodiversity Strategies and Action Plan
- Include dietary shifts in climate policy, e.g. Nationally Determined Contributions
- Invest in transdisciplinary and interdisciplinary tertiary training, especially in the Global South

3.1.127 Collaboration outcomes

This session marked the beginning of a Wageningen University & Research and WWF collaboration to scale and accelerate shifts to a planetary diet. A planetary diet is one that maximizes health benefits and lowers environmental impacts (including biodiversity and climate impacts). WUR is one of the biggest food universities, and WWF is one of the largest NGOs. We see this collaboration as a signal to pick up the pace of dietary shifts and bridging from science to action. As a start, the WUR and WWF team are working on a High Ambition Call to Action for Academia, which will mobilize the science and collaborations needed for increasing momentum on priority actions for nature-positive food transformations. We will be

developing this and advancing country committment in a series of events in 2023 and 2024, including COP28, the UN Summit of the Future and COP16.

3.1.128 Building inclusion and equity

We sought to bring regional representation to the meeting, with European, African, Latin American, and North American speakers. We also included both senior researchers and younger researchers. We explicitly explored training that could bring local and indigenous knowledge more into the global arena. We were gender balanced on our team, and in the session spoke about the need for bringing the role of woman and care and diet more into our science.

Session 28: Agenda setting for the Network of Genomics Centres of Excellence in Africa

Session Convenor
Nicola Mulder

Position
Professor, Head of Computational Biology, PI H3ABioNet, eLwazi

Organisation
University of Cape Town

Country
South Africa

3.1.129 Abstract

Genomics has the potential to significantly improve health outcomes in Africa.

Genomic research can help identify genetic variations that are associated with increased susceptibility to certain diseases prevalent in Africa, such as malaria, HIV/AIDS, tuberculosis, as well as sickle cell disease and other non-communicable diseases. By understanding the genetic factors underlying these conditions, healthcare providers can develop targeted interventions, early detection methods, and personalized treatment plans to improve outcomes. Genomic data can enable precision medicine, an approach that tailors medical treatments to individual patients or populations based on their genetic makeup. By analyzing an individual's genetic profile, healthcare professionals can predict their response to specific medications, reducing adverse drug reactions and optimizing treatment efficacy. This approach can be especially beneficial in Africa, where genetic diversity is high, and certain populations may exhibit different responses to drugs commonly used in Western medicine.

Genomic sequencing can aid in tracking and monitoring infectious diseases in real-time. By analyzing the genetic code of pathogens, such as viruses and bacteria, scientists can identify outbreaks, trace the source of infections, and assess the effectiveness of treatment and prevention strategies. This information is crucial for developing targeted interventions and controlling the spread of diseases like Ebola, Lassa fever, and COVID-19.

Genomics research can contribute to capacity-building efforts in Africa by fostering collaborations between local scientists, international institutions, and researchers. This collaboration can help build local expertise, establish genomic research centres, and enhance scientific infrastructure. Moreover, increased research in genomics can lead to a better understanding of Africa's unique genetic diversity and the development of locally relevant solutions to health challenges.

The network of Genomics Centres of Excellence aims to facilitate the implementation of genomics to address several key SDGs, enabling African scientists to develop solutions to African challenges.

Agenda setting for the Genomics Centres of Excellence in Africa, including Research Cooperation and Capacity Building.

3.1.130 Key messages

1. Building Capacity and Encouraging Equity: Dr. Agnes Binagwaho, Senior Lecturer on Global Health and Social Medicine, Harvard University, provided a vital message about the need to build capacity in genomics technology in Africa, not only to combat disease but also to improve global health. Her emphasis on equity as a foundational principle aligns with SDG 10 (Reduced Inequalities). She also emphasized the importance of turning commitments (like allocating 1% of GDP to research and development) into reality, which requires active policy engagement.

2. Genomics and Global Health: The impact of genomic research on global health was a key theme throughout the event. Deputy Assistant Administrator for the Global Health Bureau, U.S. Agency for International Development (USAID), Nidhi Bouri's presentation offered a tangible example of the crucial role genomics plays in global health. Additionally, Dr. Olofumnilayo Olopade from the Health Equity Panel underscored the need for infrastructure, healthcare developments, and collaborations to utilize the potential of genomics globally and in Africa.

3. Investing in African Genomics: Dr. Harold Varmus, Chair of the World Health Organization's Science Council, discussed the mission of the WHO Science Council to advance genomics worldwide and making technological access more equitable. Similarly, Dr. Mark McCarthy, Executive Director Human Genetics at Genetech and Lead for the Partnership for Advancing Genomic Research in Africa (PAGRA), touched on boosting African representation in clinical trials and genomic research for global benefits.

4. Building a Comprehensive Public Health System: Dr. Padmashree Sampath, Interim CEO of the African Pharmaceutical Technology Foundation (APTF) within the African Development Bank, emphasized not just expanding supply of data but also adding value with data, artificial intelligence, and stronger research and development (R&D) capacity to achieve a holistic approach to healthcare and improving quality of life.

5. Prioritizing Investment in People & Infrastructure: The Funding Organization Panel, which included representation from the Bill & Melinda Gates Foundation, Wellcome Trust, and African Development Bank, stressed investment in workforce training, infrastructure, and relevance of research to local populations. Prof. Nicola Mulder, Head of Computational Biology, University of Cape Town; PI, H3ABioNet and eLwazi Open Data Science Platform, echoed the sentiment in the closing remarks, highlighting the importance of better training programs, mentorship, and career development to retain talent.

6. Ethics and Community Engagement in Genomics: Dr. Paulina Tindana, a Senior Lecturer and Bioethicist at the University of Ghana School of Public Health, emphasized the necessity of considering ethical, legal, social, and cultural issues right from the beginning of

genomic research. This aligns with the spirit of the SDGs to "leave no one behind" and ensures that such innovations are grounded in ethical and inclusive principles. A moving talk by Victoria Gray, a sickle cell patient who received life changing gene editing therapy brought home the need to include patients in the process and solutions.

7. Establishing National Genomics Initiatives: Dr. Rizwana Mia, Senior Program Manager for Precision Medicine at the South African Medical Research Council, provided examples of national initiatives that advance genomics, including the European Africa Personalized Medicine Consortium and the South African 110K national human genome program, which highlight potential models for genomic collaborations and national-level initiatives to improve health outcomes.

8. Transparency & Collaboration in Data Sharing: Dr. Geoff Ginsburg, Chief Medical and Scientific Officer of the All of Us Research Program, emphasized the importance of transparency, data protection, and returning value to the participants in data collection and research efforts. These practices could enhance trust between scientists and the public, increasing support for science and technological advancements, which is a major tenet that GenCoE will follow.

- Regional and international bodies should dedicate more financial resources towards genomics infrastructure, research and development in Africa. Funding efforts should ideally be coordinated.
- Authorities at all levels should foster cooperation among scientists, educators, policymakers, investors, and the private sector to further promote genomics development.
- Regional governments, with support from international bodies, need to invest in infrastructure in educational and research institutions, creating long term career and entrepreneurial opportunities.
- Genomic developments must be equitable and inclusive, ensuring trials and studies are inclusive of diverse populations, and ensuring that the benefits of advancements are globally accessible.
- International bodies, local governments and African scientists should, together, establish an effective and equitable legal and ethical framework that governs genomics research and application.
- African scientists must be included in discussions on global policies. Regulation discussions should include efforts to address supply chain issues.

3.1.131 Collaboration outcomes

The session provided an opportunity to engage with potential partners. For example, contact was made with Azenta Life Sciences who were interested in working with GenCoE. Further discussions were held with the Science for Africa Foundation, the Partnership for Advancing Genomics research in Africa (PAGRA) and the African Development Bank.

3.1.132 Building inclusion and equity

The session included 10 female speakers or chairs, representing 46% of the total contributors. Speakers came from 10 different countries and included an African American female and scientists from different countries in Africa. The session was hybrid, enabling attendees from all over the world to participate.

3.1.133 Key lessons learnt

The summit provided an opportunity to discuss African Genomics at different levels and explore policy recommendations. We observed the importance of engaging different audiences and moving outside of the traditional scientific conference agenda.

Session 29: Brazil: Science and Development

Session Convenor
Pedro Machado

Position
Research soil scientist

Organisation
EMBRAPA - Brazilian Agricultural Research Corporation (linked to the Ministry of Agriculture)

Country
Brazil

3.1.134 Abstract

Lecture 1 . The SDGs in Science and Technology for Social Development - Inácio Arruda, Social Technology - Sônia da Costa, Food and Nutrition Security - Luciane Costa (MCTI)

Lecture 2. Innovation in biodiversity and the requirements of a new ecological paradigm - Glauco Villas Boas (Fiocruz)

Introduction and aims: Science, technology and innovation (STI as referred to in the UN 2030 Agenda) is a central tool for SDG implementation extending our focus beyond productivity measurement connecting economical, social and environmental pillars. This session aims at dealing with science and development inspired by the SDG's holistic way of combining large challenges, particularly related to food, nutrition, care of our planet regarding biodiversity, and strong institutions for the SDG.

Abstract: STI is pivotal in contemporary social development, addressing global challenges, and improving lives. Goals include sustainable development, poverty eradication, health enhancement, environmental preservation, and equality promotion. Ethical principles, social justice, and public participation are crucial to prevent inequalities and harm. STI for social development integrates sustainability, social responsibility, and equity, aiming at societal well-being. Key focus areas include Food and Nutrition Security by 2030, aligning with Goals 2, 3, 12, and 15 emphasizing sustainable use of terrestrial ecosystems while halting biodiversity loss.

Brazil is actively involved, fostering collaboration between the government and society, investing in research networks, and emphasizing intersectoral cooperation and social participation. The Ministry of Science, Technology, and Innovation (MCTI) funds numerous centers across the country, driving progress in food and nutrition security.

3.1.135 Key messages

In response to the SDG framework calls for broad changes in technologies, particularly in social technologies to overcome inequalities, Brazil is endeavouring to support training in the field of science, technology and innovation including technological extension activities.

Support for local productive arrangements coordinated with vocational technological institutes and centres;

The valorization and support of historically underrepresented populations in the National System of Science, Technology, and Innovation;

The generation of innovative solutions to enhance food security and eradicate hunger in Brazil (Goal 2)

In Brazil, multi-year planning for science, technology, and innovation (2024-2027) will promote social development and reduce inequalities with innovative, inclusive solutions in science and technology. All in parallel with sovereign food and food and nutrition security solidarity economy and ensuring full participation of disabled people can also be stimulated.

Regarding Goal 15, concerning innovations in biodiversity and requirements for a new ecological paradigm, the information techno-economic paradigm shall be replaced by a new structure, such as the green-learning techno-economic paradigm, in which eco-innovations could lead to changes in production and consumption patterns.

Policies are needed to achieve:

A more equitable division of resources, income and work;

Investments in natural and social capital (public goods);

Promotion of technological innovations that prioritize well-being.

- Foster research, extension, and scientific and technological development in Food and Nutritional Sovereignty and Security (FNSS), generating innovative, inclusive solutions for eradicating hunger and
- Science, technology and innovation need to expand beyond neoclassical theoretical concepts adopting evolutionary economics
- The information techno-economic model must be replaced by a green-learning techno-economic model

Session 30: London: Global City Snapshots

Session Convenor
Lamia Sbiti

Position
Business transformation manager

Organisation
ReLondon

Country
United Kingdom

3.1.136 Abstract

Circular economy isn't just about waste; and it certainly isn't just about recycling. It's about making the very best use of the planet's finite resources, designing out waste at every stage of the supply chain but how can this benefit a local economy? This webinar will use London as a case study to show how circular economy can make city economies stronger, create meaningful and accessible local jobs and help tackle cost of living pressures.

3.1.137 Key messages

The role of business innovation (and local legislation to encourage innovation) to make circular economy products accessible and attractive to consumers, so that behaviours will change

- Policy should encourage business innovation around the circular economy by creating the right incentives
- Circular economy can create benefits beyond environmental benefits such as community cohesion, economic growth, health benefits and much more

Session 31: Towards inclusivity in international method development for biodiversity assessment.

Session Convenor
John Simaika

Position
Senior Lecturer in Aquatic Ecology and Conservation

Organisation
IHE Delft, Institute for Water Education

Country
The Netherlands

3.1.138 Abstract

The global loss of biodiversity has serious implications for human well-being and can intensify several of the negative facets of global climate change. Data from biological monitoring is the primary source of information to detect and quantify biodiversity loss, as well as to evaluate the effectiveness of biodiversity management actions such as ecological restorations. Many regions and countries do not have nationally accepted or geographically harmonized protocols or quality assurance in place for monitoring and biodiversity assessment and have limited capacity and administrative support for the broad-scale development of monitoring and assessment programs.

The situation is especially challenging for many countries in the Global South that not only represent the bulk of global biodiversity but also host the most endangered fraction of it. Molecular methods such as eDNA for environmental and ecological studies and monitoring programs can support substantially support regional legislative aims and the UN Global biodiversity framework and aid the development and sustainability of environmental stewardship plans in various sectors. To facilitate uptake by agencies and industry, molecular (e.g. eDNA) methods must follow standardization and quality assurance measures.

International standardization has the potential to help individual countries lacking the capacity to entirely develop their own protocols and can overcome the incompatibility of produced results. ISO is a key international standardization organization that provides a pathway for consensus-driven standardization of, e.g. eDNA approaches. While countries and organizations/agencies in the Global North have started planning for molecular method standardization, it is imperative that all future biodiversity standardization efforts are more global and inclusive for the global South.

To help coordinate inclusive efforts dedicated task forces may be needed. For freshwaters, the IUCN Species Survival Commission (SSC) Task Force on Global Freshwater Macroinvertebrate Sampling Protocols (GLOSAM) aims to close gaps in method knowledge and application.

Further, an International eDNA Standardization Task Force (iESTF) to coordinate and execute plans for establishing ISO standards for eDNA approaches formed to champion eDNA methods and standardization in different countries/regions/agencies. This special session invites contributions from all actors involved in biodiversity assessment and biological monitoring to identify pathways and platforms needed to overcome specific biogeographic barriers to engage in the standardization of i) sample collection methods, laboratory procedures and data treatment, ii) central aspects of data quality and iii) comparable bioassessment schemes.

3.1.139 Key messages

Establish international online platforms to start and prepare the harmonization of traditional methods and standardization of molecular methods used. This requires that participants:

Establish cross- continental dialogue on the minimum requirements of methods used in biodiversity assessment, such as environmental DNA (eDNA). that acknowledges and addresses inequalities in the technological capability of key stakeholders.

Be inclusive, facilitating the participation of both individuals, industry and government organizations, especially from the Global South.

Acknowledge and address difference in risks in applying methods related to operator security between the global North and global South.

Be established within either well established nonprofit organizations that are dedicated to the long term continuation of this dialogue or be integrated into suitable branches of the e.g. UN, EU or African Union such as GEO BON, EU KCBD or UNEP.

Receive continuous funding from e.g. multinational organizations, foundations of development banks to maintain the structure and technological platforms and facilitate the inclusive dialogue.

Establish new working groups under ISO standardization that can process molecular method standardization proposals developed in the inclusive platforms into international standards.

Harmonize the use of international method standards for biodiversity assessments into the UN, EU and national environmental legislation.

Establish international online platforms to start and prepare the harmonization of traditional methods and standardization of molecular methods used for biodiversity assessments.

Establish new working groups under ISO standardization that can process molecular method standardization proposals developed in the inclusive platforms into international standards.

Harmonize the use of international method standards for biodiversity assessments into the UN, EU and national environmental legislation.

3.1.140 Collaboration outcomes

The Belmont forum extended an invitation to participate in the scoping of their CRAs in development: https://www.belmontforum.org/cras-in-scoping

The session introduced two initiatives, the international eDNA Standardization Task Force (IeSTF) (https://iestf.global; website will be officially launched on Oct 10) Lead by Mehrdad

Hajibabaei which will convene for the first time during the GEOBON meeting in Montreal. iESTF will facilitate the establishment of inclusive, international and interoperable standards for various eDNA applications and will work closely with different stakeholders as well ISO working groups for timely and efficient implementation of these standards.

Second, John Simaika introduced the IUCN SSC Task Force on Global Freshwater Macroinvertebrate Sampling Protocols (GLOSAM) https://glosam.un-ihe.org. The mission of GLOSAM is to foster a community of practitioners, who promote the use of freshwater invertebrates in biodiversity monitoring and ecological condition assessment (bioassessment). GLOSAM is looking for country ambassadors to join a worldwide network of like-minded professionals committed to advancing the application of sampling protocols for biodiversity and bioassessment purposes.

3.1.141 Building inclusion and equity

The summit was fully online, and more than 400 people registered to attend. It was inclusive in that anyone from around the world could attend, and share their ideas, knowledge and question in an open, round table format, and do so anonymously if they wished to do so.

3.1.142 Key lessons learnt

Many lessons came from the great variety of speakers, on the work that has been done nationally and internationally, and how little is known still about bioassessment, how to make it inclusive and integrative, and how to finance it.

Session 32: Collaborative Research in East Africa: Community & University Partnerships

Session Convenor
Cyrus Paul Olsen III

Position
Associate Professor, The University of Scranton

Organisation
The University of Scranton, Harvard Medical School, & Templeton World Charity Foundation

Country
USA

3.1.143 Abstract

We represent a group of researchers and clinical practitioners working with Universities and Foundations in the United States to partner on health and education research in local communities in East Africa (Kenya and Uganda). Our work spans rural and urban settings for understanding the contributions local communities and indigenous wisdom can offer to the science of health-seeking behavior and human flourishing, including the context of education. We shall share the challenges we face in collaborating remotely and in-person on complex problems related to neurology, public health, and infectious disease. Those challenges include IRB approval policies across countries and the need to attend to repeatable scientific data and evidence provided in open-source venues, per requirements issued by research funding bodies. Who owns the data and how the data can be equitably sourced, accessed, and distributed, remains a crucial problem of our work.

Our hypothesis is that by sharing our own challenges in navigating international science policy frameworks, we may work with other delegates to ensure more significant equity and inclusion for marginalized voices in East Africa, including the Batwa, an historically marginalized set of communities' long-denied human rights.

We use mixed methods for our human subject research in neurology, infectious disease, and education practices. In one study represented here, the researchers hypothesize that kinship relations, including ancestral and spiritual actors, strongly influence health-seeking behavior and thus must be studied qualitatively and quantitatively to ensure sound principles guide future health interventions. The proposed study has two complementary aims.

The first is empirical:

(1) To determine how social networks impact treatment-seeking for a group of 50 participants in Uganda. To do this, they will collect data on patient behavior and social connections using a network mapping and survey tool called PERSNET. The second aim is theoretical,

(2) To develop from the data a theory of the benefits and dangers of viewing humans as “porous” or readily influenced by outside forces and actors in the context of healthcare.

The applied potential of this theory is to support the design of culturally and contextually appropriate brain health interventions. This study is motivated by recognising the shortcomings of the disease-centric model of medicine, which prioritizes technological and biomedical solutions to physical health while failing to recognize the influence of the social or cultural environment on well-being. Referencing Charles Taylor’s conceptualization of the “buffered” and “porous” models of personhood, the researchers propose that the current disease model of health care must evolve in a way that recognizes the porosity of human beings and the interconnectedness of individuals to their broader social context. This project seeks to contribute to this aim.

An interdisciplinary team leads the project from the Human Network Initiative, which includes a philosopher, neuroscientist and theologian, building on existing research partnerships in Uganda. The Human Network Initiative is located in the Neurology Department of Harvard Medical School / Brigham and Women’s Hospital. It seeks to explore the manifold and massive ways that interpersonal community, or its lack of presence, affect brain health and general flourishing.

Other represented researchers and clinical practitioners include those specializing in randomized control trials in Kenya and Uganda, as well as infectious disease and women's health in the rural rainforest region of southwestern Uganda.

Expected outcomes

The outcomes of the research are many:

(1) open source publications;

(2) international conferences;

(3) short documentary films;

(4) up-skilling of local community-based research partners.

Overall, our work will shape international science policy by including neglected communities and side-lined traditions of wisdom that inform the daily lives of millions of people in East Africa and the United States. Our international partnerships can ensure that more voices can shape science policy, especially in matters of data governance and ownership with respect to public health.

3.1.144 Key messages

Sustained partnerships for global development require trust-building over longer periods of time than generally proposed for projects, or assumed for successes with respect to deliverables/outcomes commonly associated with scientific research. Our group highlighted local knowledge and accompaniment facilitating integral human development that is equipped to respect local conditions, avoid extractive practices (including aiming for data-

sharing and data sovereignty), and create sustainable hope for partner communities. Innovation is highly encouraged as long as local and indigenous voices are included in the innovation cycles.

- Local healthcare infrastructural development must include healing networks, including spiritual healers in communities.
- Remittances from non-residents in the economic development infrastructure should be included in policy metrics for East African contexts.
- Research funding mechanisms can help solve the sustainability of supported projects by ensuring larger, multi-year, sums can be equitably harnessed for maintaining relationships on the ground.

3.1.145 Collaboration outcomes

Presenters agreed to share research methodologies (such as Harvard's PERSNET) to enhance our understanding of the impact social relationships have on health-seeking and economic behaviors. Additionally, new collaborative partnerships among presenters/researchers previously unknown are in development (e.g. between Harvard and Arizona State University, as well as local East African initiatives).

3.1.146 Building inclusion and equity

Our session included presenters with specialities in multiple countries in East Africa and local residents from those regions. Additionally, we fielded questions from the audience, both in the chat and the Zoom video "hand-raising" function. Finally, some of the PowerPoint slides used had inclusive functionality built into the slides.

3.1.147 Key lessons learnt

I have learned how to communicate basic SDG knowledge to wider audiences. Moderation skills were enhanced. My research and personal networks have grown as a consequence of participation. Additionally, I have come to a deeper appreciation of the global challenges facing us all, which requires sustained collaboration and partnerships of the kind encouraged by the UN Science Summit at UNGA78.

Session 33: Science Diplomacy in Times of Global Crises with EU Science Diplomacy Alliance

Session Convenor
Charlotte Rungius

Position
Scientific Project Manager

Organisation
Center for Social Innovation (ZSI), Vienna

Country
Austria

3.1.148 Abstract

Science Diplomacy in Times of Multiple Crises

Science diplomacy is an often-promulgated concept for tackling global challenges in an increasingly interconnected and competitive world order. Science diplomacy fosters peace and understanding between nations and has often been utilized to argue for more cooperation and openness among adverse states. Can science diplomacy keep up with its promise in an ever-more fragmented multipolar world? Does the concept and its basic tenets need to be revised, or has science diplomacy never been more valid and important?

This event explores science diplomacy in current global affairs from at least two perspectives in times of multiple crises: the need for openness and collaboration in tackling global challenges and the need for safeguarding indisputable values, principles and interests. The first perspective will be addressed with a focus on Artificial Intelligence (Session 1: Open science diplomacy for an ethical and trustworthy global AI&rdquo) and the second perspective will be covered by attending to the risks of foreign interference, intellectual property right, misinformation and manipulation in international science cooperation.

Both sessions will take place on Friday morning, September 15th. The opening session on Thursday, 7 pm (September 14th), will also invite artistic perspectives and approaches to the otherwise highly conceptual debate, thereby broadening the range of perspectives on science diplomacy in times of global crises.

Program:

Session I: Open science diplomacy for an ethical and trustworthy global AI (10 am)

- Under-Secretary-General Amandeep Gill, UN Secretary-General's Envoy on Technology

- Rumman Chowdhury, PhD Responsible AI Fellow at Harvard University’s Berkman Klein Center (confirmed)

- Yacine Jernite, PhD Leader of the Machine Learning and Society Team, Hugging Face (confirmed)

- Prof. Dr. Judith Simon, Professor for Ethics in Information Technology (confirmed)

Moderator: Dr. Katja Mayer, University of Vienna

11.00 -11.15 Coffee Break

Session II: Science diplomacy in a fragmented, multipolar world ;(11.15 am)

- Derya Buyuktanir Karacan, PhD, George Washington University & EURAXESS North America (confirmed)

- Mag. Martina Hartl, BMBWF, Member of the ERA Subgroup "Global approach to R&I cooperation" and member of the Steering Team on the EU Science Diplomacy Agenda (confirmed)

- Peter B. Kaufman, Senior Program Officer, MIT Open Learning (confirmed)

- Isabella Tomas, MA, Consul and Co-Director of Open Austria San Francisco

Moderator: Dr. Klaus Schuch, Director of the Center for Social Innovation (ZSI)

Reflecting Remarks (12.15):

- Dr. Christina Hainzl, University for Continuing Education Krems

Closing Remarks (12.30):

- Dr. Susanne Keppler-Schlesinger, Director of the Austrian Cultural Forum in New York

3.1.149 Key messages

Science diplomacy is about the confluence of scientific research and diplomatic endeavors, harnessed to address global challenges, foster international collaboration, and bridge the gap between scientific advancements and policy formulation. It emphasizes the central role of scientific knowledge, methodologies, and community-driven insights in shaping international policies, particularly in areas like AI governance and open science.

In light of rapidly evolving technological landscapes, particularly AI, it is crucial to advance a science diplomacy framework that integrates cutting-edge scientific methodologies with diplomatic strategies. This directive urges the prioritization of open science principles and community-centric approaches in the international discourse on and governance of AI. Through science diplomacy, we aim to address global challenges such as disinformation, promote transparent and resource-efficient technological applications, and foster international collaborations that draw on the collective strengths of diverse stakeholders.

As we harness AI to advance the Sustainable Development Goals (SDGs) it is imperative to follow grassroots initiatives, thus community-centric approaches emphasizing data collection and predictive analytics tailored to local challenges are paramount. However, this direction faces the looming challenges of disinformation, potentially undermining trust and efficacy, and the resource-intensive nature of large AI systems, which could exacerbate environmental

and infrastructure strains. To address these, it is not only vital to bolster AI and digital literacy, ensuring communities can discern and counteract misleading information, but also imperative to champion the development and adoption of resource-mindful AI applications. Such sustainable AI practices will maximize impact while minimizing adverse footprints. Furthermore, the creation of AI applications must prioritize maximum transparency and adhere to open science principles, ensuring they are comprehensible, trusted, and optimally utilized by the communities they serve. The synergy of AI-driven SDG relevant data platforms, community-based resource exchange systems, and AI-assisted monitoring mechanisms will be essential. Participation of and collaboration between local communities, tech developers, NGOs, and governments is critical for both the ethical deployment and the sustainability of these grassroots-driven AI strategies.

Solutions to complex global challenges require collaboration across diverse scientific disciplines. Transdisciplinary understanding and collaboration need to be improved, scientific rewards systems need to be adapted to that requirement. Scientific cooperation respecting shared values and principles such as academic freedom has the power to sustain dialogue also in times of geopolitical crisis.

- Transparency and Trust: Uphold the principle of transparency in AI governance by instituting robust transparency regulations. Advocate and support open-source endeavors and open science initiatives.
- Inclusivity: Ensure that the whole range of relevant stakeholders is heard and actively involved in AI
- Diversity: Respect and integrate diverse cultures and science systems in the framing, design and implementation of research, as well as research policy and foster the voice espec. of the global south.
- Awareness: Prioritize the strengthening of public education concerning AI while actively countering detrimental public narratives surrounding the technology.
- Coordination: Foster robust global connectivity within the AI community to synergize diverse efforts shaping AI's global evolution as responsible technology, with the UN as a potential arbiter.
- Transdisciplinarity: Promote interdisciplinary research and foster personal and trusted partnerships between scientists, policymakers, diplomats, and industry.
- Participation: As AI becomes a catalyst for the Sustainable Development Goals (SDGs), prioritizing community-driven methodologies is crucial. Prioritize transparency, inclusivity, and ethics.
- Responsibility: Research organizations must be aware of their social responsibility as sharers of knowledge for all levels of society and actively counter disinformation.

3.1.150 Collaboration outcomes

Our participation at the UNGA78 science summit was a collaboration with the University for Continuing Education Krems, the University of Vienna and the Austrian Cultural Forum New York. On the basis of this year's successful session there are discussions on establishing a series of yearly events in the future on topics related to science diplomacy. The next event of this series in 2024 would then flow into a proposal for the next science summit.

3.1.151 Building inclusion and equity

The composition of our speakers took into account a balanced gender ratio and different backgrounds from researchers to policy makers.

3.1.152 Key lessons learnt

There are our recommendations at length.

1. Transparency: Uphold the principle of transparency in AI governance by instituting robust transparency regulations. Advocate and support open-source endeavors and open science initiatives, encompassing the release and scrutiny of expansive language models and chatbots—this includes transparency in code, documentation, and evaluation processes. Prioritize the establishment of open data metrics and mandate clear labeling protocols for AI services to ensure user awareness and understanding.

2. Inclusivity: Ensure that the whole range of relevant stakeholders (industry, from start-ups to large corporations, different disciplines from academia, potential user groups etc.) is heard and actively involved in AI governance.

3. Diversity: Respect and integrate diverse cultures and science systems in the framing, design and implementation of research, as well as research policy and foster the voice especially of the global south.

4. Awareness: 4a) create awareness that although international cooperation in science is essential there is potential for foreign interference and malign interests in these endeavors and dedicated measures to ensure research security may be necessary for higher education and research institutions to safeguard their knowledge.

4b) Prioritize the strengthening of public education concerning AI while actively countering detrimental public narratives surrounding the technology. It is paramount to critically assess and challenge overly sensationalized or deterministic discourses regarding AI's potential impact and trajectory. Scrutinize and address inaccuracies that attribute human-like consciousness or competencies to AI systems. Vigilance is required to discern and highlight concealed motives behind certain public portrayals of AI. Moreover, ensure heightened awareness of external interventions and potential malicious intent in international scientific collaborations related to AI.

5. Coordination: Foster robust global connectivity within the AI community to synergize diverse efforts shaping AI's global evolution as responsible technology for the social good, with the United Nations poised as a potential arbiter of these endeavors. It is imperative to ensure that science maintains an equal and pivotal footing in these discussions, guaranteeing evidence-based decision-making. Integrate the establishment of a worldwide Open Science framework seamlessly with the overarching governance of AI at the international level. Additionally, we advocate for the examination and adoption of best practices from established global

monitoring institutions, such as the IPCC or the IAEA, to inform and enrich the structure and operations of a potential institution dedicated to the global governance of AI.

6. Transdisciplinarity: Promote interdisciplinary research and foster personal and trusted partnerships between scientists, policymakers, diplomats, and industry. Encourage industry to integrate diversity and hybrid skills in their workforces.

7. Participation: As AI becomes a catalyst for the Sustainable Development Goals (SDGs), prioritizing community-driven methodologies is crucial. It is essential to prioritize transparency, inclusivity, and ethical considerations in AI deployment. This includes the use of mobile apps and platforms for reporting and monitoring local issues by citizen generated data, development of localized knowledge bases tailored to regional challenges, and AI-enhanced platforms rooted in local languages and cultures. Further emphasis is on facilitating rigorous participatory evaluation of AI projects and applications. The promotion of collaborative problem-solving through hackathons, AI-backed feedback mechanisms, crowdsourced research and monitoring, and tools that promote sustainable behaviors are equally imperative. Integral to these strategies is building AI capacity at the grassroots, empowering communities to co-create localized AI solutions for SDGs.

8 . Responsibility - Research organizations must be aware of their social responsibility as sharers of knowledge for all levels of society and actively counter disinformation through respectful dialogue with society. This includes building trusted collaborations worldwide with like minded organizations that respect values such as academic freedom and independent research and teaching.

9. Trust: Transparency, inclusivity and awareness are important elements not only in AI but also in general efforts to gain trust in science in a broader sense. Communication and dialogue are essential and dialogue formats need to be established to counter the rising science skepticism that also puts a danger to democratic systems.

Session 34: Exploring the Value of Living Labs in Co-Creation and Open Innovation Ecosystems within a Global Sca

Session Convenor
Martina Desole

Position
Director

Organisation
European Network of Living Labs - ENoLL

Country
Belgium

3.1.153 Abstract

The session "Exploring the Value of Living Labs in Co-Creation and Open Innovation Ecosystems within a Global Scale" at SSUNGA78 aims to delve into the dynamic realm of living labs and their pivotal role in driving co-creation and open innovation across diverse domains. Living labs, as real-world experimentation environments, have proven to be essential platforms for fostering collaboration, enabling rapid learning, and creating value for stakeholders. This session will uncover the unique potential of living labs to accelerate innovation, enhance stakeholder engagement, and contribute to sustainable development within the framework of co-creation and open innovation by serving as vital connectors between technology and human-centric societal goals, fostering collaborative solutions for the challenges of the digital era and supporting the attaining of the SDGs.

Key Objectives

Unveiling Living Lab Principles: Understand the core principles that define living labs and their relevance as powerful tools for co-creation and open innovation.

Showcasing Collaborative Potential: Explore how living labs create an ecosystem that brings together stakeholders from academia, industry, government, and civil society to collaboratively address complex challenges.

Real-World Impact: Discover real-world case studies that highlight the tangible outcomes and transformative impact of living labs on innovation, learning, and sustainable development.

Stakeholder Engagement: Discuss the critical role of stakeholder engagement within living labs and its significance in driving co-creation and open innovation processes.

Expected Outcomes:

Participants in the session will gain a comprehensive understanding of how living labs serve as catalysts for co-creation and open innovation. By exploring real-world success stories and

engaging with experts, attendees will take away insights on how to harness the potential of living labs to foster collaboration, drive innovation, and achieve sustainable outcomes.

Target Audience:

This session is tailored for individuals from academia, industry, government, research institutions, and civil society interested in understanding the transformative impact of living labs in co-creation and open innovation. Attendees seeking insights into collaborative methodologies, stakeholder engagement, and innovation ecosystems will find this session particularly relevant.

Agenda

15:00-15:05 Welcome by the Organizer - ;Declan Kirrane Iscintielligence

15.05 - 15.15 Defining living labs and introducing their significance in fostering co-creation and open innovation

Evdokimos Kostantinins, Chiar at ENoLL. Martina Desole, Director ENoLL

15:15-15:30 Living Labs as research infrastructures for New way for Science

Living Lab principles & methods in science diplomacy for rebuilding trust with underrepresented communities & improving decision-making efficiency.

Evdokimos Kostantinins, Chair at ENoLL, AUTH

15:30-15:45 The role of living labs in supporting innovative economic policies for Climate Change mitigation towards Zero pollution & ENoLL’s model of citizen-centric policymaking

Valentino Piana, HES-SO - Lantern Project

15.45-16.00 Living Labs enabling Open Innovation Communities & digital transition to improve readiness for sustainable and innovative urban mobility and logistics.

Georgia Ayfantopoulou Research Director Center of Research & Technology Hellas, Coordinator of Thessaloniki Smart Mobility Living Lab (ThessM@LL)

16.00 -16.15 Living Labs as a social technology for global digital cooperation. The case of Living Labs project in Senegal between FDSUT and i2cat.

Artur Serra, Director i2CAT Foundation

16.15 -16.30 Actively Engaging and Empowering Citizens through Citizen Science and Living Lab approaches.

How Living Labs can help to develop a global healthcare research and innovation infrastructure after the COVID lessons?.

Panagiotis Bamidis Professor, Director, Medical Physics & Digital Innovation Lab, Aristotle University of ThessalonikiFounder, Thessaloniki Action for Health and Well-being Living Lab (ThessAHALL)

16.30– 17.00 Round Table Discussion

How Living Labs are supporting the attaining of the Sustainable Development Goals (SDGs) and beyond?

Moderated by Martina Desole

ENoLL Director

17:00-17:15

Q&A and Conclusions

The Organizer:

European Network of Living Labs (ENoLL)

Founded in 2006 under the Finnish Presidency of the Council of the European Union, ENoLL is globally active to support and certify Living Labs. The role of living labs in advancing has been formally recognized by the IPCC, the United Nations body for assessing the science related to climate change, in their 2022 Climate Change Report: Global adoption of living lab methods can drive co-created solutions to existing problems by integrating scientific and expert knowledge with local knowledge and common values. The report has also formally recognized ENoLL’s model of open and citizen-centric innovation for policy-making globally.

3.1.154 Key messages

Living labs serve as real-life test and experimentation environments that foster co-creation and open innovation among the key actors in the Quadruple Helix Model. These labs provide methodologies and tools that facilitate transparent collaboration between researchers, scientists, civil society, and organizations. By promoting awareness, collaboration, and understanding of challenges, living labs position citizens as equal partners in the innovation process, empowering them to contribute and benefit from it. Orchestrated as local ecosystems distributed worldwide, these living labs rely on a fundamental ingredient: trust. Long-term trust is nurtured among all actors to ensure transparent collaboration and genuine interest.

To connect these local ecosystems globally, living lab networks like ENoLL facilitate the transnational exchange of knowledge and information. This enables the bottom-up flow of knowledge and best practices within the network while also enabling the top-down flow of policies. Living labs are not only a modern research and experimentation tool that actively involves stakeholders and citizens but are also recognized as Research Infrastructures that foster international collaboration. What makes living labs as research infrastructures unique and noteworthy is their reliance on active human involvement. Consequently, the long-term engagement of diverse stakeholders in living lab ecosystems, eager to participate in research and innovation, makes them valuable tools for facilitating science. By reducing the time needed for experimentation and innovations and by, offering a collaborative and dynamic environment, living labs support scientific research by providing real-world contexts, stakeholder engagement, innovation opportunities, data resources, and platforms for communication. These aspects collectively contribute to advancing scientific knowledge, driving scientific discovery, and addressing complex societal challenges.

As our society navigates the challenges posed by digital infrastructure in realms like education, public services, and corporate operations, LL emerges as an essential platform. Integrating insights from sociologists, anthropologists, and diverse stakeholders, LLs offer a collaborative space to design human-centric solutions. By aligning technology with the core values of a human-centric society, LLs hold the potential to reshape our digital landscape into one that prioritizes meaningful engagement, inclusive services, and sustainable innovation.

With the aim of becoming more effective, living labs have embarked on harmonizing their services and procedures. This harmonization ensures that researchers and scientists derive the same value from each living lab they engage with. An online wiki (https://wiki.livinglab-harmonization.com) presents the harmonized processes, services, tools, and methods offered by living labs, along with a methodological framework.

Finally, some examples of the value Living Labs can bring to the SDGs are:

Goal 9: Industry, Innovation, and Infrastructure: Living labs foster open innovation and provide a real-life environment for testing and developing sustainable technologies and solutions. By bringing together various stakeholders, including researchers, businesses, and communities, living labs facilitate the development of innovative products, services, and infrastructure that support sustainable development.

Goal 11: Sustainable Cities and Communities: Living labs often focus on urban areas, providing opportunities to address urban challenges and promote sustainable urban development. By involving citizens, local governments, and other stakeholders, living labs can help design and test sustainable urban solutions, such as smart mobility, energy-efficient buildings, and participatory governance models.

Goal 13: Climate Action: Living labs contribute to climate action by facilitating the development and testing of sustainable technologies and practices that mitigate greenhouse gas emissions and promote resilience. For example, living labs can explore renewable energy solutions, smart grid systems, circular economy approaches, and climate adaptation strategies.

Goal 17: Partnerships for the Goals: Living labs promote collaboration and partnerships among stakeholders from different sectors, including academia, government, industry, and civil society. By fostering co-creation and knowledge exchange, living labs enable diverse actors to work together towards common sustainability goals, enhancing synergies and driving collective action.

Goal 4: Quality Education: Living labs provide opportunities for experiential learning, allowing students, researchers, and communities to gain hands-on experience in solving real-world sustainability challenges. This practical engagement enhances education and capacity building, empowering individuals to become active agents of change and contributing to lifelong learning.

Goal 6: Clean Water and Sanitation: Living labs can support the development and testing of innovative solutions related to water management, water quality monitoring, and sanitation. By piloting and evaluating sustainable water technologies and practices, living labs contribute to achieving clean water and sanitation targets.

In the digital age, Living Labs (LL) stand as transformative social technologies, forging a bridge between technological advancement and human-centric societal progress, it is crucial now to support the digital, environmental and social transition, including climate neutrality, by growing the global Open Innovation Community in all developed and developing countries through Living Labs creation, empowerment, consolidation, upgrade and networking.

1. We need to speed up the process towards achieving a climate neutral and sustainable world, including by globally leveraging the experience gained in Europe toward zero pollution and in reforming the welfare state. In this context, Living Labs are emerging as a game changer for accelerating innovation taken up by the local ecosystems and local-to-local diffusion pathways. They support cities and regions in transitioning to their smart, sustainable, efficient future. They mobilize global resources to local achievements.

2. LLs have the tools, the capacity and the commitments for cross sectorial collaboration in solution provisioning through a holistic approach delivering irreversible results.

3. Cutting bureaucracy, redesigning support to social needs, addressing mental health and an aging society: these are just some of the real examples of success by Living Labs.

4. We need to grow the global Open Innovation Community in all developed and developing countries through LLs creation, empowerment, consolidation, upgrade and networking. This can be seen as part of fulfillment of finance and technology tranfer and co-creation dynamics underpinning the conditional part of Nationally determined contributions to cut emissions under the Paris Agreement.

5. All this is a key societal contribution that the science of 21st century is offering, by moving out of ivory towers to match real life.

- Leverage Living Labs to remove obstacles to sustainable development.
- Recognise the networks and the activities of Living Labs for sustainable development.
- Enhance the existing (and favour the birth of new) Living Labs.
- Involve Living Labs in the design of policies and cooperation platforms.
- Climate mitigation actions at urban scale need to involve Living labs and local stakeholders.
- Foster the concept of LLs as a social technology that bridges the gap between digital advancements and human-centric societies
- Align the discussion with the UN 2.0 initiative and SDGs, showcasing how LLs contribute to achieving sustainable development targets.
- LLs can serve as platforms for cross-disciplinary experimentation and innovation, directly addressing SDG-related challenges.

Session 35: DSI and Biodiversity Collaborations for Biodiscovery (Bioprospecting)

Session Convenor
Leif P. Christoffersen

Position
Biodiversity Partnerships Lead

Organisation
Basecamp Research

Country
United Kingdom

3.1.155 Abstract

This session will present Access and Benefit Sharing (ABS) approach to addressing Digital Sequence Information (DSI) through its Biodiversity Collaborations that serve as the foundation of its Biodiscovery (Bioprospecting) Research and Development.

Mr. Leif P. Christoffersenwill provide an overview of Basecamp Research as a Biotechnology Company based in the UK, as well as provide an overview of Basecamp Research’s Biodiversity Collaborations. He will also explain Basecamp Research's position as it relates to DSI and the Nagoya Protocol.

Based on his vast experience engaged in Biodiscovery (Bioprospecting) programs and projects since the early 1990s Mr. Marthinus Horak will provide an overview of Biodiscovery (Bioprospecting) experience in South Africa and explain the experience to date in South Africa with addressing DSI as it relates to ABS legal frameworks.

Building on his experience leading and associated Biodiscovery (Bioprospecting) projects, Mr. Randall Loaiza Montoya will provide a similar overview and information as it relates to Costa Rica.

Time permitting, the presenters may also provide some of their thoughts on equitable benefit sharing. Why is it so challenging and what could be considered to broaden the benefit options.

Questions will be addressed at the conclusion of these three presentations.

3.1.156 Key messages

Sharing models that promote collaboration between the private sector and organisations that are focused on one ore more for the SDGs.

- Public databases do not enable effective benefit sharing
- More effeciency is required with regards to laws and regulations governing biodiscovery

- Increased international collaborations between the biotech industry and science and conservation organisations are critical for promoting sustainability
- N/A
- N/A
- N/A
- N/A
- N/A

3.1.157 Collaboration outcomes

Undetermined at this point.

3.1.158 Building inclusion and equity

Speakers represented viewpoints and organisations from the UK, Costa Rica, and South Africa.

Participants were invited to ask questions, which were answered by the speakers.

3.1.159 Key lessons learnt

More effort to promote the event would have led to more attendance.

Session 36: Transnational Health and the Socio Epidemiological of COvid19 pandemic: How can we translate social

Session Convenor
Ramiro Andres Fernandez Unsain

Position
Professor researcher

Organisation
Universidade de São Paulo

Country
Brasil

3.1.160 Abstract

3.1.161 Key messages

Pandemic as diruptive. Pandemic as a social problem.

- Social science in health is vital
- Reinforce economic mecanisms during pandemic crisis
- Reinforce transnational research groups

3.1.162 Collaboration outcomes

Not yet engage

3.1.163 Building inclusion and equity

Totally inclusive

3.1.164 Key lessons learnt

The colaboration among international professionals is esssencial.

Session 37: Citizen Science for Digital Health and AI Research

Session Convenor
Peiling Yap

Position
Chief Scientist

Organisation
International Digital Health and AI Research Collaborative

Country
Switzerland

3.1.165 Abstract

Introduction and aims

Citizen science is defined as a practice of public participation, collaboration and co-creation in all aspects of scientific research to develop knowledge and policies to address public health challenges. By empowering communities, we build trust between communities, researchers and policymakers, a key ingredient in getting concerted responses to public health challenges. We also encourage citizens to take ownership of these challenges by acknowledging the health issues in their personal contexts. In particular, such a participatory approach is essential to ensure that human agency is preserved in the research and development of digital technologies and Artificial Intelligence (AI) for health.

Emerging digital technologies also present interesting solutions for citizens to participate in research, but they have yet to be effectively used to create an enabling environment for citizen science to be established in our societies. We note that there are systemic barriers and socio-economic inequities to consider when implementing digitally-enabled citizen science approaches to avoid widening the existing digital divide and health disparities. This session on ‘Citizen Science for Digital Health and AI Research’ aims to explore how citizen science for digital health and AI research can be established and sustained, as well as how existing technologies can enable engagement.

Abstract

The International Digital Health & AI Research Collaborative (I-DAIR) and its global academic partners, namely United Nations University Institute in Macau (China), Universidade Federal do Rio Grande do Sul (Brazil), African Population and Health Research Center (Kenya), Oxford University Clinical Research Unit (Vietnam), Dr. Rajendra Prasad Government Medical College (India) and Makerere University Centre for Health and Population Research (Uganda); and civil society partners, namely eBASE Africa (Cameroon), Zimbabwe National Network of PLHIV+ (Zimbabwe), Wireless Access for Health (The Philippines), Climate Institute (Indonesia), RD Foundation (Nepal), Rural Development Academy (Bangladesh) and Amref Health Africa

(Kenya); are proposing a session to explore how citizen science can contribute to more inclusive and collaborative research for digital health and AI for health, as well as the type of infrastructure and technologies needed to create an enabling environment for citizens to participate sustainably. By fostering active public participation in health research, we build stronger partnerships between scientists, citizens and policymakers, which can contribute towards achieving Sustainable Development Goals (SDGs) 3 and 17, ensuring healthy lives and well-being for all.

The 2.5-hr session will consist of a keynote (15 mins), followed by two panel discussions, and a closing remark (15 mins). Each panel discussion (25 mins) will be preceded by a presentation on the topic of interest (15 mins) and followed by an interactive question-and-answer session (20 mins). The opening keynote will lay the foundation for the session by highlighting the role of citizens in health promotion and disease prevention, with a particular focus on their potential for digital health and AI research.

The first panel will explore how to establish citizen science for digital health and AI research. A presentation preceding the panel discussion will showcase a mixed-method study conducted by I-DAIR and partners assessing citizens’ opinions about the application of the citizen science approach and the use of digital enablers. This study was conducted in Bangladesh, Cameroon, India, Indonesia, Kenya, Nepal, The Philippines, Uganda and Zimbabwe. The panel discussion will subsequently examine the: i) contribution of citizen science to the achievement of SDGs; ii) roles of academic, philanthropic, civil society and international organizations in promoting the citizen science methodology in digital health and AI research projects; and iii) type of infrastructure and capacity development needed to provide the enabling environment for active and sustainable citizen participation.

Finally, the second panel will examine the use of existing digital technologies to enable the engagement of citizens. I-DAIR and partners are developing participatory approaches allowing citizens’ active participation to go beyond data collection and extend into modelling and collaborative policy development. The second presentation will showcase the use of participatory modelling approaches in building agent-based models for disease outbreak management in Brazil, Vietnam and Kenya. The panel discussion will further examine the: i) use of digital tools to scale up and sustain participatory activities online; ii) use of generative AI, with a focus on large language models, to support these activities; and iii) the need for transdisciplinary research to advance the citizen science approach.

3.1.166 Key messages

- It is critical to engage citizens in science so that scientific research remains contextually relevant in solving global challenges and the SDGs become goals for citizens to contribute towards rather than being an exclusive area for policymakers and academic experts to work on.

- Citizen science, defined as the practice of active public participation, collaboration and communication in all aspects of scientific research to increase public knowledge, create awareness, build trust, and facilitate information flow between citizens, governments and scientist, serves as a way to democratise the entire scientific knowledge production process.

- In today's Fourth Industrial revolution where digital technologies and AI play a critical role in shaping our future societies, citizen science becomes even more important as it is essential to ensure that human agency is preserved in the research and development of digital technologies and Artificial Intelligence (AI) for health.

- Different stakeholders have varied roles in promoting citizen science in digital health and AI research. Philanthropic foundations and international organizations have to make sure that citizen science approaches and trans-disciplinary research feature strongly in global research and development agendas for AI and digital health pushed forward by their funding and guidelines; civil society groups can help bridge the work of researchers and policymakers, while academia should go beyond the current paradigm of "publication or perish" to more emphasis on the number and quality of citizen science research projects that are conducted.

- Citizens should not be seen just as data providers in our push towards achieving the SDGs. They should be actively in modelling, scientific communication/dissemination as well as policy development too.

-Digital technologies could help to scale citizen science participatory research which is often time consuming and labor intensive. For example, large language models can be use to simulate human behaviour in agent-based models while virtual reality can make the modelling experience for citizens more interactive.

- However, as much as we push for digital, we have to be cognizant of the digital divide that exists and provide means for citizens without access to digital technologies or literacy as well as without the willingness to engage digitally to have an equal opportunity to participate in science.

- Philanthropic foundations and international organizations have to make sure that citizen science approaches and trans-disciplinary research feature strongly in global research and development agendas
- Civil society groups can help bridge the work of researchers and policymakers
- Academia should go beyond the current paradigm of "publication or perish" to more emphasis on the number and quality of citizen science research projects that are conducted

3.1.167 Collaboration outcomes

I-DAIR will be working closely with the Global Initiative for AI for Health put forth by the WHO on the implementation of regulation guidance for AI solutions in health at the country level.

3.1.168 Building inclusion and equity

We had good gender balance with half of the speakers and moderators being female. Representation from low middle income countries was also strong with half the speakers coming from these countries. Finally, in terms of sectoral representation, we had speakers from international organizations, civil society groups, philanthropic foundations and academia.

3.1.169 Key lessons learnt

- It is critical to engage citizens in science so that scientific research remains contextually relevant in solving global challenges and the SDGs become goals for citizens to contribute towards rather than being an exclusive area for policymakers and academic experts to work on.

- Citizen science, defined as the practice of active public participation, collaboration and communication in all aspects of scientific research to increase public knowledge, create awareness, build trust, and facilitate information flow between citizens, governments and scientist, serves as a way to democratise the entire scientific knowledge production process.

- In today's Fourth Industrial revolution where digital technologies and AI play a critical role in shaping our future societies, citizen science becomes even more important as it is essential to ensure that human agency is preserved in the research and development of digital technologies and Artificial Intelligence (AI) for health.

Session 38: limate Governance: what can Engineers and Technicians bring into the political / policy arenas

Session Convenor
Yvette RAMOS

Position
Yvette Ramos, moderator - Cofounder WOMENVAI ECOSOC granted status (France) and president Swiss Engineering Geneva (Switzerland). MSc., MBA, PhD candidate University of Lisbon, Institute of Social Science (Portugal). Expert to the International Telecommun

Organisation
WOMENVAI - WOmen and Men in ENVironment and Artificial Intelligence

Country
France

3.1.170 Abstract

The need to receive updated and good knowledge about climate change: Recent reports (IPCC, 2022) show that it is important to have a good scientific knowledge of the science of climate change, its impacts, and vulnerabilities to make the right decisions and implement measures both in terms of adaptation than mitigation.

Governments and governmental institutions do not always have the geopolitical and legal tools to act effectively and efficiently at the local, and even less in a coordinated way at the global level. It seems that the financial, economic, technical, and societal issues to put in place rapid measures to adapt and to mitigate to climate change could be resolved more easily. Knowledge is not the only lever to implement decisions relating to adaptation and mitigation. Solutions must include both the mastery of scientific knowledge and technical skills, legal skills and a good understanding of the governance systems operating the levers at the global level.

At another level, governments and institutions being busy with daily life, do not always have the motivation to deeply investigate the short, medium, and long-term complexities of climate change and the needs to adapt and mitigate. When the daily distraction from the urgency to act has its toll, presenting short essays that strengthen the need to act, can be of enormous value to boost the motivation of officials.

Social science being the scientific study of human society and social relationships involves research on all aspects of history and literature, both classical and modern, philosophy, art, culture and the media, communication and linguistics, and all fields of social science at the periphery of Science Technology Engineering Mathematics (STEM), such as law, economics, political science. Robert Burton Clark, UCLA Professor Emeritus of Higher Education and Sociology, was one of the first sociologists to study higher education from a global perspective. With research interests in various domains of higher education systems, he proposed a three forces perspectives triangle (Clark, 1983) to help position national systems of higher education

of various countries, the three dimensions being: the state authority, the market, and the academic oligarchy.

When we look at university contribution to climate change mitigation and adaptation, we shall ask ourselves first: from which perspective do they contribute? To contribute is to bring one's share to a common work, to be part of a result. Knowing what contributes to climate change adaptation and mitigation actions, from the point of view of the university, would require for example, crossing the expected goals of the university, its actors, and stakeholders with the possibilities of action in the fields of adaptation and mitigation.

Not only we aim at bringing light to the contribution of University Stakeholders engaged in Climate Change and Sustainable Development Policies, but also presenting tools and perspectives to help understand latestdevelopments in terms of applied research, advocacy, lobby and influence of public authorities, international expertise, etc. on the theme of climate change adaptation and mitigation governance.

Motivated students, researchers, engineers, technicians can bring a valuable opinion to the community: they receive the latest news and research articles and are used to produce papers and research materials as part of their studies and professional careers. When being able to "ventilate" these writings and essays in communities beyond their close ones, a sincere contribution can be found to the latest research at large.

3.1.171 Key messages

At the occasion of the Science Summit at the United Nations General Assembly (UNGA78), WOMENVAI with special consultative status to UN ECOSOC and its partners coorganize a session fully aligned with the broad Summit objective which is to advance awareness of the contribution of science and innovation to the SDG agenda. Specific objectives address through this proposed session key priorities for the UN Summit of the Future planned for 2024, and refer to the policy and programme developments such as the UN TFM , the AU-EU Innovation Agenda , the AUC digital transformation strategy 2030 , and others.

The need to receive updated and good knowledge about climate change: Recent reports of the IPCC show that it is important to have a good scientific knowledge of the science of climate change, its impacts, and vulnerabilities to make the right decisions and implement measures both in terms of adaptation than mitigation.

Governments and governmental institutions do not always have the geopolitical and legal tools to act effectively and efficiently at the local, and even less in a coordinated way at the global level. It seems that the financial, economic, technical, and societal issues to put in place rapid measures to adapt and to mitigate to climate change could be resolved more easily. Knowledge is not the only lever to implement decisions relating to adaptation and mitigation. Solutions must include both the mastery of scientific knowledge and technical skills, legal skills and a good understanding of the governance systems operating the levers at the global level. At another level, governments and institutions being busy with daily life, do not always have the motivation to deeply investigate the short, medium, and long-term complexities of climate change and the needs to adapt and mitigate. When the daily distraction from the urgency to act has its toll, presenting short essays that strengthen the need to act, can be of enormous value to boost the motivation of officials.

Social science being the scientific study of human society and social relationships involves research on all aspects of history and literature, both classical and modern, philosophy, art, culture and the media, communication and linguistics, and all fields of social science at the periphery of Science Technology Engineering Mathematics (STEM), such as law, economics, political science.

With our Session held on 18th Sept. at the occasion of the #UNGA78 Science Summit, not only we aim at bringing light to the contribution of University Stakeholders engaged in Climate Change and Sustainable Development Policies, but also presenting tools, ideas, and different perspectives on Governance issues when it comes to Climate Change Adaptation, Mitigation and Geo-engineering, including SRM Solar Radiation Modification. Motivated students, researchers, engineers, technicians can bring a valuable opinion to the community: they receive the latest news and research articles and are used to produce papers and research materials as part of their studies and professional careers.

When being able to "ventilate" these writings and essays in communities beyond their close ones, a sincere contribution can be found to the latest research at large. Janos Pasztor, Executive Director of C2G described the current status of climate change, in terms of impacts; response strategies and based on these expectations, following IPCC and other UN reports, of what temperature overshoot the world can expect. According to the IPCC, it is now more likely than not that the world will overshoot the 1.5C goal.

What is not clear is how long the overshoot will last, and how high the temperature increases will go. At present, the outlook is not encouraging. Given the state of climate change and its impacts, Janos Pasztor drew attention to the potential need to consider supplementing the priority of emission reductions, carbon dioxide removal and adaptation measures with potential, temporary emergency measures, such as solar radiation modification.

Essential messages from our session include:

- From Elisabetta Venezia, Director of Applied Economic Research Lab, University of Bari Aldo Moro (Italy): Strategies and policies for improving the sustainability and resilience of transport mobility governance have been discussed through a proposed framework based on the theory of nudges. It serves as a reference for policymakers to define medium- and long-term strategies and policies for improving the sustainability and resilience of transport mobility governance. The "nudge theory" advances in economics, evolutionary psychology, and cognitive science to propose policies based not on bans and impositions but on positive reinforcement and indirect suggestions and incentives as ways to shape the behavior and decision-making of groups or individuals. Nudges are intended to persuade people to make better judgments and engage in desirable practices while preserving their autonomy.

- From Dr Abdullah Belhaif Al Nuaimi Former Minister of Climate Change and Environment (UAE), Visiting Lecturer: Eight years after the Paris agreement, the efforts and investments made to reduce human activities that affect the climate and produce pollution and greenhouse gases that heat up the atmosphere have not resulted in significant improvement. Is it not time to revisit the science and the models that form the basis of the Paris agreement, where the warming of the atmosphere occurs? The current pledges made by the countries under the agreement are not enough to limit the global temperature rise to

well below 2°C, let alone 1.5°C. According to the United Nations, the world needs to cut emissions by 45% by 2030 and reach net zero by 2050 to achieve the 1.5°C goal. The agreement sets a goal of mobilizing US$100 billion per year from public and private sources for climate finance. This amount may not be enough to help the developing countries to cope with the damages and future consequences of climate change.

- From Flavio Jorge, President Electromagnetic Envt & Interference, Commission E, International Union of Radio Science Portugal: Spaceborne Earth observation (EO) is our environmental phenomena sensing infrastructure, taking the pulse of our planet, and providing global and systematic environmental-representative data measurement. Such data are organized and stored in climate-related information for the scientific community to generate a solid climate-change scientific understanding and knowledge, essential in climate-smart decision making. The sustainability of this climatic governance model may be continuous monitored for the further adjustment of the trajectory of such governance. There are many elements to consider in this governance, including the regulatory plane of the satellite orbits and the radio spectrum resources used by EO missions, which are both regulated internationally by the International Telecommunication Union (ITU), the United Nations specialized agency for Information and Communication Technologies (ICT), which EO is an example of. These regulations are reviewed every three to four years by the World Radiocommunication Conferences (WRC), with the next one taking place this year in Dubai, at the same time and place as COP28.

- From Jacob Ngumbah, Deputy Director & Communications Coordinator at Nevis Disaster Management Dept, St Kitts & Nevis. In the fast-changing world of today, the topic of climate change has become a pressing concern for governments, organizations, communities and individuals alike. As we struggle with the consequences of our actions on the environment, it is imperative to explore pioneering approaches that can effectively tackle this global crisis. The harnessing of creatives and marketing as a pillar of climate change governance is an inevitable.

- From Aura Bustillo, Civil Engineering – Master in Environmental and Natural Resources Economics, PhD candidate Instituto Superior Tecnico - Universidade de Lisboa (Colombia): Engineers and technicians are essential catalysts for securing the future of urban areas in the face of climate change, offering expert guidance for sustainable growth. Urbanization trends, housing 55% of the global population (projected to reach 68% by 2050), heighten climate risks, necessitating their involvement in governance and spatial planning. Cities play a central role in global climate mitigation efforts, where engineers actively advocate sustainable growth and emission reduction. Our analysis of climate readiness reveals that engineers and technicians contribute significantly to effective urban planning, emphasizing multilevel climate governance.

- From Weber (Neves) Amaral, Professor at University of Sao Paulo ESALQ, entrepreneur and investor (Brazil): As a process of constructing sound governance on climate change, asking proper questions about societal needs from different scales, needs and impacts, from local to global issues, are essential steps to design robust frameworks to address these impacts and potential solutions. The concept of nature based solutions (NbS) is one of these frameworks that addresses these complex issues and interactions, and makes the necessary links of societal needs, biodiversity, climate and livelihoods. Examples of the

application of the NbS concept in regenerative agriculture practices are presented. These cases could be used to monitor progress and impacts in key indicators: a) reduction of GHGs, b) use of fossil-based fertilizers, c) use and conservation of water, while producing food, fiber and proteins in a sustainable and resilient manner.

- Develop robust governance frameworks without predetermined outcomes in relation to use or no use – irrespective of whether one is for, against or not sure about SRM.
- Develop Governance of research – whether to research and if yes how, are key immediate governance priorities.
- Build undeniable climate scientific intelligence, with strong political courage to act upon the evidence and to engage everyone in this everyone's fight for survival.
- Enhance collaboration with governmental bodies in climate-resilient practices and community engagement, and engage the climate and hydrometeorological value chain
- Develop a robust process of governance on climate change, and listen to the stakeholders, build bridges and establish dialogue with policy and decision makers
- The research on the use of nudges suggests that it is possible to argue for a more holistic framework to facilitate both resilience and the pursuit of SDGs

3.1.172 Collaboration outcomes

Creative and Marketing pillar of Climate Change governance requires the collaboration of various sectors and disciplines, of which creatives and marketing play a vital role in it. They can effectively promote sustainable behaviors, raise awareness, , and influence policy decisions. To ensure accurate messaging, it is recommended to collaborate with scientists, policymakers, and related stakeholders in the formation of creative messages with appropriate communications channels to suit the target audience group.

Also, there is the need to highlight scientific research on climate change impacts, conveying policy recommendations that align with sustainability goals, and amplifying the voices of activists advocating for climate action are essential. Mores so, to utilize storytelling techniques engage audiences emotionally, such as sharing personal stories from those affected by climate change and producing creative target audience-focused narratives that illustrate positive outcomes from sustainable actions. Therefore, Creatives and Marketing is an essential pillar in Climate Change Governance to drive positive change towards a sustainable future.

3.1.173 Building inclusion and equity

10 panellists with 5 women, 5 men - 10 countries from all regions of the world

Session 39: Sustainable Material Innovation: Harnessing the Potential of Biochar and Epoxy Resin

Session Convenor
Iveena Mukherjee

Position
High School Student

Organisation
Charter School of Wilmington

Country
United States

3.1.174 Abstract

Introduction and aims

A greater focus on conservation efforts across numerous industries has led to an uptick in demand for sustainable materials. In recent years, wildfires have also become more common, with over 1.5 million acres of land scorched in the United States alone, leaving behind charred wood that harms surrounding ecosystems. To repurpose this organic waste material, biochar, or pyrolyzed biomass, can be created. The benefits of this organic material include inputs easily found in nature (i.e. pine wood), high biodegradability, and high relative strength due to a carbon-heavy makeup. Additionally, the pyrolysis process of wood and other factors is readily available, and the kiln and other machines can in fact be powered by biofuel, a byproduct of pyrolysis, creating a net-zero carbon emission process.

When biochar was combined with epoxy resin, it was hypothesized that this composite would create a stronger, more environmentally-favourable material. In this session, participants will be exposed to the simulation techniques and biomechanics behind this material, along with the expansion of the impacts of this research as they pertain to the UN Sustainable Development Goal #11 of creating sustainable communities and cities.

Abstract

In this study, the finite element analysis software (ABAQUS) was used with the standard explicit model setting. In this method's preprocessing, for each of the configurations, a 3-dimensional, deformable, solid extrusion part was created in the parts tab of ABAQUS, with a side length of 40 units throughout. For the cube with spherical corners, the embedded region constraint was used, and half of a semi-circle dome was inserted into the cube, with a radius of 20 units. For the cube with the triangular prism corners, a cell partition was created by connecting the three auto-created vertices from the centre of each edge. Finally, for the cube with a spherical mass inside, the embedded region constraint was used, and a sphere of radius 20 units was placed inside the cube.

Whilst the structure's construction is different for each type of biochar configuration, the assigning of biochar and epoxy resin is similar. These sections could be assigned two characters, the biochar or epoxy resin. These materials were created in the materials library to simulate the specific mechanical properties of pyrolyzed biochar and epoxy resin through the Young's Modulus, and the Poisson's Ratio values found through extensive literature review.

To assign the different characters to the sections, the total amount of biochar-epoxy resin ratio was considered. For the cube configurations with differing corners (spherical and cube), there were four standard settings. In the first there were two alternate corners of biochar; in the second there were double alternate corners of biochar (four total), and finally, in the third, there were all eight corners of biochar, to observe the effect of maximum biochar character. As a control, a setting with epoxy resin for all corners was considered.

For each RVE, the boundary constant stayed the same and was applied to every edge and partition edge. The boundary condition was applied in all directions to prevent the RVE from moving out of the frame of reference as load was applied. Whilst applying load, there were six types applied, differing in amount and applied axis. For both categories, 16, 32 and 64 pressure units were applied in total to determine if strain results directly from applied pressure. To determine the effects of the type of stress applied, stress was applied uniaxially, and then hydrostatically to investigate the effects of stress upon multiple axes.

Finally, in order to analyze certain sections, the model was meshed. As there were irregular attributes due to the partitions, meshing the part required first seeding the part instance and then selecting the "tet" feature with the hexagonal setting, in order to mesh every irregular part of the RVE. To gather data from the applied stress to individual nodes, a job for each variation in pressure, configuration, and biochar percentage was created. From here, these ranges were compared against other RVEs with similar properties, to observe the impact of a single variable on the likelihood of the material to reach a permanent plastic deformation state.

Expected outcomes

First, the relationship between increased load amount and the reaction to the pressure is proportional, meaning biochar-epoxy resin composites behave in a predictable fashion under higher stresses. Secondly, as measured through lower von Mises percentages, the configuration of 4 assignable biochar sections lends itself well to lower maximum von Mises percentages, while the configuration of 8 assignable biochar sections lends itself well to lower minimum von Mises percentages, as evidenced by the pinewood RVE results for 16 MPa of applied pressure.

Additionally, the location of biochar closer to boundary conditions creates higher von Mises concentrations, however, this can be avoided through the application of hydrostatic (instead of uniaxial) stress, as this spreads the pressure along numerous axes leading to a better dispersion of force, allowing less elastic deformation. Furthermore, as seen by the smallest von Mises percentage of 1.375 and the highest von Mises percentage of 6.049 for 16 and 64 MPa of pressure respectively, the ranges of the probability of yield and fracture seem to be more varied for the softwood blend RVEs, due to the blend’s heterogeneous makeup, that incorporates an increasing number of uneven surfaces even within the RVE that contribute to more diverse percentages ranging from lower to higher values.

This contrasts with the reaction of the pure epoxy resin nodes, which act in opposite force pairs to the original biochar. Most importantly, these composites withstand the industry standard of 5000 psi and thus confirm the earlier hypothesis of a stronger and more sustainable material.

3.1.175 Key messages

Utilizing biochar and epoxy resin to create sustainable materials is a positive way to increase economic incentives for sustainability, as well as providing a cheaper alternative for sustainable materials. Integrating sustainable materials into building codes and policies can create a more resource-effective environment.

- Increased funding for sustainable material development
- Creating aspects of policy which pertain to developing communities
- Utilizing natural inputs for materials
- Creating quotas for percentages of building codes with sustainable materials
- Leveraging industry relationships for creating cheaper sustainable alternatives

3.1.176 Building inclusion and equity

My session was virtual, allowing interested audience members from all over watch my session. Additionally, at the beginning of my presentation, I acknowledged diverse viewpoints, and the different terms used throughout my research to make my research more accessible. Also, as I am on the younger side of attendees, I advertised my session to younger attendees to ensure a greater demographic received my research findings.

3.1.177 Key lessons learnt

I have learned policy can have many implications, both within science and outside. Through the interactions with my session attendees, I learned about their outlook on materials science, and the different feedstocks that can be used for sustainable materials.

Session 40: Advanced Tools for Analyzing Poverty, Climate and Environmental Changes

Session Convenor
Bjorn Hallerod

Position
Professor

Organisation
University of Gothenburg
Dept. of Sociology and Work Science

Country
Sweden

3.1.178 Abstract

Introduction and aims

The 21st Century has witnessed the rapid development and availability of harmonized international survey data (such as MICS, DHS, LSMS, EU-SILC and the Luxembourg Income Study) which have revolutionized the analysis of poverty, health and living conditions in low, middle and high-income countries. In addition, the ability to use and analyze visual satellite data has improved rapidly. While survey data gives information about how people live, satellite data provides information about available infrastructures, e.g., roads, electrification, building and urbanization and environmental challenges such as flooding, deforestation and agricultural water scarcity.

The aim of the session is to bring researchers together to discuss:

- How to improve survey measurement of child and family poverty, in order to produce globally comparable measures.

- How to use the advances in satellite-based information to analyze poverty, living conditions and environmental challenges.

- How to combine large scale survey data and satellite data to better understand causes and consequences of poverty and environmental challenges facing today’s societies.

This session will help to set a new standard for our ability to inform policy makers about how to balance and combine social and environmental policies in order to achieve long term and sustainable poverty alleviation. ;

This session has been organised by the University of Gothenburg and the Bristol Poverty Institute (University of Bristol) in collaboration with UNICEF.

Abstract

In the session, we bring together researchers engaged in novel approaches to develop measures, monitoring, and understanding for both the causes and the consequences of poverty. The session will consist of six presentations and time for questions and answers chaired by Delamónica, a member of the Data and Analytics team in UNICEF.

Despite many decades of progress, hundreds of millions of people still live in extreme poverty. Consequences of the COVID-19 pandemic, economic and political turmoil, armed conflicts, and environmental challenges do not only threaten to halt recent improvements but reverse many of the gains in poverty reduction. This will be disastrous for millions of women, men and children and also drive mass migration, putting additional pressure on political systems and possibly also affecting the ongoing deterioration of the global environment.

The UN and the governments of the world agreed to eradicate poverty during the 21st Century but they currently have no suitable, valid, reliable and comparable global poverty measure with which to monitor progress towards this goal. In their presentation, Gordon, Mack, Najera and Nandy will outline their work on this issue, showing successful examples and pointing the way forward towards globally comparable consensual survey-based measurement of poverty. Nazari will describe both the process and the results of estimating child poverty using consensual measurement in Iran.

Understanding the impact of environmental conditions is of central importance because of ongoing climate changes, increasing land use and decreasing biodiversity. Bates, Neal, Sampson, Smith, and Wing will present their work on the consequences and costs of flooding based on satellite data and precise information on the geographical distribution of populations. The work gives us more precise information of the costs of flooding and provides information on how to take action to minimize future risks for people living in areas exposed to flooding and limiting the economic costs related to flooding.

Similarly, Gordon, Owoo, and Zhang have combined geocoded extreme weather-related disaster data with social survey microdata to understand and measure multidimensional vulnerability to climate change in Ghana, Kenya and South Africa, using indicators of a greater risk of harm based upon robust criteria and scientific evidence. The analyses pinpoints and profiles local areas exposed to weather-related disasters and whose communities are especially vulnerable to the impacts from such events.

Ekbrand, Halleröd, and Zhang use detailed satellite data from a large number of countries to estimate deforestation between 2000 and 2020 and combine these data with survey data on poverty. The preliminary analyses exhibit large geographical heterogeneities between deforestation and poverty, which points towards the need for more in-depth studies that include structural socio-economic conditions such as the alternative land use once an area is deforested, trade, industry, and political conditions.

Daoud will present innovative research combining deep-learning, satellite technologies and survey data on human development, recreating historical and geographical human-

development trajectories using satellite images from 1984 to 2022. These data measure poverty with unprecedented temporal and spatial granularity and enable us to start examining causality with greater precision.

Expected outcomes

All presentations demonstrate how to significantly enhance the use of available data to better understand poverty and living conditions at a global scale and in a comparable manner. Combining improved measurement of poverty with environmental data on flooding, deforesting, erosion of farmland through drought and other climate related changes will give us a deeper understanding of the challenges we are facing to eradicate poverty and improve peoples’ lives. A buildup of complex data that spans longer time periods will further enhance our ability to move from descriptions and correlations to causation. An outcome of this session will be an advanced analysis of poverty, flooding and deforestation, the latter being an important cause of flooding.

Research on poverty is at a transformative stage in providing policy makers with the high-quality knowledge they require to improve and monitor anti-poverty policies. It is particularly important to know who are poor, what are the consequences of poverty and what are the causes. However, it is also increasingly urgent to provide knowledge about the relationship, both short- and long-term, between environmental challenges and poverty. We need to better understand consequences and causes and also provide useful knowledge about how to mitigate consequences of irreversible environmental changes by reducing vulnerability and increasing the population’s resilience. Linking poverty and environmental change to the global economic and political system also illustrates the fact that what we are facing is a global challenge with a diverse local face.

3.1.179 Key messages

In 2015, the governments of all countries agreed to attempt to eradicate child and adult poverty and reduce inequality during the 21st Century. If they are successful, this will represent one of humanity's greatest achievements – arguably its greatest achievement. In order to eradicate poverty, policy makers will need both political will and adequate resources but they will also need high quality information about the extent and nature of poverty in order to develop effective and efficiently anti-poverty policies. Good anti-poverty policy requires good measurement to help target resources where they are most needed and to monitor progress as well as to identify those most vulnerable to the effects of climate and environmental changes. It is unlikely that poverty will be eradicated if it cannot be measured.

There are currently no poverty measures which can be used in all countries (Low, Middle & High Income). Current poverty measures are unreliable in most countries. New deprivation measures are needed to complement and supplement current Unmet Basic Needs indicators.

Improving the collection of survey data on poverty that are theoretically consistent, empirically robust, comparable over time and among countries, and transparent is key for monitoring poverty on a global scale and for the ability to formulate sound policy advice. The Consensual Approach, discussed in the two first presentations, offers a method that has been tried and tested in over 50 countries and evaluated and approved by national and international statistical authorities.

Survey data such as MICS, DHS and LSMS are of fundamental importance for monitoring and analysing poverty and incorporating a short Consensual Approach questions module in these surveys, and other similar surveys, would significantly enhance our ability to monitor poverty on a global scale. What is more, geocoded social surveys are of fundamental importance for more complex analyses that incorporates data on climate change, environmental hazards to identify those most vulnerable to natural disasters and develop better mitigating and protective policies.

The three following presentations showed how satellite data on flooding, deforestation and natural disasters affect poor and non-poor people differently because there are large differences in risk exposure and coping abilities. Rapid advances have been made in modelling methods that can predict future exposure to climate and environmental changes at a global level. The presentations clearly underlined the complexity of development. The massive deforestation in parts of Africa the past 20 years can be linked to both decreasing and increasing poverty. The impact and costs of flooding is increasing dramatically but so far many African societies have taken effective protective measures and built homes and infrastructure in safer locations.

However, an important driver of increased damage caused by flooding is the combined effect of increasing urban populations and that the safest locations are already occupied. Again, the poor are most exposed, often being forced to settle in areas with little protection from flooding. The global flood risk presentation showed the significant importance of well-informed planning of settlements and infrastructures.

Because there is substantial heterogeneity in consequence of climate and environmental changes for different population groups, there is a need for more sophisticated analyses that can distinguish between different outcomes and provide sound explanations to why they occur. Incorporating data on global economy, industrial structures, trade, ownership, political system and quality of government are of central importance for further analyses and for evidence-based policy advice.

The final presentation took the issue back to the measurement of poverty based on satellite and survey data and artificial intelligence (AI) methods to make small geographic estimates of changes in poverty over time. Important here is that these AI-based estimations need input information from high quality survey data on poverty. Hence, if geocoded data based on the Consensual Approach questions are introduced on a large scale these AI models would continue to improve.

The development of AI-based estimations is also a key for further improve analyses of how climate and environmental changes affect people and especially poor and vulnerable populations.

- Incorporating the Consensual Approach for measuring poverty in large scales surveys such as MICS, DHS and LSMS. Partners are UNICEF, US-AID and the World Bank.
- Making sure that survey data on poverty are geo-coded and made available. Partners UNICEF.
- Integrate policies on poverty with policies related to climate and environmental changes in order to form long term sustainable policies. All political organizations.

3.1.180 Collaboration outcomes

The sheer opportunity to organize a session at UNGA78 meant that we were able to bring together researchers from the Natural and Social Sciences from Africa, Asia, the Americas and Europe that previously did not collaborate. It also provided a platform for closer interaction between researchers and, first and foremost, UNICEF. In the long run, we hope that this will strengthen the abilities to simultaneously reach several SDG goals, in fact, we see a relevance for SDGs 1, 2, 3, 10 as well as 12,13,14,15 as they all tap into areas related to this UNGA78 session.

We further hope that our session facilitates further research developments and cooperation. As we focused on advanced tools for analysing poverty AND environmental conditions, our aim is to make sure that these tools are used by the wider research community and relevant policy organizations, including the UN. From this perspective, we view the session as an important dissemination opportunity to discuss the latest scientific advances with the global policy making community. We need to further strengthen the international cooperation amongst climate, environmental and social researchers, NGOs, and governmental organization. We sincerely hope that our session has helped with this important task.

3.1.181 Building inclusion and equity

The research groups represented incorporated researchers from two African countries, two European countries and one Asian, one Latin American and one North American country. We had slightly more male speakers, which basically reflects the relevant research groups. We want to underline that we are, to further proceed in our research endeavour, in need of further strengthening international collaboration and that the UNGA78 provides an excellent platform to do just that.

3.1.182 Key lessons learnt

That the opportunity to participate turned out to be a vehicle for strengthening international research collaboration.

That it is quite time consuming to organize a session, but also that it will be much easier next time, having learnt the procedure.

The close cooperation with New York based organization, in our case UNICEF, was invaluable.

Session 41:] Innovation and sustainability in agriculture- do we need a new discourse?

Session Convenor
Bernd Halling

Position
Advisor Policy and Outreach

Organisation
Re-Imagine Europa

Country
Belgium

3.1.183 Abstract

Food and food security are central to all societies. The relationship between food security and socio-political stability has been well documented and has become painstakingly clear since the Russian aggression with its impact on soaring food prices. If we add to this the effects of climate change, we can understand why this is going to be one of the most important challenges of our time .

Unfortunately, whilst the stakes get higher, the debate around food, agriculture, sustainability and innovation seems to get evermore polarized, which prevents the creation of effective solutions to the intricate issues we are currently facing.

The shifting global context surrounding food systems, innovation and new technologies underline the need for a thorough rethinking of the operation of our global agricultural systemsthe development of resilience to both climate change and geopolitical shocks ; and the incorporation of innovation as tool for improvements in such settings.

The panel will discuss the need to develop new narratives towards the role of innovation and new technologies in achieving sustainability in food production, how to counter the increasing polarization of the debate and how to ensure that voices from all world regions are heard. It will also examine the role new approaches such as agroecology can play to advance towards a new consensus in ensuring sustainable food production in times of volatile geopolitics under the Damocles-sword of climate change.

<u>Chair</u>:

Erika Staël von Holstein, CEO Re-Imagine Europa

<u>Speakers: ;</u>

Urs Niggli, President Institute of Agroecology

Vincent Martin, ; Director Office of Innovation FAO

Mildred Nabah Pita, ; Head Public Affairs Science Sustainability Africa, Bayer AG

 Petronella Chaminuka , Impact and Partnerships Division, Agriculture Research Council of South Africa

 V. Ravichandran, Farmer from India, Director of the Board of the Global Farmer Network

3.1.184 Key messages

- Investigate narratives on agriculture, innovation and sustainability on the global level, in context with advancing SDG 2 and the "Summit of the Future" in 2024

- Enter into a dialogue process to build a middle ground on innovation and sustainability as well as reduce polarization. Ensure diversity and inclusiveness.

- Set up a dedicated research program on the role of innovation/ new technologies in agriculture and their impact of society, including social innovation and a particular focus on the Global South.

- Follow-up discussion/ event at e.g., COP 28, Spring 2024 to prepare input for " UN Summit of the Future", initiative at the Future Summit as stakeholder alliance and including the important role of narratives.

- - Investigate narratives on agriculture, innovation and sustainability on the global level, in context with advancing SDG 2 and the "Summit of the Future" in 2024
- - Enter into a dialogue process to build a middle ground on innovation and sustainability as well as reduce polarization. Ensure diversity and inclusiveness.
- - Set up a dedicated research program on the role of innovation/ new technologies in agriculture and their impact of society, including social innovation and a particular focus on the Global South.
- - Follow-up discussion/ event at e.g., COP 28, Spring 2024 to prepare input for " UN Summit of the Future", initiative at the Future Summit as stakeholder alliance and including the important role of

3.1.185 Collaboration outcomes

None.

3.1.186 Building inclusion and equity

3 men, 3 women

2 speakers from Africa, 1 from India

3.1.187 Key lessons learnt

Good speakers and exchange.

Zoom system did not give the opportunity to highlight speakers

Too few participants in session. Only 23 that were non-RIE and non-speaker.

Session 42: The role of science and technology in developing clean energy for emerging and developing economies

Session Convenor
Mourad EL Yaalaoui

Position
Chairman of the Board

Organisation
Public Ventures

Country
France

3.1.188 Abstract

In order to enhance their socio-economic development and meet the growing demand of developed economies, numerous emerging and developing nations must focus on producing competitive clean energy on a large scale.

To achieve the United Nations Sustainable Development Goals (SDGs) and expedite the global transition to Net Zero emissions, it is crucial to engage in multilateral discussions. By collaboratively developing effective policies and regulations that facilitate, rather than hinder, the clean energy transition, particularly in emerging and developing economies, we can ensure a just and equitable approach.

The exercise of extraterritorial jurisdiction can be contentious due to potential conflicts with international law, and it often excludes key stakeholders from participating in the design of fair and balanced regulations. Unilateral policy development in the energy sector can result in significant unintended consequences, especially for emerging and developing economies.

While there have been several announcements about clean energy projects, only a small proportion have progressed to the Final Investment Decision (FID) stage. This is primarily due tothe lack of international clean energy offtake agreements and insufficient or suboptimal engagement with multilateral organizations.

To expedite the clean energy transition and make it more inclusive, it is essential to focus research and development efforts, industrial project finance, and public support mechanisms on the areas that have the greatest impact. In the context of global climate change, advancements in science and technology must ensure an adequate supply of drinkable water for people and livestock. For example, novel seawater electrolysis and desalination technologies should be developed and commercialized to address the significant challenge of water scarcity.

In both emerging and developing economies, localization efforts to promote in-country value creation are pivotal for fostering inclusivity and maximizing the adoption of clean energy situtions.

Science plays a crucial role in driving research and development of clean energy technologies that are suitable for the unique challenges and contexts of developing countries. Scientists and engineers strive to improve the efficiency, affordability, and scalability of renewable energy sources such as solar, wind, hydro, and geothermal power. Additionally, science provides evidence-based insights and analysis to support the formulation of effective energy policies and regulatory frameworks. It helps identify barriers, assess the potential impacts of clean energy deployment, and design appropriate incentives and regulations.

Therefore, the objective of this event is to engage a wide range of stakeholders, including industry representatives, research and development organizations, policymakers, private investors, and multilateral organizations. Through this collaborative effort, we aim to develop an optimal framework of policies, financing mechanisms, and technological advancements that will enable an inclusive and impactful clean energy transition, aligning with the UN SDGs and the goal of reaching Net Zero emissions.

3.1.189 Key messages

- Clean water scarcity can hamper the clean energy transformation: Technology development needed for net zero water desalination plants (powered by sustainable renewable energy sources) to scale up production volumes of clean molecules (hydrogen, ammonia and methanol) whilst complying with tightening international regulatory requirements regarding GHG emissions (certifications, guarantees of origin etc).

- Negative impact of brine on biodiversity: Technology development needed for brine management to mitigate the negative effect of brine on shallow meadows exposed to reverse osmosis brine discharge.

- Current electrolysis technology can only operate on clean water: Technology development needed for direct seawater electrolysis to conserve scarce clean water supplies needed for people and livestock.

- Simplify access to public financing, incentivize multilateral financial organizations, philantropists and private investors to fund clean energy projects especially in emerging & developing economies
- Harmonized government policies and regulations (certifications, guarantees of origin) to derisk clean energy projects especially in emerging and developing economies
- Public funding commitment to secure clean energy offtake to derisk clean energy pilot projects especially in emerging and developing economies
- Develop policies that promote clean energy talent hubs to develop local talent in emerging and developing countries (long lead time!)
- Supply dedicated funding for net zero water desalination plants, brine management and direct seawater electrolysis

- Provide public funding to VC funds founded and managed by underserved communities without any private funding matching requirements

3.1.190 Collaboration outcomes

- Develop research partnerships in seawater direct electrolysis, brine management and net zero desalination technologies

3.1.191 Building inclusion and equity

- Session open to all participants

- The session was dedicated to how boosting clean energy production in emerging and developing economies can boost the global clean energy transformation around the world. This contributes to making the global clean energy transformation more inclusive, benefitting emerging and developing economies as well as developed economies.

- Agenda covered how to promote the role of underserved communities in developing clean energy (technology development, VC funding and new cleantech ventures)

3.1.192 Key lessons learnt

Local talent and clean water are both major challenges that are not sufficiently addressed and therefore posing a serious threat for the clean energy transformation.

Session 43: Brazil: Agriculture and bioinputs

Session Convenor
Julia Stuchi

Position
Coordinator of the Network Group of International Relationship in Brazilian Agriculture Corporation (Embrapa)

Organisation
Brazilian Agriculture Corporation (Embrapa Solos)

Country
Brazil

3.1.193 Abstract

Moderator: Ana Euler (Embrapa);

Lecture 1. Regional solutions in soil fertility management. Eder Martins. Brazilian Agricultural Research Corporation.

Lecture 2. National Bioinputs Program - Alessandro Cruvinel Fidelis (Director of Innovation Support for Agriculture, DIAGRO/SDI/ MAPA)

Convenor: Alineaurea Florentino Silva (Embrapa) Julia Stuchi (Embrapa)

Introduction and aims

Agriculture is increasingly guided by the use of inputs necessary for production, but which have a minimum of negative impacts on the environment. Simultaneously, these regional solutions reduce carbon and water footprints and have the potential to sequester carbon in agricultural soils, increasing soil quality and health. Alternatives such as bioinputs can positively contribute to sustainable production over time. The main objective of this assignment is to dialogue and move the research and development network that works around agricultural production with the adoption of alternative inputs.

Abstract

Agriculture is one of the most necessary activities for the survival of the planet and at the same time it can promote environmental problems of great proportions. Agriculture is increasingly guided by the use of inputs necessary for production, but which have a minimum of negative impacts on the environment. Simultaneously, these regional solutions reduce carbon and water footprints and have the potential to sequester carbon in agricultural soils, increasing soil quality and health. Alternatives such as bioinputs can positively contribute to sustainable production over time. The main objective of this assignment is to dialogue and move the research and development network that works around agricultural production with the adoption of alternative inputs. This session is expected to expand access to knowledge

about alternative inputs for sustainable agricultural production and mechanisms for implementing these alternatives.

Expected outcomes

This session is expected to expand access to knowledge about alternative inputs for sustainable agricultural production and mechanisms for implementing these alternatives.

3.1.194 Key messages

The purpose of these lectures is to present how Brazil has pursued its strategy of changing its input matrix towards more sustainable agriculture. In this context, bioinputs are emerging, including remineralizers, which play a fundamental role in contributing to improvements in production systems, not only from an economic point of view, but also from an environmental and social point of view.

In the first lecture Mr. Cruvinel brought us an overview of how Brazil is structuring its public policies and actions to support and promote the innovation agenda with a focus on bioinputs. Also brought some examples of technologies that are on the market and were generated within Embrapa laboratories, such as Biotrop and Biomaphos. Spoke about important aspects of the regulatory issue regarding on-farm production of bioinputs, necessary measures to guarantee security. Concluded his speech by mentioning the importance of digital transformation and connectivity to strengthen the innovation ecosystem in the country.

In the second lecture, Mr. Martins presented us the concept of Agriculture with Regenerative Practices, the risks of pesticides and erosion impacts; importance of cover crops, livestock integration and no tillage systems. He also mentioned the importance of Biological Fixation of Nitrogen on the reduction of GHG emissions.Talked about the regional agrominerals research and development going on as one of the alternatives to agriculture with regenerative practices, in accordance with the National Fertilizer Plan, which foresees a 50% reduction in imported nutrient demands by 2050 with the support of the development of emerging production chains associated with soil remineralizers, bioinputs and nanotechnology. As Mr. Cruvinel, Mr. Martins also mentioned about the Regulatory Aspects, important issue to be observed on Bioinputs Market. He concluded addressing The challenges of Regenerative Agriculture in Brazil. As well, emphasized that Further research to quantify the effects of these practices on soil health and food quality is important for adoption advances and qualified markets. Brazil aim to contribute with the National Fertilizer Plan by increasing the production and consumption of soil remineralizers for managing soil fertility in agriculture with regenerative practices in alignment with the evolution of regulatory and legal aspects, as well as based on technical scientific evidence that ensures the safety and effectiveness of the applicability of these materials in agriculture.

Brazil has excelled in the use of sustainable practices, including the use of bio-inputs. The Ministry of Agriculture and Livestock coordinates the National Bioinputs Programme, which is a public policy that has been bringing great results to the agricultural sector. This policy has six strategic objectives: 1) regulatory development; 2) investment in Science, Technology & Innovation; 3) financing for producers; 4) training; 5) support for new biofactories; 6)

stimulating new State Bioinput Programmes. As some recommendations with practical implications for policy and decision maker we consider in question 11:

- 72 million reais in public calls for research into new products;
- Development of distance learning training with more than 3 thousand trained technicians;
- Creation of ten State Bioinput Programmes, demonstrating that public policy has arrived in the states;
- The structuring of the Bioinput Innovation Network, where producers, technicians, startups, private companies, investors and other players can connect to increase the strength of innovation in the sec
- Growth in this market, which is averaging 50 per cent a year;
- The reduction in production costs for farmers who already have examples of reductions of up to 80% in fertilizers and pesticides, as in the case of producers from GAAS - Grupo Associado de Agricultura
- Enlarge the integrated systems developed in Brazil, such as crop-livestock integration and no-tillage systems, which are considered reference in sustainable systems in tropical conditions;

3.1.195 Collaboration outcomes

Our participation in the Science Summit aimed to strengthen the approach from the National Bioinputs Programme and National Fertilizer Plan in this Roadmap. The purpose is to contribute with the understanding and the capacitor process to engage different stakeholders in its interactive network, among the different states in a continental country as Brazil, contributing also to achieve SDG 2 Zero Hunger and SDG 17 Partnerships to contribute to achieve the Agenda 2030. Also, the discussions aimed to contribute to achieve the followings SDGs: GOAL 12 Responsible Consumption and Production; GOAL 15 Life on Land; GOAL 6 Clean Water and Sanitation; GOAL 9 Industry Innovation and Infrastructure.

3.1.196 Building inclusion and equity

Our session was inclusive, composed with 219 participantes representing differentes institutions from different countries, in a multidisciplinary perspective.

The companies involved which identified themselves with their positions were:

Helisul - Flght nurse

Sabarmati University - Associate Professor

Ruforum

Asian Institute of Technology - student

Eltesmanians Int For Sustainable Development Co. Ltd - President and CEO

Institute of Applied Nuclear Physics - Research

CSIR-CSMCRI - Technical Officer

University of Thessaly - Professor

University of Peradeniya - lecturer

Juta Mewangi Enterprise (M) Sdn Bhd - Founder/Director

HEARTFULNESS RESEARCH CENTRE, SMSF, UNIVERSITY OF HYDERABAD

Cortus Srl - Senior Design Engineer

EliteSDGs Business Consulting - CEO and Teacher

Kibabii University

University Hospital Vall D' Hebron Barcelona Spain - Senior Project Manager

Cal Poly Pomona - Professor

Embrapa - Director, Researchers, Analists

Shri Gopal Metal Works - Chief Supervisor

Excel-Foods DIVISION - Scientist and Head-Corporate R&D Center and Strat.

University of Illinois Urbana-Champaign - Professor and Special Assistant to the Chancellor for Science

FLEMING - Neuroscience Architect

TNC Brazil - Director of Science

University of Karachi - research fellow

King Faisal University - Assistant Professor, Department of Mathematics

OGN Energy Magazine - Editor

MAPA (Brazil) - General Coordinator

Traces.Dreams - CEO

Loc Nguyen's Academic Network - Founder

Agricultural Research Council - Researcher

BHU - Assistant Professor

Kingston University - Doctoral Researcher

IMiBio - Scientific Coordinator

Universidade Federal de Goiás

Wooro - Consultant

Deakin University - PhD candidate

Executive Director | Policy Advisor

3.1.197 Key lessons learnt

As a challenge, we hope that the National Bioinputs Programme could be increasingly used globally and that Brazil can contribute as an example of regenerative, inclusive, decarbonising and sustainable agriculture with local and regional solutions.

Also, the challenges for agriculture with regenerative practices: public policies to accelerate the adoption of regenerative technologies through rural extension and agricultural credit; further research to quantify the effects of these practices on soil health and food quality; development of production chains for local and regional inputs with investment in regional industries and services; qualifying regenerative agricultural production for the consumer market.

Session 44: Health and Biodiversity

Session Convenor
Alineaurea Silva

Position
Scientific Researcher, Embrapa, Member of the Steering Committee of the ODS Embrapa Network, Responsible for organizing Embrapa's participation in SS-UNGA 78 (2023)

Organisation
Brazilian Agricultural Research Corporation (Embrapa)

Country
Brazil

3.1.198 Abstract

Lecture 1. Climate changes. Osvaldo Luiz Leal de Moraes - Diretor do Departamento para o Clima e Sustentabilidade (Department for Climate and Sustainability) (DECLS - MCTI)

Lecture 2. Eco-innovation in the context of Health and Biodiversity: a reflection focused on praxis, Glauco de Kruse Villas Bôas (Coordenador do Centro de Inovação em Biodiversidade e Saúde de Farmanguinhos/Fiocruz)

Lecture 3. One health: how Brazil is inserting itself and acting. Janice Reis Ciacci Zanella (Embrapa Swine & Poultry Researcher), Visiting Scientist at USDA and Iowa State University in the USA Convenor: Alineaurea Florentino Silva (Embrapa);Ana Maria Costa (Embrapa) Health and Biodiversity

Key words one health, eco innovation, climate change, environmental care

Introduction and aims

In times of accelerated transformations that the post-globalized world is going through, a state of emergency exerts pressure for the elaboration of scientific policies with a focus on biodiversity as a central element. The objective of this session is to dialogue about health and biodiversity, embracing the human component as a dynamic point of policies and practices that can change behaviors and favor a more sustainable life.

Abstract

In times of accelerated transformations that the post-globalized world is going through, a state of emergency exerts pressure for the elaboration of scientific policies with a focus on biodiversity as a central element. Time is getting shorter and shorter to avoid or reduce threats to life resulting from climate change, through new modes of production and consumption, considering the new ecological paradigm. Therefore, it is urgent to recognize that for biodiversity conservation to meet the goals of sustainable development, related policies must

use socio-biodiversity concepts and present eco-productive models. The objective of this session is to dialogue about health and biodiversity, embracing the human component as a dynamic point of policies and practices that can change behaviors and favor a more sustainable life. The result to be achieved from the dialogue in this session is to observe and adopt new models that allow both the generation of jobs and education, the strengthening of the local economy and, mainly, the maintenance and regeneration of ecosystems.

Expected outcomes

The result to be achieved with this session's dialogue is to observe and adopt new models that allow both the generation of jobs and education, the strengthening of the local economy and, mainly, the health, maintenance and regeneration of ecosystems.

3.1.199 Key messages

Focused on the health of humans, animals, plants, and the environment, the various institutions participating in the session highlighted the need for networking to develop common solutions. Fiocruz, for example, since 2009, has coordinated the National Network System - RedesFito - focused on the innovation of biodiversity medicines. The networks articulate local Ecoproductive Arrangements and Production Systems in all different Brazilian biomes: Amazonia; Caatinga; Cerrado; Pantanal; Mata Atlantica and Pampa. To minimize operational costs through the adoption of new communication technologies, the Redes Fito network migrated from a vertical structure composed of Management Committees in each biome to a horizontal format composed of cores.

More collaborative and decentralized, this new organizational structure facilitates information sharing and resource management. RedesFito currently has around 5,800 registered people, of which 380 are involved in local voluntary work, coordinating local eco-productive arrangements. Another example is PREVIR - Virus Surveillance Network Project. The PREVIR MCTI Network has developed an App to support active virus surveillance activities in wild animals. The same has been used to record surveillance samples for coronavirus and avian influenza in animals, with data being synchronized with the SiBBR Platform. With increasing globalization and urbanization, zoonoses (diseases transmitted from animals to people) pose a great risk to public health and the economy.

PREVIR, the National Virus Surveillance Network in Wild Animals, is formed by several researchers from several national and international institutions, and aims to detect and analyze viruses with potential for emergence for people in different Brazilian regions. As another example of a corporate work tool, we have the Embrapa portfolio network. Embrapa’s portfolios are managerial support tools for the organization of projects into strategic themes.

The Animal Health Portfolio, for exemple, focuses on the diagnosis, control, prevention and/or eradication of animal disease agents through research, development and technology transfer in the Brazilian territory. One Health is the core of innovation challenges of this portfolio. About climate changes one of the conclusion is that additional research is needed to more fully understand the impacts of precipitation changes and water balance for the Amazon Watershed. Projections show increasing water deficit in almost all of Brazil, with the most significant changes in central and northeastern areas, through the mid to late century.

Also orchest in building risk scenarios. and in nowadays we are developing a system to classify the municipalities of Brazil that are on the climatic risk. These are some very important steps for for achieving the SDGs within the 2030 Shedulle.

Some Important links:

https://unfccc.int/process-and-meetings/the-paris-agreement

SISS-Geo - Wild Health Information System - FIOCRUZ's SISS-Geo
https://sissgeo.lncc.br/apresentacao.xhtml

PREVIR - Virus Surveillance Network Project https://sites.usp.br/previr/

Embrapa: https://www.embrapa.br/en/international

Ficruz: https://portal.fiocruz.br/

MCTI: https://www.gov.br/mcti/pt-br

- 1. Human-caused warming reached about 0.2°C per decade. This situation reminds us of the need to expand access to information about climate change, in vulnerable communities.
- 2. Strengthen the One Health working group at Embrapa and partners, with the objective of mapping the organizations that participated in the tripartite agreement for One Health in the world;
- 3. After the covid 19 pandemic, there is a need for a new organizational structure for innovation in medicines to protect biodiversity, with public policies and financing.

3.1.200 Collaboration outcomes

Unlike the year 2022, this year 2023 began the process of participation in the Science of Science Summit with the inclusion of invitations to other organizations that also have working networks on science for sustainable development, especially in One Health and biodiversity.

This makes it possible for broad dialogue and sharing of knowledge through various initiatives between Embrapa, ministries linked to the Brazilian federal government and Fiocruz with the company responsible for much of the development of Covid 19 vaccines.

On the other hand, several documents were included in the discussions of the speakers involved in the session and information and publications related to the topic were shared, which contributed again to the advancement of knowledge and also to meeting the needs of the 2030 agenda.

3.1.201 Building inclusion and equity

Considering a global event, we had the participation of several organizations from all over the planet, some of them duly registered on the session website, such as: Springer Nature, Penn

State, Finnish Environment Institute, Syke, Basecamp Research Limited, UK, University South-Eastern Norway, Faculty of Technology, Natural Sciences and Maritime Sciences, Traces.Dreams, MaNov BioteClinica, Makerere University, United Nations Environment Programme, University Federal de Pernambuco (Brasil), University of Lagos, Nigeria, Izmir University of Economics, Wageningen University, Embrapa, Kingston University, Petrobras Transporte AS, IMiBio, Embrapa, Wooro, Helisul, Sabarmati University, NASA GLOBE, Ruforum and Rainforest Connection.

We also had records of various types of positions of the people participating. This aspect revealed the interest of different social classes, considering those who reported, without those who had a hidden profile. Here are some of those who reported the positions they hold: President and CEO, Program Manager – Partners: Instituto Venturi, Research scientist, Technical Officer, Associate Partner, Researcher, PhD student, Founder/Director, Founder, Research Scholar, Senior Design Engineer, Researcher, Scientist and Head-Corporate R&D Center and Strat. Professor and Special Assistant to the Chancellor for Science and Policy, Teacher, Neuroscience Architect, Biologist, Director of Science, Scientific Researcher, Research coordinator-Epidemiologist, Editor, Executive Licensing Manager, Director, Latin America and the Caribbean, Penn State Global, Development manager, Biodiversity Partnerships Manager, Professor, CEO, Director Scientific Public Health, One Health Programme Officer, visiting Professor, Faculty member, Asst. Prof., Assistant professor in Landscape Architecture, Researcher, Doctoral Researcher, Profissional de Nível Técnico Pleno, Scientific Coordinator, Scientifc Researcher, Consultant, Flight nurse, Executive Director | Policy Advisor -private, Associate Professor, GISN Peru.

3.1.202 Key lessons learnt

The Science Summit taught us that it is possible to have a broad and inclusive debate taking into account different sectors, people, and organizations from different countries around the world around the 2030 Agenda.

The possibility of holding meetings and dialoguing with different professionals around the organization of the theme and also around the organization of logistics, the time of each event, feedback, and all possible expected results is something that brings certainty that every discussion is productive without prioritizing agendas that are not very significant at a global level.

It is also important to highlight that the vision of people and managers for the SDGs is increasingly broader and with this we have a certain ease of participation in different professional segments focused on scientific research so that they can contribute to achieving the goals of the Agenda 2030.

Session 45: Knowledge Construction and Adoption (Capacity Building)

Session Convenor
Ana Maria Costa

Position
Coordinator of the Strategic Relationship Group in SDG Network of Brazilian Agriculture Corporation (Embrapa)

Organisation
Brazilian Agricultural Research Corporation (Embrapa)

Country
Brazil

3.1.203 Abstract

Lecture 1. The construction of knowledge to promote Agroecology in the production of healthy foods, preservation of biomes and reduction of inequal - Regilane Fernandes da Silva (MDA); Iracema Ferreira de Moura (MDA)

Lecture 2. Towards knowledge structuring in territorial development programs – Paulo Eduardo de Melo (Director of Reforestation and Recovery of Degraded Areas, DEFLO/SDI/MAPA)

Moderator: Tatiana Sá (Embrapa Amazônia Oriental)

Knowledge construction and adoption

Key words: education, training, knowledge sharing, knowledge for sustainable development, empowerment of poor communities

Introduction and aims

Knowledge generation in Brazil is at a more mature stage, with research institutions over 50 years old, such as Embrapa. However, the large number of researches and publications do not always refer to the same intensity of adoption by communities that need it. For this reason, training and development involves ways of building knowledge, especially to solve problems in communities farther away from a continental country. The objective of this session is to present how the construction of knowledge can shelter research results and promote an adaptation process according to the needs of each of the adoption sites in a plural country.

Abstract

Brazil is a country of continental dimensions and with the most diverse ways of life and production possible. Knowledge generation in Brazil is at a more mature stage, with research institutions over 50 years old, such as Embrapa. However, the large number of researches and publications do not always refer to the same intensity of adoption by communities that need

it. For this reason, training and development involves ways of building knowledge, especially to solve problems in communities farther away from a continental country. The objective of this session is to present how the construction of knowledge can shelter research results and promote an adaptation process according to the needs of each of the adoption sites in a plural country. This session is expected to achieve a sharing of ways of adopting technological innovation based on the collective construction of knowledge from the plurality of ideas and socio-economic-environmental conditions.

Expected outcomes

This session is expected to achieve a sharing of ways of adopting technological innovation based on the collective construction of knowledge from the plurality of ideas and socio-economic-environmental conditions.

3.1.204 Key messages

Sustained rural development depends on committed technologies, infrastructure, and logistics to encompass the dimensions recommended in the SDGs, particularly those involving social and productive inclusion, waste reduction, and mitigation of the impacts of rural activities on the environment. To this end, coordinated actions integrating various government and society agents in favor of the agreed SDG goals are necessary. In this sense, the use and elaboration of public policies are fundamental to guarantee continued technological development and decision-making and persistent adoption of technologies in the productive environment.

The session highlighted public policies that favor rural development.

The Ministry of Agrarian Reform and Family Agriculture (MDA), a government organization whose mission is to propose and implement public policies aimed at agrarian reform and the promotion of sustainable development, presented programs to promote the strengthening of the rural segment of family farmers. Among the actions, the National Policy for Agroecology and Organic Production (PNAPO - 2012) stands out, encouraging agricultural production based on integrating and applying ecological concepts based on scientific research and the traditional knowledge of rural communities.

The program has been strengthening the construction of knowledge for family farming, stimulating the production of healthy foods, and contributing to environmental preservation and food and nutritional security. The program has been implemented in different Brazilian biomes with the support of other actions such as the National Public Policy for Technical Assistance and Rural Extension (PNATER, 2010), which distributed the National Program for Technical Assistance and Rural Extension in Family Farming and Agrarian Reform (PRONATER, 2010).

Through the MDA, the Brazilian government has been supporting the structuring of technical assistance networks for farmers, training in the use and dissemination of technologies, and promoting technological development, which has effectively contributed to progress in fulfilling the SDG agenda -2030.

The Ministry of Agriculture and Livestock (MAPA), which in turn has the mission of promoting the sustainable development of agricultural production chains, highlighted the

Nordeste+Sustentável program, coordinated by the Secretariat of Innovation, Sustainable Development, Irrigation and Cooperativism (MAPA, 2019). The program integrates actions and public policies to strengthen relevant production chains in territories that can respond to interventions rigorously in the medium term. A robust alliance of partners contributes with tools and actions to the program, focusing on the productive insertion of small to medium-sized establishments. The work is based on understanding the existing situation and developing joint and participatory strategies with the community to promote local sustained development based on the region's expertise and vocations. The results are notable, and the program is being replicated in other Brazilian areas (MAPA, 2023; Agronordeste, 2022; BIT AGRO, 2022)

In the field of technical-scientific development, the Brazilian Agricultural Research Corporation (Embrapa) is one of the leading research institutions in the country, responsible for generating information and technologies for the rural and agro-industrial environment. To accelerate the adoption of technologies that promote the achievement of the SDGs, Embrapa has been working on participatory research that has as its backdrop public policies that support family farming. In this type of knowledge construction, several actors in the supply chain are involved, who participate in identifying the problem and developing technology for its solution. As the research relies on the direct participation of specific individuals, they are more quickly broken down and disseminated in the region where they were worked on.

As an example of success, we highlight the research conducted by Rede Passitec - Technological development for the functional and medicinal use of plants from the Cerrado's biodiversity, which carried out technological development for all links in the supply chain of the genus Passiflora setacea, a fruit of Brazilian biodiversity, which until then was unknown by all links in the supply chain, is now present in markets in all Brazilian regions (COSTA et al, 2020; FAO, 2019, COSTA et al 2017).

Another example of success in the area of sustained use of biodiversity coordinated by Embrapa comes from the experiences of the BemDiverso project, which combines the efforts of researchers, teachers, extractives, and rural technical assistance, among others in the sustained use of biodiversity and preservation of the environment, which is supported by the United Nations Development Program (UNDP) and the Global Environment Facility (GEF).

In the Amazon biome, the Tipitamba Project stands out – Transforming landscapes and sharing knowledge in the Amazon, which comprises a wide set of linked projects that act as strategies for collective construction of knowledge with farmers. The work receives support from the United Nations Economic Commission for Latin America and the Caribbean (ECLAC). (KATO et al. 2020).

In the line of support for farmer empowerment, there are successful experiences obtained from Embrapa SEG projects: 06.11.01.001.00.00; 04.16.03.001.02.00, 44.16.03.001.02.00 which resulted in the formation of the Alto Rio Pardo Sociotechnical Network, an informal organization that brings together social organizations in the region and works on production and commercialization problems in the Rio Pardo de Minas region (CORREIA et al .2013).

The public policies implemented in the country over the years have guaranteed the success achieved by this and other Embrapa networks.

COMPLEMENTARY INFORMATION

AGRONORDESTE. Oportunidade, Inclusão e Sustentabilidade. Ministério da Agricultura, Pecuária e Abastecimento - Secretaria de Inovação, Desenvolvimento Sustentável e Irrigação (SDI).. Brasília – DF, 60p. 2022.

Bemdiverso. Projeto Bendiverso. https://bemdiverso.org.br/

BIT AGRO. Boletim Informativo Agronordeste. Sebrae.25p. 2022.

CORREIA, J.R.; BUSTAMANTE, P.G.; EMPERAIRE, L.; MITJA, D. Desafios da pesquisa participativa e restituição em Projeto de Pesquisa junto a Pequenos Agricultores. Estudo de caso: Projeto Rio Pardo, Embrapa/Brasil. Cahiers des Amériques Latines. 72-73, 2013. p.134.

COSTA, A.M.; WURLITZER, N. J.; MATTOS L.; CENCI S.A.; RINALDI, M.M.; FALEIRO. F. G.; ROSA, RCC. Geração tecnológica orientada à estruturação produtiva para uso sustentado das passifloras brasileiras. Documentos 356. Embrapa Cerrados, 2020. https://www.infoteca.cnptia.embrapa.br/infoteca/bitstream/doc/1124654/1/Doc-356-PRONTO.pdf

COSTA, AM, FALEIRO, FG, GONTIJO, G.M.; CABRAL, F.C.P.K.. Geração tecnológica integrada para uso sustentável da biodiversidade: maracujá pérola. In Prêmio Celso Furtado de Desenvolvimento Regional, 4° Edição, Categoria Práticas Exitosas de Produção e Gestão Institucional, pelo Ministério da Integração Nacional, p.82-88, 2017.

FAO 2019. TOWARDS SUSTAINABLE BIOECONOMY: Lessons learned from case studies". http://www.fao.org/3/ca4352en/ca4352en.pdf

KATO. O.R.; BORGES, A.C.M.R., AZEVEDO, C. M. B. C., ARAGÃO, D. V., MATOS, G. B. d, MATOS, L. M. S., SHIMIZU, M. K., VASCONCELS, S. S., SÁ, T. D. A.. Projeto Tipitamba – Transformando paisagens e compartilhando conhecimento na Amazônia. Empresa Brasileira de Pesquisa Agropecuária (Embrapa).. p16, 2020. https://archivo.cepal.org/pdfs/bigpushambiental/Caso120-ProjetoTipitamba.pdf

MAPA 2023. Plano Amazônia + Sustentável traz ações para consolidação das cadeias produtivas na região. PORTARIA MAPA Nº 575, DE 5 DE ABRIL DE 2023. https://www.in.gov.br/en/web/dou/-/portaria-mapa-n-575-de-5-de-abril-de-2023-475758806 https://www.gov.br/agricultura/pt-br/assuntos/noticias/plano-amazonia-sustentavel-traz-acoes-para-consolidacao-das-cadeias-produtivas-na-regiao

MAPA. Plano Nordeste+Sustentável. Ministério da Agricultura e Pecuária. 2019. Consultado em 20 de Setembro 2023. https://www.gov.br/agricultura/pt-br/assuntos/inovacao/nordestesustentavelna região nordeste do Brasil.

pesquisa participativa e restituição em Projeto de Pesquisa junto a Pequenos

PNAPO –Política Nacional de Agroecologia e Produção Orgânica. Brasil Agroecológico. Presidência da República. Casa Civil. DECRETO Nº 7.794, DE 20 DE AGOSTO DE 2012. http://www.planalto.gov.br/ccivil_03/_ato2011-2014/2012/decreto/d7794.htm

http://www.agroecologia.gov.br/politica#:~:text=A%20Pol%C3%ADtica%20Nacional%20de%20Agroecologia,possibilitando%20melhoria%20de%20qualidade%20de

PNATER. Política Pública Nacional de Assistência Técnica e Extensão Rural, Presidência da República – Casa Civil. LEI Nº 12.188, DE 11 DE JANEIRO DE 2010.. https://www.planalto.gov.br/ccivil_03/_ato2007-2010/2010/lei/l12188.htm https://catalogo.ipea.gov.br/politica/275/politica-nacional-de-assistencia-tecnica-e-extensao-rural.

PRONATER, 2010. Programa Nacional de Assistência Técnica e Extensão Rural na Agricultura Familiar e na Reforma Agrária. Presidência da República. Casa Civil. LEI Nº 12.188, DE 11 DE JANEIRO DE 2010. https://www.planalto.gov.br/ccivil_03/_ato2007-2010/2010/lei/l12188.htm https://catalogo.ipea.gov.br/politica/410/programa-nacional-de-assistencia-tecnica-e-extensao-rural-na-agricultura-familiar-e-na-reforma-agraria-pronater

- Promoting opportunities for the creation of spaces for the exchange and co-construction of knowledge involving research, teaching, rural extension, and others, together with civil society
- Promote opportunities to create, strengthen, and integrate networks of ST&I and higher education institutions from different countries in favor of advancing themes relevant to regions and territories
- Make available or support the generation of macro data), to support the understanding of the territorial dynamics of countries
- Farmers and their associations and cooperatives are always very receptive and eager to share their knowledge. Listen to them with an open, not harmful mind.
- We recommend that international organizations linked to the UN encourage cooperation agreements between countries to develop capabilities for incorporating Agroecology into educational policies
- We recommend encouraging cooperation agreements between countries: Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, and Venezuela to develop ATER AMAZON NETWORK

3.1.205 Collaboration outcomes

At the moment, Brazil is undergoing a period of restructuring its governance concerning meeting the SDG goals within the scope of science and technology.

The event allowed us to accelerate the approach of the ODS Embrapa Network to new leaders. The topic was again part of the ministerial agenda with the ODS Embrapa Network.

3.1.206 Building inclusion and equity

The event allowed us to accelerate the approach of the ODS Embrapa Network to new leaders. The topic was again part of the ministerial agenda with the ODS Embrapa Network.

The session could be considered inclusive. It aroused the interest of 147 participants from different continents and nationalities, including Egyptians, Nigerians, Americans, Norwegians, English, Indians, Brazilians, etc. In terms of institutions, we had registrants from the government sector, educational and research institutions, and companies, among others. Online participation was small and was, at most, 19 people only.

3.1.207 Key lessons learnt

The lesson learned is that we can use the spaces provided by SS Unga to promote rapprochement with teaching and research institutions, companies, and government institutions from other countries to establish common strategies for overcoming challenges in science and technology.

Session 46: Academia – Industry Partnership: The missing link in Africa

Session Convenor
Joseph Njogu

Position
CEO

Organisation
Research Beeline Ltd

Country
Kenya

3.1.208 Abstract

Knowledge has become one of the most prominent economic driver across the world. Economic growth and the welfare of nations depends on basic innovations (Atkinson et al. 2012). Innovation can be described as the result of the very common linkage of "science," "technology," and "innovation," that implicitly conveys a linear progression from scientific research to technology creation to innovative products.

Right policies, sufficient investment and continuous monitoring and evaluation, point to a deliberate effort to an enabling environment for a knowledge economy to thrive. The knowledge economy is a system of consumption and production that is based on intellectual capital. In particular, it refers to the ability to capitalize on scientific discoveries and applied research.

—During our session during UNGA78, we shall examine the current scenario of Academia-industry partnership in Africa, the Triple Helix approach to research technology and innovation and the challenges hampering growth of the same in Africa compared to other regions of the world.

We shall invite experienced speakers and experts from the academia, private sector and government based in Africa and also experts from sectors where such partnerships have worked in other regions of the world.

The connection between higher education growth and economic development is well acknowledged across the globe and in recognizing this, many countries across the world have been investing in their higher education institutions. On the same breadth, how to get the university to better contribute to innovation process has become an international agenda (Fikru 2016).

Knowledge has become one of the most prominent economic driver across the world and according to Investopedia, knowledge economy represents a large share of the activity in most highly developed economies while many developing economies tend to be heavily focused on agriculture and manufacturing. Unfortunately, the bigger bulk of knowledge-based economic activities such as research, technical support, and consulting serving the developing countries are predominantly externally sourced.

A lot of effort has been going on to stimulate academia-industrial linkages across the globe with obvious tangible and varying successes in across locations. There has been notable success on the Triple Helix approach in Silicon Valley (Vaivode 2015) but in a lot of similar scenarios in Africa where partnership between governments, academia and private sector came together, tell a different story.

Low level of investment in knowledge generation (research and innovation), intellectual property ownership, mistrust, low level of expertise, poor research uptake (implementation) and lack of interest in R and I by different players are some of the issues that I have picked that cause low level of academia-industry collaboration and partnerships in Africa.

My aim of holding this session during the UNGA78 is to bring on the table the different players from Academia, Industry and governments in Africa and engage in a detailed discourse on where we are and why, and things we must do to get things right.

Expected outcomes

From the session deliberations, I expect we shall have:

1. A detailed discussion on the current state of Industry -academia partnership in Africa.

2. Learn of success cases both within Africa and outside and their replicability in the African scenario.

3. A clear roadmap of short-short, medium-term and long-term interventions that need to be worked on to bring positive change to the status quo.

3.1.209 Key messages

Africa is lagging behind in research and innovation space. This is due to under-investment by both the public and private sector in knowledge generation which is mainly spearheaded by the academia.

Currently, there academia-industry partnerships are at low level and this may be partly attributed to the academia showing little understanding of the business processes of the industry.

There is clear need for the governments and multilateral organizations across the world to support new knowledge generation in Africa to ensure development agenda of economies in the continent is well informed and more so by knowledge generated within the local context.

Borrowing from the developed parts of the world, Rand D if funded mainly from private sources (industry and philanthropists) and this should be encouraged to take root in Africa.

- Need to develop all inclusive special vehicles for delivering partnership programs in Research and innovation, across academia, industry ad public sectors.
- create avenues for stakeholders discussions with a purpose for a roadmap to be supported all through the year; UNGA79 to be a culmination of the process - to be progress reporting session
- Specific organization(s) to take ownership of the process and lead in the deliberations with clear objectives in mind

3.1.210 Collaboration outcomes

The participants have supported the idea to keep the discussion going and the conveners (Research Beeline) has agreed to host another round of talks now involving the industry and the public sector with an aim of coming up with a workable roadmap or project that can create a realistic avenue or platform for academia-industry-public partnership building.

3.1.211 Building inclusion and equity

We had speakers from 5 different countries and 56 participants in attendance from across all continents of the globe. Male to female participation was well balanced at around 50:50.

3.1.212 Key lessons learnt

I have learnt that the global science community is well aware of the limitations that exist in the Africa's knowledge generation space and are willing to do something about it.

I also learnt that Africa policy makers needs to be deliberate on promoting own development agendas in R and D and this needs to be deliberate and urgent.

There is need to invest in activation of ideas as opposed to just talking.

Session 47: Brain Capital Building: Brain Deals to Meet SDGs by 2030

Session Convenor
Pawel Swieboda

Position
Member of the Steering Committee

Organisation
Brain Capital Alliance

Country
Belgium

3.1.213 Abstract

This conference will present the novel concept of 'Brain Capital' which puts a premium on cognitive skills and abilities in accomplishing socio-economic objectives. Building Brain Capital is fundamental for meeting modern societal challenges and driving innovation.

The concept has been elaborated by the Neuroscience-inspired Policy Initiative launched by the OECD. Following its success, the Brain Capital Alliance has now been formed to continue this work toward impact. Given their scope, Brain Deals – large-scale and brain science-inspired policy strategies can harness advanced AI and boost the implementation of several

UN Sustainable Development Goals shared blueprint for peace and prosperity for people and the planet, now and in the future - at the national and global levels. The event will focus on how Brain Deals can support implementation by 2030.

3.1.214 Key messages

The concept of brain capital has a transformational potential with regard to the effort to achieve SDGs and prepare the post-SDG agenda. Its underpinning significance lies in the centrality of brain skills and brain health in the age of technological acceleration. As the application of the new generation of AI approaches gains ground, there is a need to harness them to serve all 17 SDGs and better equip the citizens, so that a synergetic relationship with technology is built.

The concept of brain capital relates to an individual's social, emotional and cognitive resources. It is found to play an increasingly critical role in different fields of socio-economic life, including education, health but also in the relationship we have with the built environment. In all of these areas, it is vital to integrate insights coming from brain science. In education and training, as an example, understanding how we learn is thoroughly relevant for designing school curricula. Neuroscientific research demonstrates that learning achieves better results when objectives are well defined and communicated, or when feedback is regularly provided.

Similarly, brain health is a critical aspect of human well-being, affecting cognitive abilities, socioemotional stability, and overall quality of life. Mental health disorders alone are estimated to cost the global economy USD 5 trillion, and this is projected to rise to USD 16 trillion by 2030. Improving brain health and increasing mental health welfare is a precondition for achieving several SDGs, not only SDG3 (Good Health and Well-being) but also SDG4 (Quality Education), SDG8 (Decent Work and Economic Growth), SDG9 (Industry, Innovation and Infrastructure), SDG10 (Sustainable Cities and Communities), or SDG11 (Sustainable cities and communities), SDG13 (Climate Action), SDG16 (Peace, Justice and Strong Institutions) and SDG17 (Partnerships for the Goals). There is significant evidence pointing to a close link between the use of social media and the mental health crisis affecting adolescents across the world. Similarly, neurological disorders affect millions of people and often have a devastating impact on what makes us human, restricting the ability to exercise basic cognitive functions, or move at will and interact with the world. Every year, dementia costs the global economy more than 1.3 trillion USD and this number is set to increase to 2.8 USD trillion by 2030.

Brain capital has a liaison function, bringing the health and the skills agenda together. This is where its profound significance lies, enabling the bridging of the SDG and the post-SDG agenda.

- Brain Capital Strategy should be developed at the global level by the UN as a backbone of the post-SDG agenda, placing emphasis on the centrality of human cognitive skills and brain health.
- Multilateral organizations focused on economic cooperation, in particular the OECD and the World Bank should adopt the Brain Capital Industrial and Innovation strategy.
- Life-cycle approach to health should be recognised as the underlying global policy with concrete investment commitments at the international level to prevention and early intervention.
- In order to ensure equity of access to care in the area of brain and mental health, a new initiative is needed by G7, to support training of neurologists & mental health professionals in LDCs.
- UN should invest in creating environments (through design of cities, districts and buildings) that support SDGs with focus on brain health and skills to meet equitable economic and ecological goals.

3.1.215 Collaboration outcomes

Brain Capital Alliance, as an emerging public-private partnership, received a mandate from the broad community of stakeholders represented at the conference to further define its policy agenda based on the notion of the centrality of brain skills and brain health. This was discussed in reference to the following fields: brain and mental health, education and workforce development, economic security and resilience, green brain capital, brain capital and the build environment and neuroscience-inspired law. Four initiatives were launched at

our conference: the Brain Capital Industrial and Innovation Strategy, the Brain Capital Dashboard, the HEKA Brain Capital Venture Fund and the Mental Wealth Observatory.

3.1.216 Building inclusion and equity

Our conference was fully inclusive by engaging representatives of literally all continents and regions. We had speakers from Africa, Asia, Australia, Europe, Latin America and North America. We also ensured gender balance in the respective sessions of the event. The virtual stream included over 250 registrants and the ability to present remotely and to share content with a global audience from diverse backgrounds.

3.1.217 Key lessons learnt

Transformational policies are needed given the existence of many legacy issues such as fragmentation of mental health care in a number of countries. Problems might be medical but responses have to be comprehensive and include integrated social services or housing.

Life-cycle approach to health is a must, which puts strong emphasis on prevention and early intervention, different as they are.

We all live in a web of large, complex systems and poly-crises: the global climate emergency, shifting geopolitics, the digital divide and social inequity, epidemics of drug and alcohol abuse and an increasingly outdated workforce. The focus on brain capital can help to bring a unifying policy platform to address all of these issues.

The environments we live, work, play and heal in provide a powerful, but overlooked, opportunity to create conditions that support systemic change, making healthy choices and healthy environments the default.

Session 48: Digital Democracy for Climate Action: Everyone, Everywhere, All At Once

Session Convenor
Robert Eisenberg

Position
Founder of Vote Earth Now
Visiting Medical Officer ENT-Head and Neck Surgery Hunter New England Area Health Service Australia

Organisation
Vote Earth Now

Country
Australia

3.1.218 Abstract

Abstract

The urgency of addressing climate change and its devastating consequences demands a proactive and inclusive approach. While progress has been slow, primarily relying on government and business actions, we must find a better way to harness the collective drive of The People for a sustainable future. The transformation required to mitigate climate change necessitates the participation of all people worldwide, and an inclusive approach is paramount.

The orchestration of sustainable practices and technologies within communities involving the behaviour of 8 billion individuals is crucial. We have learned from history that religion, finite resource-based capitalism, and autocracy are insufficient in motivating the necessary cooperation and enthusiasm. Instead, a self-driven approach is essential, and democratic processes have consistently proven successful in this regard.

The digital revolution has provided us with the tools to mobilise the needs, informed consent, and human capital of 8 billion people toward achieving the United Nations' 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs). Technology facilitates the connection of individuals on a large scale, enabling both bottom-up and top-down civic participation. Traditional power hierarchies are being reshaped as digitisation transforms the dynamics of power.

Creating a more democratic and fair internet by developing data cooperatives and digital commons while addressing social media polarisation will foster greater participation. Empowering communities to organize online and directly engage with their representatives will help those same representatives advocate for effective climate laws.

PROGRAM

0830 on-site registration at Harvard Club

0900- 1000 President's room

SESSION A: PLENARY SESSION

1000-1130 President's room

SESSION B:

DIGITAL DEMOCRACY FOR CLIMATE ACTION/ CIVIC PARTICIPATION AND REBALANCING POWER

1145-1300 President's room

SESSION C:

FUTURE VISIONS: CREATIVITY, INDIGENEITY, AND CLIMATE ACTION

1145-1300 Slocum Room SESSION D: DATA COOPERATIVES AND DIGITAL COMMONS

1300-1400 Break SESSION E: FUTURE VISIONS EXHIBITION

1400- 1500 President's room SESSION F: CONSCIOUS CAPITALISM

1530-1545 President's room SESSION G: FUNDING DIGITAL DEMOCRACY and CREATIVE VISIONS

1600-1630 President's room SESSION H: WRAP UP AND RECOMMENDATIONS
Throughout : Slocum Room MEDIA INTERVIEWS

3.1.219 Key messages

Recommendations for Global Climate Action and Digital Engagement:

Global Climate Monitoring & Accountability: Establish a global climate war room that actively tracks progress, with UNFCC/COP as the central hub. This includes 'Digital Impact Dashboards' monitoring the actions and records of elected officials, investors, and industry leaders concerning climate-related initiatives. Such a platform should prioritize actions related to achieving NetZero, drawdown (beyond zero), carbon emission reduction, and safeguarding key environmental assets like the Arctic Ice and Amazon.

Public Awareness and Empowerment: Invest in extensive public information campaigns that highlight progress, the need for urgency, and the benefits of climate action. The campaigns should make science accessible, emphasize job opportunities, and provide guidance on accessing policies and benefits. Amplify the effects on health, safety, and the personal implications of climate decisions.

Establishing a UN-Centric Educational Repository for Sustainable and Regenerative Transformation: Advocate for the United Nations to create and maintain a centralized educational platform that focuses on sustainable and regenerative transformation. This platform should adhere to rigorous information hygiene standards, drawing from scientific principles and peer-reviewed resources, to ensure accuracy and credibility.

Inclusivity and Representation: Prioritize the inclusion of traditionally marginalized groups, such as indigenous communities, youth, and the elderly, in decision-making processes. Leverage media and digital platforms to amplify their voices and ensure they have a seat at the table alongside world leaders.

Media Oversight and Trust Building: Invest in criteria for monitoring media, and perform independent assessments involving scientists, journalists, and experts. Foster public-private partnerships that aim to rebuild trust in media and amplify accurate information. This includes funding for media literacy training to combat misinformation and disinformation.

AI Ethics and Principles: Incorporate guiding ethical principles within AI algorithms and systems. This should be done while considering equitable treatment of all individuals and communities.

Infrastructure & Human Capital: Create a supportive ecosystem consisting of policies, investments, partnerships, and public engagement. Invest in training to build human resources essential for the digital transition.

Digital Collaboration for Climate Action: Develop digital platforms and tools to promote global collaboration, community building, and knowledge sharing on climate change mitigation and sustainable practices. This also entails using digital platforms to bolster democratic processes, civic engagement, and climate-related decision-making.

Data Cooperatives and Digital Commons: Advocate for data cooperatives that promote data sharing, transparency, and collaboration for climate action. Governments should provide legal frameworks for data cooperatives, emphasizing privacy and security, while encouraging collaboration, knowledge sharing, and ethical governance.

Legislative Measures for Online Dialogue: Governments should legislate against algorithms that promote polarization and enact laws for the democratization of the internet. Bipartisan approaches should be adopted to separate climate change from political divisions.

International Collaboration: Emphasize international collaboration, knowledge sharing, and the interconnectedness of all nations in addressing climate change. This includes formulating a "Declaration of Interdependence" to highlight collective responsibility.

Direct Citizen Engagement: Develop platforms that allow direct citizen interaction with their representatives for effective climate policies, ensuring their voices are considered in policy-making processes.

Vision for a Sustainable Future: Utilize digital technology to engage citizens in sustainable transformation, offering a positive vision of the future, emphasizing interconnectedness, and shared responsibility

Promoting Positive Portrayals of Sustainable and Regenerative Futures in Creative Industries: Encourage creative industries such as film, music, and arts to prioritize the production and dissemination of content that presents optimistic visions of sustainable and regenerative futures, as opposed to dystopian narratives. These portrayals can serve as powerful catalysts for inspiring societal change towards environmental conservation and sustainability.

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3.1.220 Collaboration outcomes

None yet - I will need tome to follow up all the contacts I have made but there are many possibilities. If you ask again in a month I will have some for sure.

3.1.221 Building inclusion and equity

We had attendees from the Puyanawa tribe of the Amazon, a First Nation native American Indian Eugene Brave Rock, Wangari Kuria a Kenyan farmer, two teenagers Robert and Lilia Vine, a number of LGBTQI+ attendees, a disabled person who attended by zoom, and many others.

3.1.222 Key lessons learnt

Never run a scientific congress without a sponsor or a venue.

Many difficulties with both the conference software (SCHED) and the zoom package created a large amount of stress. One of the main reasons for a sponsor would be to hire administrative staff to deal with these two challenges.

Session 49: Digital Democracy to Accelerate Climate Action

Session Convenor
Andrea Soccorso

Position
Advisor , Climate Voice

Organisation
Climate Voice

Country
United States

3.1.223 Abstract

The urgency of addressing climate change and its devastating consequences demands a proactive and inclusive approach. While progress has been slow, primarily relying on government and business actions, we must find a better way to harness the collective drive of The People for a sustainable future. The transformation required to mitigate climate change necessitates the participation of all people worldwide, and an inclusive approach is paramount.

The orchestration of sustainable practices and technologies within communities involving the behaviour of 8 billion individuals is crucial. We have learned from history that religion, finite resource-based capitalism, and autocracy are insufficient in motivating the necessary cooperation and enthusiasm. Instead, a self-driven approach is essential, and democratic processes have consistently proven successful in this regard.

The digital revolution has provided us with the tools to mobilise the needs, informed consent, and human capital of 8 billion people toward achieving the United Nations' 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs). Technology facilitates the connection of individuals on a large scale, enabling both bottom-up and top-down civic participation. Traditional power hierarchies are being reshaped as digitisation transforms the dynamics of power.

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SESSION G: FUNDING DIGITAL DEMOCRACY and CREATIVE VISIONS

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SESSION H: WRAP UP AND RECOMMENDATIONS

Throughout : Slocum Room

MEDIA INTERVIEWS

3.1.224 Key messages

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Fund Digital Democracy by Digital Finance: Curate or convene early stage platforms globally in development for climate actions. This will result in, say, 500 such projects. With proper community governance and voting, establish the “leader board”. Let’s say this results in 100 projects covering 50 countries - two per country. Support the implementation, launch, scaling, and operations of these 10 of these in pilot, then scale to others. For funding, (a) projects which will support tokenization will self-fund, (b) fund other platforms on climate action causes from carbon credit markets. (Gurvinder Ahluwalia)

A “Place” for Ongoing Experimentation: Market and invite a recurring stream of applications for global “hackathons”. Ask universities and students and companies to volunteer time and resources to staff them and provide the software tools (this is common in the world of hackathons). Establish the focus themes and guide the outcomes. Don’t structure this too much, by design. Judge the outcomes and winners. Then move them into funding pipelines from (a) carbon credits in the case of hacks for climate actions, (b) private sectors that brought them or support them, and (c) UN’s sources. (Gurvinder Ahluwalia)

AI - the discussion on AI must be more deeply embedded in the global dialogue - and include discussions across communities. How can we leverage AI for good. World leaders are not discussing this

Adjust governance structure or consultative processes to build in populations which do not have access to the internet (Andrea Soccorso)

Mandate training and Call for mass investment in training and climate corps to help people transition to the new economy include the same for AI immediately - we are already behind the ball on this.

Recharacterize the Problem and Solution: The call to close the gap on policy and technology is a rhetoric and mischaracterization from decades ago. It has not worked, it will not work.

Technology, Markets, and Policy play - in that decreasing order - of “drumbeat” - of innovation or change. We cannot close the gap between their unique and signature different drum beats. Actually, the Policy drum beat can be much faster with immediacy than the Market or Technology drum beat can every be, like: when an urgent Policy action is mandated. Those are exceptions. For the norm, we action a re-education of how we think and communicate the proper characterization of the problem and solution approach. Not closing the gap, but aligning the gaps for outcome-driven metrics (Gurvinder Ahluwalia)

United Nations need to take a stand or a policy on Big Oil and fossil fuels.

Governance structures need to be reviewed - and explore citizen assemblies and more . Young people need to have a seat at the table beyond more tokenism - on youth and energy and security . Establish a task force - with votes.

- UNESCO Ethics in AI framework should be prioritized and reviewed at the UNGA level
- More public private cooperation is needed to achieve the SDGS
- Establish a coalition of billionaires to support the SDGs and or to protect global tipping points
- Establish social safety nets for the global south.

3.1.225 Collaboration outcomes

These are still in discussion - a number of people are interested in and we have an ongoing community of participants.

See our program -

https://online.flippingbook.com/link/854600/

3.1.226 Building inclusion and equity

Our session was a truly global convergence and organizing feat! We deliberately centered the voices of front line indigenous leaders from the Amazon Rainforest, the Puyanawa tribe, Eugene Brave Rock of the Black Foot tribe - , women farmer from Africa, women of color, LGBTQ representation. Several representatives from the Global tipping points were present. Our event was a multidisciplinary scientists, creatives, activists policy experts, business, entrepreneurs and tech & investors.

3.1.227 Key lessons learnt

The multidisciplinary approach is key to manage the transition we are facing.

Governments are not doing enough fast enough and need accelerated pressure from public and private sector.

Session 50: Responsible Education for Sustainable Future

Session Convenor
Virendra Rawat

Position
Founder Director

Organisation
Green Mentors

Country
India

3.1.228 Abstract

"Responsible Education for a Sustainable Future" refers to an educational approach that aims to equip learners with the knowledge, skills, values, and attitudes needed to address the complex environmental, social, and economic challenges facing our world. It focuses on integrating sustainability principles into all levels of education to create environmentally conscious, socially just, and economically viable societies for the long term.

Key elements of responsible education for a sustainable future include:

Holistic Understanding: Education emphasizes the interconnections between environmental, social, and economic systems, promoting a holistic view of sustainability.

Critical Thinking: Learners are encouraged to think critically and analytically about global challenges, exploring their causes, impacts, and potential solutions.

Active Learning: Education involves experiential and active learning methods, such as project-based learning, field studies, and simulations, fostering a deeper understanding of sustainability concepts.

Interdisciplinary Approach: Sustainable development is inherently interdisciplinary. Education encourages collaboration between different disciplines to address complex issues effectively.

Ethical Awareness: Learners develop an understanding of ethical considerations related to sustainability, promoting values such as equity, social justice, and responsible decision-making.

Problem-Solving Skills: Education equips individuals with problem-solving skills to innovate and find creative solutions to sustainability challenges.

Empowerment: Learners are empowered to take action by engaging in sustainability projects, community initiatives, and advocacy efforts.

Global and Local Perspective: Education considers both global and local sustainability contexts, acknowledging that solutions need to be tailored to specific regions while addressing global concerns.

Long-Term Thinking: Education cultivates a long-term perspective, encouraging individuals to make choices that consider the well-being of future generations.

Partnerships: Collaboration between educational institutions, governments, NGOs, businesses, and communities is essential to effectively address sustainability challenges.

Lifelong Learning: Responsible education recognizes that sustainability is an ongoing journey requiring continuous learning and adaptation.

Resilience and Adaptation: Education prepares individuals to adapt to changing environmental and societal conditions, promoting resilience.

Cultural Awareness: Sustainability education respects diverse cultural perspectives and integrates traditional knowledge systems when appropriate.

Resource Stewardship: Education emphasizes responsible resource management and consumption patterns to ensure the availability of resources for future generations.

Leadership: Responsible education nurtures sustainability leaders who can drive positive change in various sectors. The goal of responsible education for a sustainable future is to create informed, engaged, and empowered individuals who can contribute to building a more sustainable, equitable, and resilient world.

It requires a commitment from educational institutions, educators, policymakers, and learners to embrace sustainability as a guiding principle across all levels of education.

3.1.229 Key messages

All speaker has shared their inspiring stories of Greening education for a sustainbale future for all

- Responsible education is solution of all global challenges
- Green school for every child is the sustainable future for every child
- Green University brings ocean of opportunities

3.1.230 Collaboration outcomes

Schools and Universities are working together on the science of conscious education.

3.1.231 Building inclusion and equity

Responsible Education brings inclusivity in every way and every day

3.1.232 Key lessons learnt

Every Green Story of educators brings a lot of learning to the conscious education

Session 51: Managing sustainability: Can we achieve more by doing a little bit of everything

Session Convenor
Sofia Bäcklund

Position
Operations manager,

Organisation
Church of Sweden/Church of Sweden property management

Country
Sweden

3.1.233 Abstract

"The expectations on the forests contribution to a sustainable future are high, and the ideas and opinions on how are many.

The dioceses of the Church of Sweden manages a large total forest area. The area is divided into many smaller properties scattered all over Sweden. How can we navigate and make management choices in a context with new legislation on the way, a revision of the core mission for the management and the many opinions on forests and forestry within society as whole and within the Church of Sweden?

Is it possible to better contribute to a sustainable future by doing many different but smaller management activities in different places? This talk will describe the balance between different interests and give practical examples on ways to work with sustainability."

3.1.234 Key messages

I think it is (at least in my field, forestry and property management) important to connect science and practice to better underrstand the scientific results and for researchers to better understand the how results can be implemented. It is important to see the bigger picture and keep in mind that there are regional and local variations in the prerequisites.

It is important that there is a dialog and understanding between scientists/researchers and practisioners (and decision making bodies) to be able to move forward

- Be inclusive and let the ones implementing the policys and decisions have the opportunity to provide imput
- There is no "one size fits all", take regional and local variations into consideration
- Iclude developement and progress in decisions and policys
- Encurage creativity and ideas

3.1.235 Collaboration outcomes

A really nice partnership with the group that contacted us about participation.

3.1.236 Building inclusion and equity

Not sure I understand the question? But if you mean "How was.." I think a relatively easy and non-technical language made it understandable even without knowledge in my specific field.

3.1.237 Key lessons learnt

There are many inspiring projects going on around the world. And I have also learnt some lessons regarding the technical bits around SSUNGA (zoom and sched.)

Session 52: Invasive plants: impact and natural based management in Latin America

Session Convenor
Fernando Mc Kay

Position
Researcher

Organisation
Fundación para el Estudio de Especies Invasivas

Country
Argentina

3.1.238 Abstract

3.1.239 Key messages

Two examples mentioned by one of the speakers of the session clearly illustrate how classical biological control as a multiparty public good can support SDGs:

1) The introduction into West Africa of the parasitic wasp Aponagyrus lopezi (De Santis) (Hymenoptera: Encyrtidae) for the biological control of the cassava mealybug Phenacoccus manihoti Matile-Ferrero (Hemiptera: Pseudococcidae). This biocontrol programme contributed to poverty alleviation (SDG 1), food security including zero hunger (SDG 2), good health and well-being (SDG 3), quality education (SDG 4), clean water and sanitation (SDG 6), decent work and economic growth (SDG 8), industry innovation and infrastructure (SDG 9), sustainable cities and communities (SDG 11), life on land (SDG 15), peace justice and strong institutions (SDG 16), and partnership for the goals (SDG 17).

2) The introduction of the weevils Neochetina eichhorniae Warner and N. bruchi Hustache (Coleoptera: Curculionidae) for the biological control of water hyacinth (Eichoornia crassipes) in Africa. This biocontrol programme contributed to poverty alleviation (SDG 1), food security including zero hunger (SDG 2), good health and well-being (SDG 3), clean water and sanitation (SDG 6), and decent work and economic growth (SDG 8).

- Researchers from Latin America should work collaboratively to address a regional problem such as invasive plants through the implementation of nature-based management strategies
- That the Neotropical IOBC could help promote the biological control of invasive plants through the formation of work/study groups on biological control of invasive plants in Latin America.
- That Cosave can be the organization that helps promote the implementation of biological control of invasive exotic plants in Latin America.

3.1.240 Collaboration outcomes

During the session, the possibility of collaborating between institutions from Latin America (Foundation for the Study of Invasive Species) and Europe (Escola Superior Agrária, Instituto Politécnico de Coimbra and the center for agricultural bioscience international) was mentioned.

3.1.241 Building inclusion and equity

The session was inclusive in terms of gender representation (3 female and 3 male speakers). It was also inclusive in terms of geographical representation. There were speakers from Latin America (3), Europe (2) and Africa (1).

3.1.242 Key lessons learnt

The summit offers the opportunity to analyze the contribution of science to the different SDGs. For researchers, it constitutes the possibility of communicating to the world community the concrete contribution of their research to the SDGs. Throughout the summit, the sessions offer the possibility of exchanging information and enabling the emergence of new ideas to achieve the objectives and goals set in the SDGs.

Session 53: Invasive plants: imact and natural based manegement in Latin America

Session Convenor
Alejandro Sosa

Position
Senior Researcher

Organisation
Fundación para el Estudio de Especies Invasivas-FUEDEI
Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET)

Country
Argentina

3.1.243 Abstract

Latin American countries are particularly vulnerable to the threats posed by invasive species. Invasive alien plants (IAP) can have a disproportionate impact on the biodiversity and economies of these countries that have fewer resources to control such plants and typically rely more heavily on agriculture, forestry and fishing than more developed countries.

In this context, this session will address the issue of IAP in Latin America with six presentations. The first two presentations will set the scene of plant invasions in Latin America, addressing the region's knowledge and awareness of IAP. A third presentation will show the socio-economic impact and economic loss of ecosystem services caused by IAP in Latin America, with special emphasis on Argentina. The following three presentations will focus on the management of invasive plants through the use of biological control.

First, there will be a general introduction to the discipline of biological control and the scope of its application. Then some CB projects in Latin America and the Caribbean will be mentioned, and finally, a parallel will be established between the situation of IAP and biological control between Europe and Latin America in terms of challenges and opportunities.

SPEAKERS

Sergio Zalba – Invasive species in Latin America.

Ileana Herrera – Invasive plants in Latin America.

Mariana Zilio – The economic impact of biological invasions: what it is and why it matters.

Martin Hill – The benefits and risks of biological control in Africa.

Philip Weyl – Rust fungi for the biological control of weeds in Latin America, keeping a foot in the door.

Helia Marchante and Elizabete Marchante – Biological Control of invasive alien plants in Europe & South America – so many opportunities to share and so many challenges.

CONVENORS: Alejandro Sosa and Fernando Mc Kay

3.1.244 Key messages

Two examples mentioned by one of the speakers of the session clearly illustrate how a natural based solution which (classical biological control) as a multiparty public good can support SDGs:

1) The introduction into West Africa of the parasitic wasp Aponagyrus lopezi (De Santis) (Hymenoptera: Encyrtidae) for the biological control of the cassava mealybug Phenacoccus manihoti Matile-Ferrero (Hemiptera: Pseudococcidae). This biocontrol programme contributed to poverty alleviation (SDG 1), food security including zero hunger (SDG 2), good health and well-being (SDG 3), quality education (SDG 4), clean water and sanitation (SDG 6), decent work and economic growth (SDG 8), industry innovation and infrastructure (SDG 9), sustainable cities and communities (SDG 11), life on land (SDG 15), peace justice and strong institutions (SDG 16), and partnership for the goals (SDG 17).

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- That Cosave (Comité de Sanidad Vegetal del Conosur) can be the organization that helps promote the implementation of biological control of invasive exotic plants in Latin America at a regional level.
- That the Neotropical IOBC could help promote the biological control of invasive plants through the formation of work/study groups on biological control of invasive plants in Latin America.
- Researchers from Latin America should work collaboratively to address a regional problem such as invasive plants through the implementation of nature-based management strategies.

3.1.245 Collaboration outcomes

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The session was inclusive in terms of gender representation (3 female and 3 male speakers). It was also inclusive in terms of geographical representation. There were speakers from Latin America (3), Europe (2) and Africa (1).

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Session 54: FAIR Biodiversity monitoring and research in Latin America considering the influence of commercial

Session Convenor
Jonathan Ready

Position
Associate Professor

Organisation
Universidade Federal do Pará

Country
Brazil

3.1.248 Abstract

Bringing together Latin American specialists on the generation, curation and use of biodiversity data, we aim to discuss the common challenges (across countries and biological habitats and systems) for the funding, production, mobilization and use of good quality in addressing the sustainable development goals (including goals 12: Sustainable consumption and production 13: Climate Action; 14: Oceans; 15: Biodiversity, forests, desertification 17: Partnerships (Technology).

SPEAKERS NAMES:

1) Jonathan Ready (convener) - The long-term risks of black box consultancy for environmental monitoring

2) Angelica Batista Morales - Data mobilization through FW BON: challenges and opportunities

3) Patricia Charvet - Keystone predators: biodiversity and conservation in the light of fisheries pressure

4) Martin Nunez - Invasive species biodiversity data: lack of data and the asymmetries of data amount with the global north

5) Cristina Rueda Uribe - Using and sharing big data: opportunities in tropical mountain ecosystems

6) Alexandre Aleixo - FAIR data from commercially supported research

3.1.249 Key messages

FAIR data and fair management of biodiversity data is essential for high quality analyses that can effectively guide policy and sustainable management of natural resources. Extraction of natural resources and the land use changes associated with, and waste produced during, extraction and production are some of the greatest challenges across all ecosystems.

They reduce the functions of ecosystem services and, if poorly managed, can lead to resource collapse through local effects (e.g. overfishing, soil degradation or contamination) and by contributing to global effects through their contribution to climate change. The model of FAIR data is essential to the scientific method as applied to big data, allowing aggregation of data at national and international levels. However, there are considerable challenges associated with implementation of FAIR data systems in many countries.

The development of biodiversity data management systems in Latin America has followed and contributed to international standards such as DarwinCore, but the regional hyperdiversity and variability in the investments in science in the region both between and within countries result in difficulties to mobilize and normalize data. It is essential that both fundamental data collection across environmental space and data quality be maintained to provide information that is useful. New technologies such as environmental DNA and telemetry tracking show great potential in temperate climates with greater investments in infrastructure, but remain challenging to implement with high data quality and data management in tropical environments with lower accessibility. Partnerships to the global north are often essential to provide support for developing these new technologies with quality control and to maintain continuity in data collection programmes over time.

However, they can also lead to inequalities in control over data, publication of results, the ability to manage and process data at local levels, and to the introduction of tendencies to outsource aspects of data production that can lead to the loss in data quality control (e.g. lack of raw data and informative metadata for reanalysis under FAIR principles).We therefore advocate for:

1) Adequate recognition to stimulate data sharing (reassessing how this contribution is evaluated beyond metrics of publication) and

2) Greater funding for data producers and investment in capacity-building in the region.

3) Greater support for open access publication (while avoiding the tendency to over empower commercial journal publishers and therefore increase the risks of publication in predatory journals).

4) The further development of national and regional Core facilities for basic processes used in new technologies and data management or analyses (e.g. servers with different specific capabilities, High throughput sequencing centers) and that have management plans that guarantee open and responsible use of these facilities.

5) The further development of legislation and funding regulations that stimulate all commercial and academic data producers to adhere to FAIR principles, providing all raw data and metadata and depositing only in recognized quality-assured data depositories.

6)Stronger frameworks and encouragement of equitable global partnerships, where helicopter science is avoided and local stakeholders are involved.

This will require greater awareness and training in the development, implementation and evaluation of the success of project data management plans as well as mechanisms to ensure that funding is prioritized to maintain these systems and the skill sets necessary to implement them across the region.

- Adequate recognition to stimulate data sharing (reassessing how this contribution is evaluated beyond metrics of publication)
- Greater funding for data producers and investment in capacity-building in the region.
- Greater support for open access publication (while avoiding the tendency to over empower commercial journal publishers and therefore increase the risks of publication in predatory journals).
- The further development of national and regional Core facilities for basic processes used in new technologies and data management or analyses.
- The further development of legislation and funding regulations that stimulate all commercial and academic data producers to adhere to FAIR principles, providing all raw data and metadata.
- Stronger frameworks and encouragement of equitable global partnerships, where helicopter science is avoided and local stakeholders are involved.

3.1.250 Collaboration outcomes

We hope to produce a collective opinion article for publication and have received positive feedback about the topics from our network of collaborators even prior to the event, and we hope that many of them will also contribute.

3.1.251 Building inclusion and equity

Speakers covered variations in geography, career stage and gender and speakers were asked to present secondary text in the slides in the native language of their home countries.

3.1.252 Key lessons learnt

The more advanced the planning and comittment, the better the output (as long as there is clear information on expectations).

Session 55: Lessons learned in transboundary environmental governance of the Río de la Plata basin

Session Convenor
Cecilia Evelyn Miranda

Position
Investigadora

Organisation
Instituto Misionero de Biodiversidad (IMiBio)

Country
Argentina

3.1.253 Abstract

ENGLISH The Río de la Plata basin covers an area of about 3,100,000 km², which makes it the fifth largest in the world, behind the basins of the Amazon, Congo, Nile and Mississippi rivers, and covers territories of five countries: Argentina, Bolivia, Brazil, Paraguay and Uruguay.

The precipitations that fall in its area meet in two large courses, the Paraná and Uruguay rivers, which later pour their waters into the Río de la Plata, which finally flows into the South Atlantic Ocean. It covers part of Brazil and Argentina, all of Paraguay, southern and eastern Bolivia, and a large part of Uruguay. The Río de la Plata estuary shows particular characteristics that make it unique compared to similar ecosystems in tropical and subtropical regions.

This basin is a resource of great economic value since it is used for irrigation, hydroelectric power generation in the Yacyretá, Itaipu, Itá and Salto Grande dams, it supplies industrial activity and mining, it is used as a transportation system for the output of production from Paraguay and Argentina Mesopotamia. Is the deposit of most of the liquid effluents from cities, industries, farmlands and mines. Likewise, it has great cultural value associated with fishing, tourism, and spiritual activities.

However, the evidence suggests that the health of the Río de la Plata is declining, largely due to anthropogenic factors as well as natural causes. However, the latter have been modified by human-driven climate change. Some effects that are observed are abnormal fluctuations in hydrological levels, changes in fish breeding sites, generation of toxic cyanobacterial blooms, among others. This, together with the global tendency of coastal systems to become heterotrophic in the long term, suggest that we must take care of this system if we are to avoid an environmental crisis in a few decades.

By holding this session, we seek to publicize the diverse range of experiences and lessons that the speakers have collected throughout their career as leading actors in the management of the Río de la Plata basin. They will highlight the challenges regarding cross-border

environmental governance, having the water resources of this impressive basin as the engine of water, food and health security.

3.1.254 Key messages

We should focus our efforts on improving education and trying to reach a more diverse audience

- Improove education
- Increase and improve financing associated with water security
- Adopt measures to restore water resources

3.1.255 Collaboration outcomes

Creation of a warning and monitoring network for the La Plata River basin

3.1.256 Key lessons learnt

I learned about new tools for monitoring bodies of water

Session 56: The Crucial Role of Humanities in Scientific Progress: Examining Scientific Discourse Past

Session Convenor
Jayashabari Shankar

Position
Student

Organisation
MIT

Country
USA

3.1.257 Abstract

The study of humanities in sciences has been a point of contention for many years. However, an analysis of Jane Goodall's research suggests that humanities are crucial to scientific progress. Goodall's approach to studying primates was unique, as she immersed herself in their world, observing their behavior and interactions over an extended period of time. Through this method, she gained valuable insights into chimpanzee culture that would have been impossible to uncover using traditional scientific methods alone.

Building on Goodall's observations, this research aims to deepen our understanding of the role of humanities in science. Through an exploration of various written and scientific works from different periods of time, we seek to uncover the ways in which humanities have influenced scientific progress.

After conducting an extensive search, Rachel Carson's Silent Spring was chosen for examination, as it revolutionized the American environmental movement and had far-reaching impacts on society. We decided to delve deeper into why this book gained much popularity and found it due to the inclusion of social and humanitarian aspects of science. The language, metaphoricity, and storytelling used in Silent Spring, were all employed to engage readers on an emotional level.

Through this emotional appeal, Carson was able to draw attention to the human and environmental impacts of pesticide use, inspiring a broader public debate about the role of science and technology in society. This emotional connection is a critical component of the humanities, which seeks to engage with the human experience and promote critical reflection on our relationship with the world around us. Moreover, Silent Spring also emphasizes the social and cultural customs of science. Carson recognized that the use of pesticides was not simply a matter of scientific consensus or technological advancement but a complex social and political issue.

By challenging the interests of powerful corporations and government agencies, Silent Spring exemplifies the critical and reflective approach to scientific inquiry that is central to the humanities, encouraging readers to question assumptions and challenge established power structures.

Silent Spring exemplifies the critical role of humanities in scientific progress; it covers all three key aspects of humanities- emotional, social, and cultural. Our research has shown that Silent Spring precisely emphasizes the importance of humanities in science, supporting Goodall's observations and advocating for a broader integration of humanities into scientific inquiry.

Indeed, this conclusion was further supported through a careful study and analysis of the other works previously mentioned. Science, while it is indeed an objective field, also has some room for the humanities, especially in environmentalism, which is pertinent to us on the Future Blue Youth Council.

It was our main reasoning for the use of Silent Spring and articles pertaining to global climate change on Scientific American, National Geographic, and other such publications meant for a common audience. By examining the social, cultural, emotional and ethical dimensions of scientific research, the humanities can provide critical insights into the impact of science on society, and help to ensure that scientific progress is both inclusive and equitable. ;

3.1.258 Key messages

It was a good opportunity!

Incorporate more youth perspectives

3.1.259 Collaboration outcomes

I am now collaborating with a fellow convenor in the local Boston/ Cambridge university network.

3.1.260 Building inclusion and equity

I made sure to advertise it to a diverse audience.

3.1.261 Key lessons learnt

It is a good idea to network with other convenors and speakers.

Session 57: Amazon Day- Science for the Amazon

Session Convenor
First name: João Arthur
Last name: da Silva Reis

Position
Special Advisor to the President on the Amazonia+10 Initiative at FAPESP - The São Paulo Research Foundation

Organisation
The São Paulo Research Foundation (FAPESP)

Country
Brazil

3.1.262 Abstract

The system developed by the Brazilian National Institute for Space Research (INPE) to monitor deforestation in the Amazon has earned academic prestige and international recognition. INPE helped create a geoprocessing culture in Brazil. In 1987, the field was nonexistent. Today, the industry is worth R$ 15 billion per year in Brazil.

This panel will discuss the use of satellites and geospatial analysis as research and monitoring tools for deforestation in the Amazon region, drawing from Brazil's experience with the topic in the 2000s through the PRODES and DETER systems. The debate will focus on current challenges of a monitoring and control-based strategy, as well as new possibilities for utilizing these tools.

3.1.263 Key messages

The event was divided into four discussion panels. The first, moderated by Pacheco, addressed the use of satellites and geospatial analysis as research and monitoring tools for deforestation in the Amazon, based on Brazil's experience with the Prodes and Deter systems in the 2000s.

"It was at Inpe [National Institute for Space Research] that the first teams were trained to understand what a satellite image was, what we could do with it, and how we could analyze them. A culture of remote sensing was created that spread from Inpe to the whole world," said Thelma Krug, President of the Global Climate Observing System, former Vice President of the Intergovernmental Panel on Climate Change (IPCC), and a member of FAPESP's Superior Council.

Ima Vieira, an advisor to the Presidency of the Financier of Studies and Projects (Finep) and a research professor at the Emílio Goeldi Museum – of which she was the director from 2005-2009 – emphasized the importance of monitoring programs in the region. "They have been very important, especially for the implementation of public policies. Thanks to these

programs, we were able to have an annual deforestation rate. And Inpe went further. It started observing how logging was also destroying the Amazon, but in a more subtle way. The trees remain standing, but they are being degraded," she said.

Clarissa Gandour, a professor at the School of Economics of São Paulo at the Getúlio Vargas Foundation (FGV-EESP) and formerly a senior researcher and coordinator of Public Policy Evaluation for Conservation at the Climate Policy Initiative (CPI/PUC-Rio), stated that the current challenge lies not in monitoring but in response capacity. "We are already seeing in high definition what is happening. Command and control efforts remain fundamental, but we must ensure compliance with the law. Recover and strengthen the state's capacity," she emphasized.

Many Amazons

The second panel featured representatives from the private sector, the public sector, and the third sector in a discussion about using the mission-oriented innovation paradigm to structure research and development (R&D) funding in the Amazon, directing innovation efforts towards solving the region's complex social and environmental challenges.

"The idea of having missions or orienting research through missions is an old idea, inspired by the moon landing, which seeks to solve complex problems that involve not just one area of knowledge but an integrated set of actions. Today, a large part of global efforts, in parallel with global challenges, is organizing itself this way. In Brazil's case, we have a very clear challenge for the future agenda: the Amazon, due to the complexity of the subject," explained Lívia Pagotto, Executive Secretary of the "A Concertation for the Amazon" initiative and Senior Knowledge Manager at the Arapyaú Institute.

Patrícia Ellen, President of Systemiq in Brazil and former Secretary of Economic Development, Science, and Technology of São Paulo, emphasized the need for joint action. "Brazil is a country that has aged like Sweden but still has death rates like South Africa and homicide rates like Syria. This statement always alarms people, but it's true. Our duty is to integrate this agenda of health, climate, economy, and people. Our biggest challenge is our greatest solution; there is no other way but to unite. The mission approach will allow us to achieve these goals," she argued.

The potential of the bioeconomy

The third panel focused on the bioeconomy as a policy for economic development. "This is a unique opportunity to advance discussions on the subject, which, on one hand, brings the extraordinary biodiversity of the region and, on the other hand, economic and social development. We will discuss how, through the bioeconomy and, above all, with science, technology, and innovation, we can shape policies in the region," said Marcio de Castro Silva Filho, Scientific Director of FAPESP and panel mediator.

"It is very important for academia to promote debates like this, bringing people from the territories, indigenous people, to participate," said Raquel Tupinambá, coordinator of the Tupinambá Indigenous Council of the Lower Tapajós Amazon (Citupi), located in the Tapajós-Arapiuns Extractive Reserve, which has 23 villages. "We, as Amazonians, have a history of genocide and marginalization. For a long time, they placed us in the role of savages and said that the Amazon should be a space to be occupied and integrated. We have occupied the

Amazon for at least 12,000 years, and during that time, science and technology have always been developed there."

For Salo Coslovsky, Associate Professor at the University of New York (USA), coordinator of Infloresta, and associate researcher of the Amazon 2030 project, the Amazon has always been globally peripheral. "Brazil developed for a long time with its back to the Amazon. Much of what we see in the region was brought from outside, not developed locally. These are interests, products, techniques, and economic models from abroad. Those from there have always felt this contrast. But only now, with the Amazon at the epicenter of the battles against climate change, has the need to seek a new model, learning from those who are there and highlighting the important role of traditional knowledge, become apparent. For Salo, the potential of the bioeconomy in the region is limitless. "It's difficult to measure in terms of money. It could become astronomical," he assessed.

Francisco Costa Assis, a professor at the Federal University of Pará (UFPA) in the Postgraduate Program in Sustainable Development of the Humid Tropics at the Nucleus for High Amazonian Studies (NAEA), emphasized the need to readjust the view.

- A economic-led strategy for containing deforestation in the Amazon will not be enough - it is necessary to combine a multitude of different approaches
- Acknowledging indigenous traditionational knowledge as science is fundamental to the process of saving the Amazon Forest
- The transition to a more sustainable way of co-existing with the forest, as well as the future of the Amazonic region as a whole, must be led by the people from the region, not from abroad.
- Adopting big data approaches on satellite and geospatial analysis to curb deforestation is fundamental
- There is wide potential to use mission-oriented innovation to advance a new economic vision for the Amazon and Brazil

3.1.264 Collaboration outcomes

Amazon+10 Initiative, led by the National Council of State Foundations for Research Support (Confap), which brings together 25 state Foundations for Research Support (FAPs), including FAPESP.

3.1.265 Building inclusion and equity

Our four sessions included 3 indigenous leaders and activists, that contributed to a

Session 58: Nuclear Power and a Just Transition from Fossil Fuels

Session Convenor
Matthew Meyer

Position
Building Bridges Project Manager

Organisation
Generation Atomic

Country
USA

3.1.266 Abstract

This year's UNGA Science Summit will host an international group of experts to discuss nuclear energy's unique ability to underwrite a prosperous and sustainable future by providing reliable, low-carbon electricity, and phasing out coal.

This session will include individual talks from our speakers covering a range of topics including nuclear's ability to decarbonize sectors beyond electricity and its unique potential to justly transition coal plants and their workers to a clean energy economy. The event will finish with a panel style discussion covering how the world is rekindling its love for the energy source. Participants will also highlight advancements in nuclear technology and address socioeconomic implications, including creation of high-paying, permanent jobs and international collaboration among nations.

The panel aims to challenge misconceptions and promote informed dialogue on nuclear energy's role in achieving a sustainable future.

Virtual Agenda:

10:00-10:15am: Welcome Remarks by Matt Meyer, Generation Atomic

10:15-10:30am: Nuclear Energy in The Power Generation Mix, Veeshesh Sunassy, NAYGN (Canada/Mauritius)

10:30-11:00am: Coal to Nuclear: Rapid Decarbonization & High-Quality Clean Energy Jobs, Emily Nichols, Gateway for Accelerated Innovation in Nuclear (U.S.) & Dinara Ermakova, Anthropocene Institute (California/Kazakhstan)

11:00-11:15am: Advancements in Nuclear Technology Osama Baig, Nuclear for Climate (Canada/Pakistan)

11:15-11:30am: Break

11:30am-12:30pm: Panel Discussion: How the World is Rekindling its Love for Nuclear Energy Moderated by Isuru Seneviratne, Nuclear New York (U.S./Sri Lanka)

3.1.267 Key messages

Nuclear is one of the most misunderstood clean energy sources yet has an important role to play to decarbonize energy. We addressed popular misconceptions and demonstrated how nuclear can help in our climate battle.

- I am very thankful that you are open to hosting the topic of nuclear energy and would love to see even more next year!
- The need for the Zoom account to be associated with a virgin email was an inconvenience.
- A better system to find access to NYC venue space. We were offered a high probability of a free venue space from one of the organizers, only to be strung along for over a month w/ no success.

3.1.268 Collaboration outcomes

We traded interviews with someone from the solar industry in an attempt to "build a bridge" between 2 industries that are often viewed of as in opposition to one another.

3.1.269 Building inclusion and equity

We have speakers from around the world including Kazakhstan, Mauritius, Pakistan, Sri Lanka, USA, and Canada. 50/50 Female/Male split.

3.1.270 Key lessons learnt

We turned our 2.5 hour session into a full day symposium. We learned there is a lot of interest in nuclear energy. Most people have questions, but in general support it. Having discussion like these helps clear the air on nuclear as well as helps us be better communicators.

Session 59: Sustainable mobility and gender issues

Session Convenor
Elisabetta Venezia

Position
Adj Professor/FT Researcher

Organisation
University of Bari Aldo Moro

Country
Italy

3.1.271 Abstract

Scholars have thought about gender and mobility over the past decades. It can be summarized in terms of the core question driving that line of research. In essence, one asks:

How does movement shape gender?’ and considers problems such as how processes of mobility/immobility shed light on the shifting power relations embedded in gender.

The other line of research asks, ‘How does gender shape movement?’ and focuses on how gendered processes create, reinforce or change patterns of daily mobility.

It is interesting that whereas each of these non-intersecting literatures starts from different assumptions about what is important, exhibits distinctive methodologies, as well as different understandings of gender, mobility and which elements of context are important, the two strands arrive at a common fundamental message.

3.1.272 Key messages

Scientific contributions are of enormous importance for achieving the SDGs in all fields of action. Combining scientific skills with industrial and technological ones, serving the needs of the population, is essential to direct behavior. The changes are the result of concrete applications of the ideas discussed in these contexts. It is up to policy-makers to acquire the indications provided and make them operational for the future and for generations to come.

- Tackling complex societal problems, such as sustainability, requires improved understandings of the relationships between gender and mobility.
- By adopting a holistic approach to CSR, universities can significantly contribute to solving social, environmental and economic challenges.
- To achieve a true paradigm shift, it is necessary to integrate principles of gender equality and respect for diversity into corporate goals.
- By adopting of the gender perspective in all regulatory measures..

3.1.273 Collaboration outcomes

The Science Summit provided the basis for expanding scientific relationships for further research projects among those present. It gave us the opportunity to discuss the issues at a very advanced level in terms of scientific knowledge on sustainability and gender issues. Therefore, the desire to draw up a common project for the future followed. An excellent opportunity that would not have occurred in the absence of this panel.

3.1.274 Building inclusion and equity

Our session was inclusive in several ways:

- for the topics covered

- for the disciplinary areas involved

- for openness to different parts of the world, going beyond the European geographical scope

- directing our suggestions to a broad spectrum of institutional subjects capable of making real operational decisions.

3.1.275 Key lessons learnt

The first useful general lesson is that the comparison and discussion of these topics are fundamental to improving everyone's knowledge.

Specifically, with respect to the topics of sustainable mobility and gender issues, it emerged that:

- Gender and mobility literature indicates that the two strands are different but deeply complementary. Understanding how gender in all its complexity and diversity affects mobility and how mobility in all its complexity and diversity affects gender – and how each does so differently in different contexts – requires in-depth, contextualized studies, whether quantitative or qualitative in orientation. Each approach contributes significantly to understandings of gender and mobility, yet each alone is wanting. Only by connecting the two now-divergent strands, and building on the strengths of each, will researchers be able to contribute significantly to the discussion about sustainable mobility.

- Universities play a vital role in promoting gender equality. Our commitment to gender equality has a profound impact on society, as we influence the training, awareness, and development of future leaders, decision-makers, and professionals.

- To achieve a true paradigm shift, it is necessary to integrate principles of gender equality and respect for diversity into corporate goals.

- The fifth goal of the 2030 Agenda aims to achieve gender equality.

Europe has developed its own strategy to ensure that the target will be

achieved in all areas of the European Union by 2025.

The three key actions of the European strategy can be summarized:

a) fighting violence against women

b) the possibility for women to reach top positions in all kinds of jobs and politics

c) the adoption of the gender perspective in all regulatory measures.

Session 60: Innovation Systems and Global Value Chains: Balancing the two for Growth, Human Welfare and Environmental Sustainability today.

Session Convenor
Swati Mehta

Position
Assistant Professor

Organisation
Guru Nanak Dev University

Country
India

3.1.276 Abstract

The relationship between Innovation System and participation in local, regional and global value chains is complex. Whether innovation capability acts as enabler to enter and participate in value chains or entering the value chains provides window of opportunity to accumulate the innovation capabilities?

This issue that is of greater concern for laggard countries in Global South that aspires to grow and sustain in the contemporary globalized world. Subsequent it is also important to examine the impact of both stronger innovation systems and participation in value chains on gainful employment opportunities and the environmental sustainability.

These are some aspects that will be discussed in the session along with understanding the challenges of greening the value chains for both incumbents and latecomer countries.

3.1.277 Key messages

From the presentations and discussions during our session Innovation Systems and Global Value Chains: Balancing the two for Growth, Human Welfare and Environmental Sustainability today we gathered the following important points:

1. Strengthening Innovation Systems and gainful participation in global value chains/ regional value chains are important for different countries, mainly for the latecomer countries from the Global South.

2. In the contemporary times, it is important that latecomer countries avail the green window of opportunity to enter, sustain and upgrade within the GVC/RVC.

3. The role of the State and other institutions at local level, national level and global level is to produce more enabling environment for the creation, diffusion and assimilation of responsible innovations for sustainable and inclusive growth.

- Enabling environment for innovation should be strengthened in latecomer countries of the Global South.
- Conducive policies should be framed for greening the value chains, that would provides window of opportunity to participate in GVC with sustainability.
- Facilities of transportation and ICTs and other infrastructure should be developed connecting the latecomer countries from the Global South.
- Facilitate building of human capital with respect to fast changing technologies across geographies is much needed.

3.1.278 Collaboration outcomes

The Science Summit at UNGA provides a good platform to connect with many eminent scholars in the field.

I have discussed the possibilities of some collaborative research with some of the speakers and other participants.

I expect some positive outcome of such endeavours.

3.1.279 Building inclusion and equity

Our session was inclusive in many aspects:

1. The panel and convenors represents different parts of the world including India, Australia, South Africa, England, Netherlands, South Korea.

2. Gender equality was also maintained in the panel, convenors and participants.

3. Importantly the theme of our session was based on inclusive growth, human welfare and environmental sustainability.

3.1.280 Key lessons learnt

The biggest take away from the presentations and discussions during the session at the summit is identification of some of the challenges and opportunities in front of the latecomer countries for attaining inclusive and sustainable growth with the possibilities of greening of the value chains.

Session 61: People Centered Health Data Collaboratives: How they work and how they can be improved for global u

Session Convenor
Christine Asjoma

Position
Convenor for UNGA Science Summit, Editor and Research Associate

Organisation
People Centered Internet

Country
Germany

3.1.281 Abstract

Keynote 1: What is a People Centered Approach and Why It Matters?

8:45 am - 9:00 am, Mei Lin Fung, Co-Chair, People Centered Internet

The world produces 328.77 terabytes of data daily. This information can be used to achieve the SDGs and shape a positive digital future IF the data is accessible as a global good and permissioned by those who produce it. This session will outline what it means to take a people centered approach to data collection and use, illustrate why this change now matters, and discuss current examples in health service delivery, financial service development, national digital transformation efforts, and more on how this can be implemented in practice so that policymakers and scientists can work collaboratively to harness the available information today to shape the future we all want tomorrow.

Panel 1: People Centered Health Data Collaboratives: How they work and how they can be improved for global use ;

9:00: am -10:30 am

How do we harness responsibly the vast amount of health information that has been created and stored by devices but too often is siloed and inaccessible to the scientific community? ; This session focuses on the use of health data collaboratives to make this information accessible to scientists and practitioners, the regulatory issues that need to be considered and/or changed, and discusses the promise and pitfalls of the use of personal data.

Speakers:

Bertrand de la Chapelle, Chief Vision Officer, Datasphere Initiative

Paul Murphy, Research Fellow, TELUS Corporation

Kate Wilson, Senior Fellow, People Centered InternetTamara Singh, Sherpa, Sustainable Finance Development Network

Henry Mwanyika, Regional Director, Center of Digital and Data Excellence

Claire Melamed, Chief Executive Officer, Global Partnership for Sustainable Development Data

Mrt Aro, Digital Innovation Advisor to United Nations, European Commission, Estonia, and Lithuania

Moderator:

Mei Lin Fung, Co-Chair, People Centered Internet

3.1.282 Key messages

We must dispel the notion that science operates in isolation, capable of exclusively providing solutions to our challenges. Digitalization empowers individuals to become active scientists within their respective domains of expertise. It fosters collaboration, facilitating connections among highly specialized individuals, thereby expanding perspectives and facilitating the discovery of optimal solutions to the global issues confronting us. The new science is people centered.

- International organizations are good for international issues but not for transnational issues. And most of the issues that we have today are transnational.
- We need issue-based networks around the world to try to find solutions. Digital issues need iterative, adaptable and scalable treatment.

3.1.283 Building inclusion and equity

The group of speakers and moderators were fifty-fifty female male, the topic was on how to let everyone participate in the health organization design.

3.1.284 Key lessons learnt

Digital health data holds immense value, deserving robust safeguards, yet its analysis can also be life-saving. The healthcare sector's approach to data management could serve as a blueprint for handling digital information across diverse domains. Already, commendable models exist for orchestrating the collaboration of all stakeholders in crafting resilient solutions to healthcare challenges.

Session 62: Plant Molecular Farming: Advances in Biopharmaceutical Biomanufacturing

Session Convenor
priyen pillay

Position
Senior Researcher

Organisation
Council for Scientific and Industrial Research (CSIR), South Africa

Country
South Africa

3.1.285 Abstract

Plant molecular farming has emerged as an alternative biomanufacturing process for the production of biopharmaceuticals especially in developing countries. This platform for biopharmaceutical production has been validated by products manufactured and supplied by many companies in the industry viz.

Plantform, Leaf expression systems and Cape Bio Pharms. This track record demonstrates its potential for socioeconomic change, commercial viability and feasibility as well as prospects for the introduction of circularity into the production process. Adoption of the plant platform technology has occurred at a steady pace with some molecules for Covid-19 recently being licensed, and others advancing towards phase 1 clinical trials.

With more than 30 years of intensive research and development activities now having been invested in the field, great strides within the technical and regulatory landscape have now been made. It appears the field has reached a major tipping point towards wider acceptance and greater adoption.

This session brings together leaders and experts within the field of plant-made pharmaceuticals to share advances within the field, their key insights and enlighten us on the future prospects of Plant Molecular Farming.

3.1.286 Key messages

- In our session on Plant Molecular Farming, the prospect of securing health sufficiency using this expression platform really cam to the fore with so many good examples mentioned with regards to Covid-19, African horse sickness.

- Plant molecular farming is superior to conventional mammalian expression systems due to the non-meat and vegan preferences nowadays with regards to what expression systems should be used

- Environmental, Social, and Governance (ESG) Investing into plant molecular farming is becoming more popular due to the potential for circularity in the system

- If the costs of goods can be improved for the plant molecular farming sector, then we are looking at major disruption within the big pharmaceutical production sector

- More capital investment in Africa is required to translate this innovation into commercially viable pharmaceutical and vaccine production platforms
- The relatively immature regulatory frameworks and policies need to be updated to encompass these new disruptive technologies into the market
- An integrated approach involving industry, investors, governments, technical skills development, transfer, and regulations will be required
- The ESG (Environmental, Social, and Governance) of existing production systems needs to be questioned and alternatives such as plant molecular farming need to be strongly considered
- More research and development needs to be conducted within the plant molecular farming sector
- We need to look at the positive effects of setting up production plants worldwide on the net zero initiative
- We need to motivate the public and private sector to get involved in this space and invest
- We need to invest in education programs to spark interest at a school as well as a tertiary level

3.1.287 Collaboration outcomes

What came through from our session was a need to form a consortium for Plant Molecular Farmers, an ecosystem where all stakeholders support one another to further develop technology innovations.

Certainly, we will have a meeting with all the stakeholders to further discuss how we can all collaborate with one another in terms of research and development as well as from a consumer perspective.

3.1.288 Building inclusion and equity

We invited many stakeholders to our session and it was well attended from all over the world. We also invited many attendees internally as well.

3.1.289 Key lessons learnt

It is so important to share and collaborate with one another in order to advance a field forward. Within the Plant Molecular Farming field, there are so many innovations and when we interacted with our international collaborators and the field is growing quite well.

Session 63: From Brine to Building: Unlocking the Economic and Environmental Potential of Brine Discharge

Session Convenor
Ikko Tucker

Position
Technical Advisor

Organisation
Sandooq Al Watan

Country
United Arab Emirates (UAE)

3.1.290 Abstract

Countries bordering the Arabian Gulf rely heavily on desalinated water for life. An unfortunate bi-product of desalination is brine discharge, which has harmful effects on the Arabian Gulf ecosystem and marine life. Zero liquid discharge (ZLD) technologies have gained attention as environmentally acceptable solutions for brine disposal, particularly in inland areas. ;

However, traditional brine evaporation methods are energy-intensive and have significant carbon footprints.

Currently, there are limited viable solutions for brine discharge, and some commercial options are either infeasible or untested. In response to this challenge, Sandooq Al Watan, a private not-for-profit foundation based in the United Arab Emirates UAE), has launched the Re-Think Brine challenge in partnership with local industry and government partners, and regional university researchers.

The Re-Think Brine Challenge recognizes the need to address the environmental impact of brine discharge while also exploring its economic potential. This challenge aims to develop technologies that can transform brine discharge into commercially viable construction materials, contributing to the construction sector and the UAE's goal of sustainable development.

The expected impact of research outcomes from this challenge is significant. It includes protecting the Arabian Gulf ecosystem and marine life by minimizing harmful effects from brine discharge. The successful development of technologies for producing construction materials from brine discharge will foster an eco-friendly construction and real estate sector.

By fostering innovation and collaboration among scientists, researchers, and industry experts, this panel session will explore sustainable solutions for brine discharge, paving the way for a more environmentally conscious construction sector and contributing to the UAE's broader goals of sustainable development and water security.

The session incorporates research presentations from three finalists competing in the Re-Think Brine Challenge.

These researchers will showcase their ongoing projects, which explore various aspects of brine-based construction materials. Following the research presentations, the moderator will facilitate the panel discussion, where researchers will share their experiences, insights, and the challenges they have encountered during the research process, shedding light on the potential benefits and implications of this innovative approach.

Local live and virtual attendees will gain firsthand knowledge of the cutting-edge research being conducted in the UAE, and have the opportunity to engage with the panelists through Q&A sessions to exchange their thoughts and ideas.

3.1.291 Key messages

Our session combined a panel discussion with presentations of ongoing projects. We used the Re-Think Brine Challenge as a prime example of circular economy initiatives. The session delved into the environmental concerns associated with seawater desalination and explored the innovative ideas and solutions proposed by researchers in pursuit of sustainable development.

- Policymakers and governments should collaborate to develop comprehensive brine management strategies that focus on minimizing brine discharge and maximizing its reuse.
- Policymakers should incentivize the use of renewable energy sources for desalination, reducing the overall environmental impact.
- Governments can establish regulatory frameworks and financial incentives to encourage businesses and research institutions to explore innovative ways to treat and utilize brine.
- Establish partnerships between research institutions, businesses, and governments to develop innovative, feasible, and pragmatic environmentally friendly technology.
- Governments and educational institutions can launch educational campaigns for citizens and employees to spread awareness of sustainable development.

3.1.292 Building inclusion and equity

The session was a hybrid scientific/academic event. Therefore, on-site participants included researchers and students from related fields. The speakers represented five different nationalities, and overall, it appeared that the participants came from diverse national backgrounds.

3.1.293 Key lessons learnt

While I could not attend many sessions due to time differences (I certainly plan to watch many of them in the recordings), I strongly believe that collaborative efforts are the key to achieving success in the UN SDGs. Each individual should develop a sustainable mindset, not solely relying on top-down policies, and strive to achieve these goals. Combining small efforts can make a significant difference!

Session 64: Space Technologies and Safeguarding Cultural Heritage on Land, Underwater and in Our Skies

Session Convenor
Dr. Marlène M. Losier

Position
Legal Expert in International Law & Policy

Organisation
Losier González, PLLC
700 12th Street NW, Suite 700
Washington DC, 20005

Country
Mexico, USA

3.1.294 Abstract

The session, Space Technologies and Safeguarding Cultural Heritage on Land, Underwater and in Our Skies, will explore the use of space technologies to identify and safeguard cultural heritage on Earth with the use of satellite technologies while considering the need to temper these technologies to protect our night skies.

The principal objective of the session is to impress upon the United Nations General Assembly the increasing interdependence between space technologies and cultural heritage, as well as the interoperability of the scientific, technological, cultural, legal and policy objectives and expertise of the United Nations Educational, Scientific and Cultural Organization (UNESCO, Paris), the United Nations Office for Outer Space (UNOOSA, Vienna) and their respective treaty regimes.

As in many disciplines, with advancing technologies comes benefits, as well as consequences. The on-Earth applications of satellite technologies has allowed us to identify and safeguard archeological sites, endeavor to protect them from the effects of climate change, curb their pillaging and halt the illegal trafficking of their illicitly obtained cultural properties. Please join us as we discuss the benefits of satellite technologies in the field of cultural heritage identification and protection.

Our discussion, however, will be counterbalanced with the consequences of these space technologies to our night skies, which have been a critical cultural and scientific element to our lives and civilizations throughout millenia and in all parts of the world. With increased satellites orbiting Earth for a multitude of reasons, our night skies are becoming alarmingly polluted. Our pristine view of the stars, planets and our universe is threatened causing detrimental effects to cultural practices, astronomy and a plurality of other areas. Our

panelists will discuss the technical, legal and policy initiatives, current and prospective, surrounding this topic at the community and international level.

Lastly, as a fascinating segway into what lies ahead and beyond, our session will share with the General Assembly the emerging area of art and cultural heritage beyond Earth. Our panelists will discuss the growing body of tangible and intangible cultural heritage existing beyond Earth whether it be in our orbit, in modular systems, on the Moon and other celestial bodies, or traveling in interstellar space. Space technologies have broadened our access to understanding our cultural heritage on Earth. It is opportune, however, that we consider also the access and implications that these technologies will continue to give humankind to develop life and express culture beyond our home planet.

Agenda and List of Speakers

Moderator: Dr. Marlène M. Losier (Losier González, PLLC)

Panel #1: " The Role of Satellites in Identifying and Safeguarding Cultural Heritage Sites on Earth"

Time: 9:00 - 10:30 am EDT (New York)

Dr. Alicja Jagielska-Burduk, University of Opole

Dr. Michael Potter Geeks, Without Frontier

Dr. Sarah Parcak, University of Alabama at Birmingham

Dr. Constantinos Cartalis National and Kapodistrian, University of Athens

Professor Tullio Scovazzi Milano-Bicocca, University School of Law

Panel #2: "Balancing the Use of Satellites with Preserving Our Dark and Quiet Skies"

Time: 10:30 - 11:15 am EDT (New York)

Dr. Andrzej J. Jakubowski, Polish Academy of Sciences

Dr. Domingos Barbosa, Instituto de Telecomunicações

Dr. Andrew Williams, European Southern Observatory

Panel #3: "Art & Cultural Heritage Beyond Earth"

Time:11:15 am - 12:00 pm EDT (New York)

Dr. Bernard Foing, EuroMoonMars

Professor Nahum Romero Zamora, Kosmica Institute

Professor Michelle Hanlon, For All Moonkind

Key messages

- There is an ever-growing interdependence between space technologies and cultural heritage, as well as the interoperability of the scientific, technological, cultural, legal and policy objectives and expertise of the United Nations Educational, Scientific and Cultural

Organization (UNESCO, Paris), the United Nations Office for Outer Space (UNOOSA, Vienna) and their respective treaty regimes.

• Earth Observation capabilities provided by satellites facilitate the safeguarding of cultural heritage sites on Earth, which can support vertical and horizontal efforts to fulfill the UN's SDG. Satellite systems provide heightened accuracy, broader accessibility and increased capacity to identify and safeguard archeological sites, provide strategic tools to, among other uses, curb their pillaging, halt the illegal trafficking of their illicitly obtained cultural properties, prevent their damage in times of conflict, threats from agricultural and infrastructural projects and the growing hazards of climate change.

• The benefits of satellite technologies must be counterbalanced with the potential consequences of having these space objects travel through our orbits, thus, creating a demand to temper their installation and pollution of our the dark and quite skies that have been an essential element over millennia for education, science and culture for humanity, as well as a key element in the life of all living creatures. With increased satellites orbiting Earth for a multitude of reasons that in many ways enhance the fulfillment of the 17 SDGs, our pristine view of the stars, planets and our universe is at risk causing detrimental effects to cultural practices, astronomy and in a plurality of other areas.

--- The growing number of satellite constellations in low-Earth orbit (LEO) enhances global communications and earth observation. The development of a space economy is a high priority of many governments. At the same time, the proliferation of satellites in LEO has negative effects on astronomical observations, research, and the preservation of dark and quiet skies. These constellations result in sunlight reflected onto optical telescopes, as well as radio emission impacting radio observatories, which jeopardises our access to essential scientific discoveries through astronomy. The changing visual appearance of the sky also impacts our cultural heritage and environment. Both ground-based observatories and space-based telescopes in LEO are affected, and there are no places on Earth that can escape the effects of satellite constellations due to their global nature. Maintaining minimally disturbed dark and radio-quiet skies is crucial for conducting fundamental research in astronomy and important public services such as planetary defence, technology development, and high-precision geolocation.

-- Some aspects of satellite deployment and operations are regulated by States and intergovernmental organizations. While regulatory agencies in some States have started the practice of requiring operators to coordinate with the national astronomy agencies over impacts, mitigation of the impact of space objects on astronomical activities is not sufficiently regulated. To address this issue, the astronomy community urges States and the international community to:

---- 1. Maintain and improve the current access to the dark and quiet skies.

---- 2. Financially support astronomy to implement mitigation measures at observatories and in software.

---- 3. Encourage and support satellite operators and industry to collaborate with the astronomy community to develop, share and adopt best practices in interference mitigation, leading to widely adopted standards and guidelines.

---- 4. In the longer term, establish regulations and licensing conditions based on practical experience to codify industry best practices that mitigate the negative impacts on observational astronomy. Satellites in LEO should be designed and operated in ways that minimise adverse effects on astronomy.

---- 5. Continue to support finding solutions to space sustainability issues, including the problem of increasing space debris leading to brighter skies, which will also benefit the field of astronomy and all sky observers worldwide.

• The tangible and intangible expression of art and culture is being realized beyond our home planet, whether that be in orbit, in modular systems like the International Space Station, traveling in interstellar space or on the surface of the Moon or other celestial bodies. Fostered in a community in large part of non-governmental organizations, these expressions of art and cultural meet at the intersection of two legal regimes framed under distinct United Nations auspices. However, an integrated and dedicated policy and legal framework is needed within the UN regime to recognize, foster and frame the continued expansion of culture beyond our home planet.

• There is a growing need to create broader and more formal initiatives to facilitate the expanding interoperability of the scientific, technological, cultural, legal and policy objectives and expertise of the UN Educational, Scientific and Cultural Organization (UNESCO, Paris), the UN Office for Outer Space (UNOOSA, Vienna) and their respective treaty regimes.

• The practical manifestations of the interconnection between space and cultural heritage, however unimaginable or intangible on its face it may be for most people, calls nonetheless for greater mechanisms consolidated under the UN regime to facilitate interdisciplinary undertakings and public-private endeavors that could also ultimately lend not only to ensuring the competence and longevity of the United Nations into the future, but also to contribute to the realization of peace and security for more people.

• The utilization of space can be implemented as a strategic tool to improve life on Earth through collaboration in achieving the 17 SDGs and thereby a means to advance the Purposes and Principles set forth in Article 1 of the UN Charter that established the United Nations in 1946. In leveraging the capacity of all of humanity to work towards meeting the UN's 2030 Agenda, Section 3 of Article 1 of the UN Charter is materialized, in the sense that we engage in, "international co-operation [to] solv[e] international problems of an economic, social, cultural, or humanitarian character."

• Identifying and utilizing space as a strategic tool to achieve the UNGA 17 SDGs contributes also to realizing one of the founding principles of the 1967 Outer Space Treaty established in its Article 1 which sets forth that, "The exploration and use of outer space … shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development."

• Conceiving space as a strategic tool to improve life on Earth creates an integrative mechanism for interdisciplinary undertakings, public-private endeavors and moreover inter-auspices cooperation within the UN regime.

- Losier González, PLLC proposes that the UN General Assembly recognize the steadily evolving and strengthening interconnection between the exploration and use of outer space and cultural heritage.
- Losier González, PLLC proposes that the UN General Assembly create broader and more formal initiatives to facilitate the expanding interoperability of the scientific, technological, cultural, legal an
- Losier González, PLLC proposes UNGA counterbalance the benefits of satellite technologies with the potential consequences of having these space objects polluting our the dark and quite skies.
- Losier González, PLLC proposes UNGA undertake a promotional campaign evidencing ways in which space technologies and their applications have improved life on Earth.

3.1.295 Collaboration outcomes

Although Losier González, PLLC's session, Space Technologies and Safeguarding Cultural Heritage on Land, Underwater and in Our Skies, ended not more than 72-hours ago, there are already discussions underway for future collaboration. Resulting from our session is a planned initiative to organize a symposium in Paris in the spring of 2024 for invited decision makers at the UN Educational, Scientific and Cultural Organization, the UN Office for Outer Space and delegates of the International Astronautical Federation spring meetings. The symposium would similarly share with the participants (UN and governmental decision makers) the need for and opportunities to create a joint initiative to formalize the efforts of the UN's cultural auspices with its space auspices.

Another such discussion is to undertake between several Speakers to increase awareness at the UN General Assembly of the importance of: (1) the role of satellites in identifying and safeguarding cultural heritage sites on earth; (2) balancing the use of satellites with preserving our dark and quiet skies; and (3) to bring awareness to the emerging sector of art and cultural heritage beyond earth. Speakers undertook to support these efforts at the Summit of the Future in September 2024.

3.1.296 Building inclusion and equity

Losier González, PLLC's session, Space Technologies and Safeguarding Cultural Heritage on Land, Underwater and in Our Skies, was inclusive for several reasons. To begin, our speakers were from the following countries: Haiti, Poland, the USA, Greece, Italy, Portugal, the UK, the Kingdom of the Netherlands and Mexico. There was an excellent gender balance between our speakers, as well as a diverse distribution of races, ethnicities and generational representations. Our session was inclusive because it was a multidisciplinary discussion that touched on a wide range of subject matters including science, technology, diplomacy, education, communications, history, international collaboration, space, weather, astronomy, private industry, the United Nations regime, law, policy, discovery and many more. Our session was inclusive also given the range of professional positions held by our speakers from

professors, scientists, attorneys, policy makers and artists, all who collaborated successfully to support our session's objective, which was to demonstrate the increasing relationship between the utilization and exploration of outer space and cultural heritage. In addition, our session was inclusive because it enabled discussions between private and public entities, including commercial, academic, non-profit and State organizations.

3.1.297 Key lessons learnt

Perhaps the most important lesson we learned from the Science Summit for the 78th Session of the United Nations General Assembly is that the capacity for human innovation is unfathomable. The Science Summit displayed the gargantuan variety of human capacity to collaborate to identify and propose solutions to many of the most significant challenges confronting humanity. The Science Summit has done an excellent job at drawing such contributions from humanity. Well done!

Session 65: : Pan-African initiative to build research and innovation capacity to achieve SDG7 for Africa

Session Convenor
Vidvuds (Vid) Beldavs

Position
Chairman of Riga Photonics Centre

Organisation
Riga Photonics Centre

Country
Latvia

3.1.298 Abstract

This panel will present the potential for the ANSOLE Energy Compact that promotes multi-level capacity building (Africa-wide, national, university, and community-level action) to address the extremely urgent need to accelerate access to and effective uses of affordable and reliable energy by communities in Sub-Saharan Africa.

Sub-Saharan Africa has nearly 600 million people without access to electricity. It is urgent to speed up electrification as climate change intensifies and AI and other technological advances accelerate, widening the divides between the haves and the left behind, fueling rising costs of instability. Most alarming is that IEA forecasts show that based on present trends, nearly 600 million will still not have access to electricity by 2030 and be poorly equipped to address the worsening impacts of climate change. While the heart of the challenge is Sub-Saharan Africa, where less than 50% of the population has access to electricity, even countries with high access to electricity in Africa face power shedding and other supply disruptions frequently.

Session Overview

This panel will present the potential for the ANSOLE Energy Compact that promotes multi-level capacity building (Africa-wide, national, university, and community-level action) to address the extremely urgent need to accelerate access to and effective uses of affordable electricity by communities in Sub-Saharan Africa.

The ANSOLE Energy Innovation Hub (AEI-Hub) enables the multilevel capacity building to accelerate the achievement of universal access to sustainable, reliable, and affordable energy and its effective use for development for all in Africa.

Speakers will address how ANSOLE and its partners across Africa are building the AEI-Hub to enable acceleration of the pace towards SDG7 in Africa.

AEI-Hub elements – ANSOLE sponsored workshops engaging experts, entrepreneurs and mentors with specific expertise and experience to address barriers to more rapid progress towards SD7 for Africa.

- ANSOLE sponsored staff exchanges and mobility to enable collaborating partners to advance shared goals through staff mobility.

- ANSOLE knowledge exchange portal to provide accurate data about research infrastructure and scientific and technical expertise at scientific and technical institutions across Africa to enable sharing of skills and research resources to enable acceleration of the pace towards achievement of SDG7.

AI tools to empower community leaders and their communities with the knowledge to make effective decisions about energy and other technologies and their financing, deployment and operation in ways that build the capacity of the community to build a better future for the community and its members.

The ANSOLE Energy Innovation Hub (AEI-Hub) enables the multilevel capacity building to enable the acceleration of the achievement of universal access to sustainable, reliable, and affordable energy for all in Africa. Speakers will address how ANSOLE and its partners across Africa are building the AEI-Hub to enable acceleration of the pace towards SDG7 in Africa.

Inadequate access to necessary knowledge at the community-level to enable decisions about energy technologies, their financing and deployment is a key barrier to achievement of SDG7. Communities empowered with knowledge can take advantage of many existing programs aimed at advancing micro-grid energy systems in Africa, which can be solar, wind, biogas, and small-scale hydro or their combination coupled with effective energy storage. AI tools can help communities to make decisions about matters where the community has little prior experience. ChatGPT and other AI tools can be adapted with Africa-specific data sets and with the capacity to interact orally with community members in vernacular or textual information augmented with the use of video and other multimedia materials.

Expected outcomes

ANSOLE is striving for greater awareness by international organizations, national agencies, the AU Commission, the EU Commission, USAID, development banks, local governments, and religious organizations of the work of ANSOLE and of the potential of the AEI Hub to accelerate the pace to achieve SDG7, particularly in Sub-Saharan Africa in countries with low access to electricity.

Greater awareness of the AEI Hub is expected to lead to greater funding, particularly from international agencies committed to achieving SDG7 but also from private donors as well as from entrepreneurs that are encouraged to invest in energy technology development, energy systems and components manufacturing, and in products and services that enable more effective use of energy to advance the development of the community.

Time

Lecture

9.00-9.15 Welcome by Daniel A. M. Egbe & Vidvuds Beldavs

9.15-9.30 Energy Innovation Hubs for Africa, Vidvuds Beldavs, Riga Photonics Centre, Latvia

9.30-9.45 Share of Solar Cells Technologies to Ethiopia's Energy Demand and Undergoing Research, Newayemedhin Aberra Tegegne, Department of Physics, Addis Ababa University, Ethiopia

9.45-10.00 Energy and Water Situation in Rural Communities in CÔTE D'IVOIRE, Joseph Datte, Ecole Normale Supérieure, Université Felix Houphouet Boigny, CÔTE D'IVOIRE

10.00-10.15Comparison of two solar cookers for off-grid decentralized rural communities, Ashmore Mawire, Department of Physics, MaSIM, North-West University, Mahikeng, South Africa

10.15-10.30 Energy Transition in Senegal, Allé Dioum, Department of Physics, Cheikh Anta Diop University Dakar, Senegal

10.30-10.45 Ghana's Energy Transition: Research & Development of Green Hydrogen as Energy Carrier, Richard Opoku, Department of Mechanical Engineering, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

10.45-11.00 Improving Solar Photovoltaic Energy Yield using Bifacial PV module and tracking system: An Analytical Approach, Rahimat Oyiza Yakubu, Department of Mechanical Engineering, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

11.00-11.15 La Problematique de l 'accés l 'Energie au Tchad (The Problem of Energy Access in Chad), Michel Boukar, Former Chadian Minister of Petrol and Energy, President of the NGO ACID, Djamena, Chad https://www.ongacid.org

11.15-11.30 The artisanal production of solar panels as a training tool for the appropriation of technology: The case of West Africa, Arouna Darga, Departmant of Physics, University of Paris Sorbonne, Paris, France

11.30-11.45 Empowering African Women and Young girls in Energy and Climate, Zita Ngagoum Ndalloka, University of Massachusetts, Lowell, Department of Electrical and Computer engineering, Francis College of Engineering, Lowell, USA

11.45-12.00 African Network for Solar Energy: Applying The Second Law of Thermodynamics in Real Life, Daniel Ayuk Mbi Egbe ANSOLE e.V. Jena, Germany/MaSIM, North-West University, Mahikeng, South Africa/College of Science and Technology, University of Rwanda, Kigali, Rwanda

Closing Remarks

3.1.299 Key messages

The Africa Energy Paradox:

Africa has by far the greatest solar irradiance in the world and the greatest abundance of critical materials for solar energy and has an abundance of highly inventive people - over 2 billion by 2050, yet

solar energy penetration does not exceed 2 % of generating capacity in Africa.

Very little solar energy equipment is manufactured in Africa

Based on its needs and resources Africa should be the largest market in the world for solar energy and should be the largest manufacturer of solar energy products and as such should become a world leader in solar energy research.

The overriding message was to boost innovation to accelerate progress towards SDG7 in a continent where 600 million people do not have access to electricity.

Access to electricity is not enough, particularly if mini-grids are involved. There must be a local owner that takes responsibility for operating and maintaining the mini-grid system to avoid the problem like in India where nearly 100% access to electricity was achieved, but within 2 years only 5% of the mini-grid systems art operational.

- Energy innovation hubs need to be developed in sub-Saharan Africa to accelerate financing and deployment of solar mini-grids as well as to stimulate business development in rural communities.
- African countries need to intensify and accelerate R&D of organic PV materials that would be suited to agrivoltaic applications in Africa which are much less energy-intensive to manufacture and less c
- Africa needs to focus on the energy implications of Agenda 2063 for Africa to take full advantage of its human and natural resources by becoming the largest solar energy market in the world.
- Africa needs to become a leader in solar energy systems and components.

3.1.300 Collaboration outcomes

ANSOLE formed an Energy Compact with UN Energy to build capacity in Africa to achieve SDG7

Developed the African Smart Communities project to develop AI tools using ChatGPT and other AI tools to empower rural communities in sub-Saharan Africa with knowledge delivered in local vernacular via computers and mobile devices including older generation smart phones still pervasive in rural SSA.

The Project is an element of the ANSOLE Energy Compact with the UN to build capacity to achieve universal access to sustainable and reliable energy at affordable cost for all people in Africa.

After proving out the approach to empower rural communities in the SSA working with 8 communities (2 in Cameroon, 3 in Kenya, 3 in Nigeria) the approach will be adapted to work in SSA countries like South Sudan (7%), Niger (19%), Sierra Leone (27%) that have much lower levels of access to electricity than Cameroon (65%)Kenya (76%),and Nigeria (59%).

We also see the approach as a method to foster literacy in areas of the SSA with unacceptable levels of illiteracy.Additionally, the Chat/GPT enabled match-making, knowledge sharing platform to be created with project funding will exist to be applied to match needs

assessments of other communities with sources of financing, expertise and technologies. Project work will result in building blocks that can be built upon to achieve broader objectives of the ANSOLE Energy Compact which is designed for capacity building to advance SDG7 and other sustainable development goals in Africa. Proposals have been submitted to the Gates Foundation, to USAID, and to Data.org (Microsoft).

Planning a project to create energy innovation hubs associated with universities in the SSA.

3.1.301 Building inclusion and equity

Full professors, graduate students, business, religious leaders, 8 men 4 women from 12 different countries in Africa.

3.1.302 Key lessons learnt

Speakers need to be handled with great care to avoid friction.

Session 66: Plant Molecular Farming: Advances in Biopharmaceutical Biomanufacturing

Session Convenor
Maabo Moralo

Position
Researcher

Organisation
Council for Scientific and Industrial Research (CSIR), South Africa

Country
South Africa

3.1.303 Abstract

Plant molecular farming has emerged as an alternative biomanufacturing process for the production of biopharmaceuticals especially in developing countries. This platform for biopharmaceutical production has been validated by products manufactured and supplied by many companies in the industry viz.

Plantform, Leaf expression systems and Cape Bio Pharms. This track record demonstrates its potential for socioeconomic change, commercial viability and feasibility as well as prospects for the introduction of circularity into the production process. Adoption of the plant platform technology has occurred at a steady pace with some molecules for Covid-19 recently being licensed, and others advancing towards phase 1 clinical trials.

With more than 30 years of intensive research and development activities now having been invested in the field, great strides within the technical and regulatory landscape have now been made. It appears the field has reached a major tipping point towards wider acceptance and greater adoption.

This session brings together leaders and experts within the field of plant-made pharmaceuticals to share advances within the field, their key insights and enlighten us on the future prospects of Plant Molecular Farming.

3.1.304 Key messages

Biopharming's potential for scientific innovation, its alignment with SDG achievement, and its role in addressing global challenges highlighted in the UN Summit of the Future and the post-SDG Agenda position it as a vital contributor to advancing science and innovation for a more sustainable and equitable world, given its interdisciplinary approach and sustainable product development capabilities.

Biopharming's cost-effective production of pharmaceuticals and vaccines can enhance access to essential medicines in developing nations, aligning with SDG 3's aim of promoting good health and well-being for all.

Biopharming's interdisciplinary approach, involving biologists, agronomists, and pharmaceutical researchers, fosters innovation and aligns with SDG 17's aim to strengthen global partnerships for sustainable development.

Biopharming generates employment opportunities in research, agriculture, and manufacturing, which in turn supports the objective of SDG 8: fostering long-lasting, inclusive, and sustainable economic growth.

Biopharming's capacity for swift vaccine and therapeutic production enhances our readiness for global health emergencies, like pandemics, aligning with the objectives of the UN Summit of the Future, dedicated to tackling emerging challenges.

Beyond the SDGs, in the post-2030 era, biopharming innovations remain valuable for global sustainability. They can play a pivotal role in addressing evolving challenges in health, agriculture, and the environment, aligning with the future development agenda.

- Establish Regional Biopharming Hubs for Vaccine Production (1-2 years)
- Incentivize Research and Development in Plant Molecular Farming
- Facilitate Regulatory Harmonization for Biopharming Products (5- 10 years)

3.1.305 Collaboration outcomes

None at the moment but we are hoping to start discussions in the coming weeks.

3.1.306 Building inclusion and equity

The session had a diverse panel and speakers with a diverse range of backgrounds, expertise, and perspectives, including gender, race, and career stage.

3.1.307 Key lessons learnt

Lessons on diverse perspectives; Gaining insights from a wide range of perspectives on biopharming and the challenges.

Lessons on effective communication; Developing skills in clear communication, facilitation, and dialogue management.

Lessons on logistics and planning; Learning the skills of event planning and management.

Session 67: Exploring Recommendations for a More Equitable Future in Science Education and Workforce Development

Session Convenor
Adriana Bankston

Position
Senior Fellow, Civic Science & Public Policy

Organisation
Sigma Xi, The Scientific Research Honor Society

Country
USA

3.1.308 Abstract

Science education and workforce development are critical for building future global citizens. To develop the next generation of scientists who can leverage their knowledge in society, the culture of science needs to change in ways that accelerate progress towards the Sustainable Development Goal (SDG) 4, focused on inclusive and equitable education and lifelong learning opportunities for all. Impactful culture change in science also requires preparing researchers to contribute their talents to improve society in ways that advance the Sustainable Development Goal (SDG) 8, focused on economic growth, productive employment, and work environments.

Achieving these goals requires a variety of stakeholders to contribute. This includes the need for universities to incorporate discussions on the societal implications of research into the curriculum and to provide ways for scientists to engage in experiential opportunities outside the classroom. Research funders should envision novel mechanisms of rewarding training and mentoring for the next generation of scientists, in addition to several university partners who can help translate research discoveries into practical applications.

Finally, policymakers can utilize this information to help achieve actionable change in government or through the legislative process, which is critical to supporting the future scientific workforce in their education, employment, and civic engagement activities. Speakers in this session bring various perspectives and expertise, and they will engage the audience in effective ways of designing reforms to change the culture of science towards actionable recommendations that can be implemented globally.

These recommendations will benefit scientists from all backgrounds and enable them to effectively contribute towards a better society.

Moderator: Adriana Bankston, Senior Fellow in Civic Science & Public Policy, Sigma Xi & JSPG Leadership

Panelists:

Brittany Aguilar, Science Associate, Schmidt Futures

Stephen Albright, Program Manager, New York Academy of Sciences

Leah Cairns, Associate Director, Executive Office Scientific Programs, IAVI

Shalin Jyotishi, Senior Advisor for Education, Labor, and the Future of Work, New America

Kaliris Salas-Ramirez, Distinguished Medical Lecturer, CUNY School of Medicine

3.1.309 Key messages

- Our session highlighted the need to disrupt the current systems in order to create strong role models in STEM and to prioritize support for researchers who have been traditionally marginalized across different levels of education (including international students, people of color, trainees with disabilities etc).

- We highlighted the importance of the scientific system needing to adapt to the educational needs of researchers and students at various levels along the continuum, including at community colleges and four year institutions that can build a strong future workforce (https://www.newamerica.org/education-policy/edcentral/announcing-community-college-workforce-transformation-implementation-cohort/) and this includes non-degree workforce programs as a potential model (https://www.newamerica.org/education-policy/briefs/how-to-use-data-to-improve-non-degree-workforce-programs-at-community-colleges/).

- We emphasized skills as an equalizer across levels of education and the need to support populations that are underrepresented, in addition to developing innovative models of education and workforce development through adapting to different populations within U.S. institutions as well as considering educational models in a number of different countries.

- Several organizations represented in this session currently work on improving training and professional development for the next generation of scientists, whether through robust funding, strong programming and/or innovative partnerships. However, the group agreed that in order for systemic change to occur no one organization can do it alone.

- While we discussed the idea of empowering trainees to make change in a grassroots fashion from within is important, we also agreed that the burden of reform should not be placed on those who do not benefit from the current system, but that policy stakeholders with decision making powers including state and local governments need to act in order to support these groups and this may occur often from outside the institution.

- Various policy levers can be useful for culture change to occur as determined by various actors, necessitating both institutional changes (through faculty views and other advisors) and external partnerships (such as with employers and/or industry advisory boards) in order to leverage skills gained more broadly outside of the institution.

- Addressing many of these needs can also facilitate the scaling of educational offerings in order to better support different populations in STEM, and this necessitates thoroughly examining labor market information (LMI) and job postings to better prepare students and graduates for suitable jobs that they qualify for

(https://www.insidehighered.com/news/tech-innovation/data-analytics/2023/08/01/value-labor-market-data-higher-ed-grows).

- Ultimately the group agreed that a large part of the focus should be on the people who are doing research and on providing them with necessary skills and advice, as well as listening to a diversity of ideas to enrich STEM as a whole and providing access to opportunities in order to align with broader values that the system needs to uphold.

- Another important point was the idea of developing a generation of innovators and the idea of funding high-risk, high-reward research, which would not be possible without every voice represented and the existence of role models so that students can see themselves in decision-making roles in the future.

- Finally, these principles should also drive how investments in science are being made in order to support innovative research findings, including the need to focus on community needs and local engagement where often meaningful change can occur in addition to the federal level.

Recommendations for question 11:

- Policy levers at the federal and state level can be leveraged to achieve the systemic change through funding, programs and partnerships by governments.
- Policies in STEM need to adapt to different levels of education and systems of training within different countries and best practices can be learned.
- Governments should emphasize educational programs to support marginalized scientists, and develop partnerships across stakeholders.
- Governments should emphasize labor market information and partner with potential employers and offer experiential opportunities.
- Policy levers at the federal and state level can be leveraged to achieve systemic change through funding, programs and partnerships by governments.
- Policies in STEM need to adapt to different levels of education and systems of training within different countries and best practices can be learned.
- Governments should emphasize educational programs to support marginalized scientists, and develop partnerships across stakeholders.
- Governments should emphasize labor market information and partner with potential employers to offer experiential opportunities.

3.1.310 Collaboration outcomes

While we have not developed partnerships directly resulting from the UN Science Summit, the organizations represented in our session each cover an important facet of systemic change in STEM. In future work, collaborations among our different constituencies could lead to an improved STEM enterprise where researchers, academic advisors, funders, trainers, and labor market professionals can work together.

3.1.311 Building inclusion and equity

The session was inclusive based on the gender and race of panelists, and the diversity of sectors and stakeholders involved in the session to make for a positive group discussion.

3.1.312 Key lessons learnt

In our session, we learned important ideas about making the field of STEM more inclusive through talking with professionals representing different stakeholders in the ecosystem, agreed on ways to advance the field forward, challenged the status quo, discussed current challenges and provided solutions.

Session 68: Nursing and climate change: call to action

Session Convenor
Doriam Camacho Rodriguez

Position
Lider ANHE Latinoamerica
Dean Nursing Faculty Cooperative University of Colombia Campus Santa Marta

Organisation
ANHE Latinoamerica
Cooperative University of Colombia Campus Santa Marta

Country
Colombia

3.1.313 Abstract

La sesión “Enfermería y cambio climático: llamado a la acción" estará orientada a la socialización de experiencias exitosas de las Escuelas de enfermería y Hospitales de Latinoamérica, en las cuales se ha trabajado en el nexo Enfermería, cambio climático y medio ambiente, a través de actividades de docencia, investigación y proyección social.

Para esta sesión se realizará una convocatoria de postulación de experiencias exitosas, a través de los miembros de la Alianza de enfermeros por ambientes saludables - ANHE Latinoamérica- y su relacionamiento con las Asociaciones gremiales y académicas de Enfermería.

Se seleccionarán las experiencias con mayor impacto en relación con el logro del objetivo de desarrollo sostenible No. 3. Salud y bienestar, en el marco de la salud ambiental y la protección del entorno.

3.1.314 Key messages

Nursing aims to contribute to the achievement of the goals of all the SDGs, with greater emphasis on reducing perinatal maternal mortality, tropical and communicable diseases, as well as diseases caused by dangerous chemicals and air, water, and pollution. the soil, as well as actions aimed at environmental conservation and the adaptation and mitigation of climate change.

Nursing aims to contribute through the training of professionals with environmental sensitivity and solid training in the climate and actions nexus, as well as advances in research and community communities aimed at promoting healthy environments.

- Incorporate nursing and health professionals into environmental health teams and the discussion of public policies related to the climate and health nexus.
- Take advantage of the acceptability and credibility of nursing professionals in the community, to turn them into promoters of environmental health

- Incorporate environmental education in nursing and health consultations to provide education to patients, families and their communities, regarding actions to care for the environment and minimize the

3.1.315 Collaboration outcomes

From this summit, we have the opportunity to conduct research on the meaning of climate change and its impact on health for less favored communities and, from there promote interventions aimed at the identified needs.

3.1.316 Building inclusion and equity

The session was inclusive because it promoted the participation of nursing professionals and related areas from Latin America and the socialization of successful experiences from Colombia, Peru, Chile, and Brazil was achieved, where work aimed at indigenous and vulnerable communities was evident.

3.1.317 Key lessons learnt

We learned that there are many people and organizations that are working on the issue and that it is important to know what others are doing in order to join forces.

Session 69: The Role of Art in Medical Education: the added value to engage students

Session Convenor
Maria de Lourdes Pereira

Position
Associate Professor with Habilitation

Organisation
Department of Medical Sciences, University of Aveiro, Aveiro

Country
Portugal

3.1.318 Abstract

Learning medicine and health through art is one of the attractive active learning and teaching methodologies that plays a key role in engaging students, motivating them, and awakening their senses.

Thus, it is intended to create new approaches to medical education through other learning resources, such as plastic arts, music, and literature, to sharpen curiosity and stimulate empathy reflection and sustain the commitment of students to acquiring knowledge.

In this session, Prof. Ana Paula Girol will highlight many representations of diseases and pathological conditions in the field of plastic arts, such as tuberculosis, abortion, blindness, and the plague, among others. It is also intended to point out to medical students that the doctor-patient relationship can be demonstrated through various positive and negative models of experiences with the disease.

In addition, the perception of literature, especially of the classics, as an important source and activity for understanding human subjectivity and the human condition is not recent and was even the subject of enthusiastic comments by Sigmund Freud in the past regarding the nature of the psychic and its normal and pathological manifestations.

In this view Teaching in Health Sciences and (Classical) Literature: Literary Texts as a Privileged Source for Understanding Human Subjectivity and Current Mental Health Problems will be presented by Prof. Franco Cossu Jr. Although the necessary ultra-specialisation and the technical improvement of academic knowledge in Medicine and in the area of Health Sciences, in general, have abbreviated or even diminished the importance of teaching the humanities, literature and its great works seem to offer, in a direct and privileged way, an important hermeneutical shortcut for a more comprehensive understanding of human actions and not only in the clinical-practical sense but, above all, in understanding the more general relations of subjectivity and its social-historical surroundings.

This justifies the importance of literary references as an additional resource for academic teaching in the field of Medicine and for the analysis of contemporary mental health problems and body ailments.

Moreover, between the art creator and the art observer, different perspectives emerged related to the same object or representation. These aspects will be discussed by Prof. Zélia Anastácio and Dr. Sónia Oliveira

3.1.319 Key messages

In the ever-evolving landscape of medical education, engaging students is a paramount challenge.

However, educators are increasingly recognizing the power of incorporating art into their teaching methodologies to not only convey complex morphological concepts but also to inspire a deeper understanding and appreciation for the intricacies of the human body.

Through practical examples, case studies, and innovative teaching strategies, this presentation aims to showcase how incorporating art into the teaching of anatomy, histology, and embryology can stimulate student engagement, improve retention, and foster a holistic understanding of the human body. From anatomical illustrations and 3D modeling to interactive digital resources and hands-on artistic activities, we aim at creating a dynamic and enriching learning environment for the next generation of healthcare professionals and scientists.

By uniting art and medicine, many possibilities open for initiating, promoting and consolidating knowledge are important to engage students for their difficult future to cope with patients, diseases and death.

- Development of empathy with patients by medical students
- SDG 2 Health quality and Education quality
- To better manage mental health problems through Art

3.1.320 Collaboration outcomes

"Art as a strategy in teaching biomedical sciences: unveiling new horizons with artificial intelligence" is a Pedagogical Innovation Projects at the University of Aveiro, in which, the majority of participants in this Session at United Nations conference will participate this year.

This Project arises following the prior collaboration of the majority of participants (e.g. teaching several UCs, organization and participation in Workshops and Symposiums, short courses) and the convergence of various teaching/learning skills that, over time, have been consolidated , making it possible to hold the following Workshops: “Current Challenges in Medical Education: Cultural and socio-economic differences, Jan 30, 2023, “Transforming Biomedical Education: From Teaching to Learning”, Feb. 15th, 2023 and more recently, "Awakening Meanings: Art as a Teaching Strategy in Health”, 4 July of this year".

The pedagogical innovation that we intend to implement with this project consists of using innovative transdisciplinary approaches in biomedical education, through learning resources, such as painting, sculpture, music, to sharpen curiosity and stimulate empathy, reflection and sustain the students' commitment to acquiring knowledge.

3.1.321 Building inclusion and equity

Our session promoted strengthening the quality and equity of medical education, empowering medical educators, health professionals and students, ensuring access to constant learning.

3.1.322 Key lessons learnt

- Promote and establish partnerships with experts from different areas and from different countries.

- Learn to interact with other teaching methods in the medical career

Session 70: Pesticide residues in the ecosystem and humans across Europe and Argentina

Session Convenor
Violette Geissen

Position
Professor

Organisation
Wageningen University

Country
Netherlands

3.1.323 Abstract

The SPRINT projects (sprint-h2020.eu) is related to the target of the European Farm to Fork Strategy: a 50% reduction in chemical pesticide use and risk by 50% by 2030. SPRINT addresses the urgent need to assess the actual presence of ;pesticide residues in terrestrial and aquatic ecosystems, indoor dust and human matrices across Europe, covering the main cropping systems. Furthermore, we address the risk of pesticide mixtures for ecosystem and human health.

SPRINT is the first European wide effort to monitor real pesticide application patterns (Mark et al. 2023) and the resulting distribution of pesticide residues across all main European cropping systems. Therefore, we monitored during the growing season of 2021 in 10 European case study sites. We took about 600 samples across environmental matrices - soil, plant, surface water, sediment, air and indoor dust and blood, urine and feces samples from 670 persons.

We assess residue distribution connected to different farming systems (organic, integrated), taking the fact into consideration that synthetic pesticides are not applied in organic farming systems, but that they may be still present due to applications in the past or by deposition due to off-site transport.

SPRINT focuses on more than 200 active substances of synthetic pesticides and their metabolites from group 2 (approved), group 3 (candidates of substitution) and group 4 (banned at EU level) as categorized by the EC (2020).

We link the residue distribution in the different matrices to the hazardous properties of the residues (EFSA conclusions, PPDB database) for ecosystem and human health and introduce a Risk Indicator as a base for the 50% risk reduction target of the Farm to Fork strategy.

Based on field results we test the mixtures’ impact on the aquatic and terrestrial ecosystem conducting innovative ecotoxicological tests with sensitive indicators. Furthermore, we assess human health effects conducting in vitro tests with colon ilium and long organoids.

The SPRINT session provides highly important knowledge needed to solve the urgent questions on how to reduce pesticide risk as a base for a transition to sustainable agriculture. We provide data and a new risk indicator that can be included in new regulations.

How is exposure to pesticides affecting Ecosystem, Plant, Animal, and Human Health? An assessment based on SPRINT field campaign across Europe and Argentina

3.1.324 Key messages

Responsible food production means (SGD 12) that food security is guaranteed without affecting human (SGD 3) or ecosystem health (SGD 6). Pesticide use is important to increase food security, however the related risks on human and ecosystem health and clean drinking water are not sufficiently taken into consideration.

The SPRINT project (Sprint-h2020.eu) is conducting the first continental wide monitoring campaign to present real world data related to pesticide exposure of ecosystem and humans and to address urgent needs related to risk assessment.

Pesticide residue mixtures are omnipresent in ecosystem and humans, highly accumulated in indoor dust with up to 120 different residues in a residential household. Most of the residues are hazardous for the ecosystem and human. Humans are chronically exposed to these residue mixtures. Actually, this exposure is not included into the regulation. Pre-approval and post monitoring risk assessment should be included into the EFSA /UN regulation. Benchmarks are required for the human exposure by inhalation of air/ indoor dust.

SPRINT shows that several pesticide mixtures detected in the terrestrial and aquatic ecosystem show toxic effects on native soil organisms and aquatic life. Following EFSA single laboratory species tests, single pesticides concentrations did not show any effect. This shows the importance to include multispecies pesticide mixture tests with native species into the regulation process. Benchmarks for all ecosystem matrices are urgently needed. Pre-approval regulations are needed to assess the risk of the mixture of all pesticides approved and recommended per cropping systems.

Atmospheric transport is an important pathway for exposure to pesticides leading to long distance transport of residue mixtures.

This important transport pathway must be included into pesticide transport models. The actual European regulation by EFSA does not take the risk of residue mixtures present in ecosystem and human into consideration. The fact that pesticides are transported by wind and air over large distances and accumulate in indoor dust and the related health risk should urgently be addressed by regulation.

Total damage costs for ecosystem and human health are calculated as a total of 150 billion Euro for the 10 European countries included into SPRINT.

Transition to a more sustainable and 2030 ready agricultural system based on agroecological concepts are existing and need to be applied to build a modern way of sustainable food production in a global context.

All stakeholders need to be 'on board' to achieve a transition towards reduced farming taking agroecological approaches into consideration and strongly reduce pesticide use.

- EU, UN: Pesticide approval regulation must include the risk of the mixture of ALL pesticide recommended per cropping system.
- (Inter)national legislation should clearly define benchmarks for pesticide residue mixtures for the terrestrial and aquatic ecosystem and air/indoor dust.
- Pesticide producers should be asked for financial support to study the health risk of the pesticide residue detected in ecosystem and human by the continental wide SPRINT campaign.
- (Inter)national post approval monitoring studies should be requested by legislation to study real world residue distribution over ecosystem and humans.
- Health risk related to the of exposure by pesticide residues present indoor dust/air must be included into the EFSA regulation. pesticide residues
- UN should produce a framework for global regulation of pesticide approval, application and post monitoring strategies related to ecosystem and human health.
- Applying the precautionary principal, a risk assessment for human and ecosystem health should be included into the EFSA regulation and extended to UN regulations based on real application patterns and

3.1.325 Collaboration outcomes

Colleagues from the SPRINT project (SPRINT-h2020.eu) have been connected during the event with UN policy makers and policy makers from the European Parliament. Hopefully these connections will lead to an implementation of the SPRINT related outcomes i to EU and UN policies.

3.1.326 Building inclusion and equity

In our session we presented the SPRINT results, being presented by scientists of Africa, Latin America and Europe.

3.1.327 Key lessons learnt

Combining UN general assembly with the UN science summit strongly increases the exchange between scientists and policy makers, hopefully leading to a higher amount of (inter)national policies based on scientific evidence.

Session 71: Gender Equality in Science Education

Session Convenor
Hatice KIRMACI

Position
Physics Teacher(1) / Founder (2)

Organisation
Arnavutköy Korkmaz Yigit Anatolian High School(1) / "Women Science Teachers" social portal(2)

Country
Türkiye

3.1.328 Abstract

In the world of change and progress, new needs emerge every day. In the past, changes used to happen for hundred or even thousands of years, with the advancement of technology each day we have been learning and participating in new things in our lives. There used to be a few important people in one region who changed the flow of life for long periods of time in the old days, but nowadays millions of people around the World from almost every city are able to change the flow of life and even the future of the world. The world is now globalized and change is very fast.

In our changing and developing world, there is even more need for women. But - unfortunately - the number of women working on technology still did not reach the desired level. This was clearly stated at the Gender and Innovation Meeting held in Brussels.

Gender aspects continue to play an important role in science education, conditioning study choices or shaping beliefs about one's own capacities and those of others. Research has shown that, globally, women; remain underrepresented in STEM not only as students, but also as teachers, researchers, and workers, resulting in a significant gender gap.

Research has shown that women aren't globally represented in STEM; as students even teachers researchers and workers, there is a large proportion of gender inequality in society. It has also been noted that at the secondary school level, in STEM, female teachers have to work hard in terms of student achievement and gender inequality. “Gender and Innovation Meeting” (European Schoolnet) - Brussels 2017.

There are a number of reasons why females are less likely to consider a career in tech. First, many females do not consider a tech career because it is not being put forward as one of the options they can take. The importance of science education stands out here. For science education to be effective, it must be inclusive and should recognize how science teachers, scientists, families, and the community work together to achieve learning and teaching goals. Better funding for science education is needed to train more and better science teachers,

especially women. Women scientists studying in universities or working in their chosen fields tend to be the focus of discussions about bridging the gender gap in science. But school science teachers are involved in training the next generation of scientists, so they should not be overlooked.

In many developing countries, female teachers become role models and play an essential role in attracting young women and girls into science inspiring them and giving them confidence and strength to do better and achieve more in life. Every country stands to benefit greatly from training female teachers in effective teaching methods and from an increase in the number of women who study and work in science.

In this session, we will discuss the education system in Turkey, gender equality in science education, girls' interest in science lessons and how it should be developed, and the contribution of STEM components to science lessons with expert academics and teachers.

3.1.329 Key messages

The general information I got from the people who attended our session, sent messages and called me was that gender inequality still continues all over the world and that the studies carried out so far are still insufficient. It should not be forgotten that if we want science to develop in this world, we need the support of girls and women teachers.

Women teachers, who are also mothers, are a key to the development and dissemination of science. We need better education and better educators for our future. All teachers will shape the future of the world. But all women all over the world face more workload because they are mothers and wives.

In addition, women experience difficulties in working life during periods of menstruation, pregnancy, puerperium, child care (especially between 0-5 years). Female teachers have to deal with such difficulties while performing the same workload as men in schools. A female teacher who is experiencing menstruation or pregnancy is trying to fulfil her responsibilities such as controlling students in a classroom and conducting the lesson in the best way possible. Even under these difficult conditions, women teachers continue their lessons without taking leave.

No work is being done to address this injustice. Especially in backward societies, women are completely imprisoned at home and are not allowed to work and study. In this way, science is imprisoned in those societies. In societies that attach importance to women, girls and female teachers, science develops better.

- It should not be forgotten that women teachers are role models for future generations and support should be provided for them.
- Education in the world is not divided into continents and countries; it is not considered as a whole. Science should be the main goal for all countries and we should work together as the whole world.
- Joint projects can be developed for schools all over the world for a better science education. (As in Erasmus Projects)

- For a better world, a better education, the United Nations should be the shield of education in the world.

3.1.330 Collaboration outcomes

Some of my colleagues contacted me and said that they wanted to work together on gender equality. Some also reported that they had the opportunity to collaborate with other colleagues thanks to this session. I contacted a few institutions with which I could develop joint projects and receive support. The Turkish Consulate gave me tremendous support.

3.1.331 Building inclusion and equity

It was a session I had been working on for 5 months. For days, I thought about what I could do for my session and how I could enrich it. I devoted most of my 3-month summer vacation to this. Although I experienced unexpected problems, it was not only a great experience for me, but it also highlighted once again how important "gender equality in science education" is with such a great organization. With this session, I realized that all the work I have done for the subject of "Gender Equality in Science Education", for which I have been working day and night for nearly 20 years, sometimes losing sleep, sometimes neglecting my children and family, is very important and valuable.

3.1.332 Key lessons learnt

I have learnt many lessonss in my session. It was so great opportunity. I was so excited. I faced many problem in my session also. Some of my attendees did not participated in because of their some problems. One of them was in the emergency room in a hospital. One's family's house burned down. I could not reach the last one at the session. She had internet problems and could not attend.

Despite all these difficulties, I received feedback that this session was very important and contributed a lot to people. My colleagues contacted me and told me how important gender equality is and that they would work more on this issue. I have been working on this issue for 14 years, sometimes I thought no one heard my voice, I was trying in vain. I realized with this session that I was wrong. I am so happy. I felt like I was a role model not only for my own family but also for female teachers in other parts of the world. It was an incredible experience.

Session 72: EU-funded research & innovation projects with partners from the Americas and the Global South

Session Convenor
Thomas Ammerl

Position
Head of unit Environment, Energy & Bioeconomy
https://www.bayfor.org/en/about-us/organisation/team/list/team/a.html##dr-rer-nat-thomas-ammerl

Organisation
Bavarian Research Alliance (BayFOR)
https://www.bayfor.org

Country
Germany

3.1.333 Abstract

The hybrid event has its focus on the framework conditions of European funding for research and innovation projects. "Horizon Europe" as the worldwide biggest funding programe for research & innovation (95 billions of € between 2021-2027) offers manifold options for projects in green topics, e.g. Decarbonisation, Environment, Food Value Creation, Circular Economy, Water, Climate Impact Research, Agriculture and Bioeconomy.

Also partnes from outside Europe and the Global South (e.g. from Latin America, Africa and Asia) are eligible for being beneficiaries in European funded research and innovation projects

Agenda (Mid September 2023)

Registration and coffee

Welcome notes and introduction

Janet Sutherland (Bavarian US Offices, New York/United States) and Dr Thomas Ammerl (Bavarian Research Alliance, Munich/Germany)

Keynote

Dr Florent Bernard (Delegation of the European Union to the United States of America, Washington, D.C./United States)

European funding for research and innovation

Jackson Howard (EURAXESS North America, Washington D.C./United States): International cooperation under Horizon Europe

Dr Thomas Ammerl (BayFOR, Munich/Germany): European green calls for proposals: funding, challenges and support

Pitches on running EU-funded projects

Dr Emmanuel Benjamin (AGLOBE Development Center, Lagos/Nigeria): INtegrated and Circular Technologies for Sustainable city region FOOD systems in Africa (INCiTiS-FOOD)

Dr Jingshui Huang (Technical University of Munich, Munich/Germany): Water Efficient Allocation in a Central Asian Transboundary River Basin (WE-ACT)

Dr Brian Jonathan Young (Instituto Nacional de Tecnología Agropecuaria, Buenos Aires/Argentina): A global approach for recovery of arable land through improved phytoremediation coupled with advanced liquid biofuel production and climate friendly copper smelting process (Phy2Climate)

Prof. Dr Ralf Ludwig (Ludwig-Maximilians-Universität, Munich/Germany) or Prof. Chrysi Laspidou (University of Thessaly, Volos/Greece): Climate-resilient regions through systemic solutions and innovations (ARSINOE)

Prof. Joule Bergerson (University of Calgary, Calgary/Canada): System Assessment of LNG options from North America to the EU (CarbonNeutralLNG)

Networking break

Panel discussion: "How to get involved in cutting-edge SDG-implementation projects around the world"

Bernhard Kowatsch (WFP Innovation Accelerator, Munich/Germany)

Janina Hanswillemenke (Universidad de la Frontera, Temuco/Chile)

Prof. Dr Ralf Ludwig (Ludwig-Maximilians-Universität, Munich/Germany)

Sander Dolder (New York City Development Corporation, New York/United States)

Conculding remarks

Janet Sutherland (Bavarian US Offices, New York/United States) and Dr Thomas Ammerl (BayFOR, Munich/Germany)

3.1.334 Key messages

Awareness and knowledge of the importance of SDGs alone is not enough; we need actors in research and innovation projects who also start to put their SDG-relevant knowledge into visible action for fostering awareness rising and transition.

European research and innovation projects, with their necessary multi-actor approach, already offer a composition of actors and stakeholders that can contribute to bringing insights on SDGs into practical implementation.

Communiction and dissemination of robust knowledge essential for creating interfaces between science, policy and the society.

International cooperation is a must, which is why Horizon Europe (Europes framework programme for research and innovation) offers many approaches to integrate partners from outside Europe into EU funding programs.

Education for sustainability can become a key to prepare young people, students, people in training and also adults for the challenges of a world in transition. One should try to address all educational strata here.

Capacity building and science-based information as key against desinformation, independently where is your starting point.

- Science and innovation-oriented cooperation between the global North and the global South essential to address global challenges ("science diplomacy" opens doors)..
- UN agencies should be more integrated into EU-funded research and innovation projects, e.g. fruitful cooperation between Innovation Accelerator / WFP and the Bavarian Research Alliance (BayFOR).
- We need formats that bring together stakeholders from research and innovation (academia, SMEs/industry, startups, NGOs, public institutions) with policy actors responsible for implementation issues.
- Joint mapping of funded R&I projects (EU, UN, AU, World Bank, regional agencies, etc.) would be an opportunity to identify connecting fields and interesting stakeholders.
- We need administrative simplification of cooperation between funded R&I projects, regardless of the funding agency through which the projects were funded.
- Synergy building and cooperation between projects of funding and financing (banks, loans) as well as development cooperation should be strived for.
- Given the importance of achieving the SDG targets by 2030 (we are far off track!), too much significant activity has been running either invisibly or in parallel.
- Bavarian Research Alliance is key partner within the impressive regional innovation ecosystem in Bavaria (Germany) with its international ties towards the Global South.

3.1.335 Collaboration outcomes

Our session focused on cooperation and partnerships between the global North and the global South. Therefore, we included speakers from Europe, North America (USA, Canada) as well as Latin America, Africa and Asia.

The participants in the session also came from all the above-mentioned continents. In the session at the New York venue (at the Bayern LB, 560 Lexington Ave # 22, New York, NY 10022) we deliberately provided space for networking (before, during and after the event). What stood out were in-depth discussions between participants from the Global South to build South-South cooperation (Latin America - Africa).

What was also striking was the positive feedback from all participants that the personal encounter within the framework of the on-site meeting is an essential prerequisite for establishing future working relationships.

Various thematic options were discussed to deepen existing and future partnerships, e.g.:

- Ongoing EU-funded projects were presented with inter-sectoral partnerships (academia, industry, public authorities) and international ones (European institutions with partners from Africa, Latin America and Asia), INCiTiS-FOOD, WE-ACT, Phy2Climate, ARSINOE, CarbonNeutralLNG. The Bavarian Research Alliance (BayFOR) can provide more insights, personal contacts to many these EU-projects.

- Education for sustainability (in schools, universities and adult education) as key!

- Bioeconomy and climate sciences, energy partnerships as topics with partners from Canada, Finland, Kenya. just an example for future cooperation towardsSDG-goal achievement.

- Staff exchange between institutions from different sectors (academia, industry, public authorities) and different regions (global South and global North) will be offered (learning from each other, deepeining relations between partners) - trust as essential currency for working together in projects.

- Synergy building between R&I-projects and projects on development cooperation from different funding sources (regional, national, European, international) as a goal.

- University partnerships between Chile and Germany, including the integration of partners from development cooperation.

3.1.336 Building inclusion and equity

With Bayern LB, we were able to secure a bank to host the session. this also conveyed Bayerische Staatsbank's clear commitment to providing a space for discussions on achieving sustainable development.

We offered the session hybrid and had 341 registrations for the virtual session and 173 registrations for the on-site event in New York. We have offered the session between 10-12am (Eastern time) so that participants from Europe/Africa as well as Asia can attend. This has proven to be very positive and useful. We also gave the floor to experts from international and very diverse institutions (academia, industry, public institutions, municipalities, etc.), about which we were able to present a very broad wealth of experience.

The structure and agenda of the event was the following one:

Welcome notes and introduction (Janet Sutherland (Invest in Bavaria, New York/United States) and Dr Thomas Ammerl (Bavarian Research Alliance, Munich/Germany)

Keynote "International cooperation under Horizon Europe" (Dr Florent Bernard (European Union Delegation to the United States, Washington DC/United States)

European funding for research and innovation (Jackson Howard (EURAXESS North America, Washington DC/United States)

European green calls for proposals: funding, challenges and support (Dr Thomas Ammerl (BayFOR, Munich/Germany)

Pitches on running EU-funded projects

INtegrated and Circular Technologies for Sustainable city region FOOD systems in Africa (INCiTiS-FOOD) with Dr Emmanuel Benjamin (AGLOBE Development Center, Lagos/Nigeria)

Water Efficient Allocation in a Central Asian Transboundary River Basin (WE-ACT) with Dr Jingshui Huang (Technical University of Munich, Munich/Germany)

A global approach for recovery of arable land through improved phytoremediation coupled with advanced liquid biofuel production and climate friendly copper smelting process (Phy2Climate) with Dr Brian Jonathan Young (Instituto Nacional de Tecnología Agropecuaria, Buenos Aires/Argentina)

Climate-resilient regions through systemic solutions and innovations (ARSINOE) with Prof. Ralf Ludwig (Ludwig-Maximilians-Universität, Munich/Germany)

System Assessment of LNG options from North America to the EU (CarbonNeutralLNG) with Prof. Joule Bergerson (University of Calgary, Calgary/Canada)

Panel discussion: "How to get involved in cutting-edge SDG implementation projects around the world", moderated by Dr Thomas Ammerl (BayFOR) and Janet Sutherland (Invest in Bavaria)

Bernhard Kowatsch (WFP Innovation Accelerator, Munich/Germany)

Janina Hanswillemenke (Universidad de la Frontera, Temuco/Chile)

Prof. Ralf Ludwig (Ludwig-Maximilians-Universität, Munich/Germany)

Sander Dolder (New York City Development Corporation, New York/United States)

Concluding remarks

Janet Sutherland (Invest in Bavaria, New York/United States)

Dr Thomas Ammerl (BayFOR, Munich/Germany)

3.1.337 Key lessons learnt

Regarding organisational terms:

The setting of the UN General Assembly in New York offers great attention for the Science Summit. However, both events are completely isolated from each other. Spill-over effects do not take place.

The organisers of the Science Summit (ISC) are extremely service-oriented, are always available for organisational assistance and thus help to create such a broad spectrum of events.

Hybrid events a great advantage in terms of networking in New York and also in relation to the virtual involvement of participants. At the same time, it takes a lot of resources to organise such an on-site event in New York.

The now-show rate is obviously always high, possibly also because of the overflowing offer of events.

With regard to content aspects:

Science, research and innovation should continue to be heard in the SDG implementation process.

European research and innovation projects offer a great deal of theoretical and practical experience in terms of achieving SDG goals (cooperation between European and international partners, with different institutional and economic background). Multi-actor approaches are downright normal.

Cross-references between individual SDGs should be pushed more strongly, i.e. consciously address speakers and target groups that do not always belong to one's own and usual community.

Session 73: Cosmic Hazards and New Approaches to Planetary Defense

Session Convenor
Kim E. Degnan
Joseph N. Pelton

Position
Executive Director

Organisation
Alliance for Collaboration in the Exploration of Space
ACES Worldwide

Country
United States

3.1.338 Abstract

INTRODUCTION:

Experts will examine threats to Earth from Solar Flares during the current Solar Max cycle that is just beginning, the latest planning for detection of potentially hazardous asteroids and comets and specific progress with regard to the UN endorsed International Asteroid Warning Network and the Space Mission Planning Advisory Group, plus the latest information on the growth of space debris and new efforts to find agreed approaches to space traffic management.

SESSION OVERVIEW: The threat to Planet Earth from cosmic hazards continues to increase as the global population grows beyond 8 Billion. There is more dependence on vulnerable and life-sustaining infrastructure as increasingly large urban areas, “megacities”, expand around the world. Different types of cosmic threats will be examined and explained, particularly in the context of threats to Earth, space travel, and sustainable, long-term space habitation, On-going scientific research to create new planetary defense alerts and responses will be explained and explored.

Results from the UN Committee on the Peaceful Uses of Outer Space and its Working Group on the Long-Term Sustainability of Outer Space regarding space debris will also be provided. This will include discussion of global efforts to find agreement on space traffic management arrangements and improved space safety.

EXPECTED OUTCOMES:

1. Understanding of unusually powerful solar flares from the current Solar Max period.

2. Need for better protection of Electric Grids around the world.

3. Consideration of global funds to help from electric grids in economically developing nations.

4. Possible Electro-Magnetic Shields for Earth and Mars.

5. Latest information of Asteroid and Comet Hazards to Earth.

6. Update on International Asteroid Warning Network and Space Mission Planning Advisory Group.

7. New Approaches to Planetary Defense and Global Space Agency collaboration.

8. New efforts to Mitigate Space Debris and Space Traffic Management.

3.1.339 Key messages

- New efforts to encourage space agencies to prioritize and to work on cosmic hazards and planetary defense. This would include expanded efforts to collaborate globally in carrying out this mission to make the world safer and more sustainable.
- Efforts to create a global fund to retrofit electrical power grids, particularly in the Global South to protect them against solar coronal mass ejections (CMEs) through heavy duty circuit breakers and blocking capacitors.
- New collaborative scientific research efforts to understand the reversal of the Earth's magnetic poles and its effect on the protective shielding that the geo-magnetosphere provides Planet Earth against catastrophic solar storms---including the possibility of magnetic shields in space to protect against CMEs.
- New emphasis on collaborative space agency action to protect against increased levels of space debris—especially in low Earth orbit (LEO).
- The expert speakers stressed the need to eliminate the "silos" that separate the various actors and interested parties who need to work together to address major space hazards.
- Agreement that national space agencies and other interested parties must undertake unified action to address hazardous asteroids and comment, major solar storms, and increasingly dangerous orbital debris.
- Agreement among these experts that there is a need for globally unified action on these areas:

  Space Traffic Management;

  Improved, more efficient systems to detect dangerous hazards from space;

  Much more effective reporting on space weather hazards;

  The ability to deflect dangerous Near Earth Objects (NEO).

3.1.340 Collaboration outcomes

ANSWERS TO QUESTION 11 BELOW

1. As a result of the Session discussions the Alliance for Collaboration in the Exploration of Space (ACES Worldwide) would like to encourage international collaborative action involving collaboration between the European Union and the African Union. This would involve the creation of a fund to retrofit and thus protect African countries' electrical

power grid from massive and long-term power outages. This is needed protect against systematic loss of power transformers due to a massive solar storm. This fund would be used to update African power systems and install blocking capacitors. Such a fund could also be used to encourage new space projects that would help achieve the UN 17 sustainable goals in other areas that just energy.

2. As a result of the Session discussions the Alliance he Alliance for Collaboration in the Exploration of Space (ACES Worldwide) would like also encourage the space agencies of the world, working with COPUOS and the UN OOSA, to prioritize increased coordination and cooperative efforts to address all types of cosmic hazards (i.e. asteroids, comets, catastrophic solar storms, and orbital space debris) by expansion of the InterAgency space Debris Committee (IADC) to address all space hazards and as part of this process work closely with the COPUOS Working Group on the Long Term Sustainability of Outer Space.
3. As a result of the Session discussions the Alliance for Collaboration on the Exploration of Space (ACES Worldwide) would like encourage COSPAR and the ITU together with the space agencies of the world to explore new mechanism to limit the overcrowding of Earth Orbit with additional satellite launches until new solutions are found for active space debris removal, improved collision avoidance and controlled de-orbit technology is developed to avoid the Kessler Syndrome and the run away development of out of control orbital space debris.

The Alliance for Collaboration in the Exploration of Space (ACES Worldwide) is now pursuing partnerships and joint initiatives related to sustainability research and Compact Agreements for Space and Sustainability with the African Union Space Agency, the International Space University, and the UN Centro Regional de Ensenanza de Ciencia y Techologia del Espacio para America Latina y el Caribe (CRECTEALC). We are also trying to strengthen ties and a reporting relationship to the UN Office of Outer Space Affairs and a closer relationship with the European Space Agency, the European Union Agency for the Space Programme, and other space agencies around the world.

3.1.341 Building inclusion and equity

Our four sessions have sought to include wide representation from around the world and overall have had representatives from or headquartered in: India, Australia, Sri Lanka, Austria/France, the Netherlands, Nigeria, Brazil, Canada, Italy, Finland, Latvia, Cairo, Mexico, Belgium, and the US. Participation from Russia, Japan, and China, among others, has been limited due to time zone differences.

3.1.342 Key lessons learnt

The following lessons learned suggest key themes for the Futures Summit

Long Term Sustainability Threats to Humanity in the Anthropocene Epoch: In the new Anthropocene Epoch there are increasing risk to human existence and rising risks of mass extinction events and which are not well understood and need to advance scientific knowledge and protective actions to achieve long term sustainability. These global risks to human society long-term sustainability include zoonotic diseases, climate change, ocean pollution that threaten oxygen generating organisms, hazardous comets, asteroids and massive solar storms,

nuclear and bio-chemical weapons among other global dangers. These concerns give rise to the need for a global sustainability agreement that would produce new understanding of the risk of the Anthropocene Epoch and the Scientific and Regulatory Advances to prevent one or more of these potential existential threats.

Mobilization of World Space Agencies to Counter the Rising Risks of Cosmic Hazards: There is urgent need for the Space Agencies of the World to reorganize to achieve a new level of integrated planning, research, and joint action to address, combat and dimmish powerful cosmic threats related to potentially hazardous planetary level challenges. This suggests the need for space agencies to reorganize to address and greatly prioritize planetary cosmic threats on a integrated basis.

These integrated and prioritized space actions to counter cosmic threats would include at a minimum: potentially hazardous comets, asteroids, coronal mass ejections (CMEs), and the risk of orbital debris giving rise to the so-called Kessler Syndrome. Space Applications, Space Exploration and Space Science are all important but Global Cooperation and Action for Long Terms Survival of Humanity from the Threats of Cosmic Hazards Requires Top Priority.

Session 74: Unleashing the Power: Empowering Persons with Disabilities as Catalysts of Open Science

Session Convenor
Professor Dr. Munir Sewani

Position
Assistant Professor of Education and Human Rights Educator

Organisation
Sindh Madressatul Islam University

Country
Pakistan

3.1.343 Abstract

Introduction and aims

The proposed session aims to highlight the specific challenges encountered by persons with disabilities in accessing education and explore the transformative potential of Open Science Practices in eliminating these barriers. Open Science, with its emphasis on innovation, collaboration, and accessibility, has the potential to revolutionize educational practices and create a more inclusive and equitable environment for all individuals, regardless of their abilities. Through engaging discussions, insightful presentations, and practical examples, this session will provide a platform to explore and promote the crucial role of women with disabilities in Open Science Practices, ultimately aiming to drive progress toward the SDGs and create a more equitable and inclusive scientific landscape.

The aim of this session is:

1. To raise awareness and understanding about the challenges faced by women with disabilities in accessing education;

2. To highlight the remarkable contributions made by persons with disabilities in the field of Open Science

3. To provide policy recommendations to ensure educational accessibility among persons with disabilities through OER

Abstract

Education is universally recognized as a fundamental human right and a powerful catalyst for sustainable development. It holds the key to empowering individuals, driving economic growth, and fostering social inclusion. However, despite progress in recent years, there remain significant barriers that hinder persons with disabilities from accessing inclusive and equitable quality education. These barriers perpetuate a cycle of exclusion, leaving individuals with

disabilities at a higher risk of poverty and social marginalization, depriving them of economic independence and overall well-being. The 2030 Agenda for Sustainable Development, as adopted by the United Nations, acknowledges the critical importance of inclusive education and designates it as a key target under Sustainable Development Goal 4 (SDG 4): "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all." In line with this global commitment to inclusive education, the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) places significant emphasis on the right to accessible information and relevant technologies for individuals with disabilities. Despite these international commitments, women with disabilities continue to face profound challenges in accessing education.

While some Open Educational Resources (OER) initiatives offer accessible resources to persons with disabilities, such resources are often limited in availability and fail to cater to the diverse range of disabilities or consider the intersectional needs of disabled individuals.

This session aims to shed light on the educational challenges faced by persons with disabilities, and the invaluable contributions of female disabled learners in the field of Open Sciences. It aims to illustrate how Open Science practices have the potential to bridge the educational accessibility gap and empower individuals with disabilities to actively participate in scientific endeavors. By showcasing real-world examples and experiences, the session will demonstrate the transformative power of Open Science in creating inclusive and accessible educational opportunities for all, regardless of ability.

Through knowledge sharing and collaborative dialogue, we aspire to inspire stakeholders to embrace Open Science practices and foster a more inclusive and equitable educational landscape.

3.1.344 Key messages

The 2030 Agenda for SDGs recognized that persons with disabilities should have access to life-long learning opportunities. UNCRPD places particular emphasis on the right to accessible information and relevant technologies for persons with disabilities. Educational accessibility however remains the biggest barrier to empowering persons with disabilities.

Open Education is a tool of empowerment for persons with disabilities. It can promote quality education and reduce inequalities. Above all, it can shift their dependencies to independencies. If persons with disabilities are empowered regarding the potential of OER and are given hands-on experience, they can develop innovative contextual open resources that can benefit their communities and beyond.

Aligning SDG 4 with OER can boost open pedagogy, open collaboration, and form a positive connection between governments and educational institutions to address immediate educational challenges.

Open Educational Resources have the potential to transform educational practices and improve their abilities, in particular, marginalized females, to participate in the communities of practices. It can foster inclusion, and reduce the gap between persons with and without disabilities.

Open Science has positive impact on employment opportunities, raise confidence, support emotional well-being, and economic independence of persons with disabilities in the long term.

- The United Nations must introduce a Centralize Contextual Inclusive Open Education Policy and Monitoring Mechanism that guarantee equitable access to education for individuals with disabilities.
- The UN and the EU should establish open science learning institutions built upon a socioecoethical model of human rights education to inspire policy shifts towards inclusive education system
- The UN must establish university dedicated to the concept of Open Science to ensure higher education accessibility, encourage Open Science initiatives and influence intellectual property policies in e
- The UN must introduce awareness and hands-on experience courses on OER in accessible formats for public and integrated into teacher education program to drive positive changes in educational policy
- The establishment of an Open Repository of inclusive resources developed by persons with disabilities should be introduced that could have multiple positive implications for education and society
- The UN should prioritize the creation of accessible resources exclusively developed by individuals with disabilities, and financial incentives must be provided to them to encourage their participation
- To advance equity in Open Science, it is imperative to promote women leadership of women with disabilities. It will improve disability representation in educational leadership and ensure participation
- Dedicated scholarships and funding for research in Open Science for persons with disabilities should be established to promote innovation, inform evidence-based policies, and foster collaboration

3.1.345 Collaboration outcomes

I am looking forward to make more networks for the establishment of Academy of Open Education Resources Publications

3.1.346 Building inclusion and equity

Participation and representation of disabled scholar

3.1.347 Key lessons learnt

Collaboration and networking is crucial to support SDG. There is a dire need to participate in community of practice and learn from others success stories.

Session 75: Local challenges, Global solutions: achieving Open Science goals through international collaboratio

Session Convenor
Hilary Hanahoe

Position
Secretary General

Organisation
Research Data Alliance

Country
United Kingdom

3.1.348 Abstract

Local challenges, Global solutions: achieving Open Science goals through international collaboration and cooperation.

Session Overview :

Many countries and nations across the globe are closely engaged with the Research Data Alliance (RDA), leveraging on the open solutions and global forum to effectively implement and support their national open science and open data strategies and policies. However, there is a large discrepancy in the geographical representation between the Northern and Southern hemisphere. Many nations in the South are not taking advantage of RDA and the benefits for the researchers and data professionals on the ground.

Through this session, different stakeholders will outline the importance of international cooperation to achieve local goals, demonstrate the value and importance of globally agreed and recognised research data management and open science practices and solutions in achieving the UN Sustainable Development Goals (SDGs) and illustrate why and how research data good practices and standards can support national open science and open data strategies across the globe and assist in achieving the SDGs, with a particular focus on the Global South.

With more than 13,500 members from 150 countries RDA provides a neutral space where its members can come together through focused global Working and Interest Groups and Communities of Practice to develop and adopt infrastructure that promotes data-sharing and data-driven research, and accelerate the growth of a cohesive data community that integrates contributors across domain, research, national, geographical and generational boundaries” (https://www.rd-alliance.org/about-rda).

The RDA community members come from a variety of academic disciplines, technological expert areas, research and data infrastructures, universities, libraries, funders, etc. and all pursue the goal to make data accessible around the globe. Since its establishment in 2013 the

RDA has facilitated collaboration across domains and nations to the benefit of open science. Thus RDA offers a unique platform for making a substantial contribution to the SDGs as it is represented by individuals and organisations who through their activities and expertise possess valuable knowledge which can guide evidence-based policy implementations.

Agenda: (all times are in EDT (UTC-4))

09:00 - 09:15 Welcome and Introduction to session / tour de table. Hilary Hanahoe, Secretary General Research Data Alliance

09:15 - 09:30 International cooperation in science as a tool for development and bridging the digital divide. Josh Greenberg, Program Director, Technology and New York City programs, Alfred P. Sloan Foundation

09:30 - 09:45 Public private partnerships in support of Open Science and UN Sustainable Development Goals, Alison Derbenwick Miller, Vice President, Oracle for Research

09:45 - 10:00 Open science in Latin America, challenges and solutions from international collaborations, Federico Cetrango, Administrative Manager, La Referencia

10:00 - 10:15 Community cross-fertilisation within the RDA: Brainstorming international challenges, solutions and initiatives. Connie Clare, Research Data Alliance Community Development Manager.

10:15 - 10:30 Questions and Answers

10:30 - 11:00 Networking break

11:00 - 12:00 Discussion moderated by Hilary Hanahoe, RDA Secretary General with presenters, on how to advance national-level open science strategies and policies leveraging on existing resources and initiatives.

12:00 - Roundtable ends

The Research Data Alliance (RDA) was launched as a community-driven initiative in 2013 by the European Commission, the United States Government's National Science Foundation and National Institute of Standards and Technology, and the Australian Government’s Department of Innovation with the goal of building the social and technical infrastructure to enable open sharing and re-use of data. In the ten years since its launch many other public and private funders support the non-profit Alliance.

The RDA vision is that researchers and innovators openly share and re-use data across technologies, disciplines, and countries to address the grand challenges of society and the mission to achieve this vision is to build the social and technical bridges that enable open sharing and re-use of data.

Over 150 open and implementable solutions have been produced by the global RDA community and RDA currently has over 100 active groups working on all data lifecycle stages, focusing on both discipline specific and dmain agnostic solutions to ensure that research data concretely and effectively supports open science and research data management on a global level.

3.1.349 Key messages

Different stakeholders outlined the importance of international cooperation to achieve local goals, demonstrated the value and importance of globally-agreed and -recognised research data management and open science practices and solutions, and illustrated why and how research data good practices and standards can support national open science and open data strategies across the globe to assist in achieving the UN Sustainable Development Goals (SDGs).

There are a plethora of definitions of 'Open Science' and while they focus on similar aspects and have similar definitions, this in itself is confusing for stakeholders.

To provide context for the RDA roundtable and the key takeaways messages, the Science.gov (US Federal Agencies) definition that "Open Science is the principle and practice of making research products and processes available to all, while respecting diverse cultures, maintaining security and privacy, and fostering collaborations, reproducibility, and equity," is used. Note that all official definitions are valued.

Key messages from the "Local challenges, Global solutions: achieving Open Science goals through international collaboration and cooperation" roundtable organised by the Research Data Alliance were:

1. Multi-stakeholder collaboration is fundamental. For effective and successful partnerships to be established, core beliefs and incentives must be aligned, and goals, outcomes and success metrics clearly agreed from the outset.

2. Open Science goals and targets are very ambitious but not impossible. Building and implementing flexible frameworks will help. All stakeholders must be involved and the benefits, values and risks clearly defined and identified for all.

3. There are significant costs to achieving Open Science and they cannot be borne by one stakeholder, specifically industry / private sector. Policy makers and funders should communicate, synchronise and understand their investments made to reduce financial waste, avoid duplication of efforts and funding, and to share knowledge, experiences and lessons learnt.

4. Multilingualism is a priority. To achieve global goals and involve international stakeholders and communities, multilingual and multicultural approaches, processes and services must be a key part of Open Science frameworks.

5. Many challenges to research data management, a fundamental piece of the Open Science puzzle, persist. The FAIR and CARE principles for research outputs must become a centrepiece and mainstay of all data management policies and practices. With the advent and increasing focus on Artificial Intelligence (AI), the availability of high quality, trusted data is very important.

As a global organisation, the Research Data Alliance (RDA) session recommendations are global and address funders and policy makers across the world:

1. The paradigm for Open Science must change if it is to be inclusive and ensure everyone can participate in it. Ultimately, we should leave no one behind. We run the risk of

developed countries having the resources to push their Open Science vision and practices while less developed countries will be beneficiaries and not active participants. Therefore, investment in infrastructure, resources and skills for Open Science are imperative.

2. Prioritisation of data standards and application of new technologies to harmonise research data so it can be more easily shared and used. This continues to be a huge barrier to achieving Open Science and accelerating data driven innovation. The development of data standards and technical infrastructure will improve data quality and trust in data. Furthermore, it enables researchers to concentrate on undertaking research without having to become experts in 'Open Science' and research data management practices.

3. Invest in team science. Investment in data support staff, such as, data stewards,data managers research software engineers, community managers, data scientists, and recognise their role and contribution to the Open Science agenda. As technology advances, research performing organisations need multidisciplinary teams to support research projects and deal with the increasing complexity of data.

4. Inclusion of the scientific community in the definition of the Open Access and Open Science visions, agendas and policies by decision makers and policy makers. The scientific community has direct, first-hand experience, and a clear understanding of the challenges and barriers to be addressed.

5. Reward, recognise and support the diversity of roles and responsibilities, and their importance in the overall academic research ecosystem.

6. Proactive Consortia funding of infrastructure with an understanding that developed countries and scientific communities should subsidise some of the cost for less developed countries and communities.

7. Funders should align their policies and investments to reduce financial waste and duplication of efforts.

8. The paradigm for Open Science must change if it is to be inclusive and ensure everyone can participate in it. Ultimately, we should leave no one behind.

9. Prioritisation of data standards and application of new technologies to harmonise research data so it can be more easily shared and used.

10. Invest in team science. Invest in data support staff, i.e data stewards,data managers research software engineers, community managers, etc. & recognise their role & contribution to Open Science

11. Inclusion of the scientific community in the definition of the Open Access and Open Science visions, agendas and policies by decision makers and policy makers.

12. Reward, recognise and support the diversity of roles and responsibilities, and their importance in the overall academic research ecosystem.

13. Proactive Consortia funding of infrastructure with an understanding that developed countries and scientific communities should subsidise some of the cost for less developed countries and communities.

14. Funders should align their policies and investments to reduce financial waste and duplication of efforts.

3.1.350 Collaboration outcomes

The Research Data Alliance and Oracle for Research collaborate pragmatically to support global volunteer effort to accelerate data-driven developments. This is done through two specific, open, global Working Groups focusing on:

● Mapping the Landscape of Digital Research Tools: Categorisation schema of types of research tools by research data lifecycle.

● Managing and Integrating Multiomics Data: Landscape analysis of widely used -omics community standards and best practices.

The Research Data Alliance and La Referencia collaborate to specifically raise awareness of research data management solutions and activities for stakeholders in the La Referencia network (countries in the Caribbean, North, South and Central America) and to deliver training and content in the Spanish language, making it more accessible and comprehensible to the local stakeholders.

3.1.351 Building inclusion and equity

The session was held both in-person and virtually to allow participation from as broad an audience as possible. We chose a morning time slot in EDT to allow Latin and Central American as well as African participants to join remotely. The participants, both in the meeting room and on-line, were invited to actively contribute to the discussions using a Zoom meeting facility rather than a webinar function.

3.1.352 Key lessons learnt

1.Communication is key. Continuous interaction with the registered participants is important to ensure engagement and active participation during the meeting.

2.Choosing a location close to the main venue facilitates more in person participation.

3.Participants represent many different backgrounds and cultures, and the level of knowledge of a particular topic is, therefore, very diverse. With this in mind, the presentations and addresses need to be kept relatively 'high level' to be inclusive and informative for all.

4.Identifying ways to actively engage the on-line audience is important and offers a more inclusive experience.

Session 76: Recommended Framework for Sustainable Lunar Activities: Potential Links with the UN SDGs and SoF

Session Convenor
Sahba El-Shawa

Position
Implementation Support Officer

Organisation
Global Expert Group on Sustainable Lunar Activities (GEGSLA)

Country
Jordan

3.1.353 Abstract

The exploration and utilization of the Moon is the next giant leap for Humanity, which will offer unique and unlimited opportunities to accelerate the implementation of the SDGs and prepare our common future. This session at the UN Science Summit aims to present on the Moon Village Association's (MVA) Global Expert Group for Sustainable Lunar Activities (GEGSLA) and their recently developed Recommended Framework.

The MVA is an international non-governmental organization that aims to foster the concept of a sustainable human presence on the Moon, promoting collaboration among various stakeholders and peaceful exploration. To achieve this, the GEGSLA was created bringing together experts from around the world in order to develop a Recommended Framework and Key Elements for Peaceful and Sustainable Lunar Activities.

The session explores the intersections between the GEGSLA Framework and the UN Sustainable Development Goals (SDGs) 8, 9, 10, 12 and 16. It also highlights the importance of the recent UN Policy Brief 7 of Our Common Agenda titled “For All Humanity – the Future of Outer Space Governance'' and how the GEGSLA Framework can contribute to the implementation of the recommendations presented in the Policy Brief in preparation for the Summit of the Future

3.1.354 Key messages

Recommendations:

- Promote Lunar Sustainability: Encourage global cooperation and adherence to sustainable practices in lunar activities.

- Enhance Communication: Improve public awareness of the benefits and impacts of lunar exploration, emphasizing its relevance to Sustainable Development Goals (SDGs).

- Regulation and Incentives: Establish a balance between regulation and industry incentives to ensure safe and sustainable lunar practices.

- Public-Private Partnerships: Foster collaborations between public and private sectors for advancing lunar sustainability goals.

- Resource Efficiency: Emphasize resource-efficient practices in lunar exploration, recognizing the need for long-term sustainability.

- Engagement and Education: Engage the broader public in discussions about lunar exploration, emphasizing its emotional and symbolic significance.

Key Takeaways:

- Lunar Exploration's Earth Benefits: Sustainable lunar activities can provide solutions to Earth's pressing challenges and contribute to the achievement of SDGs.

- Global Collaboration: The moon should be a laboratory for peace, fostering international collaboration and unity.

- Emotional Connection: Engaging with the moon on a personal level can broaden our perspective on humanity's place in the universe.

- Effective Communication: The space community needs to improve storytelling and better communicate the value of space activities to the general public.

- Resource Efficiency: Lunar exploration must focus on resource efficiency and long-term sustainability, including regulatory measures where necessary.

- Joining GEGSLA: The Global Expert Group on Sustainable Lunar Activities (GEGSLA) offers an avenue for engagement and contribution to lunar sustainability efforts.

These recommendations and takeaways highlight the importance of lunar sustainability, cooperation, communication, and responsible resource management to ensure a positive impact on both the moon and Earth.

- Encourage global cooperation in lunar sustainability.
- Improve public awareness and communication about the significance of lunar exploration.
- Balance regulation and industry incentives for safe lunar activities.
- Involve non-space actors in space governance, particularly environmentalists.

3.1.355 Collaboration outcomes

We push for collaborations between space actors and environmental actors, due to the synergies between space and the environment.

3.1.356 Building inclusion and equity

The event invited speakers from various backgrounds including academia, industry, NGOs, and governmental representatives. It invited all attendees, including those outside of the space field, to get involved in GEGSLA activities.

3.1.357 Key lessons learnt

There is a general interest in the topic of sustainable lunar activities and how they link with the UN initiatives such as SDGs and the Summit of the Future. It is our responsibility to engage with people and audiences beyond the space field to ensure that all humanity can contribute to our future on Earth and beyond.

Session 77: Health at the borders: Assessing human rights gaps, needs, and priorities for migrant populations

Session Convenor
Daniel F López-Cevallos

Position
Associate Professor

Organisation
Department of Health Promotion and Policy, University of Massachusetts Amherst School of Public Health and Health Sciences

Country
USA/Ecuador

3.1.358 Abstract

While in 1990 Latin America and the Caribbean (LAC) welcomed 7 million migrants, in 2020 this figure doubled, reaching 15 million, making it one of the fastest growing regions in the world in terms of human mobility. The high vulnerability of refugees and migrants to health and socioeconomic repercussions responds to a repetitive pattern of factors that reinforce each other, which in turn can influence current health policies and practices applied to migrant populations.

The COVID19 pandemic further strained support systems for migrant populations in the region. In this panel, we discuss the approach based on the right to health for immigrants in four countries located in the Andean region in Latin America: Chile, Peru, Ecuador and Colombia.

In order to analyze the practical applications of rights-based approaches to health, field work was carried out that, beyond offering a national perspective, analyzed the results in 10 borders of the four countries mentioned above. In this context, we intend to address the following research questions: what are the policies and programs implemented, at the regional, national and local level, and what is the impact of the pandemic of these policies on the practices? What initiatives are unknown in border regions, how do they relate to human rights-based policies and standards, and what is the impact of the pandemic on these initiatives? What are the previous experiences with human rights-based approaches in response to COVID19, both in regards to the general population and migrants? Lastly, what are the local experiences, perceived gaps, and the impact of rights-based approaches on migrants during the pandemic at selected border sites in the Andean region

3.1.359 Key messages

Based on the consideration that the human right to health does not depend on a single legal, medical or political provision, but on multiple aspects, intersections and dimensions that

relate to the broader human/social sphere, six complementary dimensions of inquiry were proposed in this panel, each of which leads to the analysis of a relevant thematic area of the right to health which were addressed in the analysis of the information of this project:

1) Principles and manifestations of human rights;

2) Core elements of the right to health;

3) Social determinants of health;

4) Public and legal policies;

5) Interculturality, gender and intersectionality; and

6) International cooperation and solidarity

During this panel, we discussed the results and reflections following fieldwork conducted in 2021, which linked with three interconnected concepts: migration, rights based approach to health, and borders. Particular emphasis was placed on the dynamics that emerged during the COVID-19 pandemic. Beyond a national perspective, this research examined outcomes across ten border regions within the aforementioned four countries, highlighting how the diversity of migratory realities corresponds to the unique characteristics of each border region.

- National governments must honor their commitments already mentioned in official/legal documents
- International cooperation must work to strengthen inter-national/regional efforts to protect the right to health for migrant populations
- Regional entities' (e.g., Organismo Andino de Salud) capacity need to be strengthen to move from statements of intentions to operational capacity to effect change

3.1.360 Building inclusion and equity

Our session provided simultaneous interpretation (Spanish/English)

3.1.361 Key lessons learnt

The importance of collaboration and coordination at the local and regional levels.

Session 78: Creating positive futures to achieve the SDGs- the changing landscape of research for development

Session Convenor
Lucy Lawrenson

Position
Communications Manager

Organisation
UK Collaborative on Development Research (UKCDR)

Country
United Kingdom (UK)

3.1.362 Abstract

Research and science are key to developing solutions for the urgent challenges facing our world.

With only seven years left to achieve the Sustainable Development Goals (SDGs), research funders and policymakers will need to focus on accelerating the impact research can have on developing urgent solutions to global challenges, including climate change, poverty and inequality, injustice and human rights, and gender inequality. Yet, at the same time, the world has changed profoundly since the SDGs were established in 2015 and is likely to see more major changes in the years ahead. How can we ensure that the research we develop and support is future fit and relevant?

This session, jointly hosted by the UK Collaborative on Development Research (UKCDR) and Canada’s International Development Research Centre (IDRC), will explore how we can create an enabling environment to support research and help advance Agenda 2030 in an increasingly uncertain world.

In this session, participants will hear about emerging insights from IDRC’s foresight work on disruptors and enablers of research for development, and what this means for the future of research we fund. Attendees will also learn about a framework UKCDR has developed to enable more meaningful research impact. This framework highlights the mechanisms and structures that are needed to support equitable, high quality research that can be positioned to address the complex global challenges set out in the SDGs.

Following two short presentations, a moderated panel discussion will bring together five experts in research impact and foresight to explore how the international science community can apply lessons learned over the past years whilst casting an eye to future opportunities and challenges, informing the UN Summit of the Future in 2024. ;

Our speakers:

Tanya Hichert, Strategic Foresight Advisor - Centre for Sustainability Transitions, Stellenbosch University

Andrea Padilla, Research and Policy Officer - UKCDR

Our panelists:

Dr Dorothy Ngila, Director of Knowledge Networks and SGCI at the National Research Foundation South Africa (Science Granting Councils Initiative)

Moderator

Andrea Ordonez Llanos, Executive Director - Southern Voice

Panelist

Mark Claydon-Smith, Deputy Director of International Funds – UKRI

Panelist

Dr Charles Forsdick, Professor of French - University of Liverpool ;

Panelist

Francesco Obino, Director of Research Programmes – Global Development Network

Panelist

This session will be a virtual webinar delivered via Zoom. The moderator will facilitate the panel discussion and the participation of attendees in the conversation. ;

3.1.363 Key messages

Reflections from the audience poll:

- Participants, which included research funders, academics, policymakers and practitioners consider that co-production is very important to achieve research impact for development.

- When institutions work more with diverse research users from the very beginning of a research project, it helps produce initiatives that are more impactful and contextually relevant.

- One of the values of foresight research is its ability to expand our thinking and better understand the present - going beyond the same trends that we all see in the environment we are in, to anticipate the potential impacts that may come from weak signals of potential looming change.

- The study of complexity can help inform some of our R&D funding practices and systems, for example in relation to a lack of funding for certain geographies.

Insights from panel discussion:

- One quote from the UKCDR's publications on research impact that stuck with me: "it always felt like this project was Zambia-led", hinting at the active leadership and ownership of the Southern actor. The key part of the message is "it felt like", but it was not the reality. At Southern Voice we want to shift from a scenario where it feels like work is led by the South to a scenario where work is actually led by the South.

- Co-production and partnerships are very important, but there's a need to think about that in terms of time and commitments: agenda, dissemination, value of research. We need to think about all this in an equitable way. Equitable partnerships is a loaded term now - very easy to talk about, but there are strong resistances, so we need to be active champions, thinking about agency in projects. Where there are intrinsic asymmetries, we need to work around them and address them.

- It's worth thinking about recent negative developments: we been through a volatile period (pandemic, financial crisis) which has disrupted partnerships. But this showed that long term stable partnerships managed to find a way through. At the same time those difficult times hindered the creation of new partnerships. We need to focus on the value of long-term relationships.

- As part of the Research Excellence Framework (REF), in the UK context, 25% of funding allocation relies on research impact. 'Impact' is now well embedded in the UK research ecosystem, we see it influences researcher's behaviour and their environment. From REF21 we learned that the strongest universities have developed strategies for impact, meaning that impact is integrated in research design. Emphasis to identify audiences and beneficiaries. From early stages there is careful measurement of impact.

- In the strongest REF case studies we found engagement with partners and co-creation of research, co-design and co-delivery. I mention this because REF is an iterative process, impact was introduced in 2014. Panels like the present one are part of a broader reflection on how we can do this better. For the future of REF, we have also commitment to consider the role of SDGs in relation to teaching and research.

- Thinking about how impact works – we have to consider research, research capacity and impact. Research can impact development in many different ways: bringing consultants from the Global North, or working with local experts, or through collaborative processes, or you can help experts collaborate, or you can fund people to ask their own questions instead of your own. These are all the options that donors use. You can produce research that is relevant for development also in ways that does not involve Southern researchers at all, or you can strengthen research capacity at individual level but not at systemic level. We don't know how we are doing in terms of strengthening capacity unless we think about these systems from the very beginning: in this sense design is key, including the design of a partnership.

Moderator's final comment after hearing from panellists:

- What comes out of this discussion today is a series of recurring words: impact, strategies, experimentation, research excellence, funders being seen as partners with each other, EP, systems thinking.

- Policymakers and funders to prioritise initiatives that empower Southern actors to take leadership roles and ownership in projects, moving beyond perception of leadership towards actual leadership
- Policy and funding institutions should work towards leveling the playing field between Northern/Southern actors by addressing systemic inequalities/power imbalances in the global research landscape
- reevaluate the notion of universal knowledge and ensuring that Southern research and knowledge production are equally recognised and valued.
- policies and funding mechanisms should encourage diversity and inclusion, consider indigenous epistemologies, and support arts-based methods
- Decision-makers and funders should recognise the critical role of research capacity strengthening, particularly in Africa, to ensure that African researchers have better access to global networks.
- Encourage transdisciplinary research approaches and emphasise the role of arts and humanities in research and impact
- Policy and funding institutions should actively champion equitable partnerships (EP) and consider EP as a loaded term that requires proactive efforts to address intrinsic asymmetries.
- National research assessment exercises (e.g., REF2021) should reflect on the role of research to attaining the SDGs.

3.1.364 Collaboration outcomes

This event brought together actors from diverse geographies and sectors involved in research for development, and the chat was very active. While we do not know of any collaborative developments emanating from the session at this time, we hope that participants will take learnings and discussions forward.

3.1.365 Building inclusion and equity

- The session featured speakers and panelists from a wide range of geographies and perspectives across the global north and global south.

- The session was advertised in both French and English. Parts of the opening remarks were also given in French.

- Participants were able to use closed captions, if they wished to do so.

- The panel ensured gender balance with four women and three men.

3.1.366 Key lessons learnt

- Interdisciplinary research and systemic solutions: The Science Summit underscores the importance of approaching the SDGs from an interdisciplinary perspective. Many global challenges are complex and interconnected, with progress in one area influencing others. Research plays a pivotal role in helping us understand these interconnections and providing holistic solutions. By studying systems, modeling outcomes, and offering clear pathways to solutions, science helps address multi-faceted issues effectively.

- Transdisciplinary research: Engaging with diverse perspectives beyond academia enhances the relevance and practicality of research in addressing complex challenges such as the SDGs. This approach supports inclusive problem-solving, knowledge co-creation, and the bridging of academia and real-world applications, fostering more effective and sustainable solutions. It underscores the importance of collaborative networks and partnerships to ensure research aligns with the needs of society and promotes meaningful impact and positive change.

- Research as the foundation for achieving SDGs: The Summit highlights that science is not merely one of many tools in achieving the SDGs; but it is foundational to the entire endeavor. Scientific research and innovation provide the knowledge, techniques, and innovations necessary to address the world's most pressing challenges, including climate action, health, economic growth, and reducing inequalities. Research informs policymakers, sets realistic targets, and monitors progress. To achieve the SDGs by 2030, a robust scientific approach is essential, underpinning both global and local efforts.

Session 79: Reflecting Risk: Rights-Based Global Decision-Making About Research and Testing of Solar Geoengineer

Session Convenor
Benjamin Young

Position
Senior Program Officer, Strategic Initiatives

Organisation
New York Academy of Sciences

Country
Unite States of America

3.1.367 Abstract

Solar geoengineering, or solar radiation modification, is a set of strategies to limit the warming effects of the Sun to counteract human-caused climate change. While some say the technology has the potential to reduce global temperatures, others view the physical manipulation of the atmosphere as too risky to consider. If these theoretical technologies are developed enough to be deployed, they have the potential to either gravely impact the most vulnerable, who contributed least to the climate crisis; or, to help reduce future disastrous effects of global heating.

In this panel at the 2023 United Nations General Assembly’s Science Summit, scientists and policy experts reflecting different contexts in rich, middle-income, and developing countries, will have an open discussion about the current state of research and tests on these technologies.

The panel will highlight how the current vacuum in collective deliberation and decision-making processes means that the scientifically and politically controversial strategies of solar radiation modification are developing largely ungoverned. The panelists will consider how different actors should contribute to fair, just, and well-considered processes with broad participation and collective deliberation at the global level.

PANELISTS

Kate Marvel, Senior Scientist, Climate, Project Drawdown

Patrycja Sasnal, Visiting Professor, UCLA Institute of Environment and Sustainability

Michael Taylor, Dean of the Faculty of Science and Technology, The University of the West Indies

MODERATOR

Nicholas B. Dirks, President & CEO, New York Academy of Sciences (NYAS)

3.1.368 Key messages

Panelists on the New York Academy of Sciences panel at the UNGA78 Science Summit, "Reflecting Risk: Rights-Based Global Decision-Making About Research and Testing of Solar Geoengineering Climate Tech", explored not only the ways that science and innovation will directly contribute to achieving the SDGs, but also the ways in which they should do this. Research that is pushing the frontiers of science and aimed at tackling the impacts of climate change can only be done by combining increasingly sophisticated capabilities and models with an understanding of the broad impacts of new technologies like geoengineering and the direct inclusion of local, regional, and most vulnerable communities.

New scientific research cannot come at the expense of mitigation efforts or the achievement of existing goals and timelines.

- When policymakers and decision-makers pursue innovative solutions to tackling climate change, mitigation must remain the top priority and must not be sacrificed in any way.
- The most vulnerable, "frontline" communities (i.e., indigenous people in the regions most directly affected by climate change) must not only have a seat at the table but also a prominent voice.
- Burden sharing and benefit sharing with the most vulnerable, "frontline" communities must be central to policy- and decision-making.
- Existing inequities (financial resources, scientific expertise, technical expertise, political power all being controlled by certain parties) must be fixed now, so as not to be carried over into the e
- We must remember that very new technologies can have unknown and unintended consequences. For instance, we do not know how solar geoengineering would alter rainfall patterns and weather patterns at pa
- We must also remember what we know with certainty: we are more certain that greenhouse gases are causing climate change than we are that smoking causes cancer—and that mitigation offers benefits not o
- Global approaches to policy must be inclusive of local and regional knowledge. A small global temperature change will disproportionately affect the most geographically-vulnerable communities: for thes
- Preserve the basic human rights of indigenous people when considering new technologies, including the right to free, prior and informed consent.

3.1.369 Collaboration outcomes

The "Reflecting Risk: Rights-Based Global Decision-Making about Research and Testing of Solar Geoengineering Climate Tech" panel was co-organized by the International Science Reserve (ISR), which advances cross-border, cross-disciplinary collaborations among its fast-growing network of over 5,000 international scientists, around crisis preparation. The different

perspectives, geographies, and areas of expertise of the panelists reflect this approach, and we hope that the panel will inspire further ISR collaborations.

3.1.370 Building inclusion and equity

This session took a human rights-based approach, as noted in its title: "Reflecting Risk: Rights-Based Global Decision-Making about Research and Testing of Solar Geoengineering Climate Tech". Each of the panelists underscored the importance of inclusivity and gave specific examples. For instance, Michael Taylor (Dean of the Faculty of Science and Technology at The University of the West Indies) spoke to the small island perspective, the ways in which changes in climate are a matter of human survival, and how the most vulnerable must be directly involved in discussions and decisions.

Patrycja Sasnal (co-author of the report for the UN Human Rights Council on the impact of technologies for climate protection) cited her interviews of frontline, indigenous peoples from around the globe—who safeguard 80% of the world's biodiversity—and how they unanimously support emissions cuts. And Kate Marvel (Chief Scientist at Project Drawdown) explained how the effect of new technologies on particular localities is not understood, and the extent to which complex local and regional factors must be considered by scientists.

3.1.371 Key lessons learnt

It was wonderful to see practical examples of team science at both local and global scales, and the fascinating research they can produce. For me, the Science Summit was living proof of the importance of such cross-cultural, cross-disciplinary, cross-boundary scientific work that we work to advance every day at the International Science Reserve. As for more specific lessons, I am still digesting the sessions, and also still attending sessions – there is still much to learn.

Session 80: Developing Equitable Partnerships for Open Science and Innovation in the Era of AI

Session Convenor
Brian Leung

Position
Secretariat

Organisation
Belmont Forum

Country
USA

3.1.372 Abstract

Open Science and artificial intelligence (AI) are driving transformative changes across various domains, revolutionizing the way research is conducted and knowledge is shared. However, ensuring equitable partnerships in Open Science remains a significant challenge in the current AI era and a barrier to accomplish SDG17, which cuts across all SDGs. A panel comprising representatives from every country aims to foster a collective understanding of the barriers and opportunities in building equitable partnerships for Open Science, specifically within the context of the AI era.

The session will explore the multifaceted aspects of equitable partnerships in Open Science, emphasizing the need for collaboration, inclusivity, and fairness. Panelists from diverse backgrounds, including academia, industry, government, and civil society, will engage in a constructive dialogue to identify and share best practices, strategies, and policies for promoting equitable partnerships.

Abstract

Open Science and artificial intelligence (AI) are driving transformative changes across various domains, revolutionizing the way research is conducted and knowledge is shared. However, ensuring equitable partnerships in Open Science remains a significant challenge in the current AI era and a barrier to accomplish SDG17, which cuts across all SDGs. A panel comprising representatives from every country aims to foster a collective understanding of the barriers and opportunities in building equitable partnerships for Open Science, specifically within the context of the AI era.

The session will explore the multifaceted aspects of equitable partnerships in Open Science, emphasizing the need for collaboration, inclusivity, and fairness. Panelists from diverse backgrounds, including academia, industry, government, and civil society, will engage in a constructive dialogue to identify and share best practices, strategies, and policies for promoting equitable partnerships.

Key discussion points will span:

1. Recognizing and addressing power imbalances in international collaborations for Open Science.

2. Promoting knowledge sharing and capacity building initiatives to bridge the digital divide.

3. Ensuring inclusivity and diversity in AI-driven research and development.

4. Protecting intellectual property rights while fostering open and collaborative research environments.

5. Developing ethical guidelines and standards for AI-enabled research to mitigate biases and potential harm.

6. Strengthening data governance frameworks to ensure responsible and equitable data sharing.

The panelists will draw upon their experiences, insights, and initiatives from their respective countries to provide practical recommendations that can be implemented globally. The discussion will highlight the importance of equitable partnerships in Open Science as a means to democratize knowledge, facilitate innovation, and address global challenges collaboratively.

By bringing together one representative from every continent, this panel discussion will foster cross-cultural understanding and collaboration, encouraging attendees to think critically and innovatively about the future of Open Science in the AI era. The insights generated from this session will contribute to the development of a roadmap for building equitable partnerships and promoting responsible and inclusive AI-enabled research at a global level.

Expected outcomes

By bringing together one representative from every continent, this panel discussion will foster cross-cultural understanding and collaboration, encouraging attendees to think critically and innovatively about the future of Open Science in the AI era. The insights generated from this session will contribute to the development of a roadmap for building equitable partnerships and promoting responsible and inclusive AI-enabled research at a global level. Participants will walk away with the nuances in AI-enabled research in global north and global south countries.

3.1.373 Key messages

Objective:

A panel comprising representatives from every continent aims to foster a collective understanding of the barriers and opportunities to develop a framework to equitably address SDG 17 to support inclusive, equitable partnerships to pursue Open Science, as defined by UNESCO.

Summary:

1) Future programs are recommended to include equitable partnership principles as an integral core of its mission, vision, and programmatic strategy.

2) Governments and international organizations should include coordination programming that promotes open knowledge storage and dissemination in multiple languages.

3) Developing any new local, regional, or national initiative, one should include as many stakeholders as possible to make the process inclusive and transparent.

4) Private, public, and civil society incentives should promote open science through their policies, such as funding initiatives and programs should be standardized with an open science requirement.

5) Indigenous knowledge systems must be protected and developed with the community; it develops through time without the help of any external force.

6) Standardize Open Platforms for all Government Funded projects through coordination programs.

Open science and data literacy programs should be a standard, not an afterthought to make accessibility a priority not an afterthought.

7) Publication impact metrics should measure the degree of change the science has on the societal community, not based solely on citations within the academic community.

- Language Accessibility - Multinational scientific discussions are primarily in English- excludes most of the general public in the world, both discussions and online platforms.
- Governments provide open science resources but it's unclear if they are reaching wider audiences. Centralizing this knowledge improves accessibility for all sectors of the scientific enterprise.
- Private Sector does not regularly engage with Open Science (dichotomy between Profit vs Open Science/Public good)
- Coordination within and among countries - Common problem across all nations
- Publishing metrics, science to action as a metric for impact, not impact factors

3.1.374 Collaboration outcomes

Our group plans to work towards:

1) provide more access to Information and Data Storage in LMICs: Global South Academia often depends on Northern partners to get access to scientific publications. Dependent on north connections and/or costly access to journals.

2) address the inequities around how some governments openly give bonuses to researchers: perpetuate the inequality in researchers and even those across countries.

3) invite conversion around social structures: cultural and social structures (vertical vs horizontal cultures) limit data accessibility, and research Integrity is not uniform and standardization of common principles are not widely adopted.

4) Support Indigenous Knowledge Systems: Latin American and the Caribbean are rich in Indigenous Knowledge but facing various challenges (protection of cultural knowledge/preservation of current lifestyle over public consumption/ privatized exploitation). example: Asian Mountainous Indigenous communities - Business and access to information is digitalized, but Indigenous knowledge and culture should be protected and transformed to meet the needs of social innovation. Such as digitizing Climate information and adapting this climate information into their own indigenous way of life is a challenge

5) Asymmetry of scientific development across middle income countries in the Latin American and Caribbean regions: Different countries have different advancements in Open Science Infrastructure, a common approach will not be appropriate.

6) Address how language restrictions are a barrier for regional open science data platforms, which means we need to make databases multilingual

3.1.375 Building inclusion and equity

We game-ified our session to make it more interactive and anonymous so people did not feel compelled to unmute their mic or ask their questions into the chat. Since our session was the first non-plenary session, our online platform received zero help and was full of sched errors. We eventually had to tell all participants to go to our live stream of our session to move it away from sched because of how dysfunctional it was. Sched isn't user friendly for many people.

Session 81: Innovation Policy for sustainability-Reflections from Australian agriculture

Session Convenor
Rajesh Gopalakrishnan Nair

Position
Researcher

Organisation
Commonwealth Scientific and Industrial research Organisation, CSIRO

Country
Australia

3.1.376 Abstract

Agriculture serves as a foundational pillar of Australia's economy, deeply intertwined with its cultural identity. The nation contributes7.5% of global agricultural land use. With Australia, the sector encompasses 55% of Australia's land area, drawing upon 24% of its water extractions.

Furthermore, while contributing to 2.5% of the country's value-added GDP and employment, it accounts for 11.6% of goods and services export earnings by exporting 72% of domestic agriculture production. Over the past two decades, the agricultural sector has witnessed a 59% increase in gross (real) value. These gains stand as a testament to the industry's dedication to productivity enhancement. Such advancements have proven invaluable, providing a cushion against the challenges posed by prolonged fluctuations in commodity prices. In essence, this resilient growth trajectory ensures a secure position for producers in the face of long-term price volatilities.

However, Australia’s agriculture grapples with multifaceted challenges, ranging from climatevariability and resource depletion to evolving consumer demands and global market dynamics, while remaining one of the hardest to abate sectors with respect to emissions. Agriculture in Australia is a significant source of emissions and is highly trade exposed. Achieving significant change requires aligning interests of government, industry and society and demands synchronous changes in policies, technologies and implementation capability. Such moves towards directional innovation are being advanced to address multiple societal goals simultaneously.

The SDGs serve as a universal framework for addressing pressing global challenges and advancing a set of broad-ranging and integrated goals. For Australian agriculture, pertinent targets include zero hunger (SDG 2), clean water and sanitation (SDG 6), climate action (SDG 13), life on land (SDG 15), and responsible consumption and production (SDG 12). The sector's interdependence with natural resources, coupled with the imperative to meet these SDGs,

necessitates a comprehensive revaluation of its practices and policies. Factors such as technology adoption, resource management, and stakeholder engagement play pivotal roles. Delineating the extent to which existing systems align with the SDGs is a complex undertaking that requires a holistic examination of infrastructure, practices, and policy. Innovation emerges as a linchpin for catalysing the transition toward sustainable agricultural practices.

From precision agriculture and agroecological techniques to supply chain optimization andrenewable energy integration, innovation spans a spectrum of opportunities. As Australianagriculture navigates the path to sustainability, a crucial question arises: Is current innovation policy sufficiently equipped to guide the sector in the right direction? There is a growing consensus that while successful in achieving short term incremental goals its ability to bring about more transformative innovation needed to address the 'cross-industry, long-term grand societal challenges' remains questionable.

An emerging question is whether the agricultural and food sectors should continue to address grand societal challenges independently or whether a more integrated approach within the food and national innovation systems is needed. This panel brings to perspective from two major Australian public sector organisations aiming to support directed innovation for sustainability. Department of Agriculture, Fisheries and Forestry (DAFF) and The Commonwealth Scientific and Industrial Research Organisation (CSIRO) have a set of programs and projects which variously aim to shift innovation policy, re-format innovation action and build greater capability to do so. These include CSIRO Missions and Future Science Platforms and internal DAFF projects to explore options for agricultural innovation policy.

The panel brings together key figures from Australia's agricultural policy domain to deliberate on significant topics, encompassing (but not limited to) the following:

1. Conceptual issues: Exploring how to define and examine the wide array of innovative endeavours addressing environmental and social sustainability challenges faced by Australian agriculture.

2. Innovation Policy: Analysing the traits of Australia's agricultural innovation policy. Is thepresent policy adequately equipped to guide the sector? Are appropriate mechanisms for policy coordination in place?

3. Stakeholder Preparedness: Recognizing that change isn't always embraced, assessing thewillingness and capacity of stakeholders within Australian agriculture to engage and support the transition.

4. Learning Opportunities: Identifying the lessons that Australian agriculture can glean from this process, as well as the potential for sharing insights with other nations undergoing a similar journey.

3.1.377 Key messages

1. Australia is proactively looking for ways to augment its productivity enhancing agricultural innovation system to be more able to drive directional innovation to address grand challenges. Key lessons for this are emerging around the design of bottom-up mission-oriented innovation, the capability and leadership needed to drive these, and the institutional arrangements across private and public sector that can enable efficient and

effective distribution of resources to advance change in agriculture and food that has lasting benefits for society, climate and environment. Key lessons from these efforts may be relevant to both developed and developing countries as well as multi-lateral agencies.

2. One key message was that more integrated approaches to innovation and innovation policy are needed to meet grand societal challenges.

3. Directional innovation for sustainability requires a significant capacity building and proactive engagement with diverse interests to shift beyond dominant narratives and enable change

4. Much of this change appears incremental, but can move slowly then quickly to precipitate radical re-arrangement.
5. To enact such work requires coordination, sound methodology and excellent inclusive leadership.

3.1.378 Collaboration outcomes

A collaborative project with ABARES & CSIRO Australia is running

Yet another collaborative project with Association for Sout South Cooperation for Innovation Systems Transformation ASSIST Ltd UK is taking shape to building a community of practice for enabling South South cooperation for Innovation Systems Transformation

Session 82: The role of education, science and technology on the survival of the Amazon

Session Convenor
Federico Ernesto Viscarra

Position
Science Officer - Science Panel for the Amazon

Organisation
Sustainable Development Solutions Network

Country
Bolivia

3.1.379 Abstract

This session aims to highlight the importance of education, science and technology on the survival of the Amazon.

BACKGROUND

The Amazon basin extends throughout the north of South America, including Bolivia, Brazil, Colombia, Ecuador, Peru, Venezuela, Suriname, Guyana and French Guyana. It covers an area of around seven million km2, of which over the tropical forest originally covered 5.8 million km2. The Amazon is home to approximately 13% of the world’s known biodiversity, unparalleled on the planet, the result of a geological evolutionary process for more than a hundred million years with a rich history of tectonics and climatic changes. It has been more than 40 million years since the beginning of the Andean Mountain rise. An inattentive look at the region may suggest an environmental homogeneity that does not exist.

From its source in the Nevado Mismi, the Amazon River runs for 6,992 kilometers to the Atlantic Ocean, receiving waters of different colors, such as the black waters of the Negro River, which discharges around 25,000 m3 per second into the Solimões River, opposite the city of Manaus, forming a singular spectacle: the meeting of its black waters with the muddy waters, also called white water, of the Solimões River.

This is just an example of the environmental heterogeneity. Along its course, it also receives the clear waters of the Tapajós River, to discharge into the sea around 220,000 m3 per second ranging about 16-22% of all the fresh water that enters the world's oceans. It is unnecessary to emphasize the importance of this source of fresh water for a world in transition.

The biodiversity existing in the region, which plays a fundamental role in the quality of local and global life is still largely unknown, especially regarding to what is hidden in the genome of the organisms that make it up. Fish is the major source of protein in the region. However,

regional biodiversity also might include bacteria, fungi and viruses that could cause new epidemics and even pandemics. Monitoring potential new zoonosis is essential, particularly in the face of human impact either directly by interacting with and destroying the forest, or indirectly through climate change. . The Amazon forest stores a significant amount of carbon (150-200 GtC) and contributes daily to the removal of a massive amount of carbon emission from the atmosphere.

The Amazon biome has been populated for thousands of years. When the Europeans arrived in the region, there were between 8 and 10 million people in the forests. Only part of the original population managed to survive disease and violence, and to this group were later added the afro-descendants (quilombolas), riverine communities, and a vast array of other social groups. Today, there are 2,2 million Indigenous peoples in over 400 Indigenous communities. The Amazon also includes large urban populations that put pressure on biodiversity by pollution of plastics, metals, and medicines, among others. Megacities, such as Manaus, with over 2 million inhabitants, need to be developed in harmony and be compatible with the forest.

The development model based on the need of the replacement of the forest for other land uses, has produced extensive changes in the territory, with land being used for purposes that are not sustainable, given the characteristics of the soils in the region that do not support agricultural production cycles. When removed by extensive burning for example, the soil "dies" with it in a short time of a few years. Degrading lands do not even support the local communities.

These degraded lands are the result of cattle ranching, extensive agriculture and the impact of other extractive industries and have already resulted in almost 20% of degraded areas, with local, regional and global impacts. It is essential to seek sustainable development alternatives that keep the forests standing and the rivers flowing.

Besides the human impact on the Amazonian environment, the impact of global climate change needs also to be addressed. Even if we succeed in achieving the goals of the Paris Agreement of keeping global warming below 1.5oC, a significant increase of temperature in the region for the coming years is expected, especially for some micro - and meso-scale regions.

These temperature increases have diverse impacts on the forest; making it more vulnerable to fire, as on the aquatic environment, since many aquatic species, particularly fish, live near their thermal limits. The biodiversity and climate crises are pushing the Amazon to a tipping point with an irreversible shift to degraded lands. These two crises can no longer be considered separately; they are part of the same challenge affecting the Amazon forest, as well as the most vulnerable people, including children, women, and marginalized Indigenous peoples and local communities (IPLCs).

In order to advance sustainable development pathways for the Amazon there is a need for substantial investment in research, technology and innovation. Currently only about 2.5% of Research, Development and Technology investments in Brazil are directed to the Amazon. The situation in the other Amazon countries is even more critical. To advance this vision, cooperation among the Amazonian countries is of high priority. In addition, enhancing institutions for the transformation of global knowledge about the Amazon into sustainable

technologies is also essential. The successful realization of this vision requires the presence of several enabling conditions, including research infrastructure, the emergence of new markets, shifts in social preferences, and a cultural transformation that embraces a holistic perspective on forest socio-biodiversity. It is important to mobilize available technologies compatible with the requirements of the Amazon biome that enable forest conservation, social inclusion, and income generation. It is also necessary to develop the educational and research infrastructure for innovative technologies, to preserve standing forests and healthy flowing rivers.

3.1.380 Key messages

1. Knowledge should be transformed into innovation, including technological innovations, that will be at the service of the region in which it is produced.
2. Indigenous and local knowledge (ILK) and scientific knowledge should be integrated.
3. Working with local communities for capacity development is key, including via partnerships between university researchers and local communities and companies; access to quality education; and inclusive and focused professional and technical training efforts.
4. Science and evidence-based solutions, including new technologies and innovation, must be developed while prioritizing the rights of Indigenous Peoples and local communities (IPLCs).
5. Overcoming the impacts of the coupled climate and land cover changes and biodiversity crises requires the integration of various disciplines and collaboration across stakeholders. These impacts must be addressed in both cities and rural areas, rather than only in urban areas, as has been the case historically.
6. Invest in accessible education, science, research, technology, and innovation valuing Indigenous and local knowledge to promote a socio-bioeconomy of healthy standing forest and flowing rivers.
7. Develop fiscal and financial incentives to engage the private sector and multilateral institutions in innovation and sustainable biodiversity-based value chains, ensuring transparency and accountab
8. Promote green job creation, capacity building, and incentives to local entrepreneurships, including bioindustrialization of value chains.
9. Enhance connections between actors at many regions and scales to support knowledge sharing and value creation, foster coordination and cooperation across the Amazon countries.
10. Engage Indigenous Peoples and local communities in planning and policymaking processes.
11. Recognize diverse knowledge systems and promote intercultural education and dialogue.
12. Increase demand, finance, and marketing pathways for ecosystem services and high value, low impact products, generating added value in the region.

13. Establish an inclusive and participatory socio-bioeconomy planning and collaborative implementation processes that builds on Indigenous Peoples and local communities' knowledge and institutions.

3.1.381 Collaboration outcomes

The speakers of this session shared various examples of notable research projects they are involved in and developing to advance science, education, and technology efforts in the Amazon region.

● Amazônia 4.0 (https://amazonia4.org/): an institute that develops advanced technologies and methods to transform Amazonian inputs into products with extremely high added value, develop a powerful bioindustry, empower local people and create urgently needed alternatives to deforestation and forest degradation. It combines scientific knowledge with Indigenous and local knowledge (ILK) and industry in its mobile biofactories, the Amazon Creative Laboratories, through partnerships with local communities that help demonstrate the visibility of a new social bioeconomy in the region.

● AmIT (https://amazonia4.org/amit/): a Pan-Amazonian institute, inspired by the Massachusetts Institute of Technology (MIT), with the premise that knowledge of the Amazon must be based on science and technology aimed at innovation to ensure socioeconomic inclusion in the development of the region itself, observing the fundamental precepts of environmental conservation. AmIT aims to seek creative solutions, involving a holistic and transdisciplinary approach, to structural problems that result in sustainable development and capacity building in the region. The AmIT will focus on five overwhelming themes: forests and sociobiodiversity; water; altered landscapes; sustainable infrastructure; and urban Amazon.

● Science Panel for the Amazon (www.theamazonwewant.org), composed of over 250 scientists - more than two-thirds from Amazonian countries, including Indigenous scientists - who came together with the mission of synthesizing and communicating scientific knowledge about the Amazon, integrated with Indigenous and local knowledge, to accelerate solutions for sustainable and equitable development.

3.1.382 Building inclusion and equity

● The event was accessible via an Americans with Disabilities Act (ADA) compliant elevator.

● The event was offered in a hybrid format, allowing attendees to participate both virtually via Zoom and in person to increase accessibility.

● The programming was available in both English and Portuguese, with two interpreters translating speeches live throughout the session.

● Session speakers and panelists included representation of women and Indigenous communities.

3.1.383 Key lessons learnt

- Hybrid events in which half of the panelists are participating in person and the other half are participating virtually increases accessibility, but also makes moderating conversations and time keeping more difficult.

Session 83: One Health: A feasible approach to control of many emerging and re-emerging diseases

Session Convenor
Mirinda Van Kleef

Position
Specialist Researcher

Organisation
Agricultural Research Council - Onderstepoort Veterinary Research

Country
South Africa

3.1.384 Abstract

Issues of One health have gained prominence in the recent past, and justifiably so. The world is witnessing an increase in pathogen spill overs from animals to humans. These spill overs are driven in large measure by human actions such as population growth, encroachment on wildlife habitats, agriculture intensification and more efficient transport systems that allow people and cargo capable of carrying pathogen fomites to move between regions in a short space of time. These actions have resulted in changes to the environment which has impacted climate change and contributed to zoonotic disease emergence and re-mergence. Indeed, it has been estimated that up to 70% of all emerging and re-emerging infections in humans are of animal origin. The SARS CoV2 infection that causes COVID 19 is just but one of many such infections.

One health employs a multidisciplinary approach to address the interactions, the health risks and threats posed by the ever changing interactions between humans, animals and the environment. Surveillance leading to early detection, diagnosis and prompt reporting of disease events has been recognised as key to the effective control of zoonotoic diseases. Global One Health security agenda promoted by the World Health Organisation (WHO), World Organisation for Animal Health (WOAH) and many other international organisations, recognise One Health as a major component to the attainment of UN Sustainable development goals. Is One Health a panacea for all emerging and re-emerging diseases?

Programme

Panel discussion (+40 min)

Implementing One Health – moving from theory to practice. How do we narrow the gap between rhetoric and action?

Opening remarks (5 mins)- Dr Mirinda van Kleef, Agricultural research Council of South Africa, Convenor

Dr Misheck Mulumba. head of Animal Health and Protection at the Agricultural Research Council-Onderstepoort Veterinary Institute (ARC-OVI). He is a member of the World Organisation for Animal Health (OIE) Scientific Commission for Animal Diseases (SCAD) and the current Chairperson of the African One Health Network (AfOHNet)

Dr Jacqueline Weyer (Head of the Centre for Emerging Zoonotic and Parasitic Diseases of the National Institute for Communicable Diseases,

Prof Wanda Markotter. Director of the Centre for Viral Zoonoses, Faculty of Health Sciences, University of Pretoria, and serves on the One Health High level expert panel (OHHLEP) Deputy Chairperson

Summary and closing remarks (10mins)- Misheck Mulumba

3.1.385 Key messages

The panel discussion highlighted the following points for the success of implementing a One Health initiative and to move from theory to action:

Acknowledged and reiterated that the Quadripartite alliance on One Health will enhance collaboration and drive prioritised change for the health of humans, animals, plants and the environment at global, regional and country level.

It is necessary to include One Health in education curriculum in order to ensure a changed mindset of the next generation.

We must engage more actively with government to ensure that they understand research and its outcomes and inform them what actions are needed for a successful and sustainable One Health outcome. Need to showcase evidence of One Health successes to ensure buy in.

Need everyone around one table to communicate. If you want action you need to know what you want to do and align programs accordingly. Project design and coordination is important to know who does what, when and where. This will ensure action. We require dedicated persons within different sectors who will have the power and be accountable for integration and implementation. This will ensure that the channels of communication are opened and that there is a link between the different departments to breakdown silo's.

Need to prioritise actions and bring practical uncomplicated solutions to the table.

We must demonstrate our vision to funders and drive their research agenda.

We must engage more actively with government to ensure that they understand research and its outcomes and inform them what actions are needed for a successful and sustainable One Health outcome.

Project design and coordination is important to know who does what, when and where.

Need to prioritise actions and bring practical uncomplicated solutions to the table.

3.1.386 Collaboration outcomes

Being a convenor has introduced me to several One Health role players in South Africa that can be contacted for future collaboration.

3.1.387 Building inclusion and equity

Panel discussion on “Implementing One Health – moving from theory to practice. How do we narrow the gap between rhetoric and action?” Panel members represented Veterinary Research, South Africa; Zoonotic diseases and Environment, Government, South Africa; One Health University Network, Africa; National Institute of Human Communicable Diseases, South Africa; Viral Zoonosis, University, South Africa.

3.1.388 Key lessons learnt

Working together is the best solution.

Session 84: Spirituality and Health: The State of Science for the Improvement of Human Functioning

Session Convenor
Shivan Arasu

Position
At the Heartfulness Research Centre, recognised and affiliated with the philosophy department of the University of Mysore, Dr. Shivani is working as a professor and providing guidance to scholars in the field of spirituality and its effects from 2014 onwa

Organisation
Heartfulness Research Centre, Sahaj Marg Spirituality Foundation, recognized and affiliated with the philosophy department of the University of Mysore, Karnataka State, India.

Country
India

3.1.389 Abstract

The speakers will present for 20 to 45 minutes each, followed by a discussion. During the science portion of the session, participants will be presented with information on (a) the current state of scientific knowledge with respect to the relation spirituality has to health and well-being (inclusive of both positive and negative associations), (b) the known mechanisms through which spirituality is thought to influence health and well-being (e.g., character development, coping skills, lifestyle choices, self-regulation, meaning and purpose in life), (c) recognized pathways through which spirituality may be cultivated and developed (e.g., religious involvement, engagement in meditation and contemplative practices, engagement with nature), and (d) effects of spirituality on the brain, what triggers spiritual experiences and their varieties, and how these experiences influence health.

For the second portion of the session, the focus will be on how spirituality may be integrated into public health and professional practices in fields such as medicine, counselling, psychology, education, economics, and sociology.

Throughout the session, attention will be given to the importance of culture as a potent moderating factor that needs to be considered when interpreting empirical research and when implementing health promotion programs and interventions in different social milieus.

Topics for the presentation content:

(1) What does science say about the relationship between spirituality and health? This first presentation can focus on summarising the current state of scientific knowledge regarding the relationship and influence spirituality has on health.

(2) Status of spirituality as a scientific construct. This second presentation can focus on the known problems and challenges of defining and measuring spirituality and on existing theories

that attempt to explain the empirical association of spirituality with health. This presentation will also touch upon how spirituality will likely differ in important ways across cultures.

(3) The dark side of spirituality: Its involvement in negative health and well-being outcomes. This third presentation can provide a brief overview of what is known about the relation of spirituality to problems in functioning. This includes such things as spiritual bypass, spiritual emergency, spiritual struggles, and negative religious coping, among other things.

(4) Spiritual technologies: Meditation. The fourth presentation can focus on the research on meditation and discuss its positive and negative effects on health. It can also touch upon how meditative techniques are being incorporated into counselling and psychotherapy practices and implemented in school systems in different areas of the world.

(5) Spiritual experiences and their effects on the brain, including what triggers spiritual experiences, their varieties, and upcoming technologies in this field, will be discussed in the fifth presentation.

(6) Accommodating spirituality in a diverse world. The sixth presentation can cover the promise and challenges of trying to recognize and incorporate spirituality across nations and how it can be used to facilitate (a) greater tolerance and compassion within and between nations (thereby addressing such things as war/conflict and humanitarian needs), and (b) how it may be able to improve the relation humans have to nature to help facilitate greater responsibility in how we treat the environment.

3.1.390 Key messages

In the session, Spirituality and Health: The State of Science and its Application for the Improvement of Human Functioning, the presentations and discussions were around spirituality and health, their interrelationship, and the effects of spirituality on health. Based on the positive effect of spirituality on health, its application in various fields was discussed. The main points and highlights of the session are given below:

1) Prof. Harold G. Koenig's presentation on the research review and update on spirituality and health overview consisted of the following:

1. Religion vs. spirituality definitions

2. Research on religion and mental health

3. Research on religion and physical health

4. Theoretical model explaining effects

5. Clinical applications

6. Conclusions

7. Further resources

2) Mr. Mark McCrindle presented on spirituality, wellbeing, and the emerging generations. The highlights of his presentations were: Based on national studies from Australia, Mark

McCrindle has shown how the younger generations are more likely to express openness to exploring religion and discussing spirituality compared to the older generations.

3) Prof. Kiran Kumar Salagme presented on religion, spirituality, and the transpersonal perspective. He discussed health, well-being, and optimal human functioning from a transpersonal perspective.

4) Prof. Ellen Idler presented Religion as a Social Force in Health: Complexities and Contradictions. The presentation summarized recent research on the health effects of religion and spirituality on the individual, which are strongly protective of health outcomes and quality of life in serious illness. However, there are known conflicts between religious groups and public health efforts at times. The presentation presented an example of the role of religious groups during the 2014 Ebola crisis in West Africa to illustrate both the serious conflicts and the benefits of partnerships between public health and faith-based organizations.

5) Dr. Douglas A. MacDonald presented the status of spirituality as a scientific construct. This presentation focused on the known problems and challenges of defining and measuring spirituality and on existing theories that attempt to explain the empirical association of spirituality with health. This presentation also touched upon how spirituality will likely differ in important ways across cultures.

6) Prof. Andrew Newberg made his presentation on The Varieties of Spiritual Experiences: A Neurotheological Perspective. He discussed spiritual experiences and their effects on the brain with the help of brain-scan images, including what triggers spiritual experiences, their varieties, and upcoming technologies in this field.

7) Dr. David B. Yaden explained his presentation on Spiritual Experience: Causes, Correlates, and Consequences. The areas discussed were the following:

1. Historical background on the scientific study of spiritual experience

2. Prevalence of spiritual experience

3. Outcomes of spiritual experience

4. Triggers of spiritual experience

5. Emerging psychedelic research

8) Prof. Everett L. Worthington Jr. discussed through his presentation on Accommodating Spirituality in a Diverse World: The Need for Promoting Forgiveness to Help Mitigate Social Conflict He explained the following points in his discussion:

A. The need to promote forgiveness to help mitigate social conflict

B. How spirituality and religion might make forgiveness more or less able to promote peace

C. Handbook (Handbook of Positive Psychology, Religion, and Spirituality; edited by Davis et al., 2023) shows research is global, not relegated to the USA and Western Europe.

D. The intervention of Reach Forgiveness across the globe—a randomized controlled trial in five countries

E. A community campaign to promote forgiveness—what works and what doesn't?

F. The global promise of forgiveness as contributing to world peace

9) Prof. Edward Ward Davis presented, along with Sophia A. Osteen, MA (Wheaton College), and Christina Metzler Miller, on the topic Science-Religion Collaborations Can Support Progress on the United Nations Sustainable Development Goals. They presented the history and horizons of the science-religion relationship, identified the UN Sustainable Development Goals that offer the most opportunity for science-religion collaboration, and discussed the possible impact of such collaborations.

10) Prof. Shivani Arasu presented on Spirituality for Sustainable Development. The presentation highlighted the meaning of spirituality, spiritual development, unmet spiritual needs due to life hurdles and problems, and the way to incorporate spirituality into society for these problems and sustainable development goals. The presenter stressed the following points: 1) There is a need to provide institutional help for spiritual growth and development in the field of health care services to people of all ages, genders, and classes during difficult circumstances. 2) The integration of spirituality in all institutional settings in a controlled manner, aligning with local traditions and culture and incorporating them into the social system, will reduce conflicts, deprivation, exploitation, rape, abuse, suicides, war, insurgencies, and homicide. 3) By fostering self-responsibility and sensitivity through spirituality, the sustainable development goals will be far easier to achieve with the life-span approach of spiritual interventions, mainly including the goals of poverty reduction, hunger, gender equality, environmental protection, sustainable cities and communities, peace and justice, and production and consumption concerns. 4) There should be an inclusion of spiritual aspects in sustainability teaching and research practices.

The outcomes of the session in the form of recommendations are the following:

• There should be an inclusion of spiritual aspects scientifically in sustainability teaching and research practices. By fostering self-responsibility and sensitivity through spirituality, the sustainable development goals will be far easier to achieve with the life-span approach of spiritual interventions, mainly including the goals of poverty reduction, hunger, gender equality, environmental protection, peace, and justice, as well as production and consumption concerns.

• The integration of spirituality in all institutional settings in a controlled manner, aligning with local traditions and culture and incorporating them into the social system, will reduce conflicts, deprivation, exploitation, rape, abuse, suicides, war, insurgencies, and homicide. There is a need to provide institutional help for spiritual growth and development, specifically in the field of health care services, to people of all ages, genders, and classes during difficult circumstances.

• Spirituality studies have a global scope and have the potential to mitigate future conflicts, promote forgiveness and flourishing, and reduce mental health symptoms. For example, REACH forgiveness studies

6. There should be an inclusion of spiritual aspects scientifically in sustainability teaching and research practices to foster self-responsibility and sensitivity for sustainable development.
7. The integration of spirituality in all institutional settings in a controlled manner, aligning with local traditions and culture and incorporating them into the social system, will reduce problems.
8. Spirituality studies have a global scope and have the potential to mitigate future conflicts, promote forgiveness and flourishing, and reduce mental health symptoms. For example, forgiveness studies.

3.1.391 Collaboration outcomes

Spirituality as a scientific study needs to be incorporated into all institutions. For example, in education, specifically sustainability teaching and practice, a scientific framework for the study in the form of a syllabus can be developed in collaboration with all the countries. For public health, the outcomes presented in the session can be shared to encourage countries to include spirituality systematically for physical, mental, and social health and well-being, as well as care for the terminally ill.

Spirituality should find a place in the political and administrative systems at local, regional, and national levels. For the conflict-affected population, the application of spirituality can help relieve stress and improve mental health. Both scientific and faith-based as well as spiritual organizations can collaborate for the benefit of a larger public so as to promote equality by generating self-responsibility and sensitivity towards other human beings and the environment.

There is a need for more international collaboration to take up studies and research related to spirituality and to understand spirituality's various dimensions and factors related to it.

3.1.392 Building inclusion and equity

The session included expert speakers from India, the USA, and Australia with their vast experience in the respected areas. The presentations were based on their research findings from international studies covering data and analyses from Asia, Africa, Europe, Australia, and the USA on a range of problems, including spirituality, physical health, and mental health. Their studies covered people of all ages, genders, and even difficult situations like war, conflict, and epidemics. They suggested that spirituality be applied scientifically in a culturally appropriate manner. The session also has presentations from four female presenters.

3.1.393 Key lessons learnt

With a genuine concern for people, mostly the scientific community is ready to share their findings, and the UN is there to support the findings and recommendations for their application for the betterment of humanity. UN Sustainable Development Goals can be achieved with the help of mutual understanding and international collaboration. Involvement of all stakeholders in implementation is a must.

Session 85: Shifting Power Paradigms: Towards an Equitable Global Health Stewardship

Session Convenor
Majid Sadigh

Position
Director, Global Health Program

Organisation
Nuvance Health

Country
USA

3.1.394 Abstract

This session outlines a two and a half hour examining power dynamics and decision-making within global health governance, learning from the lessons of the COVID-19 pandemic. It promotes critical discourse on equitable collaboration between LMICs and high-income countries (HICs), advocating for a shift in power dynamics and more democratic stewardship in international institutions.

One of the objectives is introducing the role of artificial intelligence (AI) in addressing these goals, illustrating how ethically applied AI can identify and address health inequities, enhance data collection and analysis, support collaborative efforts, and foster open and meaningful communication.

Based on the UNGA78 theme of SDGs, we bring the voices of LMICs to focus global attention on the challenges that affect implementation of SDGs among the most vulnerable populations in LMICs while suggesting feasible and effective solutions. The following will be important elements of the session.

Expected Outcomes:

This session aims to provoke a comprehensive discussion on the existing power dynamics within global health governance and intersectoral partnerships. We aspire to inspire a shift in these dynamics towards a more democratic and balanced global health stewardship. We hope to produce a comprehensive roadmap for a more inclusive, equitable, and democratic global health system.

Our goal is to create a shared understanding of the unique challenges LMICs face and possible AI-driven solutions, thus stimulating collective efforts to achieve health-related SDGs. By engaging various stakeholders in these discussions, we hope to highlight the value of bottom-up decision-making, community engagement, and democratic global health governance

toward the equitable achievement of the health-related SDGs, which has the potential to integrate digital medicine, including AI into the existing healthcare systems of LMICs.

We firmly believe that by shifting power dynamics, we can take significant strides toward the equitable achievement of the health-related SDGs.

3.1.395 Key messages

Demystify Science & innovation in LMICs and vulnerable communities, Strengthen quality science education in LMICs.

Encourage/support local manufacture in LMICs/their regions, equitable science partnerships.

1. Democratize stewardship in global health and empower LMICs
2. Must promote and support equitable partnerships
3. Stop exploitation and extraction of their rewsources leading to persistent poverty
4. The Voices from LMICS must be included in decision or policy making
5. LMICs must also take ownership and ownership and participation in decision making
6. LMICS should contribute more resources to development
7. LMICsGenuine and bilaterally must decide priorities for their development agenda

3.1.396 Collaboration outcomes

Need equitable partnerships between LMICs and HICs in science and innovation programs, projects that empower LMICs to lead in science education, health and science and technology transfer.

3.1.397 Building inclusion and equity

The majority of speakers are from LMICs and of 5 panelists three are women. Invitation to participate was extended to anybody from anywhere who can log into the session

3.1.398 Key lessons learnt

That LMICs populations are not aggressive enough to take up opportunities to be heard effectively.

To put up a very good session requires a lot of effort and starting several months early to prepare well.

Session 86: Optimizing Global Health Exchange Programs for Participants from Low-to-Middle-Income Count

Session Convenor
Majid Sadigh

Position
Director, Global Health Program

Organisation
Nuvance Health

Country
USA

3.1.399 Abstract

The colonizer mindset continues to ripple through academia, educational institutions, healthcare centers, and communities. Rooted in an empowerment rather than dependency model, the Nuvance Health / University of Vermont Larner College of Medicine Global Health Program with active participation from domestic and international partners has and continues to gradually implement unique features from decision-making to resource allocation, participant education to community engagement, capacity building to brain gain. We aim to continuously shed a truthful light on a tragic past and present while evaluating our program’s components that combat and contribute to the savior complex model.

An integral component of GH exchange programs is the bidirectional hosting of GH participants from HIC to LMIC, and reciprocally from LMIC to HIC. However, these exchanges are being more critically investigated in order to better understand and ameliorate the discrepancies, among them the disconnect between the levels of support given to HIC participants and LMIC participants.

While many discussions have been held about inequalities in GH, this particular form of inequality has yet to be addressed. A critical first step involves giving the platform to LMIC participants to safely share their experiences in HIC.

Global Health (GH) programs in HIC spend ample resources ensuring the emotional and physical safety of HIC participants while on GH electives in LMIC. From extensive pre-departure orientation training to reviewing of weekly written reflections, host family cultural integration to longitudinal mentorship on arrival home, HIC GH participants are given thoughtful attention as they adjust to a new culture and medical setting while encountering numerous structural and personal challenges.

However, LMIC GH participants are not given this same level of attention when hosted in HIC, even though they often encounter greater challenges than their HIC counterparts in being unable to put hands on patients, access patients' medical records, or participate in clinical

discussions or scientific dialogues. Regardless of their level of training, they are purely observers and listeners in HIC while even first-year HIC medical students can participate more fully in the clinical experience while in LMIC.

Furthermore, LMIC participants often experience mistreatment, microaggressions, and other biases that affect their comfort, emotional safety, and ability to learn and work, not only without protection but without a platform on which to discuss those experiences without fear of repercussion. Amidst the push to combat power imbalances in GH today, this topic has been left largely unaddressed. In this panel, we ask participants from LMIC what their challenges have been during their time being hosted in HIC, and what can be done to empower them on their GH journeys.

While many aspects of GH partnerships are currently under discussion and restructuring, the relative lack of support for LMIC participants while hosted in HIC has been far overlooked. There is no question that we have a long way to go to equalize GH, and this panel may not offer any solutions.

However, giving the podium to partners from LMIC to discuss their perspective may open new dialogues around the structural, personal, and cultural barriers that may prevent LMIC participants from having an optimal GH experience, and ultimately enrich the path toward more equitable GH partnerships.

3.1.400 Key messages

Suggestions and actions for addressing disparities should be home-grown starting with education for critical consciousness in health professions education. The colonizer cannot spearhead decolonization; GH is still entangled in colonial mindsets so decolonization is a prerequisite.; Power imbalance and inequalities exist but could be minimized. They should be made explicit and recognized. How? Focusing not only on challenges and deficiency but also on opportunities and solutions. We, as bilateral partners, are both dedicated, creative and resourceful.

A stronger emphasis should be put on the LMIC-LMIC alliances.; Need for practical and detailed outlines of what “bidirectionality” looks like and how it will be executed; Need to teach decolonization/health equity/social determinants of health at all levels of medical education to ensure lasting systemic changes moving forward; Participants from LMICs DO benefit from GH programs in HICs.

However, these benefits should not be taken for granted. They should be intentional, mutually and realistically discussed, and evaluated.

Curriculum building and implementation should be a mutually collaborative endeavor between educational institutions in high-income countries and low-to-middle-income countries

Everyone involved in global health from every level should undergo rigorous training in decolonization/colonization of global health

Global health partnerships should create new, standardized policies for protecting and supporting participants from low-to-middle-income countries during their stay in high-income countries

3.1.401 Collaboration outcomes

Assessing current knowledge of decolonization/colonization of global health among global health participants; understanding how we can address these knowledge deficiencies; understanding what what structures are currently in place to support participants from low-to-middle-income countries during their global health observerships in high-income countries

3.1.402 Building inclusion and equity

It was inclusive by featuring panelists and audience members from different countries and cultures, and highlighting the point of view of people from low-to-middle-income countries. The panel was gender balanced as well.

3.1.403 Key lessons learnt

Interdisciplinary collaboration, particularly among scientists, on different hot topics, particularly AI, is extremely helpful. We need to create an equitable system for teaching our colleagues in low-to-middle income countries to collect and and analyze their own data regarding AI in order to help close the technologic gap. LMIC-LMIC partnership is critical for autonomy.

Session 87: Digital innovation and digital transformation

Session Convenor
Alexandrina Pauceanu

Position
Professor

Organisation
Geneva Business School

Country
Switzerland/Spain

3.1.404 Abstract

In today's fast-paced and interconnected world, digital innovation and transformation have become crucial for organizations across various sectors. However, the pursuit of technological advancement must be accompanied by a balanced and inclusive approach that considers the needs and well-being of all individuals and communities. This session aims to explore the intersection of digital innovation, digital transformation, and social responsibility, highlighting the importance of inclusivity and equity in driving positive change.

During this interactive session, industry experts, thought leaders, and innovators will come together to discuss the challenges and opportunities presented by digital innovation and transformation. Participants will gain valuable insights into how to effectively balance the pursuit of technological progress with the goal of creating a more inclusive and equitable world.

Some key topics that will be covered include:

Understanding Digital Innovation and Transformation: This introductory segment will provide a comprehensive overview of digital innovation and digital transformation, including their definitions, impact on society, and potential benefits and risks.

Ethical Considerations in Digital Innovation: Participants will explore the ethical implications of digital innovation, including issues such as privacy, data security, algorithmic bias, and the potential for unintended consequences. The session will emphasize the need for responsible and inclusive practices to mitigate these challenges.

Inclusive Design and Accessibility: This segment will delve into the concept of inclusive design, highlighting the importance of creating digital solutions that are accessible to individuals of diverse abilities, backgrounds, and socioeconomic statuses. Participants will learn about practical strategies and tools for incorporating inclusivity into the innovation process.

Human-Centered Approaches to Digital Transformation: Participants will discover the value of adopting a human-centered approach to digital transformation, focusing on understanding

user needs, preferences, and experiences. This segment will emphasize the significance of empathy, co-creation, and continuous user engagement in driving meaningful innovation.

Leveraging Technology for Social Impact: This session will showcase inspiring examples of how digital innovation and transformation can be harnessed to address societal challenges, promote sustainability, and empower marginalized communities. Participants will gain insights into successful initiatives and explore avenues for leveraging technology to create a more equitable world.

Collaborative Innovation and Partnerships: Collaboration among stakeholders from different sectors is vital to achieving a balanced and inclusive approach to digital innovation and transformation. This segment will highlight the importance of partnerships between governments, businesses, civil society, and academia in driving positive change.

3.1.405 Key messages

As the most important intergovernmental organization in the world, the United Nations has a vital role to play in fostering innovation and digital transformation globally. The UN can facilitate the sharing of best practices and knowledge among its member states, provide technical assistance to developing countries, and create a conducive environment for innovation and digital transformation to thrive.

As we stand on the cliff of a digital future, it is imperative for us to establish clear digital strategies that will guide our way forward. Investing in robust digital infrastructure is not merely a choice but a necessity for economic growth and societal advancement. Alongside this, we must prioritize digital education and training, ensuring that our people are equipped with the skills they need to navigate the rapidly changing digital landscape. But our efforts shouldn't stop at just skilling; it's equally vital to foster a culture of research and development, allowing for ground-breaking innovations to emerge and thrive.

Furthermore, it's essential to create a regulatory environment that supports and champions innovation, ensuring that our policies promote growth rather than hinder it. Protecting digital rights should remain at the forefront of our agenda, ensuring the privacy and freedom of our citizens. Open data initiatives will pave the way for transparency and improved decision-making. On the global stage, collaborative international initiatives can pool resources and knowledge, while financial support and incentives can help startups and tech innovators in realizing their visions. And finally, the establishment of innovation hubs across our cities and regions will serve as beacons of progress, creating ecosystems where ideas can flourish and transform our world.

In conclusion, we can admit that innovation and digital transformation are no longer optional, but a necessity for survival in the globalized world. It is incumbent upon us, as members of the global community, to work together to foster an environment of innovation and digital transformation, for the betterment of all mankind.

Implement supporting policies for innovation in different fields

Include industry-public-NGOs partnerships support.

Make use of the CSR funds to solve real world challenges.

Under UN umbrella, we can provide guidelines for innovation, a kind of hnadbook for entrepreneurs

Create inclusive innovation events where we can showcase best practices, develop networks, etc.

3.1.406 Building inclusion and equity

We have included academicians and practicians from different continents - Europe, Africa, Middle East.

3.1.407 Key lessons learnt

Technology is not always your friend. Be more selective with the speakers.

Session 88: Industrial hemp for paper and packaging

Session Convenor
Beth brandstatter

Position
Chief impact officer

Organisation
Element6 dynamics

Country
America

3.1.408 Abstract

This panel includes element6 Dynamics CEO, Kim Kovacs, Executive Director of Buckminster Fuller Institute, Dr. Stuart Cowan, and CSO Shop founder, Danielle Azoulay (former head of sustainability and ESG for Bed, Bath & Beyond and L'Oreal).

Experience the power of industrial hemp and how this annually renewable phytoremediator is currently optimizing supply chain for the paper and packaging industries in North America.

Hemp's unique position to be incorporated into farming practices as a rotational crop, regenerative solution, soil erosion mitigator and novel revenue source encourages farmers to take an strong interest.

Enterprises looking to collaborate with ESG focused suppliers with great transparency of supply, chain of ownership, accuracy and validation towards Scope III goals, can look at the nascent industry of hemp of how partnership align with SDGS goals for achieveable solutions.

Key messages

Industrial hemp for paper and packaging and bio regional infrastructure is vehicle to address supply chain challenges, address regional work environments and address GHG emission imbalances.

Exemption of industrial hemp and farmers in 2023 farm bill.

Government/private subsidies for the industrial

Collaboration across industry for the adoption of hemp

3.1.409 Collaboration outcomes

Buckminster fuller and two private collabs.

3.1.410 Building inclusion and equity

Open for all

3.1.411 Key lessons learnt

Test equipment and zoom link if possible. Only issue was that.

Session 89: Safeguarding Ancestry technologies- The Silver Passport case study

Session Convenor
Rosakebia Liliana Estela Mendoza

Position
Founder

Organisation
Silver Passport

Country
Peru

3.1.412 Abstract

The Silver Passport Project draws inspiration from NASA's 1977 initiative, where they collaborated with the United Nations to compile a golden record representing the essence of human civilization and culture.

This record, which included greetings, photos, and sample recordings, was sent aboard a spacecraft into the solar system. It served as a timeless testament to our collective heritage. The creative approach of the Silver Passport project involves creating a digital space where youth and seniors can exchange stories and knowledge. Young content producers learn about ancestral heritage and the importance of preserving cultural traditions directly from seniors who share their wisdom and experiences.

The project aims to go beyond formal education and provide a unique learning environment that promotes a deeper appreciation for diverse heritages and traditional practices. The planned outputs of the project include an online platform where youth and seniors can connect and exchange stories, a collection of digital content showcasing ancestral technologies and cultural heritage, and partnerships with organizations that share similar goals.

The project aims to leverage digital platforms to reach a global audience, promoting cultural diversity and intergenerational collaboration on an international scale. Overall, the Silver Passport project directly contributes to the Sustainable Development Goals (SDGs) by promoting intergenerational learning, safeguarding ancestral technologies, and fostering inclusivity.

It serves as a platform for preserving cultural heritage and creating meaningful connections between generations, ultimately contributing to a more sustainable and inclusive future.

Speaker: Rosakebia Estela

3.1.413 Key messages

Leveraging my interdisciplinary academic background in Biological Sciences, Creative Industries, and Higher Education, and enriched by my roles as a Sakharov Fellow and an ECA Professional Fellow, I have integrated extensive global advocacy for human and environmental rights to offer a multifaceted approach to global challenges. My emphasis on innovation, technological empowerment, and inclusive dialogue has allowed me to contribute significantly to discussions on environmental and social issues, including presenting challenges from Latin America to the European Parliament.

I have been a part of transformative initiatives like the KFAS-Salzburg Global Leadership Initiative and the Just Transformation Forum, where I engaged in enlightening discussions and collaborative endeavors to advance the Sustainable Development Goals (SDGs). My experiences have underscored the pivotal role of informed and collaborative efforts in shaping the trajectories of post-SDG agendas and fostering enlightening discussions at the UN Summit of the Future in September 2024.

I have represented Peru in international events in eleven countries and have initiated cultural ties with nine other countries in online settings as an independent and passionate advocate and scholar. My work at the intersection of social innovation, social change, and activism has allowed me to join high-impact projects and work with multicultural and interdisciplinary teams since 2017.

I had the unique opportunity to raise awareness about social and environmental challenges, including the lack of drinkable water in Northern Peru, at the European Parliament's Sakharov Fellowship in June 2022. Additionally, I contributed to the development of The Artisanal Mining Grand Challenge at ENGINEERING FOR CHANGE from May to September 2022, supporting innovators worldwide in addressing the environmental and social costs of artisanal and small-scale gold mining in the Amazon.

With recognitions such as participating in the LEAP Innovation News Lab and winning the Bio-Reto organized by INNOVATE, Ministry of Production of Peru, I have raised pre-seed capital for various innovative projects, emphasizing my commitment to fostering innovation and addressing global challenges.

I believe that these diverse experiences and my commitment to innovation and dialogue can contribute to a greater understanding of science and innovation within the context of achieving the SDGs and can provide valuable insights for the UN Summit of the Future in September 2024 and the post-SDG Agenda more generally.

Develop policies that recognize and incorporate indigenous and traditional ecological knowledge, especially from regions like Latin America, to address climate change and environment

Facilitate platforms and initiatives that promote intergenerational dialogue and knowledge transfer, bridging the gap between the elderly and the youth, to preserve traditional practices and wisdom.

Develop inclusive scientific and technological solutions that are accessible to marginalized communities and represent diverse geopolitical and cultural contexts, focusing on human-centered stories

Implement community-based initiatives and policies that focus on reducing environmental vulnerability and livelihood fragility, especially in biodiversity hotspots like Latin America

3.1.414 Collaboration outcomes

Not established formal collaborations yet.

3.1.415 Building inclusion and equity

Yes. As a transgender founder, diversity and inclusion are key in my work.

3.1.416 Key lessons learnt

The summit highlighted the critical importance of fostering international and cross-sectoral collaborations, encompassing academia, the private sector, entrepreneurs, creatives, and civil society movements, and demonstrated the transformative potential of virtual events in amplifying participation and diversity, enabling a richer and more inclusive exchange of ideas and knowledge.

Session 90: Science capacity building for the future: defining the Skills Agenda

Session Convenor
Imac Zambrana

Position
Associate Professor

Organisation
University of Oslo, and Oslo New Community College.

Country
Norway

3.1.417 Abstract

SUMMARY

The growing interest in identifying future-ready human skills amidst rapid technological growth has inspired new cross-sector collaboration on education and skill development. This symposium addresses how we can make a more inclusive approach to science capacity building a critical part of the UN Summit of the Future in 2024.

This symposium aims to create a platform for a transdisciplinary and global dialogue on improving and reimagining science and technology education. Our goal is collective strategy-building for an equitable STEM future, ensuring every individual, regardless of background, can access opportunities. Together, we can shape novel strategies and policies to influence the next generation of scientists, innovators, and leaders in STEM, aligning with the UN's Sustainable Development Goal #4 and the EU-AU Innovation Agenda.

The session has three main objectives:

1. Advocate for transdisciplinary science & epistemological pluralism to ensure cross-cultural knowledge exchanges & applications.

2. Identify skills needed to enhance future science capacity from local to global levels.

3. Identify best practices to enhance these skill sets efficiently from local to global levels.

Speaker 1: Imac Zambrana (Associate Professor, University of Oslo and Oslo New University College, Norway)

Title: A broader and more diverse framework for science capacity building for the future.

Summary: There is a need to identify and develop skills for the future amidst anticipated technological advancements. The digital and green transformations, diversity, and unevenness in resources, needs, and societal challenges reflect the importance of considering and understanding these challenges and turning them into opportunities. This talk will provide a

framework for supporting a more holistic, inclusive, and trans-disciplinary approach to science capacity building.

Speaker 2: Petter Næss (Executive Director, U.S-Norway Fulbright Foundation for Educational Exchange)

Title: The value of diplomacy and exchanges across borders and fields.

Summary: The Fulbright program promotes global peace and understanding through academic exchange and strives to "see the world as others see it." This talk will examine some of the issues and tensions relevant to that imperative: the "two cultures" of science and the humanities, epistemological pluralism, threats to academic freedom, precautionary principles and market forces, unequal distribution of resources in the global research community, national identities and interests in the face of global challenges, and how to collaborate constructively and peaceably with those who may see the world – and the world of science – differently.

Speaker 3: Larisa Schelkin (CEO, President and Founder, Global STEM (Science, Technology, Engineering and Math) Education Center, Inc.)

Title: The importance of global competencies and science diplomacy ("science in diplomacy, science for diplomacy and diplomacy for science" Royal Society & AAAS)

Summary: Sharing scientific knowledge and approaches through formal and informal, private, and public collaborations and training depends on global perspectives and literacy. One needs to understand global nuances to navigate global scientific communities and ensure technological progress across all disciplines. Skills such as science diplomacy are not currently being taught in schools, but moving forward, scientific communities and science education depend on promoting and integrating them into the curriculum across all educational systems.

Speaker 4: Charles Takalana (Physicist, Head of Secretariat, African Astronomical Society, South Africa)

Title: The role of astronomy to build skill sets within and across fields.

Summary: Astronomy is a data-intensive science. It can be used to build skill sets for other fields and technology transfer beyond the field of astronomy. Moreover, the astronomical heritage in Africa, combined with the increasing need for dark sky preservation, opens up opportunities for policy and strategies to boost interdisciplinary exchanges between and across educational efforts in astronomy, technology, and the SDGs.

Speaker 5: Tshiamiso Makwela (Post-doctoral fellow and research scientist, IAU OAE, Max Planck Institute for Astronomy & University of Cape Town).

Title: Astronomy Education Research towards sense-making

Summary: Science education that leads to responsible and informed citizenship from a global perspective needs to respect the culture of students while at the same time fostering their abilities to think critically and scientifically. This talk advocates for a science education approach that respects cultural backgrounds and fosters critical thinking, using astronomy as a

case study. It will argue against rote memorization, emphasizing the importance of sense-making in connecting science, culture, and personal experience.

Speaker 6: Ismahan Soukeyna Diop (Associate professor at Université Cheikh Anta Diop, Dakar, Senegal)

Title: African oral tradition as a tool for sharing and understanding of culturally relevant content.

Summary: African storytelling tradition can be used to share, teach, and understand non-scientific and scientific material. Oral tradition builds on projections of known cultural content, such as ancestry and practices, contextualizing new and unfamiliar content. The abstract narrative can become a bridge into the context. This talk will share how African storytelling has been used to project material in psychotherapeutic sessions and discuss how such oral traditions can be used for science education and training.

Speaker 7: Laila Sandroni (STeP fellow, Inter-American Institute for Global Change Research, Uruguay).

Title: Weaving transdisciplinary research networks to address the challenges of global environmental change in the Americas.

Summary: Issues such as climate change, biodiversity loss, and water scarcity require urgent solutions informed by science. This talk will d

3.1.418 Key messages

This symposium addressed how we can make a more inclusive approach to science capacity and skills building a critical part of the UN Summit of the Future in September 2024, as well as how we can shape novel strategies and policies to influence the next generation of scientists, innovators, and leaders in STEM and the achievement of the UN's Sustainable Development Goal SDG 4 and the post-SDG Agenda.

The growing interest in identifying future-ready human skills amidst rapid technological growth has inspired new cross-sector collaboration on education and skill development. Motivated stakeholders across the business, policy, research, and education spheres are developing roadmaps for future educational and skills efforts. The overall goal of this session was to create a platform for a transdisciplinary and global dialogue on improving and reimagining science and technology education and to motivate collective strategy-building for an equitable STEM future, ensuring every individual, regardless of background, can access opportunities. The main objective of the session was three-folded:

1. Advocate for transdisciplinary science and epistemological pluralism to ensure cross-cultural knowledge exchanges and strategies for applying that knowledge.

2. Identify skills needed to enhance future science capacity from local to global levels.

3. Identify best practices to enhance these skill sets efficiently from local to global levels.

In advocating for a more diverse framework for future science capacity-building, the session emphasized the need to cultivate a broader range of skill sets. These undeniably encompass

technological proficiencies, which remained unaddressed in this session, and skills specific to varied scientific domains. However, in this session, we advocated for an augmented emphasis on:

1. Training of universal competencies or generic skills like diplomacy, perspective-taking, critical thinking, and epistemic pluralism.

2. Exchanges across disciplines regarding data utilization, methodological development, and training.

3. Leveraging on cultural traditions and a broader heritage of knowledge and epistemic practices.

4. Cultivating a more profound understanding of localized challenges is a crucial agenda in equipping forthcoming scientists to address real-world problems in their ambient environments.

We can more effectively access the global knowledge reservoir by fostering educational methodologies that encourage trans-cultural and trans-disciplinary knowledge and experience exchanges. In our current technological era, STEM education has the potential to be more globally interconnected, ensuring that the beneficiaries of scientific progress are integral to its evolution. Detailed proposals for enabling such interdisciplinary exchanges will be elucidated below.

1)Universal skills can support the building of science capacities:

When considering the interactive and digital tools available today that transcend space and time, it is possible to facilitate direct experiences with cross-cultural and trans-disciplinary projects that connect science students across borders as integrated parts of our global educational programs. This will not only stimulate an appreciation of the complexity of the real-world challenges globally but also give direct experience with methodological pluralism and the diversity of problem-solving possibilities that exist -- opening the range of cognitive flexibility, innovation, and the development of problem-solving skills to meet current challenges together.

Development of science diplomacy skills requires substantial support in learning how to navigate the complex world with an openness to the diversity that exists in lived experiences and heritage and with a curiosity for the wealth of knowledge that we encompass combined, emphasized by our Keynote speakers Petter Næss Executive Director, U.S-Norway Fulbright Foundation for Educational Exchange, Norway) and Larisa Schelkin (CEO, President and Founder, Global STEM (Science, Technology, Engineering and Math) Education Center, Inc.). Learning how to see the world the way others see it might sometimes fit the pre-existing templates we have of the world, but it might also involve revisions of these templates and refinement of our current state of knowledge.

2)Exchanges of field-specific skills across disciplines and methodological approaches: There are abundant opportunities for exchanges across disciplines regarding data utilization, methodological development, and training, as emphasized by our speaker and physicist Charles Takalana (Head of Secretariat, African Astronomical Society, South Africa). Direct translations can be done across the STEM fields, which could be realized with

interdisciplinary Hackathons. As Charles mentioned. Moreover, bringing ancient knowledge together with new science has been a persistent pursuit. Still, recognizing their unique contributions can be made more explicit and crystallized on the future SDG educational agenda. For example, the African continent has a long heritage of dark sky studies that is a gateway to fueling an interest in astronomy.

Furthermore, there are broader transdisciplinary exchanges to be made. Considering that different fields rely on the same human mind that battles to make sense of the material at hand, lessons learned from one area about the uptake and processing of information can be translated across fields. Our speaker, Tshiamiso Makwela (Post-doctoral fellow and research scientist, IAU OAE, Max Planck Institute for Astronomy & University of Cape Town), emphasized how sense-making and overall reasoning can be introduced into Astronomy Education to promote critical thinking and, as such, broadening the understanding and connection with the real world.

3)Leveraging on cultural traditions and a broader heritage of knowledge and epistemic practices:

Some epistemic traditions relevant to science capacity building and education are broader and specific to a given culture. Our speaker, Associate Professor Ismahan Soukeyna Diop (Université Cheikh Anta Diop, Dakar, Senegal), demonstrated how building on the African oral traditions, tales, and mythology can be robust vehicles for the transmission of knowledge, understanding, and education.

Several lessons learned here can be transferred across epistemic traditions and cultures. Paradigms of understanding can have long trans-generational histories. It is an opening to known representations that we can build on to increase our knowledge and learning beyond the initial stories through concept analogy. Parallelism is one lens that is relevant in West Africa, and it is imperative to use such decolonized approaches based on principles of Indigenous psychology in our educational programs. Indeed, human stories generally build on many of the same structures, and the same lenses might apply across cultures and fields. Work on identifying shared and non-shared narrative structures and practices of exchanging our lenses is speaking directly to the objective of increasing epistemic pluralism.

New information can change the existing schemata of how the world works rather than forcing others to assimilate further information into pre-existing schemata. We must protect traditions not part of the massive data sets used as a foundation for such sizeable generative language models, including local oral traditions. It is wise, just, and speaks directly to SDG4. In fact, the human heritage of sense-making might inform the computer sciences by considering a more comprehensive range of information up-taking, processing, and generation.

4)Cultivation of a more profound understanding of localized challenges and the learners' ecological context:

It is a crucial agenda to equip forthcoming scientists with knowledge of how to address real-world problems in their ambient environments. Taking a closer look at SDG4, we must consider the learners' ecological context to reach the goal of education for all learners to acquire knowledge and skills that promote sustainable development. Andres Villalba

(Universidad Gastón Dachary, Argentina) showed explicit examples of integrating STEAM methodology with socially relevant perspectives and reality pedagogy. Reality Pedagogy emphasizes students' lived experiences and cultural backgrounds as valuable assets in the learning process. Combining Reality Pedagogy and STEAM methodology with a social perspective can enhance students' engagement, promote their critical thinking, and cultivate a deeper understanding of the world. Our speakers, Laila Sandroni (Inter-American Institute for Global Change Research, Uruguay) and Rebecca Barnes (Belmont Forum, Uruguay), demonstrated specifically the massive potential of building partnerships and networks across policy, science, education, and people in the Americas through the work and collaborative efforts of the IAI and the Belmont Forum. Transdisciplinary research and training can benefit from structures that protect local stakeholders.

By considering the diversity of perceptions, the formal and informal knowledge, the abstract, and the case-specific, the potential of developing solutions and training programs that promote the common good is highly increased. Training the next generation of global transdisciplinary science leaders is crucial to ensure such collaborative efforts with diverse stakeholders and to instill essential transdisciplinary knowledge and humanistic virtues as guiding principles. The work in the Americas can easily be translated to other countries and regions. We call for initiatives and grants to support Global educational exchange programs in which their strategies can be shared and implemented in other parts of the world.

To prepare students to become active, formed, and informed citizens capable of addressing real-world, localized, and complex future challenges, we can tap into our combined heritage of skillsets and knowledge about the world. Future science and discovery will require all of it. The question is how we can bring all forms of knowledge together? There are multiple ways to develop a broader and more diverse framework for science and our capacity to understand the world. Still, it will require more exchanges, decolonization of science, and a greater appreciation of other ways of knowing. We can build on the knowledge about how bi-directional exchanges across disciplines and cultures can be done successfully.

In sum, some suggested actionable recommendations that can contribute to a greater understanding of science and innovation within the context of achieving the SDGs, the UN Summit of the Future in September 2024, and the post-SDG Agenda more generally are:

1. Making universal science diplomacy skill sets part of the science capacity-building agenda through science and leadership programs.

2. Formation of trans-cultural and trans-disciplinary joint educational projects in which science students at all levels collaborate across borders and fields to tackle problems for and with each other. The availability of interactive and digital tools today makes it possible to facilitate direct experiences with cross-cultural and trans-disciplinary projects that connect science students across borders as integrated parts of our global educational programs. This can promote an exchange of field-specific skills across disciplines and methodological approaches and boost epistemic pluralism and practices.

3. Development of educational strategies that rely on sense-making and leveraging cultural traditions and a broader heritage of knowledge and epistemic practices by identifying shared and local sense-making strategies that benefit educational activities within and across scientific fields. This can promote critical thinking and a deeper and broader

understanding of the connection between scientific pursuits and its connections with the real world.

4. Cultivation of a more profound understanding of localized challenges and the learners' ecological context by integrating STEAM methodologies with socially relevant perspectives that emphasize students' lived experiences and cultural backgrounds can be implemented directly in educational programs. This can result in equal access to the benefits of scientific innovations, in which educational goals are aligned with SDG 10 of reducing inequality within and among countries.

5. Creation of more initiatives and financial support of global educational exchanges that build on the IAI and the Belmont Forum experience and knowledge of partnership and network building across policy, science, education, and people. Training the next generation of global transdisciplinary science leaders that instill essential transdisciplinary understanding and humanistic virtues as guiding principles should be a global pursuit. This speaks to SDG 17 of strengthening the means of implementation and revitalizing the Global Partnership for Sustainable Development.

6. Considering the inequality in quality education, including the financial and technological gaps in achieving SDG 4, it is recommended that equality in access to advanced technical and AI-driven tools is considered when legislation of international and regional governance of AI is being planned and implemented. Opening as opposed to closing the opportunity for data and technology sharing, open and accessible sources that can benefit science and innovation in developing countries and regions should be on the data regulation agendas.

In particular, the Summit of the Future taking place in September 2024 will put the transformation of education on the agenda. Creating learning societies with teaching and life-long learning recognized as a global public good depends on a broader recognition of how to build science capacities and skill sets for the future. Transdisciplinary and epistemic pluralism perspectives acknowledge that meaningful bi-directional exchanges are untapped. The mobilization of the broader scope of knowledge and information sharing is required for a fairer distribution of science and innovation outcomes. These efforts are deeply connected with emphasizing an open, accessible, and secure digital future. Digital governance frameworks should "accelerate digital connectivity for all. We need more long-term planning of how technological regulations can be aligned with open-science approaches that result in scientific and educational inclusion rather than exclusion. This requires true global partnerships for sustainable development based on global solidarity.

Creation of transdisciplinary and cross-cultural educational projects that connects science students and that can promote epistemic pluralism and a more humanistic approach to skills building.

Funding and transference of partnership models, such as those developed by the IAI and the Belmont Forum in the Americas, to other regions of the world, including Africa, Europe, and Asia.

Strategic outlining of a skills agenda that combine field-specific skills with soft skills.

3.1.419 Collaboration outcomes

We will look at opportunities to collaborate among the panelists on shared objectives, as well as send out information to all participants of how to connect with the panelists.

3.1.420 Building inclusion and equity

This session included 9 female and male speakers and leaders in their respective fields from 4 continents (Latin America, Africa, Europe, and the United States). In addition to the main objectives for this symposium, it was our ambition to bring together perspectives from diverse cultures and fields and to address the potential for exchanges across these two dimensions for Science Capacity Building for The Future and efforts towards defining the Skills Agenda. The symposium aimed to create an inclusive platform for a transdisciplinary and global dialogue on improving and reimagining science and technology education. We explored global perspectives and actionable strategies to ensure that future generations' science and technology capacity is innovative, robust, inclusive, and equitable. The session encouraged collaboration across different sectors to create a collective strategy toward a fair and inclusive STEM future. Our vision was to promote an approach to science and technology education that extends opportunities to all, regardless of their background or circumstance, and to help shape strategies and policies that can influence the next generation of scientists, innovators, and leaders in STEM toward this overall goal.

Three speakers (the convenor/host and two keynote speakers) from the European continent and the United States addressed the need for a broader, more inclusive approach to science capacity building for the future and the need to put universal and generic skills on the Skills Agenda:

1. Imac Zambrana (Associate Professor, University of Oslo, Norway) is an expert in cognitive behavioral and developmental sciences, particularly interested in transferrable and generic epistemic approaches and skills that can support science-specific skills. This talk provided a framework for supporting a more holistic, inclusive, and trans-disciplinary approach to local and global science capacity-building.

2. Petter Næss (Executive Director of the Fulbright Foundation in Norway) is an international exchange program leader with a particular interest in promoting exchanges and diplomacy across borders and fields of relevance for Science Capacity Building for the future.

3. Larisa Schelkin (CEO, President, and Founder of Global STEM (Science, Technology, Engineering and Math) Education Center, Inc., USA) has over 20 years of professional experience in engineering research and development. Her expertise from several arenas, including teaching (UN Institute for Training and Research Global Diplomacy Initiative Fellowship Program, UN General Assembly President's Fellowship "HOPE," Science Diplomacy, Sustainable Development Goals, Global Environmental Outlook, the UN Environmental program, and NASA GLOBE education) fellowships (UNITAR Global Diplomacy, Education Policy, Institute for Education Leadership, Washington, DC (Class 2015), and board member and partnerships (Massachusetts Academy of Science, NASA GLOBE, USA, the Science Diplomacy Center in Cambridge, Massachusetts, and the Journal for Science Policy and Governing in

Washington, DC) lays the ground for her emphasize on the importance of Science Diplomacy as a skillset for the future.

Three speakers from the African continent addressed trans-disciplinary and cross-cultural opportunities for science capacity building and education with a particular lens on Astronomy, science practices related to sense-making, and the educational potential of building on African oral traditions:

4. Charles Takalana (Physicist, Head of Secretariat, African Astronomical Society, South Africa), a physicist and astrophysicist with a particular interest in how the field of astronomy and astronomical heritage in Africa can play a role in the building of skill sets within astronomy and across fields, and how astronomy combined with the increasing need for dark sky preservation can open up opportunities for policy and strategies to boost interdisciplinary exchanges between and across educational efforts in astronomy, technology, and the SDGs. This talk addressed how astronomy can build skill sets within and across fields, including advancing technology and technological innovation, and how ancient traditions in Africa and globally can be linked with modern interests.

5. Tshiamiso Makwela (IAU OAE, Max Planck Institute for Astronomy & University of Cape Town) is a post-doctoral fellow and research scientist interested in introducing sense-making into astronomy education and research. This talk used examples from physics and astronomy to highlight the shift needed in which active sense-making is cultivated over memorization in astronomy education and STEM sciences.

6. Ismahan Soukeyna Diop (Associate professor at Université Cheikh Anta Diop, Dakar, Senegal) is a psychologist with a deep understanding of how to utilize traditional epistemic frameworks, such as African oral tradition, as a tool for sharing, teaching, and knowledge of non-scientific and scientific material. Oral tradition builds on projections of known cultural content, such as ancestry and practices, which can help contextualize new and unfamiliar content. Her talk shared how African storytelling has been used to project material in psychotherapeutic sessions and discussed how such oral traditions can be used for science education and training.

Three speakers from the Americas focused on the importance of stimulating trans-disciplinary and societally relevant science and science education with a particular lens on the Americas. This part of the session had a specific lens on creating a collaborative structure across stakeholders to facilitate more inclusive, co-creative, and transdisciplinary approaches to ensure a more equitable science agenda, with examples of how socially relevant education can be implemented in science education.

7. Laila Sandroni (STeP fellow, Inter-American Institute for Global Change Research, Uruguay) shared her expertise and experience with weaving transdisciplinary research networks to address the challenges of global environmental change in the Americas. This talk showed an overview of IAI's three decades of experience weaving transdisciplinary research networks to address global change in Latin America. The best practices shared can support scientific progress and education globally. Implementing more inclusive, co-creative, and transdisciplinary approaches can close the gap between scientific knowledge and society by ensuring that research is conducted through equitable partnerships with decision-makers and affected communities.

8. Rebecca Barnes (Belmont Forum, Uruguay) shared her expertise and The Belmont Forum's work on creating a program connecting the next generation of global transdisciplinary science leaders - recruiting, training, and bridging across generations, disciplines, sectors of society, cultures, and nations. The talk addressed what Equitable, Inclusive, and Just Leadership looks like and provided suggestions as to what kind of non-scientific skills and interdisciplinary approaches are needed to support science education and leadership in the science policy space globally.

9. Andres Villalba (Doctorate student, Universidad Gastón Dachary, Argentina) is a teacher and scientist interested in integrating STEAM methodology within social perspectives. This talk makes a case for combining Reality Pedagogy and STEAM methodology with a social perspective. The inclusion of students' lived experiences and cultural backgrounds are emphasized as valuable assets in the learning process, which subsequentially are shown to promote student engagement, critical thinking, and understanding of the world, and preparing them for active and informed meetings in solving complex scientific, technological, and cultural relevant challenges of the 21st century.

Full description of the individual speakers can be found below:

Speaker 1: Imac Zambrana (Associate Professor, University of Oslo, Norway)

Title: A broader and more diverse framework for science capacity building for the future.

Summary: There is a need to identify and develop skills for the future amidst anticipated technological advancements. Stakeholders in various fields are creating taxonomies to define these skills. The digital and green transformations, along with diversity and unevenness in resources, needs and societal challenges reflect the importance of considering and understanding these challenges and turning them into opportunities. This talk will provide a framework for supporting a more holistic, inclusive, and trans-disciplinary approach to science capacity building locally and globally.

Speaker 2 (Keynote): Petter Næss (Executive Director, U.S-Norway Fulbright Foundation for Educational Exchange, Norway)

Title: The value of diplomacy and exchanges across borders and fields.

Summary: The Fulbright program seeks to foster global peace and mutual understanding by facilitating and funding international mobility of students and scholars. Most importantly, it strives to “see the world as others see it”; this distinguishes it from other national “soft power” initiatives which, however well-intentioned, are rarely (genuinely) about self-enlightenment. Operating at the intersection of diplomacy and research/education within all fields of knowledge, the Fulbright program touches on many issues that are relevant to the Science Summit, and more broadly to the SDGS: the “two cultures” of science and the humanities, concepts of epistemological pluralism, academic freedom and the tension between curiosity-driven and applied research, submission of the precautionary principle to market forces, the grossly unequal distribution of wealth and resources in the global research community, national identity and national interest in the face of global challenges, and most importantly, how to collaborate constructively and peaceably with those who may see the world – and the world of science – differently.

Speaker 3: Larisa Schelkin (CEO, President and Founder, Global STEM (Science, Technology, Engineering and Math) Education Center, Inc.)

Title: The importance of global competencies and science diplomacy ("science in diplomacy, science for diplomacy and diplomacy for science" Royal Society & AAAS)

Summary: Sharing of scientific knowledge and approaches through formal and informal, private, and public collaborations and training depends on global perspectives and literacy. To navigate the global scientific communities and ensure technological progress across all disciplines, one needs to understand the global nuances. Skills such as science diplomacy are not currently being taught in schools, but moving forward, scientific communities and science education depend on promoting and integrating them into the curriculum across all educational systems.

Speaker 4: Charles Takalana (Physicist, Head of Secretariat, African Astronomical Society, South Africa)

Title: The role of astronomy to build skill sets within and across fields.

Summary: Astronomy is a data-intensive science. It can therefore be used to build skill sets for other fields and technology transfer beyond the field of astronomy. Moreover, the astronomical heritage in Africa combined with the increasing need for dark sky preservation open up opportunities for policy and strategies to boost interdisciplinary exchanges between and across educational efforts in astronomy, technology, and the SDGs.

Speaker 5: Tshiamiso Makwela (Post-doctoral fellow and research scientist, IAU OAE, Max Planck Institute for Astronomy & University of Cape Town).

Title: Astronomy Education Research towards sense-making

Summary: Science education that leads to responsible and informed citizenship from a global perspective needs to respect the culture of students while at the same time fostering their abilities to think critically and scientifically. Astronomy offers a universally captivating experience and, at the same time, teaches scientific methodology through understanding our place in the cosmos. Unfortunately, astronomy and other science disciplines are often taught as rote knowledge rather than emphasizing the critical driver of science, which is sense-making, disconnecting science, culture, and personal experience. This talk will use examples from physics and astronomy to highlight the shift needed in which active sense-making is cultivated over memorization in astronomy education.

Speaker 6: Ismahan Soukeyna Diop (Associate professor at Université Cheikh Anta Diop, Dakar, Senegal)

Title: African oral tradition as a tool for sharing and understanding of culturally relevant content.

Summary: African storytelling is a tradition that can be used as a tool for sharing, teaching, and understanding of non-scientific and scientific material. Oral tradition builds on projections of known cultural content such as ancestry and traditions which can help contextualize new and unfamiliar content. The abstract narrative can become a bridge into the context specific. This talk will share how the use of African storytelling has been used as a tool for the projection of

material in psychotherapeutic sessions, but also discuss how such oral traditions can be used for science education and training.

Speaker 7: Laila Sandroni (STeP fellow, Inter-American Institute for Global Change Research, Uruguay).

Title: Weaving transdisciplinary research networks to address the challenges of global environmental change in the Americas

Summary: Issues such as climate change, biodiversity loss, and water scarcity require urgent solutions informed by science. However, traditional disciplinary science approaches have proven to be ineffective in driving societal and policy changes. The use of more inclusive, co-creative and transdisciplinary approaches can close the gap between scientific knowledge and society by ensuring that research is conducted through equitable partnerships with decision-makers and communities most affected by the problem at hand. This talk will share an overview of IAI's three decades of experience weaving transdisciplinary research networks to address global change in Latin America. The best practices shared here can support scientific progress and education globally.

Speaker 8: Rebecca Barnes (Belmont Forum, Uruguay)

Title: What does Equitable, Inclusive, and Just Leadership Look Like?

Summary: If we are to solve global environmental challenges we need different approaches, different training. Today's early career scientists and environmental youth leaders recognize the strength of a breadth of viewpoints, want to do use-inspired societally relevant science, and want to make the research space more welcoming and inclusive. The Belmont Forum aims to create a program connecting the next-generation of global transdisciplinary science leaders - recruiting, training, and bridging across generations, disciplines, sectors of society, cultures, and nations. This talk will provide some suggestions as to what kind of non-scientific skills and interdisciplinary approaches are needed to support science education and leadership in the science policy space globally.

Speaker 9: Andres Villalba (Doctorate student, Universidad Gastón Dachary, Argentina)

Title: Integration of STEAM methodology within a social perspective.

Summary: Reality Pedagogy emphasizes the lived experiences and cultural backgrounds of students as valuable assets in the learning process. This talk makes a case for combining Reality Pedagogy and STEAM methodology with a social perspective, and discusses how this can enhance student engagement, promote critical thinking, and cultivate a deeper understanding of the world, preparing students to become active, formed, and informed citizens capable of addressing the complex scientific and technological challenges of the 21st century.

3.1.421 Key lessons learnt

The science summit showed an inclusiveness of perspectives that is significant for the empirical pluralism we need to fight knowledge hegemonism and solve real-world global scientific challenges. Bringing the full range of stakeholders together seems essential to meet the SDGs. After gathering and compiling the knowledge, however, the challenge remains to process and organize

what we know and do not know and develop actionable steps that build on our shared expertise and address the knowledge gaps. A lesson learned from this summit is how each stage of the process requires slightly different approaches and how essential multi-national collaborations are to this work.

Session 91: Invasive plants: impact and natural based management in Latin America

Session Convenor
Fernando Mc Kay

Position
Researcher

Organisation
Fundación para el Estudio de Especies Invasivas

Country
Argentina

3.1.422 Abstract

Latin American countries are particularly vulnerable to the threats posed by invasive species. Invasive alien plants (IAP) can have a disproportionate impact on the biodiversity and economies of these countries that have fewer resources to control such plants and typically rely more heavily on agriculture, forestry and fishing than more developed countries.

In this context, this session will address the issue of IAP in Latin America with six presentations. The first two presentations will set the scene of plant invasions in Latin America, addressing the region's knowledge and awareness of IAP. A third presentation will show the socio-economic impact and economic loss of ecosystem services caused by IAP in Latin America, with special emphasis on Argentina. The following three presentations will focus on the management of invasive plants through the use of biological control.

First, there will be a general introduction to the discipline of biological control and the scope of its application. Then some CB projects in Latin America and the Caribbean will be mentioned, and finally, a parallel will be established between the situation of IAP and biological control between Europe and Latin America in terms of challenges and opportunities.

SPEAKERS

Sergio Zalba – Invasive species in Latin America. Ileana Herrera – Invasive plants in Latin America.

Mariana Zilio – The economic impact of biological invasions: what it is and why it matters.

Martin Hill – The benefits and risks of biological control in Africa.

Philip Weyl – Rust fungi for the biological control of weeds in Latin America, keeping a foot in the door.

Helia Marchante and Elizabete Marchante – Biological Control of invasive alien plants in Europe & South America – so many opportunities to share and so many challenges.

CONVENORS : Alejandro Sosa and Fernando Mc Kay

3.1.423 Key messages

Two examples mentioned by one of the speakers of the session clearly illustrate how classical biological control as a multiparty public good can support SDGs:

1) The introduction into West Africa of the parasitic wasp Aponagyrus lopezi (De Santis) (Hymenoptera: Encyrtidae) for the biological control of the cassava mealybug Phenacoccus manihoti Matile-Ferrero (Hemiptera: Pseudococcidae). This biocontrol programme contributed to poverty alleviation (SDG 1), food security including zero hunger (SDG 2), good health and well-being (SDG 3), quality education (SDG 4), clean water and sanitation (SDG 6), decent work and economic growth (SDG 8), industry innovation and infrastructure (SDG 9), sustainable cities and communities (SDG 11), life on land (SDG 15), peace justice and strong institutions (SDG 16), and partnership for the goals (SDG 17).

2) The introduction of the weevils Neochetina eichhorniae Warner and N. bruchi Hustache (Coleoptera: Curculionidae) for the biological control of water hyacinth (Eichoornia crassipes) in Africa. This biocontrol programme contributed to poverty alleviation (SDG 1), food security including zero hunger (SDG 2), good health and well-being (SDG 3), clean water and sanitation (SDG 6), and decent work and economic growth (SDG 8).

That Cosave can be the organization that helps promote the implementation of biological control of invasive exotic plants in Latin America at a regional level.

That the Neotropical IOBC could help promote the biological control of invasive plants through the formation of work/study groups on biological control of invasive plants in Latin America.

Researchers from Latin America should work collaboratively to address a regional problem such as invasive plants through the implementation of nature-based management strategies.

3.1.424 Collaboration outcomes

During the session, the possibility of collaborating between institutions from Latin America (Foundation for the Study of Invasive Species) and Europe (Escola Superior Agrária, Instituto Politécnico de Coimbra and the center for agricultural bioscience international) was mentioned.

3.1.425 Building inclusion and equity

The session was inclusive in terms of gender representation (3 female and 3 male speakers). It was also inclusive in terms of geographical representation. There were speakers from Latin America (3), Europe (2) and Africa (1).

3.1.426 Key lessons learnt

The summit offers the opportunity to analyze the contribution of science to the different SDGs. For researchers, it constitutes the possibility of communicating to the world community the

concrete contribution of their research to the SDGs. Throughout the summit, the sessions offer the possibility of exchanging information and enabling the emergence of new ideas to achieve the objectives and goals set in the SDGs.

Session 92: Achievements of sustainability by global scientific collaboration and scaling innovations in the fie

Session Convenor
Ulviyya Hasanova

Position
Professor, Chair ICESCO Biomedical Materials

Organisation
Baku State University

Country
Azerbaijan

3.1.427 Abstract

One of the fundamental understandings of our society is that despite the diversity of every individual, the common is the lack of boundaries in the cultural, scientific, and educational aspects of humanity existence. There is a clear awareness that in our dynamically changing reality, the enormous challenges and uncertainties of human existence can be solved by joint efforts of innovative solutions to benefit humanity.

The key role here belongs to global scientific cooperation and the scaling of innovations, that in turn have an undeniable impact on the transformation of the model of education. The tools that ensure such international cooperation are the programs of various organizations such as the UN, EU, ICESCO, etc. It may seem that public awareness is not keeping up with the huge speed of deployment in the field of high technologies, which in turn can lead to serious challenges not only for the SDGs, but even for the existence of human society. That is why it is necessary to develop mechanisms that will allow transforming technological, scientific, and educational aspects in a single format of sustainable development.

This session will discuss current issues of global scientific collaboration and scaling innovations in the field of science and education. Using examples from their own experience, the speakers will share how the scientific research in the frame of collaborative projects accelerate progress in investing of knowledge transfer, economy, and technology development. Another aspect of the session is evolving of young researchers actively participate in this process.

In this session, the experiences reviewed will identify mechanisms that will translate global scientific collaboration and innovation scaling for impact towards the SDGs.

3.1.428 Key messages

The main outcome of this session is holding on the networking and communication in term of regional, international cooperation in science, and join the efforts for cooperation projects with the surrounding regions with focus on industry needs, research, and education

communities. It has been emphasized that the efficient networking of scientists and creation of advanced technological infrastructures and services are crucial in this process. Beside this it is extremally important evenly to transfer and distribute the funds, resources and tools in technology, education, industry and human. The scaling innovation in the industry through generation of knowledge and international collaboration finally leads to meet the challenges of society to come along

Design science cooperation based on international partnerships.

Introduce cross-linking and incentives for innovation scaling between science-education-industry

Encourage both regional and EU fund for science cooperation, sharing of infrastructures, labs and data

Promote the public awareness in innovation, science and education by creation open science and open data zone

Supporting mobility of students, professors and scientists

3.1.429 Collaboration outcomes

The Scientific and Technological Research Council of Türkiye (TÜBİTAK) and Azerbaijan Science Foundation (ASF) invite industrial enterprises, universities and research centers/institutes of Türkiye and Azerbaijan to submit joint proposals for research, development and innovation (R&D&I) projects.

There must be at least one industrial enterprise from Türkiye and one industrial enterprise from Azerbaijan in a joint project.

Universities and Research Centers/Institutes can participate in a project as a partner of industrial enterprises. In session It has been decided to start the joint (R&D&I) project . The ASF also support young scientists by mobility grants and the young researchers and students apply for mobility in Ege, Yildiz Technik, Sivas Cumhuriyyet Universities.

3.1.430 Building inclusion and equity

On the session "Achievements of sustainability by global scientific collaboration and scaling innovations in the field of science and education" there were 8 speakers from Azerbaijan, Tukey, UK, USA sharing their experience how scientific research in the framework of collaborative projects accelerates progress in investing knowledge transfer, economy, and technology development that in turn contribute to SDG.

The speakers are mostly from academia, but the age interval varies from professors to the researchers of the younger generation, in order to consider the session topic from different points and angles for a more comprehensive reflection of the problem.

3.1.431 Key lessons learnt

The session discussed the achievements of sustainability by global scientific collaboration and scaling innovations in the field of science and education

We learned that the key role here belongs to global scientific cooperation and the scaling of innovations, that in turn have an undeniable impact on the transformation of the model of education. The tools that ensure such international cooperation are the programs of various organizations such as the UN, EU, ICESCO, etc.

It has been pointed that public awareness is not keeping up with the huge speed of deployment in the field of high technologies, which in turn can lead to serious challenges not only for the SDGs, but even for the existence of human society. That is why it is necessary to develop mechanisms that will allow transforming technological, scientific, and educational aspects in a single format of sustainable development.

This session discussed, using examples presented by the speakers from their own experience, how the scientific research in the frame of collaborative projects accelerate progress in investing of knowledge transfer, economy, and technology development. On the session has been emphasized the crucial aspect of evolving of young researchers actively participate in this process.

Finally on this session, the speakers based on their experiences suggested mechanisms that can translate global scientific collaboration and innovation scaling for impact towards the SDGs.

Session 93: Challenges and proposals for pollinators conservation in Latin America

Session Convenor
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3.1.432 Abstract

The abundance and diversity of pollinating animals is critical to ecosystem functioning, crop productivity, farm income and access to nutritious food. There are global concerns over pollinator declines, which have resulted in national and international policy demands for information on pollinator status and trends to develop appropriate conservation and management strategies. Latin America includes unique and impressive tropical, subtropical and temperate biomes with high landscape heterogeneity, supporting great natural and cultural diversity.

At the same time, the region shows high deforestation rates, which jeopardize its biodiversity and ecological balance. In its unique natural, cultural and socioeconomical context, Latin America faces challenges that must be confronted with innovative ideas and initiatives. This session is about identifying the critical points of pollinator conservation in Latin America, as well as sharing positive experiences towards a regional search for solutions.

The pollination crisis and its impact in ecosystem services provision have been a priority in research agenda for some decades. Despite a substantial increase in scientific, public and political interest in pollinator health and many practical conservation efforts, incorporating initiatives across a range of scales and sectors, pollinator health continues to decline. Thus, the situation calls for a sensible review of the actions taken so far, in order to understand what is known and what is still ignored, what can lead to success and what has proven unworthy of limited resources allocation.

In that spirit, Jane C. Stout and Lynn V. Dicks reviewed existing pollinator conservation initiatives and defined their common structural elements ("From science to society: implementing effective strategies to improve wild pollinator health", Phil. Trans. R. Soc., 2022). In this paper, they considered the hierarchical structure and content of existing global efforts to reverse pollinator declines; defined and reviewed the knowledge domains they consider critical to designing effective pollinator conservation actions; and used the IPBES conceptual

framework to discuss how pollinator conservation might broaden its scope to enable it to drive the transformative change that many others have argued will be necessary to reverse biodiversity loss. Finally, they consider how each of the areas of action frequently included in pollinator initiatives could be enhanced or improved, based on the critical knowledge domains and gaps identified, namely: research, regulatory issues, monitoring, public engagement and land management.

The approach of this session was to take this thorough analysis and frame it in the Latin American context. This region shows one of the highest plant species richness, which in turn allows the assumption of high richness of vertebrate and invertebrate pollinator richness. Latin America is also a great global producer of commodities (such as soybean, maize or coffee). Consequently, since developing nations usually rely on extractive land uses, vast areas of natural vegetation are being converted into agricultural farmlands at a worrying speed.

Fortunately, Latin American issues have Latin American men and women devoted to ameliorate these concerns with great ideas and hard work. Through careful research in publications and media, an assorted group of experts in the pollination topic was sought and invited to share their opinions and experiences, taking into account the scope of areas of action for pollinators' conservation initiatives. They will update status and trends of this crisis in the subcontinent; share useful, traditional knowledge; describe running projects and programmes in different countries deserving to be reproduced; and propose solutions that inspire stakeholders to take the necessary steps to a brighter future.

This session has the privilege of an ensemble of experts living and working in Latin America, willing to share their thoughts and experience in every area of action of pollinators' conservation initiatives. From the interaction among them and with attendees, who surely are as worried and committed as the speakers about pollination crisis, we expect:

- to have an updated information about pollinators' status and trends;

- to expand the knowledge about pollinators management and restoration;

- to reclaim traditional practices and worldviews about our relationship with Nature;

- to learn from our achievements and mistakes;

- to inspire conservation practitioners to replicate or generate innovative proposals;

- to promote initiatives adapted to the regional context, with realistic chances of success;

- to agree on an agenda of conjoined efforts of conservation for the years to come.

3.1.433 Key messages

I firmly believe that science, technology and innovation must belong to citizens, attend to their needs and allow a prevalent participation from them. Society needs to understand why science is relevant for the benefit of forgotten people, and for the achievement of SDG Goals. To achieve that, clear and efficient communication is key. Scientist can no longer evade their resposibility of telling what, why and how they are doing what they do, in every context and by any means possible. Decision-takers and powerful stakeholders should learn to claim and use scientific information as well. We must fight post truth and misinformation. Formal,

informal and non-formal education should include tools for children (as they will rule the future) that teach them how to take informed decisions and opinions. Scientists and STI professionals should enhance their communication abilities or delegate the responsibility to team members with such a (remunerated) task.

Increase support in research plans related to pollinators and pollination services, and share their implementation and outcomes with society through actions involving citizen science.

Promote a critical view about normalized concepts, habits and ethics regarding our relation with the environment, the natural resources and other forms of life.

Promote socially fair means of production. Beware of prioritizing economy and instrumental values about nature over intrinsic values.

Agree solutions with all the stakeholders, particularly those with the highest economic power and social influence. Reinforce their coordination and liabilities for assumed compromises.

Promote biocultural conservation plans that reassess all contemporary knowledge without jeopardizing pollinators through mismanagement.

Avoid the homogenization of managements. Reappraise local knowledge and practises.

Promote legislation and regulations that involve synergetic perspectives between production, conservation and education.

Promote multifunctional and pollinator-friendly landscape design, and support agroecology.

3.1.434 Collaboration outcomes

The session linked professionals (both speakers and audience) form all over Latin America. Their expertise and the debate helped as an inspiration for conservation plans in other areas of the subcontinent, particularly in pollinator-rich landscapes like the Southern Atlantic Forest. Useful material has been exchanged (legislation, proceedings...) and there will be an advisory team to check on future initiatives.

3.1.435 Building inclusion and equity

The session ensured gender equality by including the same number of people identifying themselves as men and women. There was also representation for the LGBTIAQ+ community.

As a regional topic, there was representation from countries from all over the subcontinent, both speakers and audience.

3.1.436 Key lessons learnt

This was my first experience as a convenor, and as a participant of the Science Summit. I have learnt the relevance of coordinating the commitment of professionals to debate and attend global issues.

Session 94: Building Sustainable Food and Health using Artificial Intelligence technologies and methodologies

Session Convenor
Osaretin Agbonavbare

Position
Founder

Organisation
bbcmgtAI LLC

Country
United States

3.1.437 Abstract

Session 1:

African Technological Advancement: Breaking Barriers and Building Bridges.

This session will delve into Africa's emergence as a trailblazer in the global digital revolution. It will emphasize the pivotal role of technology in fostering economic development and inclusive growth in countries like Nigeria, Egypt, India, Thailand, Malaysia, South Africa, and Kenya. The focus here will be on the rise of startups, digital entrepreneurship, and job creation, underlining the transformative power of technology in these regions.

Session 2:

African Scientific Innovations for Sustainable Development: Empowering the Next Generation of Women.

In this session, the spotlight will be on the remarkable accomplishments of women from developing countries in the field of science. Despite facing numerous challenges and barriers, these trailblazing women have defied the odds, broken new ground, and are leading the way for future generations. The aim is to inspire and empower young girls and women to pursue careers in science, technology, engineering, and mathematics (STEM).

Session 3:

Building Sustainable Food and Health Future Using Artificial Intelligence Technologies and Methodologies.

The importance of consistent access to sound health and food as a basic human right will be explored in this session. It will underline the significance of quality food supply chains and health systems. Moreover, it will highlight how artificial intelligence technologies can play a pivotal role in ensuring the availability of these essential services.

We stand at a pivotal moment in history where the access to sound health and nutritious food is no longer seen as just a basic human right, but a privilege in many developing nations. This alarming disconnect from the principles upheld by the United Nations General Assembly urges us to act swiftly. Our conference aims to address this pressing issue head-on. In the 21st century, advanced technologies have granted countries like the US, China, Japan, and Europe a remarkable advantage in the health and food supply chain. To achieve the Sustainable Development Goals (SDGs), it is imperative that we bring developing nations into this technological era. These countries are eager to harness the opportunities that smart digital economics offer.

This UN Science Summit has garnered substantial attention due to its potential to drive the achievement of the United Nations Sustainable Development Goals (SDGs) before the 2030 deadline. Developing countries are poised to seize the vast opportunities presented by smart digital economies in the 21st century.

The sessions will be graced by prominent speakers and leaders from around the world, including policy makers, entrepreneurs, scientists, researchers, and both private and government practitioners. ;

3.1.438 Key messages

Emphasize should be laid on advance technology and it's accessibility, simplicity and affordability for all

Advocate for increased investment in Science, Technology, Engineering, and Mathematics (STEM) education at all levels. This will empower the next generation with the skills needed to drive scientific

Develop initiatives and policies that actively support and encourage women to pursue careers in STEM fields. This can include scholarships, mentorship programs, and addressing gender biases.

Encourage governments and private sectors to invest in research and development, particularly in areas relevant to Africa's unique challenges. This includes funding for local scientific research and i

Facilitate cross-border collaboration among African countries and international partners to share knowledge, expertise, and resources. This will accelerate progress in science and technology across th

Improve digital infrastructure and connectivity, especially in rural areas. Access to the internet and technology is crucial for inclusive growth and innovation.

Embrace AI and other emerging technologies to improve healthcare and food supply chains. Prioritize accessible and affordable healthcare and nutrition as basic human rights.

Align national development agendas with the United Nations' Sustainable Development Goals (SDGs) and integrate science, technology, and innovation as key drivers to achieve these goals.

Actively involve youth in shaping policies and initiatives related to science and technology. They are not just the future but the present of innovation.

3.1.439 Collaboration outcomes

We are looking at furthering the discussion and resolution made during the summit with speakers who are willing to partner with us for subsequent virtual and in-person meeting

3.1.440 Building inclusion and equity

Yes

3.1.441 Key lessons learnt

The essence of collaboration and action oriented thoughts. This summit that further reveal the need to collaborate for effective engagement

Session 95: Enrolment and retention of Girls in Basic Education in Nigeria: The situation analysis

Session Convenor
Wakil Ajibola Asekun

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Country
Nigeria

3.1.442 Abstract

There have been introductions of different policies and programs both local and international in the past to bring about an increase in enrolment and retention of girls in basic education in Nigeria. In spite of these efforts, there still remains significant gaps in enrollment and retention of girls compared to boys in schools in the country as attendance rates for girls are still low

The panel examines how various infrastructural, psychological, social, economic and other factors militate against all efforts to enhance enrolment of girls in basic Education. It also examines how past and existing policies and programs in Basic Education effectively address disparity in enrolment of pupils, it ascertains the proportion of girls' enrolment in Basic Education in the focal areas and discusses how the push and pull factors for dropping out of schools among the girls can be further addressed effectively.

3.1.443 Key messages

Mass mobilisation and social reorientation of people in understanding of how their cooperation with government and relevant stakeholders will help in the attainment of achieving ending of gender disparity in educational opportunities.

More funding is needed for a cutting edge research on how the greatest number of children will benefit from quality education.

There is need for more monitoring of government agencies charged with execution of policies on improving of enrolment of girl child in Basic Education

Procedures for accountability on investment on education should be well laid down.

3.1.444 Collaboration outcomes

Proposal from colleagues for collaborative research in the area of gender equality

3.1.445 Building inclusion and equity

Female scholars were sufficiently represented as speakers, attendees/ participants consisted of youth, senior citizens, females and males.

3.1.446 Key lessons learnt

People are willing to contribute to the attainments of Sustainable development goals if they are made to feel as important stakeholders.

Session 96: Navigating the Future of Finance: Harnessing AI and Data Science for Transformation

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National University of Sciences and Technology (NUST)

Country
Pakistan

3.1.447 Abstract

The Islamic World Educational, Scientific and Cultural Organization (ICESCO, formerly ISESCO) is a specialized organization that operates under the aegis of the Organization of Islamic Cooperation (OIC), and is concerned with fields of education, science, culture and communication in Islamic countries in order to support and strengthen relations among Member States. The Organization's headquarters is located in Rabat, Morocco.

The Science Summit at the United Nations GA serves as a pivotal platform for global experts to share insights, innovations, and collaborations on critical scientific issues. In line with the summit's mission, a comprehensive 2-hour session dedicated to exploring how the strategic integration of artificial intelligence and data science can empower the financial sector to drive sustainable development by effectively aligning with the United Nations' Sustainable Development Goals (SDGs) is organized.

This session aims to illuminate the transformative potential of artificial intelligence (AI) and data science in reshaping the landscape of business and finance while addressing emerging challenges and opportunities.

The session will consist of a dynamic panel discussion and presentations, led by experts and thought leaders from academia, industry, and governmental sectors. This diverse blend of perspectives will foster multidisciplinary dialogue and stimulate innovative ideas for harnessing AI's power in the domains of business and finance.

Topics to be Discussed:

Sustainable Investment Strategies: Delve into how AI and data science are revolutionizing sustainable investment decisions by analyzing environmental, social, and governance (ESG) factors to promote ethical investment practices aligned with the global goals.

Financial Inclusion and Accessibility: Explore how AI-driven data analytics can enhance financial inclusion by enabling better access to financial services for underserved populations, ultimately contributing to poverty reduction and equality.

Climate Resilience and Risk Assessment: Discuss how AI-powered predictive analytics and risk assessment models can quantify climate risks for financial institutions and encourage the development of resilient financial systems that address climate-related SDGs.

Ethical Use of AI in Finance:</u> Examine the ethical considerations and guidelines in deploying AI and data science solutions in the financial sector, ensuring fair and unbiased outcomes while contributing to responsible consumption and production.

Fraud Detection and Prevention: Highlight how AI-driven algorithms are enhancing fraud detection and prevention measures, fostering trust and accountability in financial transactions and supporting the goal of building just, peaceful, and inclusive societies.

Impactful Philanthropy and Donor Engagement>: Explore how AI-powered analytics can optimize philanthropic efforts by identifying high-impact projects and facilitating effective donor engagement to support global goals for sustainable development.

Algorithmic Trading and Market Efficiency: Examine the role of AI in algorithmic trading and its potential to enhance market efficiency, liquidity, and stability, contributing to partnerships for sustainable development.

Data Privacy and Security in Finance: Discuss the importance of maintaining data privacy and security in the financial sector while leveraging AI and data science for improved financial services, aligning with the goals of promoting peace, justice, and strong institutions.

Data Collaboration for Common Good: Explore cross-sector data collaboration initiatives that leverage AI and data science to address pressing global challenges, fostering international cooperation for the achievement of sustainable development goals.

Empowering Financial Decision-Making: Showcase AI-powered tools and data-driven insights that empower individuals, businesses, and governments to make informed financial decisions, contributing to the overarching goal of eradicating poverty and achieving prosperity for all.>

Expected Outcomes:

The proposed session envisions achieving multiple outcomes. Firstly, it will foster cross-sectoral collaborations and dialogues among experts, policymakers, and practitioners, fostering innovation and collaboration. Secondly, participants will gain an enriched understanding of AI's potential to reshape the finance and business sectors, while also addressing potential ethical concerns and regulatory challenges. Lastly, the session will provide a platform for sharing best practices, case studies, and real-world applications, equipping attendees with actionable insights to drive AI adoption in their respective domains.

In-depth Exploration

The session will offer an in-depth exploration of how AI and Data Science are being harnessed to streamline operations, enhance predictive analytics, and automate tasks within the realms of Business and Finance.

Expert Insights: Distinguished experts and thought leaders will share insights into the latest trends, challenges, and opportunities presented by the integration of AI in various facets of these sectors.

Practical Applications: Attendees will gain insights into real-world applications of AI and Data Science in financial modeling, risk assessment, fraud detection, customer engagement, and market analysis.

Sustainable Impact: The session will highlight how AI-powered solutions can contribute to the achievement of UN SDGs, particularly those related to economic growth, responsible consumption, and climate action.

Networking: Attendees will have the opportunity to connect with leading professionals, researchers, and practitioners in the fields of AI, Data Science, Business, and Finance.

This session promises to offer an insightful and forward-looking exploration of the symbiotic relationship between AI, Data Science, Business, and Finance, fostering a dialogue that bridges cutting-edge technologies with the needs of sustainable economic growth and development.

In conclusion, the "AI and Data Science in Business and Finance" session at the UN Science Summit will serve as a knowledge hub for exploring the transformative role of AI in reshaping the global financial landscape. Through engaging discussions and presentations, this session will not only highlight the immense potential of AI but also emphasize its ethical implementation and collaboration for sustainable development.

3.1.448 Key messages

The session was concluded with the following message:

1. Collaboration for Common Good: Cross-sector collaboration can enable a more efficient, inclusive, secure financial future for all. Fostering international cooperation at multiple forums is necessary for the achievement of sustainable development goals.

2. Sustainable Investment Strategies: AI and data science can revolutionize sustainable investment decisions by analyzing social and governance factors to promote ethical investment practices aligned with global goals.

3. Financial Inclusion and Accessibility: AI-driven data analytics can enhance financial inclusion by enabling better access to financial services for underserved populations, ultimately contributing to poverty reduction and equality.

4. Climate Resilience and Risk Assessment: AI-powered predictive analytics and risk assessment models can quantify climate risks for financial institutions and encourage the development of resilient financial systems that address climate-related SDGs.

5. Ethical Use of AI in Finance: Ethical regulations and guidelines should be established and implemented before deploying AI and data science solutions in the financial sector. This will ensure fair and unbiased outcomes while contributing to responsible consumption and production. AI-driven algorithms may be used for fraud detection and prevention measures,

fostering trust and accountability in financial transactions and supporting the goal of building peaceful, and inclusive societies.

6. Algorithmic Trading and Market Efficiency: AI algorithms have the potential to enhance market efficiency, liquidity, and stability, contributing to partnerships for sustainable development. AI-powered tools and data-driven insights can empower individuals, businesses, and governments to make informed financial decisions.

Recommendations for UN Summit of the Future in September 2024 and the post-SDG Agenda more generally.

1. Embrace Ethical AI and Responsible Data Use: As AI and data science become more integrated into finance, ethical considerations become paramount. Developing and adhering to robust ethical guidelines for data collection, usage, and algorithm design is necessary. Ensuring compliance with data privacy regulations like GDPR and CCPA to build trust with clients and stakeholders should be promoted. A joint working group should be established to give recommendations for the ethical use of AI data in Finance.
2. Invest in talent. The general public should have access to AI-driven financial models. This can be achieved by providing mass online learning resources (preferably free). The startups in AI/Data Science for Fintech should be supported.
3. Continuous learning for Industry readiness: Training for Small and medium industries is very important in this regard. It will not only stimulate the global economy but also will be a source of a new set of jobs.
4. Foster a Data-Driven Culture: Encourage a data-driven culture within your organization. Promote data literacy and encourage employees to use data for decision-making at all levels. Consider creating a dedicated data science team or center of excellence.
5. Monitor Regulatory Changes: Regulatory bodies are adapting to the changing landscape of finance and data management. Stay updated on regulatory changes related to AI, data privacy, and financial services to ensure compliance and avoid potential legal issues.
6. Global Policy Framework: Establish a global policy framework for the responsible and ethical use of AI and data science in finance. This framework should include guidelines on data privacy, security.
7. Promote transparency and fairness in AI-driven financial decisions. Advocate for AI models that are explainable and free from biases, ensuring that they don't perpetuate inequalities or discriminate.
8. Collaborate with international financial regulatory bodies and organizations to harmonize AI and data science regulations.
9. Foster partnerships with AI and fintech companies, academia, and research institutions to drive innovation in financial technology.
10. Establish advisory councils/expert committees comprising AI and data science experts, financial professionals, and policymakers to provide guidance on AI adoption in finance to ensure ethical practice

11. Promote the use of AI-driven financial services to expand financial inclusion. Mobile banking, digital wallets, and microfinance platforms powered by AI can reach unbanked populations.

3.1.449 Collaboration outcomes

The session in the summit provided a unique platform for scientists, researchers and stakeholders from diverse backgrounds to come together, exchange ideas, and leverage their collective expertise. By facilitating dialogues and discussions on pressing global challenges, such as the application of AI and data sciences in Finance focusing on climate, health, sustainable development, the UN Science Summit promotes the formation of interdisciplinary collaborations.

3.1.450 Building inclusion and equity

This session promises to offer an insightful and forward-looking exploration of the symbiotic relationship between AI, Data Science, Business, and Finance, fostering a dialogue that bridges cutting-edge technologies with the needs of sustainable economic growth and development. The proposed session envisions achieving multiple outcomes. Firstly, it fostered cross-sectoral collaborations and dialogues among experts, policymakers, and practitioners, for innovation and collaboration. Secondly, participants gained an enriched understanding of AI's potential to reshape the finance and business sectors, while also addressing potential ethical concerns and regulatory challenges. Lastly, the session provided a platform for sharing best practices, case studies, and real-world applications, equipping attendees with actionable insights to drive AI adoption in their respective domains.

3.1.451 Key lessons learnt

1. In-depth Exploration of topics for future
2. Expert Insights
3. Practical Applications
4. Collaboration for Sustainable Impact
5. Networking

Session 97: Can we de-fossilize chemicals and materials: fact or fiction?

Session Convenor
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Country
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3.1.452 Abstract

Can we de-fossilize chemicals and materials: fact or fiction?

Sources of non-fossil carbon in a net-zero economy for the chemical and materials sector.

As the world enters its most urgent climate crisis with many planetary boundaries crossed and the effects of climate change obvious to all, the need to decouple our economies and societies from fossil fuels becomes ever more urgent. Over 70% of all anthropogenic greenhouse gas arise from fossil fuel, the larger proportion of which arises from combustion for energy. Although our response to climate change has been slow, there are now clear technological solutions for renewable energy which could allow a route to net zero carbon in this important sector. Less certain is how we de-carbonise industry where the de-carbonization issues are even more challenging. These include challenges such as the probable use of fossil-like fuels for high-temperature combustion (e.g. in the cement, glass and ceramic industries as well as aviation).

The chemical industry alone accounts for around 10% of the use of fossil fuels emitting some 3 – 5 Gt CO2 (6 -10% of global emissions). Our demand for the chemicals and materials (e.g. plastics) that are borne of fossil fuels is increasing, and by 2050 alone, our demand for plastic will reach 1 Bt and may account for up to 30% of global emissions.

A largely unanswered question is where the carbon we need for chemicals and materials comes from if not fossil resources. Many approaches are being studied but remain far from large-scale implementation.

The capture and conversion of CO2 may be a step forward, and several technologies are proposed:

Conversion of various forms of biomass (from waste through agriculture and ocean sources) to chemicals, plastics and fuels and contribute to a global bioeconomy.

The circular economy may provide savings by extending the life of products, increasing reuse and the recycling of components and materials.

Synthetic photosynthesis may also develop as a direct route to carbon chemical and material building blocks.

This meeting will address key issues in developing non-fossil-based carbon sources for sustainable development.

3.1.453 Key messages

Materials consumption and use have a complex relationship with sustainable development. It could be argued that the use of advanced materials has been a primary driver of industry and economic growth since the industrial revolution.

Conversely, the impact of this intense materials consumption on climate and the environment is clear, with the chemical industry alone accounting for around 10% of the use of fossil fuels emitting some 3 – 5 Gt CO2 (6 -10% of global emissions). The OECD have estimated that there is 30 Mt of plastic waste in seas and oceans, and a further 109 Mt has accumulated in rivers.

There is clearly a global imperative to decouple materials consumption from economic development with this requirement setting the direction for the majority of research and innovation in this field.

However, it is important to emphasize is that technology alone will not solve the problem, ensuring a just transition to a zero carbon economy is will require international cooperation addressing technological, societal, economic, policy making and community engagement to be successful

Technological

Carbon has revolutionized the world; Oil industry is 7% of the world economy. It is Projected we need > > 2 billion tonnes of renewable or non-fossil fuel based carbon by 2050 to de-fossilize industry, energy and transport by 2050.

The key questions is that technologies which can provide these non-fossil fuel based sources of carbon such as carbon dioxide capture, direct air capture and biomass are not sufficiently mature or have the ability to be scaled (biomass) to meet the growing demand for carbon. Therefore, the emerging supply vs demand issue is a significant constraint on the net-zero transition.

There is a need to accelerate the development of new and improved technologies and there is a myriad of contributory solutions including the circular economy and a focus on materials and products which are more durable or can be recycled. The is a challenge for most companies due to a business model which is optimised around the linear model of take-make-use-dispose.

Political

The need for appropriate policies relevant to developed and developing nations to ensure the regulatory framework and financing the ensure the transition to clean energy, energy independence and decarbonisation of the industrial sector.

Economic.

The complex relationship between the need to finance a just transition to clean technologies while decoupling economic activity from fossil fuel consumption was debated. For developing countries such as India, decarbonisation of the economy will require significant amount of funding (several trillion dollars). A large part will come from private investment, much of it will be borne by consumers.

For example, those who purchase electric vehicles or buy houses with improved green building materials. However, there will be a need for public funding of adaptation actions in sectors like agriculture, health, water, which are not covered easily by private investments, because very difficult to recover the costs. In addition, just transition actions such as skilling, the need for safety nets and pensions will need to come from public money. In the case of India, a quarter of the Government's tax revenue comes from taxes on diesel and petrol which will be negatively impacted by the shift towards electric vehicles. There is therefore a need for this to be replaced by some other form of tax, which is why, carbon tax becomes actually something worth considering.

Similarly, in developed countries, the funding required to develop, demonstrate and scale the necessary technologies which are not fully proven is also a barrier to progress with companies unable to commit significant capital for projects with a very long timeframe to realise a return on investment. This will require both public and private sector support as well as a political focus at both an individual country and global level. The need for international cooperation to ensure deployment of green technologies was highlighted as a priority.

Societal/Community Engagement

The broader impact of the deployment of green technologies on society, the importance of community engagement and the need to develop and implement these technologies in the context of the social environment in which they will be used was debated.

For example, the impact of deployment of solar and/or wind energy on land use and communities in rural and urban environments was discussed; In the case of rural India, where farming income is highly subject to the vagaries of extreme weather (drought and flooding) the leasing of land to a Solar Park is an attractive path to a stable income for farmers, however this has an impact on landless laborers who are dependent on agriculture for their livelihoods which can force increased migration to urban areas.

Similarly in regions where there is a high reliance on the coal mining industry for the local economy and jobs, it will be necessary to establish just transition programmes to examine how to offset the impact of the closure of coal mines that ensures the restoration of the land in a way that creates new jobs.

From an urban, developed nations perspective the need to reverse urban sprawl with a focus on making higher density cities was highlighted, this will bring with it a need for meaningful community engagement to drive the transition to green technologies. Examples include the need to debate what this will mean in terms of costs and taxation, availability of jobs and whether or not this is actually the right path to lower carbon were provided.

There is an emphasis on the need to build the right skills pool. Is it sufficiently large? Is it sufficiently diverse terms of the transition that's required in? Like, are we creating the pathways, retaining people, training them adequately and trainings from researchers and engineers to blue collar workers. Work is still required to identify the gaps, and establish what are the needs from industry and what are the needs, from research?

The importance of having informed and engaged citizens to drive the transition was also discussed. The example given was avoiding greenwashing and improving understanding of whether measures around reduce, reuse and recycle were actually a pathway for lower carbon.

Future iterations of the SDG or related polices should have clear links to tangible deliverables and internationally agreed standards; We cannot currently drive the goals, without knowing what the del

There must be stronger alignment between industrial strategy and international policies, to drive a just transition at a global scale

This is a multi-disciplinary area which is essentially at the frontier of research, it is important that sufficient investment is allocated to build us the expertise and research required so that we c

3.1.454 Collaboration outcomes

The AMBER Centre is actively engaging with the Advanced Materials Initiative 2030 (AMI2030) which was represented by one of the speakers and will continue to build on this partnership following on from this session. We have also now built links with the Henry George Institute in the US and the World Resources Institute in India, and we are planning to explore opportunities for future collaboration with both entities

3.1.455 Building inclusion and equity

The session was arranged to ensure that that there was representation from three major regions; US, Europe and Asia including developed and developing countries, the was no more than 70% of a single gender represented (including the moderator. The panel chair ensured that each speaker had an equivalent of speaking time and that all perspectives were represented

3.1.456 Key lessons learnt

We learned that there is significant interest in this field with lots unknown despite its importance. A few challenges were clearly identified for progress in research to be made:

a) Significant shortfalls in progressing to a circular economy to reduce need for carbon sources. These span technology thru to economic needs and environmental research especially around assessment of impact.

b) That this is a complex problem requiring multi-disciplinary approach and accounting for a very varied range of stakeholders.

c) Change is unlikely to occur without proper policy and regulation coupled to appropriate standards.

d) There is not one clear solution and a number of actions will be required and these will need to be tailored towards regions and areas.

Session 98: Financing Science and research in overlooked communities. Solving inequalities: Current situation

Session Convenor
Leyla Taghizade

Position
Managing partner at A-hub

Organisation
A-hub accelerator.A-hub is a ICESCO powered Global Startup Accelerator to support Member States tech economy by igniting 150+ new scale- ups by the end of 2025.
Our mission is to solve real world gaps and unlock Member States' scientific and tech potentia

Country
Azerbaijan

3.1.457 Abstract

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Our mission is to solve real world gaps and unlock Member States’ scientific and tech potential by projecting ICESCO as a leading regional hub for tech scale-ups.

The scope:

The goal of this session is to bring together people from diverse backgrounds working in the technology and innovation industry across unstable geographies to discuss the current situation and future plans related to funding overlooked talent in emerging economies.

While large and fast-growing ecosystems such as Silicon Valley, London, Dubai, and Berlin are oversaturated with venture capital and funding resources concentrated in a handful of cities and countries, the rest of the ecosystem suffers from low access to funding.

Wars, political instability, inadequate infrastructure, low internet access all are seen as major obstacles to accessing finance in emerging and unstable economies.

Expected outcomes: developing of workable proposals and solutions in discussion with panelists working at the grassroots level with overlooked talent.

3.1.458 Key messages

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Wars, political instability, inadequate infrastructure, low internet access all are seen as major obstacles to accessing finance in emerging and unstable economies.

Expected outcomes are developing of workable proposals and solutions in discussion with panelists working at the grassroots level with overlooked talent.

There is crucial importance of educating the governments on how to effectively support science and research during times of crisis. More initiatives are needed. Partner organizations Newspace |WBAF

The essential need to prioritize the emerging startup ecosystem. By doing so, we can create a ground for innovation and entrepreneurship, making it more likely for venture capital come

The pivotal role of government in financing research and science is evident.However, private companies are vital in financing startups, and collab between public and private sectors is must have

the lack of incentives for private companies still remains a huge obstacle in the path to financing startups in emerging economies. finding ways to encourage private sector involvement is a big need

3.1.459 Collaboration outcomes

Initial agreement with ICESCO, WBAF and Newspace innovation on developing educational initiative for governments on how to support overlooked talent during times of crisis have been achieved.

3.1.460 Building inclusion and equity

speakers were from the diverse backgrounds accross the world including women candidates . We succeeded to include speakers almost from all continents including Africa, Asia and Europe.

3.1.461 Key lessons learnt

It is pertinent to realize that the world continues to grapple with disparities that hinder the advancement of science and research, hindering our progress towards SDGs such as Goal 4 (Quality Education) and Goal 9 (Industry, Innovation, and Infrastructure).

• Inequality in science and research is not just a matter of access to laboratories or funding; it's a matter of access to opportunities, mentorship, and the chance to make meaningful contributions to national knowledge and development.

• In well-resourced urban centers, world-class research institutions flourish, while rural and marginalized communities often lack access to even basic facilities, adequate funding, and quality education.

Importance of Addressing Inequalities:

• Talent and brilliance are universal, but opportunities are not. Opportunities need an equal spread for this purpose.

• Untapped potential in overlooked communities needs to be harnessed to our socioeconomic uplift, where every individual can make their fair contribution

Session 99: Post 2030 Agenda: Role of Education

Session Convenor
Ma'an Alkhatib

Position
Co-Chair, ICESCO CHAIR in Sustainable Engineering
Professor, International Islamic University Malaysia

Organisation
International Islamic University Malaysia

Country
Malaysia

3.1.462 Abstract

Education is a fundamental human right and a powerful tool for sustainable development. It is essential for building a more just, equitable, and prosperous world.

The Sustainable Development Goals (SDGs), adopted by the United Nations in 2015, include a goal to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. This goal, SDG 4, is essential for achieving the other SDGs.

However, there are still significant challenges to achieving SDG 4. Millions of children and youth are still out of school, and many of those who are in school are not learning the skills they need to succeed.

In the post-2030 agenda, it is important to continue to invest in education and to make sure that education is accessible to all, regardless of their background. Education will continue to play a critical role in addressing the future challenges such as technology disruption, climate change, and inequality.

Education can help to prepare individuals not just for the jobs of the future, but to develop the skills needed to solve complex problems, and build a more just and sustainable world.

This session will explore the role of education in the post-2030 agenda. We will discuss the challenges and opportunities facing education, and the ways in which we can overcome these challenges. We will also discuss the importance of making education a priority in the post-2030 agenda.

The session will be of interest to policymakers, educators, researchers, and anyone who is interested in the future of education.

3.1.463 Key messages

Financing education remains a significant challenge, necessitating innovative solutions.

Exploring Islamic financing can help bridge the education gap, offering equal opportunities to the less fortunate.

While AI holds promise for advancing knowledge and technology, it poses various challenges, including ethical ones.

Advancements in technology impact social constructs, affecting family institutions, human relations, and morality.

Shifting from smart cities to wise cities is essential, where citizens not only benefit from technology but also contribute to a more sustainable society as spiritual natives.

Sustainability should be founded on principles of justice, equity, governance, and balance.

Emphasizing ethics in AI and digitalization is crucial.

Achieving a balance between the purpose of digitalization and human-centric values is essential.

Rethinking digitalization for sustainable societies involves design for sustainment, cradle-to-cradle design, regenerative design, and transition design.

Capacity building, especially among youth, is key for transitioning from fossil fuel-based to green and sustainable energy sources.

Education plays a crucial role in addressing these multifaceted challenges.

Sustainability should be founded on principles of justice, equity, governance, and balance.

Rethinking digitalization for sustainable societies involves design for sustainment, cradle-to-cradle design, regenerative design, and transition design.

Capacity building, especially among youth, is key for transitioning from fossil fuel-based to green and sustainable energy sources.

3.1.464 Collaboration outcomes

The summit served as a valuable platform for fostering extensive collaboration with experts hailing from diverse corners of the globe, particularly in domains pertaining to sustainability and education. It facilitated the exchange of ideas, insights, and potential partnerships that hold the promise of advancing these critical fields.

3.1.465 Building inclusion and equity

Our session aimed to be inclusive in several ways. Firstly, we ensured gender diversity among both speakers and participants, fostering a balanced representation. Secondly, while we reached out to experts from various regions, including Africa and Europe, we acknowledge that the short notice may have limited their participation. We look forward to receiving information well in advance to enhance our planning process.

Moreover, the session's inclusivity extended to its content. While the overarching theme was education, we addressed sustainability from various angles, encompassing societal, energy,

ethical, and financial perspectives. This multidisciplinary approach aimed to engage a wide range of interests and expertise.

We also invited speakers from Both academia and industry.

In addition, we encouraged active participation through open discussions and interactive Q&A sessions, giving everyone an opportunity to contribute.

3.1.466 Key lessons learnt

This is a significant opportunity for individuals from diverse backgrounds and areas of expertise to unite. Every person plays a crucial role, and collective efforts are essential for improving the quality of life for all.

Session 100: Biodiversity and multifunctional landscapes

Session Convenor
Erik Ruuth

Position
Scientific Coordinator

Organisation
IMiBio

Country
Argentina

3.1.467 Abstract

The expansion of homogeneous landscapes has been a major driver of biodiversity loss, climate change, and land degradation. There is an urgent need for a transition to multifunctional landscapes that provide abundant and nutritious food while also delivering several other contributions essential for a good quality of life. However, implementing this process, especially in large-scale agriculture without economic subsidies, remains unclear. I will discuss guidelines for a transition to multifunctional landscapes based on science and the team experience as practitioners.

In this transition, practitioners manage crop fields, natural habitats, and field edges. We propose an iterative process for designing multifunctional landscapes. Initially, at a fine-scale resolution, we identify and classify areas with low opportunity costs (e.g., low crop productivity) or a high appreciation for nature (e.g., near housing areas). These areas are categorized into either "wide" patches or "narrow" corridors (i.e., edges <100m wide). Subsequently, wide patches (including those with remnants of native species regardless of size) are allocated for natural habitat restoration (covering at least 20% of the farmland), while narrow zones are designated as biological corridors (making up at least 10% of the farmland and designed to be 50-100m wide).

Also, field size and configuration are re-designed to enhance the efficiency of agricultural practices and edge density. This entails creating smaller fields with strip cropping that follows environmental heterogeneity, instead of relying on large, squared monocultures. Ultimately, this design is continually refined through engagement with stakeholders, incorporating cost-benefit analyses, as well as a process of ongoing monitoring, evaluation, and mutual learning. I will describe an iterative process by which large-scale agriculture can support biodiversity and leverage nature's contributions to people while providing more nutritious food and stabilizing crop yields and profits.

Multifunctional landscapes will be critical in achieving the targets of the Kunming-Montreal Global Biodiversity Framework by 2030 and moving the world towards net-zero emissions by 2050.

3.1.468 Key messages

Create Multifunctional landscapes

In a 5 years study (2010-2014) 344 fields were analysed in 33 farming systems 5 years.

Multifunctional landscapes were created with a an increased Yield of + 24 %.

The Benefits were :

Crop productivity, stability and quality

Crop pollination increased

Less costs (weeds, diseases, pests)

In an area of an agricultural landscape it is recommended to :

Identify areas with low opportunity cost or high natural value

Allocate areas to new targets like keeping biodiversity

Redesign: sizes and configuration

3.1.469 Collaboration outcomes

Collaborative initiates surged from groups that were interested to provide areas for this analysis

3.1.470 Building inclusion and equity

It spanned several scientific areas and included both genders and several continents

3.1.471 Key lessons learnt

The road is long and difficult but not start it is not an option

Session 101: Advancing Diagnostics in developing regions/Bridging the diagnostic divide

Session Convenor
Priyen Pillay

Position
Senior Researcher

Organisation
Council for Scientific and Industrial Research (CSIR)

Country
South Africa

3.1.472 Abstract

Access to reliable and affordable diagnostics is crucial for effective healthcare delivery and disease management in both developed and developing countries. However, developing countries often face significant challenges in establishing and maintaining robust diagnostic systems, resulting in diagnostic gaps that hamper the quality of healthcare services and the overall well-being of their populations.

In this session, we propose to address critical issues such as developing and implementing sustainable and innovative diagnostic solutions that can enhance diagnostic capabilities in resource-constrained settings.

Furthermore, in the session, we would like to showcase examples of innovative solutions, such as the CSIR and CapeBio co-developed COVID-19 test kit and point-of-care diagnostics, which satisfy the WHO ASSURED criteria: Affordable, Sensitive, Specific, User-friendly, Rapid and Robust, Equipment-free and Deliverable to end-users. The session also explores possible diagnostic device fabrication opportunities in developing countries. The session could also be used as a platform for creating solutions and proposals that can foster effective collaborative efforts between governments, international organisations, academia, and the private sector to address the diagnostic gap comprehensively.

3.1.473 Key messages

There is a great need to secure the supply of medicines and diagnostic kits and devices for the Africa continent.

More capital investment in Africa is required to translate this innovation into commercially viable diagnostic and production platforms

The relatively immature regulatory frameworks and policies need to be updated to encompass these new disruptive technologies into the market

An integrated approach involving industry, investors, governments, technical skills development, transfer, and regulations will be required

The ESG (Environmental, Social, and Governance) of existing diagnostic systems needs to be questioned and alternatives need to be strongly considered

More research and development needs to be conducted within the local diagnostics sector

We need to look at the positive effects of setting up production plants worldwide on the net zero initiative

We need to motivate the public and private sector to get involved in this space and invest

We need to invest in education programs to spark interest at a school as well as a tertiary level

3.1.474 Collaboration outcomes

We wish to closely with our colleagues from Cape Bio Pharms and anyone really in search of technology partners to assist them with their technology development.

3.1.475 Building inclusion and equity

We invited various stakeholders from all around the world to join our session via various different social media platforms.

3.1.476 Key lessons learnt

The summit has really given me an opportunity to learn from experts in the field into what is happening all around the world.

Session 102: Web 2.75 or Web 3.0 transformation, what does that mean?

Session Convenor
Dr Alex Cahana

Position
Founding member and Chairman of the Board

Organisation
ImpactRooms

Country
UK/ South Africa/ United States

3.1.477 Abstract

Introduction and aims

Our loss of trust in data and information has eroded our ability to cooperate. This session will show how Web 3.0 transformation with decentralized technologies can solve the problem of mistrust, as well as offer new ways to inter-cooperate, thus solving the problem of data sovereignty, privacy and illiquidity.

No technology has been more maligned than blockchain, while chat-GPT has ignited an angst proclaiming AI as the end of humanity. But can these technologies team together to create a sustainable decentralized Web 3.0?

In this session, we will learn how distributed ledger technology combined with federated computing, when done ethically, can comply with MICA (markets in crypto assets) and the AI act and offer a sustainable alternative to the techno-feudalism of Web 2.0.

3.1.478 Key messages

Our loss of trust in data and information has eroded our ability to cooperate.

The session explained how Web 3.0 transformation using decentralized technologies can solve the problem of mistrust, as well as offer new ways to inter-cooperate, thus solving the problems of data sovereignty, privacy and illiquidity.

Web 3.0 technologies include, but are not limited to: AI and machine learning; Spatial Web; blockchain; Internet of Things (IoT); edge computing; privacy preserving technologies (zero knowledge cryptography); Immersive technologies like virtual, augmented and extended reality and the Metaverse.

The key to ensure the ethical, safe and inclusive use of these technologies, thus mitigating the risk for digital divide, is to ensure that data remains open source, transparent and decentralized, while intellectual property is protected using zero knowledge encryption.

Because decentralized technologies are attack-, censor- and collusion- resistant, they discourage extractive, exploitative and exclusionary economic models and promote citizen-driven economies, especially in emerging markets and developing economies.

Data needs to be secure, private and most importantly self-owned, providing people monetary (local, crypto and sovereign currencies) and non-monetary (rewards) opportunities to benefit from it.

Decentralized and federated data governance must include self-owned digital identity, verifiable credentials, transparent voting mechanisms and clear dispute resolution mechanisms.

These data coalitions, organized in a distributed autonomous organization (DAO), create new data ecosystems like decentralized Science (DeSci), decentralized Finance (DeFi) and regional economic cooperatives (Smart Cities and coordi-Nations).

The panelists emphasized that technology per se will not accelerate SDG adoption, but rather the way people engage and benefit from these technologies, that will ensure SDG attainment by 2030.

Regulatory approaches towards the Web 3.0 technology should be permissive (sandboxes) to encourage research and innovation, rather than prohibitive legislation, increasing the risks of amplifying the conditions of a digital divide and a dystopian data Panopticon.

Finally, data is a valuable asset and thus capturing people's data (continually or episodically) should be considered dignified labor, which needs to treated and protected by labor laws.

Ensure user-generated data is self owned (not third party or state)

Create regulatory sandboxes to test local and community digital currencies

Encourage distributed autonomous organization for Science (DeSci)

Apply the legal framework of ownership for data as an asset (buy, sell, trade)

Consider data as dignified work, protected by labor laws (own, lease, rent)

In general policies should discourage the centralization of data

3.1.479 Collaboration outcomes

Collaboration of the represented panelist companies and organizations:

- The Spatial Web Foundation

- Verses

- ImpactRooms

- MAPay

- TitleChain

- Inteleos

- AIMedis

as part of the Inclusive Sustainable Smart City (ISSC) "Symphony" Initiative.

3.1.480 Building inclusion and equity

The panel included business leaders focused on Web 3.0 capacity development mostly in emerging markets and developing economies in East Africa, ECOWAS, SADC, MENA, LATAM, India, and ASEAN regions as well as the GCC.

3.1.481 Key lessons learnt

The Science Summit at UNGA is an ever growing initiative, that has started this year to engage in public-private partnerships (PPP).

I will help expand these PPPs and engage more startup, early growth and established private entities that are committed to engage in economic collaboration, technology transfer and capacity development in low and low to middle income countries (LIC, LMIC).

In regards to scientific and technology education, it is important to invite the younger generation (Gen Z) into the conversation

Session 103: The New Space Pioneers: From ITEK (Indigenous Technological Knowledge) to the New Pioneers in Space

Session Convenor
Robin Hawk

Position
CEO

Organisation
Galxyz LLC

Country
USA

3.1.482 Abstract

Title: Indigenous Space Social Justice, ITEK Artemis Objectives, Power of Lunar Dust, Lunar Regolith, Space Radiation Hardening, Nuclear Space Propulsion & Objective Due Regard SaaS

Summary: Traditional Ecological Knowledge is critical to sustainability in Space. What has been forgotten is the interconnectedness of all things. What are the issues? Dust: From the dust bowl to the Lunar surface, Lunar regolith and Lunar dust have special qualities in Space that are only now beginning to be understood. Radiation Hardening is needed for equipment and to support life in Space. Increasing Orbital Space Debris Cadence is increasing the probability of collisions between Space Objects. Solutions involve in situ debris and dust characterizations and accurizing of conjunction assessments.

Abstract: The James Webb Space Telescope is the successor to the Hubble Space Telescope. It is the largest space telescope ever constructed and is giving humanity its first high-definition view of the infrared universe. The Webb is observing early epochs of the universe that the Hubble cannot see to reveal how its galaxies and structure have evolved over cosmic time. The Webb is exploring how stars and planetary systems form and evolve and is searching exoplanet atmospheres for evidence of life. The Webb's science instrument payload includes four sensor systems that provide imagery, coronagraphy, and spectroscopy over the near- and mid-infrared spectrum. NASA developed the JWST in partnership with the European and Canadian Space Agencies, with science observations proposed by the international astronomical community in a manner like the Hubble. Launch of the Webb occurred during Christmas day 2021. In-flight commissioning was completed during June 2022 and science operations are now underway.

3.1.483 Key messages

The New Space Pioneers who spoke at SSUNGA78 demonstrated advanced scientific knowledge of Space and what is necessary to sustainably and peacefully move life on Earth

into Space. Achievement of UN Sustainable Development Goals involve the Peaceful Use of Outer Space, Space Debris Prevention, Cleanup, Security, and Equal Access to outer space for Indigenous Peoples to monitor their resources from Space. It is also a Social Justice Issue for all people to be included in the future of Space. The UN Summit of the Future in September 2024 will be extremely important for these and other scientific endeavors in Space and to the extent there is a "post-SDG Agenda", it will clearly involve Space, at the least to monitor results on Earth of any progress toward achieving the SDG's.

Some common themes were the extreme problem of increasing Space Debris and its affect on future plans. Another theme was the lack of Indigenous inclusion in Space. Yet another was the need to fully understand the extreme environments in Space on Biology and Communications Technology. Each speaker presented Real World experience and understanding related to Space from scientific, technical and legal perspectives.

Some of the best examples came from those pioneering Space in ways that have and will continue to have enormous implications on Earth, such as Matt Greenhouse, the luncheon keynote, who gave an excellent presentation on his WEBB telescope mission for NASA. Franck Marchis spoke about Citizen Science with SETI and Unistellar with a highlight of the first live broadcast view of the Sun from a Unistellar telescope. The Keynote Speaker, Vint Cerf, speaking about the "Implications of an Interplanetary Internet was the highlight of the Sessions."

Some notable examples were: Dan Hawk speaking about Indigenous Inclusion in Space, extreme environments and the need for advanced safe nuclear power. Another was Borja Barbero Barcenilla, who spoke about important research involving Telomeres in Space, paving the way for important discoveries involving life support in Space. Robin Hawk spoke about advanced photobioreactor systems and advanced optical clocks on a chip. Vitali Braun gave an excellent presentation on his work with ESA on Space Debris modeling. Moriba Jah spoke eloquently and soberly about the real problems on Space Debris and TEK. Michelle Hanlon spoke about For All Moonkind and the need for inclusion in the Peaceful Use of Outer Space. Chris Impey spoke about his amazing history as a professor of Astronomy at ASU.

There were 2 pioneers who represented the only two endeavors this past year to land a lander on the Moon, ispace inc. founder Takeshi Hakamada from Japan on the M1 Lander and Namrata Goswami, Chandrayaan Mission from India.

The sessions will lead to a much greater understanding of what is required to address the scientific issues related to Space by the Pioneers actually working in Space.

Indigenous Inclusion in Space Policy and Decision Making

Scientific Review of Space Technologies and how they can contribute to or against the UN STG's

Clear delineations of Artemis Accord Signatories vs Other endeavors and how plans and actions affect others.

Objective Due Regard Laws for Space as opposed to Subjective ones as proposed by Dan Hawk.

A clear plan on how to clean up space Debris and assure access to Space by All People.

A New Technology Working Group and Standards Working Group at the UN related to Space that works with the US Department of Commerce

Preparation for Scientific and Conservation uses of Space, not just Commerce in Space

A fair and equatable division of duties and responsibilities tied to recognition of both finite and infinite resources in Space.

3.1.484 Collaboration outcomes

Creation Stories to go up in Space by Moriba Jah.

Knowledge of the Extreme Environments of Space and Space Debris.

The Long View of how anything can be accomplished in Space!

The Importance of Space to daily life on Earth.

3.1.485 Building inclusion and equity

We were the only session to feature indigenous pioneers in Space alongside the real Pioneers in Space and were inclusive of Global participants with 3 women as speakers.

3.1.486 Key lessons learnt

To begin immediately for next year as this was not at all well organized and could have been done much better. To make reservations much earlier in NYC as the expense was unexpected. To apply for grants next time.

Session 104: Blueprint for action: provoking hopeful futures

Session Convenor
Cyndi Coon

Position
Founder, CEO, Futurist

Organisation
Laboratory5 Applied Futures Lab

Country
United States

3.1.487 Abstract

This interactive two-hour session, revolving around our curious question, "What is our blueprint for a hopeful future where humanity can take action to flourish?" aims to ignite hope, provoke thought, and inspire action.

We're bringing together a diverse group of experts with unique lenses on futures and foresight practice. Through real-world examples, these visionary leaders will demonstrate how they look to the future for ways to bridge our current reality to an aspirational tomorrow.

Organized around themes such as health, education, water, environment, space exploration, finance, and global governments, this session will present a tangible, interactive exploration of the futures we can create. Together, we’ll envision a blueprint for a hopeful, flourishing futre.

3.1.488 Key messages

The essential messages, examples, and outcomes that can contribute to a greater understanding of science and innovation within the context of achieving the SDGs, the UN Summit of the Future in September 2024, and the post-SDG Agenda more generally from the BLUEPRINT FOR ACTION: PROVOKING HOPEFUL FUTURES Session

Science for a Better Future

The session underscored the importance of futures values like mindest, solidarity, mutuality, altruism, reciprocity, and trust in shaping the future.

Mass Migration and Climate Change

The session highlighted the challenges of mass migration coupled with conflict, leading to negative dynamics for people who are forced to move from their homes. Emphasizing on the

need to address climate change for the next generation and the importance of creating a better future for everyone.

Fourth Industrial Revolution

We are currently in the midst of the fourth Industrial Revolution, characterized by the convergence of multiple technologies such as robotics, artificial intelligence, space technologies, synthetic biology, gene editing, and 3D printing of organs. The backdrop of this revolution is a world where artificial intelligence and the internet are ubiquitous, opening up unprecedented possibilities for innovation and advancement with a human-centric focus.

Ecological and Economic Considerations

The session touched upon the social implications of production and consumption, emphasizing the need to understand the ecological impacts and the economic structures that enable access to essential materials.

Adapting to Change

The importance of flexibility and adaptability in the face of changing environments was a highlight of the session. The future requires collective action, and it's essential to seek tools, resources, experts, and community support along the way.

The session focused the importance of addressing global challenges like mass migration and climate change, leveraging the advancements of the fourth Industrial Revolution, upholding values of solidarity and trust, considering ecological and economic impacts, and fostering adaptability and collective action. These insights are crucial for understanding the role of science and innovation in achieving the the UN's Sustainable Development Goals (SDGs) along with the significance of international human solidarity focused on a future for all.

Brainstorming and Backward Design for Future Planning: Encourage a brainstorming approach to policy-making, where multiple scenarios and pathways to the desired future are considered.

Incorporate Flexibility and Support in Policy Design: Policies should be designed with a flexible mindset, ready to adapt and overcome obstacles. Recognizing that the path to the future is not linear.

Establish a "Governance by Design" framework for any new global initiative, ensuring that all potential implications are considered from the start.

Encourage, support and supply futures tools and training globally.

3.1.489 Collaboration outcomes

The session emphasized the creation of a "blueprint for action" that focuses on crafting a tangible path forward for everyone. This blueprint will serve as a foundation for collaborative research and initiatives among the 12 female futurists gathered for this session.

There was a focus on infusing futures thinking into design, especially in the context of climate, human lived experience and education. The idea is to intentionally foster skills like imagination, empathy, curious questioning, and storytelling across all generations.

The session also highlighted the importance of taking action and emphasized that one cannot approach the future alone. It stressed the need for tools, resources, experts, and community support.

Potential Partnerships between the UN, academic institutions, futurist organizations, K-12 educational institutions, and design schools could lead to major global outcomes. This could lead to the development of new curricula, training programs, and workshops that integrate futures thinking into design and education.

Collaborate with local communities industry leaders to pool resources, knowledge, and expertise. This could lead to joint projects, research initiatives, and community-driven actions to address global challenges. These collaborative initiatives and partnerships emanating from the session can play a pivotal role in shaping a hopeful future and ensuring that global challenges are addressed effectively.

3.1.490 Building inclusion and equity

We were 12 female futurists from around the world, with a 14-year-old youth representing Gen Z, and our behind-the-scenes producer was a woman.

3.1.491 Key lessons learnt

Meet often with the participants. Don't use your personal email for Zoom or you'll lose your account. Practice many times, test sound and video. Build community, participate in WhatApps Groups and engage a lot.

Session 105: Anticipatory Science: Thinking Multilateral Solutions for the Future

Session Convenor
Claudia Alarcón López

Position
PhD student at EPFL and ETH, Switzerland.
Founder of Ciencia Sí, a science outreach initiative in LATAM.
Science Diplomacy Alumni of GESDA.
Member of Diplocientífica

Organisation
EPFL and ETHZ.
Ciencia Sí.
GESDA.
Diplocientífica.

Country
Mexican residing in Switzerland.

3.1.492 Abstract

Our rapidly evolving world requires the ability to anticipate and adapt to emerging trends and challenges. Join us for a dynamic two-hour session that delves into the cutting-edge realms of anticipatory science, exploring five pivotal areas of focus as outlined in the Geneva Science Diplomacy Anticipator - GESDA Science Breakthrough Radar ®\

Our session will highlight the latest developments, trends, and challenges within these domains, paving the way for a future shaped by innovation, collaboration, and forward-thinking strategies.

The session will have science and diplomacy experts from each of the Radar's platforms, all members of the Geneva Science Diplomacy Week alumni community.<u> You will have the possibility to interact and share your perspective about where science is taking us!

3.1.493 Key messages

Governance is usually reactive to scientific developments. Science anticipation is a tool to act in advance and foresee the pathway we might take as society and prepare multilateral solutions to overcome the future's challenges. Innovation and science must be analysed in other to anticipate. During our session, the 5 different areas of the science anticipation radar were highlighted to talk about their current and future's impact in society with targeted messages:

Quantum:

-The quantum revolution in Africa is a rapidly evolving field with increasing investment, research activity, and collaboration (Winnie Nakiyingi)

-African countries and institutions are increasingly recognizing the potential of quantum technologies, such as quantum computing, quantum communication, and quantum sensing, to drive innovation and address complex challenges (Winnie Nakiyingi)

Human Augmentation trough neuroscience:

-Regarding to Global Governance for Neuroscience and Neurotechnology, We will not understand, heal, have efficient interfaces that can mimic the brain, until we map these unchartered territories (Renaud Jolivet).

-Human brain organoids, though in their early stages, offer significant utility for modelling human brain development, but we need to ensure their responsible development through interdisciplinary discussions involving ethicists, biologists, neuroscientists, philosophers, and legal experts to establish a well-informed framework, rooted in empirical evidence (Giulia Bruno).

Eco-regeneration and Geo-engineering:

-Floating offshore wind technology is critical to combatting climate change and reducing reliance on fossil fuels, as it provides a clean, renewable source of energy; it has potential to generate more energy tan fixed-bottom turbines due to its ability to Access deeper waters, where wind speeds are higher (Munira Raji).

-Anticipated cost reductions are expected to make energy from floating offshore wind competitive within the next decade (Munira Raji).

Science Diplomacy:

-Bridging the worlds of science and politics by initiating dialogue to address challenges together under the neutral umbrella of science.

(Denis Naughten)

-Data science methods can help tell an objective history of diplomacy efforts, adding to the data for diplomacy framework (Rafael Mesquita)

Knowledge Foundations:

-Improvements in education are and will be closely related to technology and science, hence we must address the connectivity gap among countries and populations, we must ensure data protection and integrity are and will be foundational frameworks of action, and we need to focus on the soft and transversal skills to be able to cope with changes (Claudia Alarcón).

These 5 areas are critical to our future's world. We must invest in understanding them, communicate with scientists and stakeholders to understand where the field is going, and generate multilateral solutions as assents in humankind.

"We must use the present to build the future." -Gesda.

Publicly available digital records of governmental bodies, such as parliaments, are important for accountability, transparency, and monitoring of implementation/domestic reception of global programs.

All publicly funded data would be made freely available in an open source format for utilisation by the broader scientific community; and that it would also be made available in a format that can be u

Science entrepreneurship should be supported to open a new field of action for scientists.

Need for more brain observatories collecting brain data at scale to solve the complexities of the brain in the next decades.

Floating offshore wind is an emerging technology with enormous potential to help accelerate the global energy transition. To facilitate the development of floating offshore wind, an international coop

Learning sciences should be the cornerstone of educational systems, research is needed to reach optimal educational frameworks.

Science communication is required to communicate today and in the future between scientists, decision makers, and the public; funds and incentives should be available to do it.

The science diplomacy capacity building is key to unify the efforts to professionalize the area and support multilateral solutions.

3.1.494 Collaboration outcomes

Invitation to participate at events such as Science Diplomacy Week, Africa's Quantum Leap initiative, Ciencia Sí's anual event, Multilateralism effort, and Research initiatives to professionalize the science in diplomacy are some takeaways of our session.

3.1.495 Building inclusion and equity

We ensured the translations/closed captions were available for the participants.

We did not constrained the access to any person.

We had diverse representation in our speakers.

We edited the slides with accessibility design (letters, contrast of colors, etc)

We had the session in English, language that everyone could speak.

We had the option to have the Q&A session in different languages.

3.1.496 Key lessons learnt

I've learned the importance of science communication in a decision-making framework. Scientists tend to explain in detail the problems and solutions of their science, but due to the limited time, the amount of collective contributions, and cognitive load we have, giving targeted messages is key.

Also, the collaborative power has been a pleasant lesson. When we work together, a unique force is formed.

Session 106: Role of ICT towards empowerment of women and girls achieving gender equality and the SDGs

Session Convenor
Chioma Uzo-Udegbunam

Position
FOUNDER

Organisation
SURE SMILES WOMEN AND CHILDREN ADVOCACY INITIATIVE

Country
NIGERIA

3.1.497 Abstract

For any meaningful development in a nation to be achieved the deployment of ICT cannot be over emphasized as the development of a nation depends on the development of the human resource. Empowering women and girls through ICT means providing economic power to reduce poverty, develop new opportunities of learning and education, bring improvements in health of women and girls as well as increase their literacy rate.

ICT helps to break and challenge gender stereotypes and biases that limit women's potential. Access to ICT can enable women and girls gain a stronger voice in their various communities and at international level. While there is a recognition of the ICT as a tool for the promotion of Gender Equality and empowerment of women a Gender divide has been identified, hence the reason why just a few women and girls have access to ICT, whereas more men have unlimited access.

Until this bias is addressed less use of ICT by women and girls may deepen the Gender gap being experienced presently. It's pertinent to note here too that ICT serves as a support structure for all the 17 sustainable Development Goals. It is the fulcrum the 17goals strives and hobs around hence it drives its advancement.

3.1.498 Key messages

Scientists must remain true to the fundamental principles of objectivity and impartiality. One challenge of sustainable life is to use technology in such a way that it balances advances in productivity with long term resource viability. Cooperation is also very vital as it builds bridges among nations. An effective way to promote sustainable practice globally is through partnership in research among developed and developed countries

Gender diversity in STEM

Dismantling Gender barriers

Provision of mentors and development opportunities for women to enable them nature confidence and empower them to move into leadership roles digitally

3.1.499 Collaboration outcomes

The summit gave my organisation the opportunity to understand what enabling policy and platform needed to achieve global challenges broaden our perspective on the way forward hence we were opportunity to open discussions with some scholars from University of Brazil who were our speakers

3.1.500 Building inclusion and equity

Yes it provided opportunities for speakers and participants to leverage on the platform provided to bring essential means of reducing risks and creating a safer and more peaceful world using science

3.1.501 Key lessons learnt

A lot needs to be done if we are to achieve the SDG goals by 2030.

Session 107: Impact of in transit migration on the natural and social ecosystems of the Darién Biogeographic Region

Session Convenor
Noris Martínez

Position
Researcher at Universidad Tecnológica de Panamá

Organisation
Universidad Tecnológica de Panamá

Country
Panamá

3.1.502 Abstract

In 2020, the number of migrants exceeded 280 million according to data from the International Organization for Migration. Migration drivers are related to the availability of natural resources, political instability, economic inequality, insecurity, violence, among others. Transboundary environmental governance is essential for managing natural resources in countries that serve as corridors for migratory flows. Panama is part of these corridors, where migrants from the Caribbean, South America, Africa, and Asia cross the Darien jungle in transit to North America. According to Panama's National Migration Service, in 2022, 248,284 individuals crossed through the Darien Biogeographic Region. Meanwhile in 2023, 251,758 persons have crossed by July, surpassing the previous year's number.

This crossing represents risks and impacts for both humans and the natural ecosystems of the region. Darien is a tropical forest zone with high levels of humidity and rainfall, rich biological diversity, and vast expanses already experiencing negative pollution impacts due to increased human flow and lack of governmental and local initiatives to address the issue. It is necessary to approach the topic with a focus that also encompasses strategies for environmental governance involving the entire region, encouraging the development of research, programs, and policies aimed at maintaining and restoring natural ecosystems in extra-regional and extra-continental migration corridors.

A two-hour open space session is intended, involving 6 experts from different countries who have conducted research on the topics of transboundary environmental governance, public health migratory flows, migration drivers, migration impacts on natural and social ecosystems, or related themes. The session aims to engage in a scientific discussion encompassing the various components of migrations in transboundary natural corridors. The geographical area of focus is the Darien Biogeographic Zone, a Neotropical natural corridor stretching from the Darien province in eastern Panama, through western Colombia, to the northwest of Ecuador. This corridor spans the Pacific coast of three countries and sometimes extends into valleys, slopes, or even the Caribbean coast. This area is of great scientific importance due to its

concentration of endemic plant species. It also boasts valuable ethnic diversity, with over 200 communities inhabiting the territory, some comprised of Afro-descendants, and others of indigenous or mestizo descendants of migrants. It is considered one of the most culturally diverse areas in Latin America.

Expected outcomes

This session aims to encourage the scientific community, policymakers, and civil society at large to design a roadmap considering social, economic, and environmental aspects focused on Transboundary Environmental Governance. This will contribute to generating other research initiatives that address environmental and social issues in the studied region or other regions with similar characteristics. This initiative significantly contributes to six Sustainable Development Goals directly, notably Goal 15, which aims to address threats faced by wildlife and natural ecosystems.

3.1.503 Key messages

The increase in the migratory flow through the Darién Biogeographic region presents considerable risks for human well-being, migrants and the population of the receiving communities, with a negative impact of contamination on the environment. The development of local and regional initiatives is necessary to confront the problem, from an approach that includes transboundary environmental governance strategies and that encourages the development of research, programs and public policies focused on maintaining and restoring natural ecosystems in irregular migration corridors.

The UN must promote public policies and regional and local programs focused on counteracting the main drivers of migration.

The transboundary region must propose alternatives and carry out studies of possible aquatic and land routes for controlled migration.

Financial support from international and regional organizations is necessary and urgent for research and development related to the effects on the region's ecosystems.

Comprehensive solid waste management studies for receiving communities.

Comprehensive study of quality and use of water resources.

Programs for the promotion and development of sustainable local enterprises for the recipient population of the region.

3.1.504 Collaboration outcomes

The Universidad Tecnológica de Panamá, and the Instituto de Investigaciones Ambientales del Pacífico “John Von Neumann” (IIAP) of Colombia, have human capital with scientific-technical expertise in the areas where problems and opportunities for research development have been identified. and initiatives that will help mitigate and improve the impacts of migration on the natural and social ecosystems of the Darién biogeographic region. Examples of initiatives: Development of projects focused on solid waste management, quality and use of water

resources, and promotion and development of sustainable local enterprises for migrant-receiving communities in the region.

3.1.505 Building inclusion and equity

Yes, our session is inclusive to the extent that the scientific participation of women in science was promoted. Additionally, the migration issue affects vulnerable groups such as the migrant population that crosses this irregular route and the indigenous and Afro-descendant population that inhabits the Biogreographic region of Darién.

3.1.506 Key lessons learnt

The United Nations Summit is a scientific space to discuss problems of interest to the entire region, despite the importance for the scientific community, greater local and regional dissemination is necessary.

Session 108: Inclusive Sustainable Smart Cities

Session Convenor
Arsalan Abtahi

Position
Founder and Executive Chair

Organisation
Symphony

Country
USA

3.1.507 Abstract

Deep concern echoes throughout our urban environments and the pervasive addiction-driven economy that defines modern society. These factors underlie a myriad of physical, mental, emotional, spiritual, and societal disorders that erode our collective well-being. The path forward, as envisioned, necessitates a profound shift. It calls for a departure from traditional quantity-oriented economic progress metrics like GDP and a pivot towards quality-oriented metrics and sustainability assessment tools. These tools must comprehensively address the social, environmental, governance, and economic dimensions of human society.

In this transformative journey towards Inclusive Sustainable Smart Cities (ISSCs), data becomes the common language spoken by cities. Digital twin technology and AI act as the keystones, enabling these cities to thrive. They offer a dynamic framework where data informs decisions, optimizing urban landscapes, and fostering innovation. But let us not forget that technology is merely the vessel; the true essence of ISSCs lies in human-centered design.

By focusing on human needs and solving real-world problems, ISSCs come to life. Data-driven decision-making, empowered by AI and digital twins, addresses challenges in healthcare, education, transportation, and more. These cities are not just interconnected; they are living organisms, constantly adapting and evolving to serve their inhabitants better.

The imperative for a comprehensive global standard is paramount. This standard not only guides cities in embracing the ISSC framework but also facilitates data-sharing, mutual learning, and the collective pursuit of sustainability. It's the bridge that unites these cities in a shared mission, promoting harmony and synergy on a global scale.

In conclusion, ISSCs represent a visionary approach to our urban future, a departure from the status quo. They embrace a holistic perspective, using data, digital twin technology, and AI as tools to elevate the human experience and achive the UN Sustainable Development Goals (SDGs). These cities, guided by a global standard, aim to harmonize our fractured world into a symphony of sustainable, thriving communities.

3.1.508 Key messages

Trans-disciplinary Collaboration: Effective solutions often require collaboration across various scientific disciplines and sectors. For example the development of sustainable cities and communities involves experts in urban planing, green infrastructure, energy, waste management etc. (SDG 11 Sustainable Cities and Communities)

Innovative Technologies: Cutting-edge technologies can accelerate progress towards the SDGs. For example Digital Twin technologies can play a vital role in predicting future climate change catastrophes. (SDG 13 Climate Action)

Data-Driven Decision-Making: Data science and analytics are crucial for evidence-based policy and decision-making. For example monitoring air quality and pollution levels using IoT devices and data analytics can inform policies to combat air pollution (SDG 11 - Sustainable Cities and Communities).

Global Collaboration: Global challenges demand international cooperation and knowledge sharing. For example the sharing knowledge and collaboration between countries can help with shaping global consensus to achieve the SDGs (SDG 17 : Partnership for goals)

Inclusive Innovation: Innovation should be inclusive and consider the needs of marginalized populations. For example affordable and accessible healthcare technologies, like telemedicine, can help bridge healthcare gaps in underserved areas (SDG 3 - Good Health and Well-being).

Environmental Conservation: Sustainable innovation is essential for preserving the environment. For example sustainable packaging materials, such as biodegradable plastics, help reduce plastic pollution (SDG 14 - Life Below Water and SDG 15 - Life on Land).

Education and Skill Development: Building scientific and technological capacity through education is critical. For example STEM (Science, Technology, Engineering, and Mathematics) education programs can empower individuals and communities to participate in innovation and development (SDG 4 - Quality Education).

Ethical Considerations: Ethical and responsible innovation is vital to avoid unintended negative consequences. For example closing the digital divide and the responsible development of AI technologies, with ethical AI principles, helps mitigate biases and discrimination (SDG 10 : Reduced inequalities).

Public-Private Partnerships for innovation and infrastructure development : Collaboration between governments, private sector, and civil society can drive innovation.For example Public-private partnerships in space exploration have led to advancements in satellite technology and Earth monitoring (SDG 9 : Industry innovation and infrastructure).

Establish a Universal Basic Income (UBI) Pilot Program

Develop a National Artificial Intelligence (AI) Strategy

Implement a Carbon Tax

Adopt a Circular Economy Policy

Establish Data Protection and Privacy Regulations

Implement Universal Healthcare Coverage

Promote Education Reforms

Establish Sustainable Smart City Development Guidelines and standards

3.1.509 Collaboration outcomes

During our sessions at the Science Summit, stakeholders from the technology sector, digital regulation experts, sustainable development practitioners, and people working with municipalities identified several promising collaboration opportunities. One such opportunity revolves around the development of a comprehensive data governance framework for smart cities. Digital regulation experts would contribute their expertise in privacy and legal compliance, while municipalities and technology companies would work together to ensure ethical and secure data management. Sustainable development practitioners would provide insights to align data usage with sustainability goals. Additionally, collaborative efforts may focus on researching and developing digital infrastructure solutions to promote sustainable transportation within cities. Sustainable development practitioners and municipalities could partner with technology firms to explore ways to bridge the digital divide and expand access to digital services in urban areas. These scenarios illustrate the potential for cross-sectoral collaboration to advance smart, sustainable, and inclusive urban environments that prioritize citizen-centric design, cybersecurity, data-driven policy making, and urban resilience in the face of climate challenges.

3.1.510 Building inclusion and equity

The session was truly inclusive as it brought together a diverse group of individuals from around the world, with a balanced 50-50 gender ratio. This diversity ensured a rich tapestry of experiences, backgrounds, and expertise, creating a vibrant environment for collaborative discussions and knowledge exchange. Participants represented various sectors, including technology, policy, academia, and sustainable development, allowing for a holistic perspective on the topics at hand. This inclusivity not only promoted a broader understanding of the challenges and opportunities but also facilitated the development of well-rounded solutions that took into account different cultural, gender, and professional viewpoints. The collaborative spirit and diversity of the session made it a valuable platform for generating innovative ideas and fostering global cooperation.

3.1.511 Key lessons learnt

The Science Summit at the UN General Assembly offers a rich tapestry of lessons that can shape our collective understanding of sustainable development and innovation. One of the most profound lessons is the power of interdisciplinary collaboration. As participants come together from diverse backgrounds, including science, technology, policy, and sustainability,

they discover that the most effective solutions emerge at the intersection of these fields. Collaboration fosters a holistic approach to addressing complex global challenges.

Another key lesson is the transformative potential of innovation. The summit showcases how cutting-edge technologies and innovative approaches are driving progress toward sustainable development goals. Attendees learn that science and technology can be powerful catalysts for positive change, particularly in the context of smart city development and urban planning.

Data-driven decision-making takes center stage as participants realize the critical role of data science and analytics in shaping policy. The summit underscores the importance of evidence-based approaches, emphasizing that well-informed decisions are essential, especially in urban planning and the development of smart cities.

Global cooperation and knowledge sharing emerge as fundamental lessons. Attendees discover that collaboration, partnerships, and information exchange are vital for addressing global challenges that transcend borders. The summit serves as a reminder that our interconnected world requires collective action.

Inclusivity in innovation becomes a cornerstone lesson. The summit highlights how technology can be harnessed to bridge socioeconomic gaps and promote equity. Lessons in ethical considerations remind us that responsible AI, data privacy, and ethical principles must guide technological advancements.

Resilience and adaptation are recurring themes as attendees learn to navigate emerging challenges. Strategies for enhancing cities' resilience and preparedness come to the forefront, emphasizing the importance of long-term sustainability.

Public-private partnerships are celebrated as a powerful force for driving innovation and sustainable development. Participants gain insights into how collaborations between governments and the private sector can accelerate progress toward the SDGs.

Education and capacity building emerge as foundational lessons. The summit underscores the importance of empowering individuals and communities with the knowledge and skills needed to drive sustainable change.

These lessons serve as a blueprint for informed policies, strategies, and actions. They inspire attendees to apply their newfound knowledge in their respective fields and regions, ultimately contributing to a more sustainable and inclusive future. The Science Summit is not just a gathering; it's a catalyst for positive global change.

Session 109: Lessons learned in transboundary environmental governance of the Río de la Plata basin

Session Convenor
Carlos Barboza

Position
Specialist G4 - Geomatics Specialist

Organisation
Minister of Public Health

Country
Uruguay

3.1.512 Abstract

The Río de la Plata basin covers an area of about 3,100,000 km², which makes it the fifth largest in the world, behind the basins of the Amazon, Congo, Nile and Mississippi rivers, and covers territories of five countries: Argentina, Bolivia, Brazil, Paraguay and Uruguay. The precipitations that fall in its area meet in two large courses, the Paraná and Uruguay rivers, which later pour their waters into the Río de la Plata, which finally flows into the South Atlantic Ocean. It covers part of Brazil and Argentina, all of Paraguay, southern and eastern Bolivia, and a large part of Uruguay. The Río de la Plata estuary shows particular characteristics that make it unique compared to similar ecosystems in tropical and subtropical regions.

This basin is a resource of great economic value since it is used for irrigation, hydroelectric power generation in the Yacyretá, Itaipu, Itá and Salto Grande dams, it supplies industrial activity and mining, it is used as a transportation system for the output of production from Paraguay and Argentina Mesopotamia. Is the deposit of most of the liquid effluents from cities, industries, farmlands and mines. Likewise, it has great cultural value associated with fishing, tourism, and spiritual activities.

However, the evidence suggests that the health of the Río de la Plata is declining, largely due to anthropogenic factors as well as natural causes. However, the latter have been modified by human-driven climate change. Some effects that are observed are abnormal fluctuations in hydrological levels, changes in fish breeding sites, generation of toxic cyanobacterial blooms, among others. This, together with the global tendency of coastal systems to become heterotrophic in the long term, suggest that we must take care of this system if we are to avoid an environmental crisis in a few decades. By holding this session, we seek to publicize the diverse range of experiences and lessons that the speakers have collected throughout their career as leading actors in the management of the Río de la Plata basin. They will highlight the challenges regarding cross-border environmental governance, having the water resources of this impressive basin as the engine of water, food and health security. **Key messages**

To deepen scientific research and the science-policy nexus; to promote transdisciplinary research projects and with the inclusion of communications and local government levels and finally to support transboundary projects, borders are cultural limits and problems do not understand them.

Support and facilitate projects with immediate impact on the people of the partner communities

Advocate for greater cooperation between academics and decision makers

Make it a mandatory rule that projects or actions on territories and therefore people, be transdisciplinary, and with the inclusion of social actors and local governments.

3.1.513 Collaboration outcomes

it was possible to achieve in a very short time a small collaborative and transdisciplinary research with gender equality, in addition to reaffirming the group achieved to advance and deepen the theme, from two of the countries in question, thinking of increasing the participation of the other three.

3.1.514 Building inclusion and equity

All-inclusive from a gender and transdisciplinary perspective

3.1.515 Key lessons learnt

Improve communication and work in more depth on the topics presented.

Session 110: Supporting Bioeconomies of a Healthy Standing Forest and Flowing Rivers in the Amazon

Session Convenor
Isabella Leite

Position
Senior Manager, Science Panel for the Amazon

Organisation
Sustainable Development Solutions Network

Country
Brazil

3.1.516 Abstract

The Amazon Basin is one of the world's most biologically diverse areas, home to >10% of the world's described species. Yet, the region is under threat; approximately 17% of the basin has been deforested, and an additional 17% of the biome has been degraded. Deforestation contributes to climate change, and places the region in danger of crossing a tipping point beyond which today's forests can no longer exist. The coming years are crucial for saving Amazon. Investing in education, science, technology, and innovation (ST&I) today can promote the sustainable use of resources in the long term, and build a vibrant, inclusive, knowledge-based economy based on new products and services that can be produced from standing forests. This requires building the region's research capacity and dissemination of scientific knowledge to key stakeholder groups.

At the time of the 78th session of the United Nations General Assembly (UNGA), this event aims to highlight the potential for a bioeconomy of healthy standing forests and flowing rivers in the Amazon, leveraged by investments in ST&I. The Science Panel for the Amazon (SPA) will present a policy brief "Supporting Bioeconomies of Healthy Standing Forests and Flowing Rivers", outlining the need for a new bioeconomy in the Amazonian region and providing science-based, data-driven recommendations to conserve the forest, transform the Amazonian economy, and support Amazonian peoples.

Together with the World Bank, the InterAmerican Development Bank, and the World Resources Institute, the session will also reflect on commitments made by the region's governments during the Amazon Presidents' Summit in August, and will discuss opportunities for policymakers and scientists to engage in dialogues and to promote the science-policy interface for a sustainable socio-bioeconomy of standing forests and flowing rivers in the region.

3.1.517 Key messages

Below are key messages of the discussion:

- The need to establish safeguards against the misuse of the bioeconomy concept. Socio-bioeconomies are based around the sustainable use and restoration of healthy standing forests and flowing rivers and support the well-being, knowledge, rights, and territories of Indigenous Peoples and local communities.

- Land tenure security, access to public policies, long term partnerships, and ethical markets are key factors to scale up the socio-bioeconomies in the Amazon.

- Balancing sustainable development and conservation. The discussions emphasized the urgency of adopting sustainable bioeconomic practices that both stimulate economic growth and conserve the Amazon's natural resources. Structural changes centered on justice, diversity, and inclusivity are required to achieve this.

- The need to establish inclusive and participatory socio-bioeconomy planning and collaborative implementation processes that builds on IPLC knowledge and institutions and respect their rights. The panel underscored the importance of strengthening capacities in local communities through tools, knowledge exchange, and opportunities to actively participate in and benefit from the bioeconomic activities. Opportunities presented by hundreds of socio-bioeconomy initiatives in IPLC territories at different planning and ideation stages were emphasized.

- Biodiversity conservation. Panelists highlighted that responsible bioeconomic practices are a vital part of safeguarding the region's unique biodiversity. These could be supported by comprehensive geospatial analysis tools that support strategic decisions, facilitate information exchange, and encourage investments.

- Finance is essential for scaling up bioeconomy in conjunction with a broader enabling environment including governance, traceability systems, and partnerships. Innovative financial instruments that leverage private markets, such as bonds with returns to conservation and risk mitigation, provide opportunities to increase financing for bioeconomy. Blended finance instruments, using guarantees, grants, and other de-risking instruments to mobilize private capital which could be deployed on concessional terms, were also highlighted.

Obs: For the section below, you can find recommendations in the following policy brief: https://www.theamazonwewant.org/wp-content/uploads/2023/08/230811-PB-Bioeconomy-EN-approved2.pdf

Please cite this Policy Brief if using these recommendations.

3.1.518 Collaboration outcomes

No new collaborations emanated from the Science Summit, but collaborations have been strengthened.

3.1.519 Building inclusion and equity

- The event was accessible via an Americans with Disabilities Act (ADA) compliant elevator.

- The event was offered in a hybrid format, allowing attendees to participate both virtually via Zoom and in person to increase accessibility.

- The programming was available in English, Spanish, and Portuguese, with interpreters translating speeches live throughout the session.

- Session speakers and panelists included representation of women and Indigenous communities.

Session 111: Virus del Papiloma Humano en Argentina: estado de situación y nuevas tecnologías para el diagnóstico

Session Convenor
Lucía Raily Acuña

Position
Investigadora

Organisation
Instituto Misionero de Biodiversidad

Country
Argentina

3.1.520 Abstract

Virus del Papiloma Humano en Argentina: estado de situación y nuevas tecnologías para el diagnóstico temprano y prevención del cáncer de cuello uterino El cáncer de cuello uterino (CCU) es uno de los tumores ginecológicos malignos más frecuentes en la población femenina mundial. En Argentina, se estima que cada año 4.500 nuevas mujeres son diagnosticadas y más de 2.100 fallecen a causa de esta enfermedad, la cual en más de un 95% de los casos es causado por el Virus del Papiloma Humano (VPH).

El Programa Nacional de Prevención de Cáncer Cervicouterino (PNPCC) ha permitido avanzar en su prevención mediante un programa de tamizaje que consiste en detectar dentro de una población sin síntomas, lesiones precancerosas que si no se tratan pueden transformarse en cáncer. El equipo del PNPCC trabaja en articulación con los referentes de los programas provinciales para el fortalecimiento de las acciones para la prevención del cáncer cervicouterino en las provincias brindando acceso a su diagnóstico y tratamiento en Hospitales Públicos.

En línea con estas medidas de prevención, en el año 2011 fue incluido en el calendario de vacunación nacional la vacuna contra el VPH para niñas y niños de 11 años de edad, nacidos a partir del año 2000.

Sin embargo ya pesar de los esfuerzos realizados, el VPH aún es un flagelo que alcanza y afecta la calidad de vida sobre todo de mujeres de condiciones socio-económicas, educativas y geográficas más desfavorecidas, por lo que aún nos queda mucho por hacer.

Es por ello que en esta sesión proponemos un conversatorio con los referentes del PNPCC a nivel nacional y provincial para conocer la historia y estado de situación actual del Cáncer Uterino en Argentina y como nuevas tecnologías podrán sumarse al diagnóstico temprano y prevención de esta patología.

3.1.521 Key messages

La pandemia de COVID-19 legó a múltiples laboratorios un soporte tecnológico mejorado con respecto al período previo a la pandemia

Esto permite potenciar y ampliar las prestaciones de las unidades para impulsar nuevos proyectos relacionados a la salud

Se generaron numerosos diálogos interinstitucionales

Amplia cobertura de campañas de vacunación y concientización

Desarrollo de nuevas tecnologías diagnósticas para el VPH

Fortalecimiento de las redes de trabajo en América Latina

Mayor difusión de sesiones de habla hispana

Mayor apoyo político a la atención de salud pública

3.1.522 Collaboration outcomes

A partir de la sesión que he conducido existe la posibilidad de que se cree una red de trabajo en Argentina para ampliar el diagnóstico e investigación sobre Virus del Papiloma Humano y cáncer de cuello uterino.

3.1.523 Building inclusion and equity

En el área de diagnóstico humano

3.1.524 Key lessons learnt

Ha sido una experiencia muy gratificante poder contactar a diversos profesionales y poder exponer y compartir nuestras experiencias y conocimientos, tanto entre los disertantes invitados como el público en general.

Se destaca la interdisciplinaridad y el trabajo en colaboración para alcanzar los objetivos propuestos y continuar mejorando!

Session 112: [VIRTUAL] Continuing Education in Formal Environmental Education

Session Convenor
Christian Luiz da Silva

Position
Full Professor - Technological Federal Universirty

Organisation
Instituto Venturi (https://institutoventuri.org.br/web/)

Country
Brazil

3.1.525 Abstract

The session aims to show how Instituto Venturi and its partners have been working in a practical way to demonstrate that Brazil has strong public policies in the environmental area capable of leading the country on the path of sustainable development. To this end, decision makers, teachers and managers of public and private institutions must understand and follow its guidelines, which necessarily involves training teachers in formal environmental education and individual reverse logistic models for industries to reintroduce their post-consumer packaging into the commercial cycle of recycling.

Instituto Venturi Para Estudos Ambientais

The Venturi Institute is a non-profit organization that aims to disseminate economically viable solutions on socio-environmental issues to businesses, governments and local communities. It does so by compiling technical and scientific studies, conducting research, producing educational materials and organizing curses and workshops on several sustainability-related topics. The Institute’s vision is to create a sustainable world where environmental management and business management practices are congruent.

It was founded in January 2005 by a group of professors, researchers and students interested in promoting dialogue between the government, private companies, NGOs and the community on the subject of environmental and social responsibility. Since its creation, the Institute has been considered as a reference for knowledge in the elaboration of viable solutions in socio-environmental issues.

In recent years, the Venturi Institute has focused its actions on transferring knowledge in environmental education, believing that this is a fundamental instrument for changing behavior now and for life, aiming practices that are environmentally and socially responsible.

Christian Luiz da Silva (Full professor at UTFPR and Director of Instituto Venturi Para Estudos Ambientais)

Arlinda Cezar - President of Instituto Venturi Para Estudos Ambientais (probably recorded)

Continuing Education in Formal Environmental Education: Training course for teachers-multipliers in environmental education, via the Web, whose objective is to equip the public basic education network for the effective implementation of environmental education in the curriculum of schools according to the national environmental education policy (Law 9,795/99), which despite having been instituted in Brazil over 23 years ago, the challenge remains to train teachers to understand how to work with cross-cutting themes in an interdisciplinary way. More than 1,800 teachers have already been trained since 2021.

Sergio Pessa Ribeiro (Lawyer, Journalist, Professor and Consultant in the Business and Environmental areas, practicing law for forty-five years. He is a member of the Environmental Law Commission of the Brazilian Bar Association (OAB). He was president of the Venturi Institute for Environmental Studies)

Recycling is doing magic program: This is a PET plastic reverse logistics model in full operation in Rio Grande do Sul since 2019, which delivers much more than reverse logistics, it delivers environmental education, with actions in schools and entities, promoting the change of culture towards the circular economy, remunerating the entire value chain. This program contributes to achieving the goals of the packaging sector agreement (Federal Law 12,305/2010). It was awarded 1st place in the Social Commitment; Transformer category at the Plstico Sul 2022 Awards, competing with more than 90 projects from companies in So Paulo, Paranacute; Santa Catarina and Rio Grande do Sul.

Jeferson Alberton(Program Manager; Partners: Instituto Venturi and Plásticos Bellaforma)

Zero Waste Lab POA: Implemented at TECNOPUC/Catholic University, the Zero Waste Porto Alegre (POA) Laboratory is a living laboratory with the aim of connecting people and initiatives to disseminate, research and adopt technologies that support the application of the Zero Waste concept in communities, governments, innovation ecosystems and organizations. The Lab seeks to contribute to a more aware, participatory society and more active citizens, impacting the local and regional economy with innovation, technology and sustainability.

Lucas Oliveira Fontes – Greenthinking (Partner of Instituto Venturi)

3.1.526 Key messages

The session presented examples of how to put environmental education into practice based on projects that strengthen continued training and its relationship with formal environmental education.

Three examples were presented in different environments:

1) teacher training;

2) formation of a recycling culture at school;

3) development of projects in a zero waste laboratory.

The experiences were presented based on their methodological content and the results achieved. The possibility of replicating such projects in other countries was discussed and it

was reinforced that these proposals began in Rio Grande do Sul, which is the headquarters of the Venturi Institute, and are being consolidated in other regions of Brazil. The methodological basis supports the discussion in the scientific and technological environment with the theoretical support of these proposals that strengthen the theoretical and applied knowledge of formal environmental education.

It is also important to correlate the SDGs with the federal legislation of each country since adherence to the 2030 Agenda is voluntary. In Brazil, for example, the National Environmental Education Policy (Law 9,795/1999) aims to protect the environment and its sustainability, and this Law requires decision makers to provide this knowledge from early childhood to high school levels, however the Law is not fulfilled in its entirety.

The Venturi Institute has worked steadily to convince judicial and government authorities to comply with Law 9,795/1999. It is worth mentioning that this same Law is an instrument for implementing other Federal Laws, such as Solid Waste and Basic Sanitation. Hence the importance of Environmental Education being implemented in formal education, therefore, continued training is essential to prepare teachers, who are those who, in fact, will help in achieving the goals of the Sustainable Development Goals, through the science and technology practices taught to its thousands of students within the educational and methodological planning of environmental education in school curricula.

Expand understanding of environmental education

Create public bodies that develop and articulate environmental education actions

Strengthen environmental education actions through schools

Create a bank of environmental education cases, with results achieved, to strengthen benchmarking between countries, especially in the southern hemisphere

Stimulate an environment for discussing practices and environmental education with access to everyone (regardless of educational level or mother tongue)

3.1.527 Collaboration outcomes

The cases presented in other panels and the integration with the organizers allowed for a mapping of possible partners, cooperation and future joint work. It is expected that these actions will be consolidated with a view to continuing them for the next meetings.

3.1.528 Building inclusion and equity

This is a problem that all organisms would need to worry about. The audience was limited because there was no simultaneous translation and many interested parties in Brazil were unable to access due to language restrictions. There should be broad support for this issue, including a platform in several languages. Environmental education takes place in Brazil, as in many countries, in schools and many teachers do not have command of other languages.

3.1.529 Key lessons learnt

The main lessons learned are that we still need to be more inclusive. We treat the topic as inclusive, but the practice itself excludes many, especially those in the southern hemisphere.

We need to understand that the development process is not peculiar to a few, but is necessary and involves everyone regardless of academic background, knowledge of other languages, income, creed or any other characteristic.

Therefore, the work of the Venturi Institute effectively starts with inclusion and this need to expand in all media, including SUMMIT.

Session 113: Expanding scientific frontiers via international cooperation and networking with COST and NSF

Session Convenor
Katalin Alföldi, COST Association, Policy and Communications Department
Kara C. Hoover, US National Science Foundation, Office of International Science and Engineering

Position
Katalin Alföldi, COST Association, Policy officer, Task Leader for International Cooperation, Katalin.alfoldi@cost.eu
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Organisation
COST Association, EU
National Science Foundation, USA

Country
European Union,
United States of America

3.1.530 Abstract

The session is co-organized by the US National Science Foundation AccelNet Program and the European Cooperation in Science and Technology, the COST Programme. We aim to promote the value of international networking to the advancement of science using examples from funding programs.

The session includes an overview of the model used by each program, the scope of international collaboration, and informal presentations by teams funded through both programs about their collaboration and building international networks of networks.

The session will end with a “meet & greet” opportunity for interested participants to talk to funded teams about their experience or learn more about the models and details of the various funding schemes discussed.

COST (European Cooperation in Science and Technology) is a European funding organisation for research and innovation networks. Its Actions help connect research initiatives across Europe and over the globe while enabling researchers and innovators to grow their ideas in any science and technology field and share them with their peers.

The open and inclusive characteristic of COST Actions establishes and maintains the international research partners’ long-term collaboration built on trust and achieving breakthrough scientific results. COST Actions are bottom-up networks with a duration of four

years that boost research and innovation while providing opportunities for researcher mobility and career advancement.

The AccelNet program funds networking activities to coordinate the efforts of multiple independent research networks at the international level in cooperative team science.

The program welcomes proposals in any area funded by the National Science Foundation, particularly those addressing grand research challenges identified within research communities and/or NSF.

The program is based on a model of science as a global effort resulting in highly cited papers featuring diverse research teams working for mutual benefit. The program emphasizes collaboration rather than competition in the pooling of expertise and resources that accelerate science and scientific exchanges that foster science diplomacy.

3.1.531 Key messages

International scientific networking is crucial for science to progress since no single country has access to all the necessary facilities and expertise. SDGs, while focused on particular topics, more broadly include how science is conducted.

Through international collaboration, AccelNet and COST help teams make connections to leverage resources, exchange talent, and coordinate efforts in an unprecedented way to advance science. Such cooperation reduces fragmentation that arises from replicating efforts by pooling knowledge and resources, identifying most productive pathways forward and assigning tasks to teams best equipped.

It also lifts barriers to science due to global inequities in research infrastructure and diversifies participation—a key factor in innovation and cutting-edge science.

Our teams, funded in each country by either COST or AccelNet provided their specific examples of how international networking funds have advanced their science in way that would not have been possible through ordinary research grant support. The ChETEC COST Action developed an Infrastructure sharing platform that opened access to data across networked teams.

NexusNet COST Action and Accelnet Sustain Food highlight the importance of the interactions between these systems through the Water-Energy-Food Nexus concept by focusing on recognizing the interconnected risks to water, energy and food security and connecting the research and policy-making communities over continents.

Accelnet IReNA expanded scientific scope (e.g. towards simulations of galaxies) and geographical reach (with the addition of countries like Canada, Brazil and Mexico) and exchanged data and researchers to more effectively advance key questions share across their networks. Such cooperation creates opportunities for early career researchers through collaboration with global experts.

International scientific networking expands resource access, which reduce barriers to participation. AccelNet Irena has managed to leverage resources (access to equipment and data access for example) to partners who previously were scientifically isolated. Reduction in barriers benefits teams mutually through the new perspectives brought by sharing resources

and larger number of researchers working on the core problems, which promotes sustainability. SustainFood centers Africa as a partner and brings together African researchers in Africa through workshops that expose regional approaches to localized challenges—efforts that NexusNet is part of as well.

These networks of networks are growing exponentially and creating a global web of researchers directly focused on meeting SDGs in their applied multi-disciplinary fields of research. These networks demonstrate the power of removing disciplinary silos to address complex global problems. Without the time and space to bring together leading experts taking different approaches to different aspects of the problem, the science will not be advanced as rapidly.

Science is not a universal language. There are tremendous benefits to international research coordination but the first step is learning to listen to other views--of how to conduct science and who the stakeholders and partners are. Making meaningful connections before engaging in advancing science is the critical lesson learned across teams--and that lesson makes them stronger!

- To have ambitious goals and a visions as it brings people together and the group always wins versus working isolated and alone. Learning to learn again, scientists must learn to be humble and reali
- To work against fragmentation and duplication of research efforts, build trust and create a web of communication channels, allow science to happen outside politics and break down the silos.
- To have more space and funding available for international scientific networking, to talk f2f and get inspired across interdisciplinary teams having basic and applied researchers on board.
- Collaboration and international cooperation are the crucial to share expertise and it accelerates the opportunities to go further.
- Collaboration teaches to keep trying despite failure and get to the results and breakthroughs needed.
- Scientists must learn to be humble and realize that they need to listen more to connect and advance their goals.
- International scientific networking require enthusiasm and commitment and it brings results which show that 2+2 > 4.
- A key challenge beyond funding is political interference with scientific aims—a critical example is the Russian war with Ukraine and concerns regarding China. These political issues disrupt and often

3.1.532 Collaboration outcomes

The session was co-convened by two funding organizations that see the event as the first concrete step towards a possible formal agreement between them, building on their synergies. Such an agreement would have important implications for reinforcing international scientific networking by facilitating network of networks creation. Another possible outcome is

facilitated join PI meetings to help teams make connections. We observed here and in our PI meetings, that teams learn from each even if the questions asked are as different as astrophysics and sustainability.

3.1.533 Building inclusion and equity

The session's inclusivity was characterized by the involvement of funding schemes from different continents, having a gender and age balance among the speakers, giving voice to young researchers, running the session online and in person at a venue accessible for reduced mobility.

3.1.534 Key lessons learnt

• Lessons learnt includes the experience of the co-convenorship and the importance and respect of cultural differences when working together with colleagues from different continents.

• Furthermore, the value of advertising the event via diverse mode such us direct channels to targeted audience and via social media for a larger outreach as it resulted in a large number of registration. A disappointment and non-fully understood outcome is that in spite of the great efforts of raising awareness about the session, and the large number of registered people, the actual turn-out was very low.

Session 114: Earth for all- Earth for all? Turnarounds to reach SDGs Implementation

Session Convenor
Friedrich Hinterberger and Meike Bukowski

Position
Vice President of the Austrian Chapter of the Club of Rome and Senior Scientist at the University of Salzburg

Organisation
Austrian Chapter of the Club of Rome and University of Salzburg

Country
Austria

3.1.535 Abstract

Since publishing the first report, "The Limits to Growth", the Club of Rome has stood for future thinking and a scientific reputation. Building on this, the Earth4All Initiative - initiated by the Club of Rome - published another report to the Club of Rome in September 2022, "Earth4All - A survival guide for our planet”.

In light of the Earth4All scenario; Too Little too Late - business as usual”, the question remains if we continue as we have for the last 40 years or create the giant leap ("The Giant leap") - a vision for a sustainable global society at the end of this century? To qualify this leap, Earth4All identified five turnarounds with 15 proposed actions that can have a major impact.

The governments of Austria and Kenya are the first countries to transform this vision into national policy. The Club of Rome brings together a collective of organizations and individuals who will contribute their expertise in the respective areas and ensure the dissemination of the results. The aim is to gather experiences that can then be implemented in other countries and regions. We want to inspire and empower people to take action with this positive vision.

In times of multiple crises, the transformation towards a sustainable future and well-being for all, as proposed in the Agenda 2030 with the SDGs, is at risk. The implementation of the SDGs and their targets depends on the ability to overcome the single focus on each goal, taking into account their entanglement, trade-offs and synergies on a national but also on a personal level. Often environmental awareness and environmental actions drift apart (politically and personally).

To understand and analyze these vast interdependencies, reaching out to the people with no one left behind, the latest initiative of the Club of Rome: "Earth4All - A survival guide for our planet”, provides support and guidance. This includes the demand for an economic system change by upgrading our economic system with five extraordinary turnarounds: Eliminate Poverty, Address Inequality, Women’s Empowerment, Transforming the Food

and Energy Systems. If implemented in the next decade, we can shift the economic system toward well-being for all within planetary boundaries.

In this vein, the Club of Rome started the E4A implementation initiative with two pilot countries (Austria and Kenya). For both countries, E4A/SDG modelling is being conducted. For this, the Club of Rome Austrian Chapter triangulates the system dynamic E4A/SDG modelling (Millennium Institute) with participatory means (UniNEtZ), including Inequality and Poverty Assessment modelling and arts-based approaches (UniNEtZ, an SDG University Network).

The researchers have developed co-creative and participative ways to integrate the public into a participatory modelling process. A process that aims to enable stakeholder-driven SDG/E4A implementation that is related to stakeholders’ future visions, sub-goals, targets and indicators.

By this, we aim to provide inclusive scientific ideas and options for political and societal actions to further sustainable development and to overcome trade-offs between economic and ecological as well as social interests.

This Session introduces the mentioned CoR initiatives and scientific approaches accompanying the Earth for All implementation process with short scientific inputs, followed by a transdisciplinary discussion with political stakeholders (ministries’ representatives from both pilot countries). Impulse lectures followed by discussion with the audience and a panel session, moderated by the council chair of UniNEtZ. UniNEtZ was invited by the Club of Rome as an university network, that includes 21 Austrian universities dealing with the implementation of the SDGs. For the panel discussion different stakeholders (NGOs, policy makers, business representatives) will discuss the SDGs- and Earth for All affiliated works, experiences and ideas for practical implementation.

Expected outcomes

The aim is to gather experiences, introduce innovative approaches and provide tools such as (participative) SDG Modeling etc., that can be transferred to the E4A implementation of other countries and regions. Therefore, the expected outcomes are constructive SDG/E4A future visions, goals and indicators driven by the stakeholder involvement with scientific means, like the triangulation of system dynamics (CLDs) as well as leave no one behind (LNOB) related analysis models (all levels) and arts-based visioning practices.

The first steps and activities for the implementation of these turnarounds and the corresponding measures in the sense of a "Wellbeing Economy" are planned in the following four areas, which will also complement and enrich each other: citizen engagement, advocacy, research, and public outreach. We want to inspire and empower people to take action with this positive vision.

;

For the wellbeing of our audience:

We will have a musical interlude with Mira K. from Bremen, Germany, an exeptional singer-songwriter, and partner in our co-creative arts meets science projects

The Panel Session featuring:

1 Petra Bayr, member of the Austrian National Assembly, chairperson of the subcommittee for development cooperation

2 Nelya Rakhimova, Sustainable Development Specialist, Ph.D, SDG Watch

3 Georg Reibmayr, Federal Ministry for Social Affairs, Health, Care and Consumer Protection, Austria

4 George, CEO of the fair-finance Vorsorgekasse part of Sinnova Group (pension insurance fund)

5 Franz Fehr, Chairpseron of the Uninetz council, and University of Natural Resources and Life Sciences, Vienna (Boku)

3.1.536 Key messages

Highlight essential messages, examples, and outcomes you feel can contribute to a greater understanding of science and innovation within the context of achieving the SDGs, the UN Summit of the Future in September 2024 and the post-SDG Agenda more generally.

The session presented and discussed the global vision of “Earth4All”, a recent report by the “Club of Rome” in relation to the implementation of the SDGs, and zoomed in on two countries which are pioneers in the national implementation of Earth4All: Kenya and Austria. Earth4All describes an analytical model of how the future issues of our planet could be addressed in order to transform human development in low income countries, transform wealth distribution, energy systems, and the food systems, to empower women, and to invest in education for all.

In doing so, Earth4All not only has an important hinge function in promoting exchange between the scientists and administration who together work to achieve SDGs and sustainability in general, but it also enables a comprehensive view of the current challenges of our time from a well-being perspective.

In order to make this new approach better known and concretely usable for policy-makers and societies as a whole, both in the Global South and the Global North, and thus to achieve its connectivity for national actors, the four upcoming work streams presented in the webinar have to be comprehensively addressed: research, citizen engagement, advocacy, and public outreach.

Earth4All shifts the view from an extractive GDP based economy to an economy that takes into account the social and environmental risks in financial and economic decision making and ultimately to an economy that is fundamentally based on a variety of economic models, such as wellbeing, and circular, regenerative, and doughnut economics “beyond GDP”. Key

points are to expand the provision of public goods, to bring back the capacity of the state, and to rethink how we reward environmental and social commons. Another key point is to reduce inequalities between the Global North and Global South, as well as within societies.

Since the SDGs cannot be implemented through a top-down approach alone, participative approaches incorporating and empowering the people are essential. Examples from both Kenya and Austria were presented to show how a combination of the SDGs and the Club of Rome's Earth4All “turnarounds” can further and accelerate the needed sustainable transformation.

Partnerships for the SDGs and beyond are vital to reach a sustainable future for all (The Higher Education Sustainability Initiative HESI is a good example of this). To identify synergies and trade-offs between the SDGs in order to overcome the barriers of SDG implementation, there is an urgent need for more SDG- inter-and transdisciplinary research and research funding opportunities.

A special focus was taken to Africa. The African Union's Agenda 2063 and the Earth4All Initiative both champion sustainability, equity, collaboration, and innovation as core principles.

To realize these shared aspirations across the continent, policymakers throughout Africa should consider the following recommendations:

i. Prioritize integration: Incorporate sustainability and equity principles into national policies to address pressing challenges.

ii. Promote collaboration: Actively encourage cross-national collaboration to leverage collective expertise and resources.

iii. Facilitate technology transfer: Facilitate the transfer of sustainable technologies and practices among African nations.

iv. Ensure inclusivity: Ensure inclusive public engagement, with a specific focus on women, youth, and other marginalized groups and communities.

v. Leverage global partnerships: Harness the potential of global partnerships to amplify efforts and resources.

By collectively implementing these recommendations, Africa can work together to build a future marked by prosperity, equity, and sustainability, benefiting individual nations and the entire continent.

3.1.537 Collaboration outcomes

We met leaders from institutions who have interest in the Earth4All work and are ready to help champion campaigns in order to rally stakeholders who can support uptake of key policy and practice messages emanating from Earth4All work. No doubt that the extent of this has been limited by the fact that our event was virtual.

3.1.538 Building inclusion and equity

Speakers were a blend of scientists, policy makers, varied in gender, both younger and senior. We can make it more inclusive next time e.g. youth, persons with disabilities... Participation was also quite inclusive.

3.1.539 Key lessons learnt

Interconnectedness of work and interest across the globe is there and still needs to be deepened. Earth4All engagement is prompt and persistent, making it/ and it is and attractive to many interested in SDG implementation and also those already thinking beyond the Agenda 2030.

Session 115: Open Sciences comprehensive Overview

Session Convenor
Odountan Ambaliou Olounlade

Position
Executive Director

Organisation
Centre of Actions for Food Security and Sustainable Development (CASAD-Benin)

Country
Benin

3.1.540 Abstract

In 2021, UNESCO invited world regions to discuss shared values, principles, and standards in its 'Recommendation on Open Science'. This year, the " Centre d'Actions pour la Sécurité Alimentaire et le Développement Durable (CASAD-Benin)", organize under the Science Summit at UNGA78 the Open Science Session valuing a diversity of research outputs, broadening research assessment systems, incentives to reward quality and variety of research, and incentivizing cross-disciplinarity and citizen science.

The goal is to bring clarity to an increasingly complex transition and the sprawling number of interlinked initiatives that affect the future of the research and innovation landscape. The plenary sessions will focus on strategy and direction and will set the stage for practical, action-oriented breakout discussions. The session is one of the first to establish and explore equity as a key consideration in its own right when discussing Open Science.

The panel discussion will then open for a broader question-and-answer session with the audience.Participants are invited to discuss the many facets related to the transition in a highly interactive event that specifically covers:

Open Access to all types of research outputs

Open Science and society, including equity

Access to and use of open research infrastructures

3.1.541 Key messages

Open science is a transformative approach to research and knowledge-sharing that emphasizes transparency, collaboration, and accessibility. It involves making scientific data, research findings, and publications openly available to the public and the global research community. This promotes greater accountability, accelerates scientific progress, and fosters innovation. Open science is a powerful tool for advancing knowledge and addressing complex global challenges, contributing to a more inclusive and collaborative scientific

landscape. The open research infrastructure issue needs more attention to provide more equitable access to and use it. Open science infrastructures are the shared research infrastructures that are necessary to support open science and serve the needs of different communities.

There are several outcomes that can contribute to a greater understanding of science and innovation within the context of achieving the Sustainable Development Goals (SDGs), the UN Summit of the Future in septembre 2024 and the post-SDG Agenda more generally:

1. Interdisciplinary Research: Encouraging interdisciplinary research that brings together experts from various fields can lead to innovative solutions for complex global challenges. This can help bridge the gap between different scientific disciplines and foster a holistic approach to SDG implementation.

2. Open Access to Data and Research: Making scientific data, research findings, and publications openly accessible can facilitate knowledge sharing and collaboration among scientists and innovators worldwide. This transparency can accelerate progress toward the SDGs.

3. Collaboration and Partnerships: Building partnerships between governments, academia, industry, and civil society can facilitate the development and deployment of innovative technologies and solutions that address specific SDGs, such as clean energy, healthcare, or food security.

4. Education and Outreach: Investing in science education and public outreach programs can increase scientific literacy and awareness about the importance of innovation in achieving the SDGs. This can empower individuals to contribute to sustainable development efforts.

5. Ethical Considerations: Promoting ethical research and innovation practices, including responsible AI and biotechnology development, ensures that scientific advancements align with the principles of sustainability, equity, and social justice.

6. Policy and Regulation: Developing supportive policies and regulations that incentivize sustainable and innovative practices can create an enabling environment for scientific research and technological innovation to thrive.

7. Monitoring and Evaluation: Implementing robust monitoring and evaluation mechanisms can assess the impact of scientific and innovative interventions on SDG progress, helping refine strategies and allocate resources effectively.

These outcomes collectively can foster a greater understanding of the role of science and innovation in achieving the SDGs and drive meaningful progress toward a more sustainable and equitable future.

8. Increasing investment in open science infrastructure and services
9. Promote Sensitization amongt research institutions, universities, scientific unions and associations, and societies to improve the practice of open science
10. Develop diversified, long-term funding models that guarantee the equitable participation of scientific producers from less-favored institutions or countries

11. Encourage equitable public-private partnerships for open science, and involve the private sector in open science
12. Promote best practices when it comes to the use and access to research infrastructures

3.1.542 Collaboration outcomes

The Open Science Summits fostered collaboration, knowledge sharing and the promotion of open science principles. We discussed best practices, policy recommendations and commitments to improve transparency and access to scientific research. We have forged collaborations with several organizations in order to develop concept notes aimed at bringing open science to the forefront in Africa.

3.1.543 Building inclusion and equity

Our session was open and allowed everyone to participate in the debate. The convenor that I am, I designated the participants to give their point of view on each theme. This made it possible to enrich the session with very interesting and enriching exchanges.

3.1.544 Key lessons learnt

I learned at this summit about Open science several valuable lessons:

1. Collaboration is Key: Open science encourages collaboration among researchers, institutions, and the public. It has shown that collective efforts can lead to more robust research outcomes and innovative solutions to complex problems.

2. Transparency Builds Trust: Openly sharing research data and methods enhances transparency and trust within the scientific community and with the public. It reduces the potential for bias and misconduct, fostering a culture of integrity.

3. Access to Knowledge Empowers: Providing open access to scientific publications and data democratizes knowledge. It ensures that information is accessible to a wider audience, including individuals and communities that may have been excluded in the past.

4. Accelerating Scientific Progress: Open science accelerates the pace of discovery by allowing researchers to build upon existing work. This reduces duplication of effort and enables quicker advances in various fields.

5. Challenges of Data Privacy: Balancing open access with data privacy concerns is a challenge. It's crucial to establish protocols and ethical guidelines to protect sensitive information while still promoting openness.

6. Policy and Funding Support: Governments, institutions, and funders play a critical role in promoting open science through policies and funding initiatives that incentivize transparency and collaboration.

7. Cultural Shift: Embracing open science requires a cultural shift within the scientific community. Researchers must be willing to share their work openly, and institutions need to recognize and reward these efforts.

8. Global Impact: Open science has the potential to address global challenges like climate change, healthcare disparities, and food security by enabling researchers worldwide to collaborate on solutions.

In summary, open science underscores the importance of openness, collaboration, and accessibility in research. It has the potential to reshape the scientific landscape and contribute to more equitable and impactful scientific progress.

Session 116: Opportunities: Renewal Oceans, and Sustainable Maritime Industry Innitiatives

Session Convenor
Karen Mulberry

Position
Sr Manager, Public Affairs IEEE SA

Organisation
The Institute of Electrical and Electronic Engineers (IEEE)

Country
United States

3.1.545 Abstract

Opportunities: Renewable Oceans, and Sustainable Maritime Industry Initiatives"

This session presents a unique opportunity to bring together a consortium of experts, industry leaders, and innovators dedicated to addressing the ocean’s technical and climate change policy challenges.

To reach Ocean sustainability requires many different actions from marine-based carbon dioxide removal (mCDR) to the maritime industry actions to address ocean pollution and environmental sustainability.

This session will include a blend of insightful speakers, engaging panel discussions, and opportunities to discuss what is currently underway to address ocean sustainability and maritime industry actions on what policies and regulatory actions are needed to support a sustainable ocean.

Welcome and Opening Remarks: Saifur Rahman, IEEE President

Panel - Opportunities: Ocean-Climate Solutions; IEEE Oceanic Engineering Society (OES)

The session will introduce the need, importance, and technical and policy challenges associated with marine-based carbon dioxide removal (mCDR). Starting with a broad introduction and its relation to the SDGs. Speakers will focus on its social relevance, government issues, monitoring, reporting and verification of mCDR and will highlight the importance of the interaction between industry, technology, and policy. CDR alone also isn't enough. We still need emission reduction first, renewable shipping propulsion and CDR.

All pathways to meeting the Paris Agreement targets require substantial amounts of CDR. The ocean is the largest carbon sink on the planet and holds the potential to supply a substantial fraction of the required sequestration, but the required technologies are immature.

Additionally, MRV is technically challenging, yet essential to prove the required technologies and support effective data-based policy and governance.

Opening Remarks: Christopher Whitt, President IEEE Oceanic Engineering Society (OES)

Moderator: Giulia de Masi, IEEE Women in Engineering (WIE), Propel Laureate for the OES

Romany Webb, Deputy Director, Sabin Center for Climate Change Law, Adjunct Assistant Professor of Climate, Columbia Climate School, Research Scholar, Columbia Law School

Adam V. Subhas, Woods Hole Oceanographic Institution

Matthew Eisaman, Associate Professor, Department of Earth & Planetary Sciences, Yale University

Will Burt, Chief Ocean Scientist, Planetary Technologies, Adjunct Professor (FGS) - Department of Oceanography - Dalhousie University

Panel - Sustainable Maritime - Decarbonization via electrification in marine transportation

Opening Remarks and Moderator:

John Prousalidis, Professor, National Technical University of Athens (NTUA), School of Naval Architecture; Marine Engineering (S-NAME)

Leonidas Evgenidis-Demetriadis, President of Eugenides Foundation

Mr Ricardo Batista, European Commission – Directorate General for Mobility and Transport, Brussels – Belgium

Mr. Zeno D'Agostino,President of the Ports of Trieste and Monfalcone - President of ESPO

Dr Alex Papalexopoulos, President & CEO of ECCO International Inc., CEO and Chairman of the Board ZOME Energy Networks, Inc.

Closing Remarks: Karen McCabe, Senior Director, Public Affairs & Marketing Communications, IEEE Standards Association

Session Expected Outcomes *

This session will identify the technical and policy challenges that ocean sustainability is currently facing, outline roadmaps and identifying areas where further work is still needed.

The first panel will result in a summary of what is needed to enable MRV for mCDR. This summary of technical and policy challenges will inform an upcoming workshop organized by IEEE Oceanic Engineering Society, in which 20-30 domain experts will explore in detail the technology steps needed for effective MRV to be applied at the scales needed.

The panel second will note the challenges that maritime decarbonization has encountered. For example, electrification, where applicable, offers flexibility to this end but requires formulation of the regulatory and green electricity pricing policy framework so that the maritime sector is aligned with the electric energy market rules. Including identifying new types of electric grids that need to be developed for shipping ports and onboard ships to meet decarbonization targets.

3.1.546 Key messages

The IEEE session focused on two key ocean sustainability topics: the importance of marine-based carbon dioxide removal (mCDR) and case studies and examples of what is being done by the maritime industry to address sustainable shipping and port solutions to reduce their environmental impact.

IEEE President, Saifur Rahman opened the session and noted the importance of oceans in the context of climate change. Oceans play a significant role in absorbing a large portion of excess heat from greenhouse gasses and redistributing it around the planet. They also act as a carbon sink, absorbing vast amounts of CO2. However, as the oceans warm due to climate change, their capacity to absorb CO2 is affected. This warming also impacts weather patterns, making events like hurricanes more destructive due to the increased moisture in the atmosphere. The increased severity of hurricanes is an example of how ocean warming intensifies the impact of climatic events. Rahman also highlighted the work of the Oceanic Engineering Society (OES).

The first panel, "Opportunities: Ocean-Climate Solutions", comprised of IEEE Oceanic Engineering Society (OES) members:

Christopher Whitt, President IEEE Oceanic Engineering Society (OES)

Giulia de Masi, IEEE WIE (Women in Engineering) Propel Laureate for the Oceanic Engineering Society, Principal Scientist, Technology Innovation Institute, Abu Dhabi, UAE

Romany Webb, Deputy Director, Sabin Center for Climate Change Law, Adjunct Assistant Professor of Climate, Columbia Climate School, Research Scholar, Columbia Law School

Adam V. Subhas, Woods Hole Oceanographic Institution

Matthew Eisaman, Associate Professor, Department of Earth & Planetary Sciences, Yale University

Will Burt, Chief Ocean Scientist, Planetary Technologies, Adjunct Professor (FGS) - Department of Oceanography - Dalhousie University

The panel focused on marine carbon dioxide removal as a solution to ocean sustainability noting that the ocean plays a vital role in the carbon cycle. Notably, it absorbs about a quarter to a third of all CO2 emissions, with the land taking up a similar proportion and the remainder staying in the atmosphere. It emphasized that the ocean is not a mere bystander but actively affected by human-induced changes, including warming and chemical alterations like ocean acidification due to CO2 absorption.

Panelists also noted that to combat the worst effects of climate change, the world needs to follow a specific trajectory of emissions reductions over the next century. Conventional solutions, like renewable energy sources and efficient energy distribution, are part of this. However, a key component is the active removal of CO2 from the atmosphere, known as carbon dioxide removal.

The deep ocean holds vast potential for carbon storage, containing significantly more carbon than the atmosphere or the land. As such, the ocean stands out as a primary reservoir for carbon storage. Various techniques are being explored to manage carbon in the ocean, from biological solutions like seaweed farming and nutrient fertilization to chemical methods that focus on altering the seawater's acid-base chemistry.

To make progress, both private and public sectors need to fund research and development. Presently, the private sector's commitment, driven mainly by the voluntary carbon market, surpasses that of governments. However, international cooperation and transparency are vital for the success of these efforts. The ocean's dynamic nature means monitoring carbon storage will be a challenge, necessitating robust measurement and observation networks.

Overall, ocean-based carbon dioxide removal is a promising but complex avenue in the fight against climate change, with opportunities being developed by startup technology companies such as the Yale Center' s focus on enhancing natural solutions for carbon capture, specifically ocean and geological capture, and the startup company, "Planetary," which focuses on carbon removal and ocean deacidification.

Discussants in the session observed that the current governance frameworks, and international agreements are inadequate, this includes the United Nations Convention on the Law of the Sea and the London Convention and Protocol, that indirectly touch on topics related to MCDR. Resolutions under these conventions take a skeptical stance on mCDR and impose restrictions on its research and implementation. For example, a decision by the Convention on Biological Diversity in 2010, emphasized restricting geoengineering activities due to their potential impact on biodiversity, with exceptions for small-scale research in controlled settings. This creates a dichotomy between global climate and ocean governance regimes.

There is still much to be done by governments and in partnership with the private sector to enable ocean-based carbon dioxide removal. Education and effective communication are crucial, ensuring that scientific information and findings are accessible to policymakers and the public.

In essence, while there is a lot of potential in emerging technologies for carbon removal, it is essential to ensure environmental safety, engage the public, and establish ethical and legal frameworks to oversee their deployment.

The second Panel, “Sustainable Maritime - Decarbonization via electrification in marine transportation”, was organized by the IEEE Sustainable Maritime Industry Connections Activity under the IEEE Power & Energy Society Maritime Systems, by members:

Dr. John Prousalidis, Professor National Technical University of Athens (NTUA), School of Naval Architecture & Marine Engineering (S-NAME)

Leonidas Demetriades-Eugenidis, President of Eugenides Foundation

Mr. Ricardo Batista, European Commission – Directorate General for Mobility and Transport, Brussels - Belgium

Mr. Zeno D’Agostino, President of the Ports of Trieste and Monfalcone - President of ESPO

Dr Alex Papalexopoulos, President & CEO of ECCO International Inc., CEO and Chairman of the Board ZOME Energy Networks, Inc.

The maritime sector is undergoing significant transformations to become more sustainable. Panelists, consisting of shipping and port management experts, placed a strong emphasis on sustainable maritime and port initiatives. The primary focus of the speakers was on decarbonizing marine transportation through electrification. These industry experts provided real-world examples of efforts to promote ocean sustainability. However, they also emphasized the considerable challenges that the global maritime sector faces in its pursuit of sustainability.

The shipping industry is actively adopting various measures to decrease its carbon footprint. Some of these measures include the implementation of greenhouse gas treatment methods, utilization of alternative fuels, and the introduction of innovative machinery and storage procedures.

Concurrently, ports are integral to this transformation. As highlighted by the example of the port of Trieste in Italy, electricity is seen as a pivotal alternative fuel. It forms the foundation for numerous decarbonization projects. For ports to fully embrace this transformation, steps such as fortifying a resilient grid, incorporating energy storage systems, and investing in smaller-scale projects like photovoltaic systems and batteries are crucial. This shift denotes the comprehensive energy evolution of ports.

Also, it was noted that a holistic approach is essential when addressing the environmental challenges in the maritime sector. The entire supply chain, from shipping to ports, requires a coordinated strategy. Collaboration between various stakeholders like academia, industry, and governments is vital. Funding research to decrease the industry's carbon footprint is crucial.

Furthermore, it's understood that no single solution can tackle all the challenges. A multidisciplinary, step-by-step approach is needed. Technology plays a pivotal role, especially onshore power technology, which can mitigate emissions and noise at ports. The aim extends beyond just electrifying the ship-to-shore interface; it includes electrifying other segments, such as cargo handling, and the incorporation of more renewables within ports.

To support Maritime electrification, the maritime electricity market is gearing up for several advancements, especially concerning the electrification of ports and their integration into the global energy market. The overarching goals are sustainability, resilience, and energy justice.

- Policies to enable ocean-based carbon dioxide removal
- European Commission "Fit for 55" package and its importance for onshore power supply to Maritime electrification
- Need for clear regulatory framework for the electrification of ports, and the incorporation of renewables within ports
- Need to update ocean governance frameworks to address global climate research and funding

- Partnership role between governments, industry and private sector to educate and communicate critical scientific findings so they are accessible to policymakers and the public
- Need to relook at geoengineering restrictions to enable more research and implementation of solutions
- It is essential to ensure environmental safety, engage the public, and establish ethical and legal frameworks to enable ocean sustainability and emerging technology deployment.

3.1.547 Collaboration outcomes

Partnerships within the Maritime industry to address climate change through development of electrification solutions, and power and energy synergies that will decrease shipping and ports carbon footprint. Such as the Port of Trieste (Italy) partnership to evolve the port, its rail system and supply chain to better prepare for maritime electrification for ocean sustainability and prepare for climate change.

Identification of the critical role that electrical engineering plays in ocean sustainability and the importance to developing educational programs

The importance of addressing ocean acidification due to CO2 absorption and the importance of project like the Yale University Center's focus on enhancing natural solutions for carbon capture, specifically ocean and geological capture, and the startup company, "Planetary," which focuses on carbon removal and ocean de acidification, which are working with local governments to trial solutions to address marine carbon dioxide removal.

3.1.548 Building inclusion and equity

Speakers and panel members came from many geographic areas with both men and women experts represented

3.1.549 Key lessons learnt

Diversity of thought and unique solutions are the key to addressing the UN Sustainability Goals.

That partnerships between policymakers, researchers and the public are critical to implementing solutions.

The importance of skill development and education to address ever changing climate impacts.

Session 117: Advanced Tools for Analyzing Poverty, Climate and Environmental Changes

Session Convenor
Björn Halleröd

Position
Professor

Organisation
University of Gothenburg

Country
Sweden

3.1.550 Abstract

Introduction and aims

The 21st Century has witnessed the rapid development and availability of harmonized international survey data (such as MICS, DHS, LSMS, EU-SILC and the Luxembourg Income Study) which have revolutionized the analysis of poverty, health and living conditions in low, middle and high-income countries. In addition, the ability to use and analyze visual satellite data has improved rapidly. While survey data gives information about how people live, satellite data provides information about available infrastructures, e.g., roads, electrification, building and urbanization and environmental challenges such as flooding, deforestation and agricultural water scarcity.

The aim of the session is to bring researchers together to discuss:

- How to improve survey measurement of child and family poverty, in order to produce globally comparable measures.

- How to use the advances in satellite-based information to analyze poverty, living conditions and environmental challenges.

- How to combine large scale survey data and satellite data to better understand causes and consequences of poverty and environmental challenges facing today’s societies.

This session will help to set a new standard for our ability to inform policy makers about how to balance and combine social and environmental policies in order to achieve long term and sustainable poverty alleviation.

This session has been organised by the University of Gothenburg and the Bristol Poverty Institute (University of Bristol) in collaboration with UNICEF.

Abstract

In the session, we bring together researchers engaged in novel approaches to develop measures, monitoring, and understanding for both the causes and the consequences of poverty. The session will consist of six presentations and time for questions and answers chaired by Delamónica, a member of the Data and Analytics team in UNICEF.

Despite many decades of progress, hundreds of millions of people still live in extreme poverty. Consequences of the COVID-19 pandemic, economic and political turmoil, armed conflicts, and environmental challenges do not only threaten to halt recent improvements but reverse many of the gains in poverty reduction. This will be disastrous for millions of women, men and children and also drive mass migration, putting additional pressure on political systems and possibly also affecting the ongoing deterioration of the global environment.

The UN and the governments of the world agreed to eradicate poverty during the 21st Century but they currently have no suitable, valid, reliable and comparable global poverty measure with which to monitor progress towards this goal. In their presentation, Gordon, Mack, Najera and Nandy will outline their work on this issue, showing successful examples and pointing the way forward towards globally comparable consensual survey-based measurement of poverty. Nazari will describe both the process and the results of estimating child poverty using consensual measurement in Iran.

Understanding the impact of environmental conditions is of central importance because of ongoing climate changes, increasing land use and decreasing biodiversity. Bates, Neal, Sampson, Smith, and Wing will present their work on the consequences and costs of flooding based on satellite data and precise information on the geographical distribution of populations. The work gives us more precise information of the costs of flooding and provides information on how to take action to minimize future risks for people living in areas exposed to flooding and limiting the economic costs related to flooding.

Similarly, Gordon, Owoo, and Zhang have combined geocoded extreme weather-related disaster data with social survey microdata to understand and measure multidimensional vulnerability to climate change in Ghana, Kenya and South Africa, using indicators of a greater risk of harm based upon robust criteria and scientific evidence. The analyses pinpoints and profiles local areas exposed to weather-related disasters and whose communities are especially vulnerable to the impacts from such events.

Ekbrand, Halleröd, and Zhang use detailed satellite data from a large number of countries to estimate deforestation between 2000 and 2020 and combine these data with survey data on poverty. The preliminary analyses exhibit large geographical heterogeneities between deforestation and poverty, which points towards the need for more in-depth studies that include structural socio-economic conditions such as the alternative land use once an area is deforested, trade, industry, and political conditions.

Daoud will present innovative research combining deep-learning, satellite technologies and survey data on human development, recreating historical and geographical human-development trajectories using satellite images from 1984 to 2022. These data measure

poverty with unprecedented temporal and spatial granularity and enable us to start examining causality with greater precision.

Expected outcomes

All presentations demonstrate how to significantly enhance the use of available data to better understand poverty and living conditions at a global scale and in a comparable manner. Combining improved measurement of poverty with environmental data on flooding, deforesting, erosion of farmland through drought and other climate related changes will give us a deeper understanding of the challenges we are facing to eradicate poverty and improve peoples’ lives. A buildup of complex data that spans longer time periods will further enhance our ability to move from descriptions and correlations to causation. An outcome of this session will be an advanced analysis of poverty, flooding and deforestation, the latter being an important cause of flooding.

Research on poverty is at a transformative stage in providing policy makers with the high-quality knowledge they require to improve and monitor anti-poverty policies. It is particularly important to know who are poor, what are the consequences of poverty and what are the causes. However, it is also increasingly urgent to provide knowledge about the relationship, both short- and long-term, between environmental challenges and poverty. We need to better understand consequences and causes and also provide useful knowledge about how to mitigate consequences of irreversible environmental changes by reducing vulnerability and increasing the population’s resilience. Linking poverty and environmental change to the global economic and political system also illustrates the fact that what we are facing is a global challenge with a diverse local face.

3.1.551 Key messages

In 2015, the governments of all countries agreed to attempt to eradicate child and adult poverty and reduce inequality during the 21st Century. If they are successful, this will represent one of humanity's greatest achievements – arguably its greatest achievement. In order to eradicate poverty, policy makers will need both political will and adequate resources but they will also need high quality information about the extent and nature of poverty in order to develop effective and efficiently anti-poverty policies. Good anti-poverty policy requires good measurement to help target resources where they are most needed and to monitor progress as well as to identify those most vulnerable to the effects of climate and environmental changes. It is unlikely that poverty will be eradicated if it cannot be measured.

There are currently no poverty measures which can be used in all countries (Low, Middle & High Income). Current poverty measures are unreliable in most countries. New deprivation measures are needed to complement and supplement current Unmet Basic Needs indicators.

Improving the collection of survey data on poverty that are theoretically consistent, empirically robust, comparable over time and among countries, and transparent is key for monitoring poverty on a global scale and for the ability to formulate sound policy advice. The

Consensual Approach, discussed in the two first presentations, offers a method that has been tried and tested in over 50 countries and evaluated and approved by national and international statistical authorities. Survey data such as MICS, DHS and LSMS are of fundamental importance for monitoring and analysing poverty and incorporating a short Consensual Approach questions module in these surveys, and other similar surveys, would significantly enhance our ability to monitor poverty on a global scale. What is more, geocoded social surveys are of fundamental importance for more complex analyses that incorporates data on climate change, environmental hazards to identify those most vulnerable to natural disasters and develop better mitigating and protective policies.

The three following presentations showed how satellite data on flooding, deforestation and natural disasters affect poor and non-poor people differently because there are large differences in risk exposure and coping abilities. Rapid advances have been made in modelling methods that can predict future exposure to climate and environmental changes at a global level. The presentations clearly underlined the complexity of development. The massive deforestation in parts of Africa the past 20 years can be linked to both decreasing and increasing poverty. The impact and costs of flooding is increasing dramatically but so far many African societies have taken effective protective measures and built homes and infrastructure in safer locations. However, an important driver of increased damage caused by flooding is the combined effect of increasing urban populations and that the safest locations are already occupied. Again, the poor are most exposed, often being forced to settle in areas with little protection from flooding. The global flood risk presentation showed the significant importance of well-informed planning of settlements and infrastructures.

Because there is substantial heterogeneity in consequence of climate and environmental changes for different population groups, there is a need for more sophisticated analyses that can distinguish between different outcomes and provide sound explanations to why they occur. Incorporating data on global economy, industrial structures, trade, ownership, political system and quality of government are of central importance for further analyses and for evidence-based policy advice.

The final presentation took the issue back to the measurement of poverty based on satellite and survey data and artificial intelligence (AI) methods to make small geographic estimates of changes in poverty over time. Important here is that these AI-based estimations need input information from high quality survey data on poverty. Hence, if geocoded data based on the Consensual Approach questions are introduced on a large scale these AI models would continue to improve. The development of AI-based estimations is also a key for further improve analyses of how climate and environmental changes affect people and especially poor and vulnerable populations.

- Incorporating the Consensual Approach for measuring poverty in large scales surveys such as MICS, DHS and LSMS. Partners are UNICEF, US-AID and the World Bank.
- Making sure that survey data on poverty are geo-coded and made available. Partners UNICEF.
- Integrate policies on poverty with policies related to climate and environmental changes in order to form long term sustainable policies. All political organizations.

3.1.552 Collaboration outcomes

The sheer opportunity to organize a session at UNGA78 meant that we were able to bring together researchers from the Natural and Social Sciences from Africa, Asia, the Americas and Europe that previously did not collaborate. It also provided a platform for closer interaction between researchers and, first and foremost, UNICEF.

In the long run, we hope that this will strengthen the abilities to simultaneously reach several SDG goals, in fact, we see a relevance for SDGs 1, 2, 3, 10 as well as 12,13,14,15 as they all tap into areas related to this UNGA78 session.

We further hope that our session facilitates further research developments and cooperation. As we focused on advanced tools for analysing poverty AND environmental conditions, our aim is to make sure that these tools are used by the wider research community and relevant policy organizations, including the UN. From this perspective, we view the session as an important dissemination opportunity to discuss the latest scientific advances with the global policy making community.

We need to further strengthen the international cooperation amongst climate, environmental and social researchers, NGOs, and governmental organization. We sincerely hope that our session has helped with this important task.

3.1.553 Building inclusion and equity

The research groups represented incorporated researchers from two African countries, two European countries and one Asian, one Latin American and one North American country. We had slightly more male speakers, which basically reflects the relevant research groups. We want to underline that we are, to further proceed in our research endeavour, in need of further strengthening international collaboration and that the UNGA78 provides an excellent platform to do just that.

3.1.554 Key lessons learnt

That the opportunity to participate turned out to be a vehicle for strengthening international research collaboration.

That it is quite time consuming to organize a session, but also that it will be much easier next time, having learnt the procedure.

The close cooperation with New York based organization, in our case UNICEF, was invaluable.

Session 118: Advanced Tools for Analyzing Poverty, Climate and Environmental Changes

Session Convenor
Björn Halleröd

Position
Professor

Organisation
University of Gothenburg

Country
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Session 119: The role of Indigenous Peoples and Local Communities in conserving the Amazon and preventing tipping

Session Convenor
Julia Arieira

Position
Scientific-Technical Secretariat

Organisation
Science Panel for the Amazon

Country
Brazil

3.1.559 Abstract

The role of Indigenous Peoples and Local Communities in conserving the Amazon and preventing tipping points (ID section 41)

Marielos introduces the Panel and the topic of the role of Indigenous Peoples and Local Communities in conserving the Amazon and preventing tipping points

Luciana warns about the risks of the Amazon becoming a carbon source and will deliver a powerful message on the Amazon tipping point and importance of standing forests

Carmen will present an analysis of deforestation inside and outside indigenous territories (2000-2020 data) and projections for the next 5 years.

Ane will address the main threats to Indigenous territories, their significance in terms of ecosystem services, and the role of transnational initiatives in reducing these impacts.

Gasod will share some experiences of Indigenous communities in managing their territories and seeking conflict resolution solutions and explore how scientists and knowledge systems can collaborate and create space for governments and society to acknowledge and embrace these invaluable values.

Lilian will bring some challenges and opportunities to improve local capacity for territorial management of stakeholders with legitimate territorial rights.

Andre Baniwa

Experience in sustainable local development and the importance of traditional or cultural knowledge of indigenous peoples for protecting forests and climate

Marielos will connect the key findings and recommendations of the Science Panel for the Amazon to the outcomes of the preparatory meeting for the Amazon Summit concluding the session with unified recommendations from these important events ;

3.1.560 Key messages

The Amazon Forest has a major role in climate regulation with benefit the whole humanity. Evapotranspiration by trees cause cooling of the Earth's surface and minimize the effects of interannual droughts and heat waves. Between 150-200 Gt carbon are stored below and above ground thanks to atmospheric carbon sink function of the more than 400 billion trees which inhabit the 600 million hectares of the Amazon lowland.

Indigenous Peoples (IPs) rely to varying degrees on the resources of the forest, which are essential for providing them with shelter, food, fiber, security, as well as holding profound cultural and spiritual significance. They serve as the primary guardians of the Amazon Forest, having inhabited and thrived in this region for approximately 12,000 years. The concept of sustainability is deeply interwoven with the Indigenous vision of the Amazon, as exemplified by Gasodá Paiter Surui, the Coordinator of the Indigenous Cultural Center Wagoh Pakob, residing within the Sete de Setembro Indigenous Land in Cacoal – Rondônia, Brazil. He articulates that 'the Earth belongs to all human beings, and it is our mission to protect it for our own well-being and for the benefit of future generations'.

There are many socioecological transformations happening in the Amazon, including deforestation, degradation, fires, land grabbing, illegal mining, roads which come at costs of social injustice, inequalities, violence against Indigenous Peoples and local communities. The Amazon is also affected by global climate changes. The mean warming trends for the whole Amazonia was 1.02 ± 0.12 °C between 1979 and 2018. Historical trends are showing that the Northeast and Southeast Amazon are already a carbon source thanks to their high rates of deforestation, forest degradation and climate changes. 66% of the Amazon is subjected to some type of pressure that generates deforestation or degradation. If these pressures continue through a disordered occupation of space, deforestation is expected to increase more than 60% by 2025.

There is already mounting evidence that the Amazon Forest is experiencing a loss of resilience, primarily attributed to climate and land use changes. These changes manifest as extended dry seasons, an increased mortality rate among trees, and a heightened frequency of extreme drought events. The prolonged and anomalous drought, coupled with intense heatwaves experienced in the Amazon during El Niño events, pose a significant risk to the well-being of Indigenous and traditional populations residing in the region.

These alterations, in conjunction with deforestation and wildfires, are pushing the Amazon towards critical tipping points. Beyond these thresholds lies the potential for an abrupt disruption in the quality and functioning of the Amazon ecosystems, jeopardizing the long-term preservation of the rainforest, its biodiversity, and consequently the well-being of Indigenous Peoples.

Indigenous Peoples play a pivotal role in safeguarding the Amazon's ecosystems, preserving its carbon stock, buffering against climate and land use changes, and possessing invaluable biocultural knowledge about the sustainable utilization and management of the Amazon ecosystems. 34% of Amazon forests areas and carbon are inside Indigenous Territories (ITs). Xingu Indigenous Territory serves as a barrier to deforestation, regulating temperature and

climate (e.g., through evapotranspiration). Brazilian Amazon ITs are much cooler and release much more water to the atmosphere than outside areas. Inside Indigenous lands, there are only 1.5% deforestation, in comparison to 24% in the rest of the biome. Hence, by preserving the cultures and territories of Indigenous Peoples, we are simultaneously safeguarding forests and the invaluable ecosystem services they offer, benefiting not only local populations but also regions and the world at large.

The ancestral territories of Amazon Indigenous Peoples urgently require the legal recognition of their land rights. Without such recognition, numerous threats loom, including mining, road construction, dam projects, cattle ranching, logging, infrastructure development, and large-scale agriculture. In 2021, a stark statistic emerged: despite comprising only 3% of the Amazon Indigenous Territories (ITs), these areas witnessed a staggering 50% of all fire occurrences. Moreover, over 38,373 hectares of logged forest were identified within the ITs during the same period. These alarming figures serve as a compelling testament to the multitude of threats bordering Indigenous lands. The absence of protection in the face of climate and land use changes can lead to transnational repercussions with far-reaching consequences.

Additionally, emerging carbon and biodiversity-driven markets could further exacerbate these risks, potentially leading to displacement or conflicts among Indigenous communities. Hence, the demarcation of Indigenous Peoples' territories through legal means becomes a matter of critical importance for their survival and recovery from historical injustices. A noteworthy example is the demarcation of the Paiter Suruís Indigenous Territory in 1976, reinforced by decree nº 88867, which bestowed ownership rights to the Paiter Suruís Indigenous Peoples. This landmark achievement granted them the autonomy to formulate their own life plan, known as a management plan, and the ability to defend their territories against invaders. The development of this management plan enabled them to comprehend the potential of their territory and implement sustainable initiatives, including the creation of business plans for activities such as crafting, tourism, and carbon management. These endeavors strengthened their capacity for sustainable businesses. Through this plan, various groups within the territory gained autonomy to manage their own projects, empowering them to protect the forest while simultaneously improving their way of life. This approach not only enhances the visibility of Indigenous peoples but also underscores their role as self-governing and self-managing stakeholders in these spaces, rather than mere beneficiaries.

Across the Amazon, there’s little investment in infrastructure and protection of Indigenous territories, so the most effective and creative strategies are coming from the communities in an autonomous process. For this, the translation of traditional knowledge into technical language should receive support considering its associated costs. Therefore, it becomes crucial to establish financial mechanisms that can support management efforts and facilitate their implementation. To provide a concrete example, a Basic Land Management initiative spanning a decade in Bolivia would necessitate an approximate investment of USD 7,700,000. Such an investment holds the potential to yield substantial benefits, including enhanced biodiversity values, increased richness and representativeness, preservation of forested hectares, effective management of designated areas, improved connectivity both altitudinally and latitudinally, continued water provision, and the assurance of essential environmental safeguards. This needs to happen urgently, considering how long we can survive in the face of the impacts of climate change and the imminent tipping points. It is

imperative that Indigenous communities not only receive external support but also cultivate internal resilience to engage effectively with external opportunities.

- Urgently prioritize the legal recognition of ancestral territories of Amazon Indigenous Peoples.
- Invest in sustainable land management initiatives within Indigenous Territories. Establish financial mechanisms to support these efforts
- Recognize the intrinsic link between preserving Indigenous cultures and protecting forests and ecosystem services.
- Understand the importance of Indigenous Territories (ITs) in conserving the Amazon ecosystem. ITs not only help regulate climate but also have significantly lower deforestation
- Support Indigenous communities in their autonomous efforts to protect and manage their territories
- Stop deforestation, degradation and wildfires and develop a plan for conservation and restoration to Avoid amazon tipping point

3.1.561 Collaboration outcomes

During the Science Summit, we engaged with various organizations that shared their valuable experiences. One notable collaborative initiative emerged from the panel featuring Santiago Obispo and Andre Baniwa. We received greetings from Amazonas, Venezuela, and expressed a desire for a meeting to discuss heritage-related matters, specifically concerning Venancio Cristo Kamico. This collaboration is set to become a part of our stakeholder network and represents an exchange of knowledge and expertise.

3.1.562 Building inclusion and equity

Prior to the event, we initiated communication with attendees through various channels such as social media and email. We strategically posed questions to actively involve them in the core themes that would be addressed during the session. During the event, we created an opportunity for questions and answers to foster interactive engagement.

3.1.563 Key lessons learnt

The summit serves as a platform for disseminating and deliberating on regionally-rooted, science-based knowledge for a global audience. Encouraging participation in sessions lasting over an hour and a half can be challenging, but the theme of Indigenous Peoples and local communities holds significant appeal due to its relevance to numerous Sustainable Development Goals (SDGs) and climate-related issues.The success of virtual sessions relied heavily on the extensive support provided by the conveners and their dedicated team.

Session 120: Collaborative species conservation efforts in South America. Centers for Species Survival

Session Convenor
Nahomy De Andrade

Position
Executive Director

Organisation
IUCN Species Survival Commission

Country
Venezuela

3.1.564 Abstract

Reverse the Red seeks to establish and expand diverse but united species conservation networks worldwide. The Center for Species Survival model works to understand the key networks, stakeholders and conservation efforts nationally; to identify priority gaps in assessments, planning and action needed to save species and to ensure that efforts are connected effectively and have access to the necessary tools, capacity building and resources required to maximize impact.

Strategic species conservation is being taken to a whole new level by the Reverse the Red movement through the creation of an international network of IUCN SSC Centers for Species Survival (CSS). Currently there are 16 Centers worldwide, and two of them are located in South America. The CSS Brazil hosted by Parque das Aves and founded in 2019, and the CSS Argentina hosted by Fundacion Teimakn in 2020.

The objective of this session is to make visible the work carried out by CSS Argentina and CSS Brazil, and how it contributes to the conservation of biodiversity (SDG 15) by accelerating joint actions through alliances with strategic sectors (SDG 17).

Centers for Species Survival have the unique ability and capacity to articulate a plurality of actors and different actions. Fostering and promoting the constitution of effective alliances in the public, public-private and civil society spheres, taking advantage of the experience and knowledge of the scientific sector is something that the CSS Argentina and CSS Brazil have been doing and working on and that will be addressed in this session, where we propose to show the role of both centers as a catalyst for the promotion of intersectoral alliances for the conservation of biodiversity.

3.1.565 Key messages

- Especial attention to the Global Biodiversity Framework as the globally approved and accepted framework of reference to monitor progress towards some of the SDGs and conservation goals local and globally
- From IUCN SSC we are also evaluating and analyzing more deep the connection between species conservation and climate change resilience, we believe this could be key for achieving most of the SDGs.
- How new and innovative models are bringing new actors to the table: in our case we are implementing new approaches, Centers for Species Survival (partnerships that are collaborating with SSC to building capacity) and the National Species Specialist Groups (group of experts that are working locally to identify and solve local conservation challenges).
- Importance of including the Private Sector as a key actor
- Encourage national and local gov agencies to commit with GBF and take a more active part to the discussions on how to advance in implementation
- Give more voice to local experts, establish and enhance the mechanisms to allow this
- Make sure financial and other important resources are well distributed among the countries and/or communities that need them most

3.1.566 Collaboration outcomes

None at this point, but open to collaborate

3.1.567 Building inclusion and equity

We publicized it via our IUCN SSC network of over 9,500 members, we also advertised it via our SSC social media channels and we reached out to all our partners including grant makers, donors, zoos and aquaria, botanic gardens.

3.1.568 Key lessons learnt

There is a lot of things happening, a lot of people working on different topics to make a different in their filed. That's inspiring

Session 121: Sharing 'Best Practices' and Foresighting as Tools in Attaining the SDGs

Session Convenor
Lourdes J/ Cruz

Position
National Scientist

Organisation
National Academy of Science and Technology Philippines (NAST PHL)

Country
Philippines

3.1.569 Abstract

The ranking of ASEAN countries with respect to their progress in attaining the 17 SDGs shows a wide range of achievements. The top-ranked countries (Thailand, Vietnam, and Singapore) have performed very well in SDG 1 on No Poverty, SDG 4 on Quality Education, and SDG 6 on Clean Water and Sanitation. The UN Sustainable Development Goals Report of 2022 indicates timely progress by at least one ASEAN country in SDG 1, SDG 4, SDG 6, SDG 8, SDG 9, SDG 11, SDG 12 and SDG 13.

The use of futures thinking and foresight has been adopted by several ASEAN countries as members of the ASEAN Foresight Alliance initiated by Malaysia in 2019. Through training workshops, AFA serves as a platform for providing the right tools and skills in identifying and understanding emerging issues and uncertainties up to 2050.

The objectives of the session are 1) for the ASEAN members to learn from each other through sharing of best practices and discussion on how the ASEAN countries can improve in terms of the SDGs not yet attained by any ASEAN country; and 2) to discuss the use of futures thinking and foresighting as tools in attaining the SDGs.

3.1.570 Key messages

The session held during the UNGA78 Science Summit highlighted the significance of the SDGs in addressing the pressing challenges faced by ASEAN countries. In the two-and-a-half-hour event, speakers from ASEAN countries gave short five-minute presentations on the status of the SDGs and initiatives in foresighting and futures thinking in their respective countries. With a combined population of over 650 million people and rapid economic growth, ASEAN plays a crucial role on the global stage in achieving these goals.

Throughout the discussion, it was evident that ASEAN countries have made significant strides in their pursuit of some of the SDGs. However, the speakers also acknowledged that each nation faces unique challenges. These include issues related to poverty, inequality, climate

change, healthcare, education, and access to clean water and sanitation. In several instances, the speaker's assessment of their country's progress in achieving the SDGs differs from what is indicated in the UN 2022 Sustainable Development Report.

Midpoint in the SDG timeline, the UN predicts that no country will be able to meet all the SDGs by 2030. The 2022 report on the SDGs indicates that six out of the 10 ASEAN countries are on track with respect to SDG 4 on Quality Education, SDG 6 on Clean Water and Sanitation, and SDG 12 on Sustainable Consumption and Production. Merely four countries (Thailand, Vietnam, Singapore, and Malaysia) are on track in SDG 1 on No Poverty and in SDG 13 on Climate Action; three countries (Thailand Singapore, and Brunei Darussalam) in SDG 9 on Industry, Innovation and Infrastructure; two countries (Malaysia and Indonesia) in SDG 8 on Decent Work and Economic Growth; and only Brunei Darussalam is on track in SDG 11 on Sustainable Cities and Communities. On the other hand, none of the ASEAN countries have yet shown adequate development in terms of the seven remaining SDGs including Zero Hunger, Good Health and Well-being, Gender Equality, Affordable and Clean Energy, Reduced Inequalities, Life Below Water, Life on Land, Peace, Justice and Strong Institutions, and Partnerships for the Goals.

This session on sharing best practices and discussion of common challenges is a first step toward the development of strong Partnerships for the Goals. As a contribution of the ASEAN Foresight (AF) initiated by Malaysia with other countries, futures thinking and foresighting have become integral to the pursuit of sustainable development in ASEAN countries. By adopting these forward-looking approaches, governments can anticipate challenges, seize opportunities, and navigate complex global trends. While challenges exist, the commitment to shaping a sustainable future is evident across the region.

In the discussion and open forum that followed, the questions were (1) What are the challenges in popularizing S&T solutions in attaining the SDGs in your country? (2) What are the recommendations for ASEAN moving together on the SDGs? There were expressions of the need to learn from one another. Data and information gathering is particularly critical and challenging in ASEAN countries. Effective strategizing and foresighting rely on comprehensive data and analysis. There was a recognition of the challenge of capacity building. Developing the skills and expertise needed for achieving the SDGs and foresighting can be a barrier, requiring investment in training and capacity building. There was also a call for greater attention to monitoring and evaluation of the achievement of the SDGs.

The discussion highlighted that ASEAN countries should commit to continuing sharing 'best practices' and utilizing foresighting as tools to drive progress in sustainable development in the region. The strategy is to harness synergies within and between ASEAN countries These efforts contribute not only to improving the quality of life for people in ASEAN countries but also to the global community's collective journey toward a more sustainable and equitable future.

- For ASEAN countries to continue sharing 'best practices' and utilizing foresighting as tools to drive progress in sustainable development in the region
- To develop skills and expertise needed for achieving the SDGs
- To invest in training and capacity building in data and information gathering for proper monitoring and evaluation of the achievement in the SDGs.

- To encourage acdemia and civil society tto engag an inclusive and transdiciplinary approach for a systems view of the challenges in food, water and energy security in the country and the ASEAN region.
- To stregnthen the ASEAN Foresight Alliance
- To promote and encourage countries and participate actively in similar region wide SDG oriented institutions, like Future Earth Asia
- To bring in young and early career and young academics and researchers into the conversations at the national and regional levels
- To promote knowledge into action and localizing SDGs to empower local communities to solve their sustainability problems.

3.1.571 Collaboration outcomes

Possible collaborations:

1. Collaboration on region-wide data collection and sharing on the SDG

2. Collaborative basic education curriculum on SDG enhancement or promotion including such as: content creation for elementary and high school levels

(Content creation; Problem-based learning and teaching of SDGs including role-playing, simulations, and scenarios)

3. Collaboration to encourage center-periphery interaction and collaboration among academic institutions in SDG promotion through the establishment of the Universities SDG Action Network . (A pilot has been done through Future Earth Philippines and we are now expanding this in different regions of the Philippines.)

4. Collaboration to encourage policy think-tanks to study the interactions and resolve the trade-offs and adverse interaction dilemmas

5. Collaboration in recognition and award systems for national and regional SDG champions among individuals and institutions.

3.1.572 Building inclusion and equity

The session included all ASEAN countries with participants from government agencies and the academe in different fields of expertise

It was inclusive with respect to gender and age.

3.1.573 Key lessons learnt

Each country has its own strong programs for SDG attainment, which are worth emulating in other countries. Among these are:

- Dr. Abby Tan of Brunei Darussalam - The mobilization of universities for accelerating holistic and professionally driven SDG engagement and attainment. formulation of a university-wide sustainability blueprint as well as working with national SDG secretariat on "Marine Ecosystem and Climate change"

- H.E. Dr. Hul Seingheng of Cambodia - Deployment of a national innovation system to drive Cambodia's STI Roadmap to enhance governance, education, research, and create an ecosystem for business.

- Dr. Suraya Abdulwaha Afiff of Indonesia - For SDG 4, a database platform in online format provided access to digital learning during the pandemic including textbooks and teacher manuals. The system has strengthened the digital skills of students, teachers, and staff.

- Dr. Pervaiz Ahmed of Malaysia - The NSTI Ecosystem, identified technology drivers in the global innovation value chain and studied how this will drive the quality of life of localities. He mentioned the areas of investment via the 10-10 framework for achieving inclusive development where no one is left behind. He also talked about the national energy policy, low carbon mobility, and advanced trends such as hydrogen economy, robotics, and nanotechnology.

- Dr. Vilas Nitivattananon of Thailand - The country's best achievement is in poverty alleviation. The best practices to share are the Banatonchan Homestay community-based ecotourism, the Bang Khun Thian -- food management, and the Khung Bang Kachao -- best urban oasis models.

Dr. Janice Lee of Singapore - Of the SDG targets 48% are green, 33% are insufficient, and 7% need further progress. Singapore has 5 Pillars in Green Plan 2030 where Green Government and Green Citizenry are the Drivers. She also mentioned Singapore’s challenges in attaining SDGs.

Dr. Napoleon Juanillo of the Philippines - He highlighted that human well-being is being promoted in SDGs 2,3,6,4,5, and 10. The RxBox was developed as an easy-to-use diagnostic tool for isolated communities.

The ASEAN Foresight Alliance (AFA) - Foresighting enables governments to proactively anticipate and plan for future challenges and opportunities. It also aids in ensuring policies and strategies are adaptable to changing circumstances. Futures Thinking, on the other hand, involves envisioning and analyzing different future scenarios, and considering trends, uncertainties, and potential disruptions. It helps governments to identify opportunities and challenges that may arise in the future.

Session 122: The Science of Engaging Existential Risk

Session Convenor
Brie Linkenhoker

Position
Founder & CEO

Organisation
Worldview Studio

Country
United States

3.1.574 Abstract

Introduction and aims

We face an unprecedented set of existential threats to humanity -- what some call the 'polycrisis.' These include nuclear war and catastrophic climate change, as well as emerging threats from AI and bioengineering that could result in mass loss of life and/or destruction of critical ecosystems and infrastructure. These are the threats that human civilization would be unlikely to recover from.

Humans are notoriously unwilling or unable to engage in deep thinking about or active prevention of, existential threats. Our emotional distress, lack of perceived agency, the tendency to discount the future, perceived psychological distance from the threat, and poor capacity to judge non-linearities all play a role in hindering us from engaging more deeply.

But if we are going to navigate the existential threats we face, which we must, and then diminish them, we need to help each other overcome the barriers to engaging them. We will review recent work in psychology, science communication, futures thinking, and human-centred design on how these barriers work and on how we might overcome them.

Abstract

We are engaged in the following work, which we will report on in our panel discussion:

1) reviewing multi-disciplinary academic research in cognitive science, affective psychology, the science of science communication, risk communication, and other areas of scholarship that can inform the challenges we face as humans in engaging existential threats and taking action to counter them

2) network building among "committed outlier" professionals who are unusual in the extent to which they have committed their professional lives to reducing existential threats and learning from them individually and collectively

3) through the Decolonizing Futures Initiative, engaging marginalized communities around the world in imagining their preferred futures, countering a "one size fits all" approach to foresight

4) analysing existing design approaches to catalysing action to reduce existential threats, and envisioning future design principles that could help to counter barriers to engaging existential threats

This work is ongoing, but we will share what we have learned thus far, as well as plans for future research and design projects.

Expected outcomes

Our research has identified psychological and sociological barriers to deep engagement with existential threats and/or to behaviour change or directed action to reduce those threats. As scientists, designers, social innovators, and futurists, we are taking a multidisciplinary approach to understanding these barriers and to identifying and testing new ways to increase engagement with existential threats. Our research is ongoing, but our eventual goal is to develop actionable tools and approaches that can be used by scientists, science communicators, policymakers, and leaders, in multiple cultural contexts, to help the audiences they care about mode deeply engage with existential threats and take action to reduce them.

3.1.575 Key messages

- It is essential that we incorporate engagement and management of existential threats to humanity into the post-SDG agenda. Thinking about how to manage threats from nuclear weapons, engineered bioweapons, pandemics, catastrophic climate change, out-of-control AIs, and other existential risks doesn't come easy to humans, who have cognitively evolved to focus more on the immediate future and on threats we see around us in our own communities. That is why it is especially important that the UN address these problems, especially since they will, by definition, require long-term, multinational approaches to risk mitigation.
- We hope to see a greater emphasis on security in the post-SDG agenda for several reasons. First, outdated notions of security, held by a privileged few, are largely responsible for the global threat of nuclear weapons. Second, notions of security that are too narrow fail to include how climate change preparedness will be central to the future well-being of all nations. Third, differing views about what security looks like may be responsible for future international conflicts; understanding and being able to articulate different views of security could help diffuse conflicts and advance peace. Fourth, as we consider futures in which humans live on the moon, Mars, or elsewhere in space, we will need radically different common understandings of security than what we have today. Fifth, technologies currently under development (e.g., AI, gene drive, geoengineering technologies) could advance or threaten global security in the future, yet few innovative scientists or technologists are actively considering the security implications of their work. Sixth, security has for too long been considered a subject for defence ministries and militaries, but we need to make security a topic for leaders in health, environment, energy, infrastructure, cities, and other sectors.

- The concept of security -- and how different nations conceive of security -- needs to be addressed by the UN as it is critical to the promotion of peace.
- Outdated concepts of security play a major role in the persistence of global nuclear threat, and in our lack of attention to climate change.
- In most of the world, we have not updated our notions of security to include pandemic preparedness.
- Security needs to be defined at the level of individuals, communities, nations and regions.
- Existential threats do not get a lot of attention in the current SDGs. But we can't achieve the SDGs without managing existential threats.
- Understanding why it's difficult for leaders and citizens to engage with existential threats is an essential step towards managing them.
- Futures and foresight methodologies could help the UN and other international bodies prepare for multiple futures shaped by AI and other major uncertainties.
- Decolonizing futures methodologies can challenge "official future" narratives with perspectives, worldviews, and stories that have been historically marginalized.

3.1.576 Collaboration outcomes

Our presenters knew each other before the Summit, but had not worked together closely. The process of developing our joint presentation for the session really advanced our understanding of each other's work, and helped us clarify areas where we might work together. We are already planning to propose new projects about shifting mindsets and worldviews about security, and about how religious faith may play a role in helping people engage existential risk.

3.1.577 Building inclusion and equity

Our session touched upon work done across six continents on how concepts of security are evolving and being enhanced or threatened by emergent trends and current events. We also addressed questions about futures methodologies and whether these were being used globally (they are) or only by people, businesses, and governments in wealthy nations. Our group also featured post-colonialist perspectives on futures thinking and planning.

3.1.578 Key lessons learnt

The Summit has an impressive, and impressively diverse, attendee and presenter list, and we have much to learn from the perspectives at the Summit. Now that we know more about how it operates, we will do better next year at preparing, promoting our session, and networking with other attendees.

Session 123: Science diplomacy in uncertain times- are we on the right track?

Session Convenor
Gabrielle Gagnon

Position
Special Projects Advisor

Organisation
Fonds de recherche du Québec (Québec Research Funds)

Country
Canada

3.1.579 Abstract

The ongoing work towards the United Nations Sustainable Development Goals (SDGs), specifically when discussing the scientific community, includes the idea of open science and internationalization of knowledge. This perspective supports the transformative idea of leaving no one behind. Recent international events have however proven that crises, ranging from sanitary emergencies, climate change, and the fast development of technology to armed conflict, have impacts on science. They can provide incredible opportunities for joining research, promoting exchanges, and advancing science or for developing overarching policies to frame development. A crisis can also isolate scientists and force interruption of collaborations and projects.

The aim of this panel is to present how science is impacted by international relations, both negatively and positively. More specifically, experts will present the effects of an international crisis on science and on the scientific community. In this context, and oriented from their respective specialities, panellists will also discuss the different mechanisms in place or not to mitigate, prevent and/or assess the risks and to address and balance the direct and indirect impact on science and scientific cooperation.

3.1.580 Key messages

- The link between science and diplomacy should be considered in the development of the post 2030 Agenda within the context of science for diplomacy as well as diplomacy for science.
- The recent COVID 19 crisis allowed for example where diplomacy helped promote the collaboration in science for the quick development of vaccines, while at the same time, diplomacy, prevented equal access to the vaccine.

- To promote advancements in specific research fields and to advance towards the achievements of the SDGs and develop the upcoming post 2030 Agenda, science diplomacy and international scientific collaboration should be promoted.
- Panelists advocated for the need to limit the impact of diplomacy on scientific cooperation to limit the loss of knowledge that occurs when diplomacy stops scientists from collaborating.
- Panelists presented how science diplomacy can provide when other type of diplomacy fails and advocated that science diplomacy allows for continued collaboration where there is diplomatic tension between countries.
- Policy-makers should be more informed of the role and impact of science diplomacy to better include research and scientific cooperation as part of their international relations framework
- Policy-makers should separate science diplomacy from other diplomacy when interacting
- Science and scientists should remain neutral within the political framework of international relations.

3.1.581 Building inclusion and equity

- It was hybrid (online and in person) with a recording for later sharing
- It had simultaneous translation in French

Session 124: Advancing Diagnostics in Developing Regions

Session Convenor
Maabo Moralo

Position
Researcher

Organisation
Council for scientific and industrial research (CSIR, South Africa)

Country
South Africa

3.1.582 Abstract

Access to reliable and affordable diagnostics is crucial for effective healthcare delivery and disease management in both developed and developing countries. However, developing countries often face significant challenges in establishing and maintaining robust diagnostic systems, resulting in diagnostic gaps that hamper the quality of healthcare services and the overall well-being of their populations.

In this session, we propose to address critical issues such as developing and implementing sustainable and innovative diagnostic solutions that can enhance diagnostic capabilities in resource-constrained settings.

Furthermore, in the session, we would like to showcase examples of innovative solutions, such as the CSIR and CapeBio co-developed COVID-19 test kit and point-of-care diagnostics, which satisfy the WHO ASSURED criteria: Affordable, Sensitive, Specific, User-friendly, Rapid and Robust, Equipment-free and Deliverable to end-users.

The session also explores possible diagnostic device fabrication opportunities in developing countries. The session could also be used as a platform for creating solutions and proposals that can foster effective collaborative efforts between governments, international organisations, academia, and the private sector to address the diagnostic gap comprehensively.

3.1.583 Key messages

Achieving the Sustainable Development Goals (SDGs) requires a comprehensive understanding of science and innovation. The UN Summit of the Future in September 2024 and the post-SDG Agenda offer a crucial platform for addressing global challenges. Here are some key messages and points:

1. Limited Access to Diagnostics:

Only 19% of people in Low- and Middle-Income Countries (LMIC) have access to diagnostics, while a staggering 47% have no access at all. Lack of diagnostic tools hampers healthcare systems, hindering timely disease detection and management.

2. Critical Need for Funding:

Adequate funding is pivotal for the development and deployment of diagnostic tools. Financial investments are necessary for research, technology development, and establishing sustainable healthcare infrastructure.

3. Establishing Fabrication Centers:

Building fabrication centers in LMICs is essential for the local production of diagnostic tools. Local manufacturing reduces costs, enhances accessibility, and promotes self-sufficiency in healthcare technology.

4. Industry Collaborations:

Collaboration between the public and private sectors is crucial for advancing diagnostic technologies. Public-private partnerships can leverage expertise, resources, and networks to accelerate innovation and accessibility.

Innovation for Affordability:

5. Scientific and technological innovations should prioritize affordability to ensure widespread accessibility.

Developments in low-cost, scalable technologies will make diagnostics accessible to a larger population.

6. Integration with Digital Health:

Integrating diagnostics with digital health platforms enhances data management and analysis. This integration improves the efficiency of healthcare systems and enables remote monitoring.

7. Establish a global funding initiative led by UN in collaboration with international financial institutions and philanthropic organizations. Launch within the next 12 months.
8. Regional Diagnostics Innovation hubs with continental bodies such as the AU and regional development banks, focused on R&D, and production of diagnostics tailored to region regional health challenges.
9. Integrate diagnostic technologies with digital health platforms. Tech companies. Develop and launch the framework within the next 18 months.

3.1.584 Collaboration outcomes

Nothing concrete at the moment. However, speakers suggested and were eager to establish consortiums.

3.1.585 Building inclusion and equity

1. A diverse range of topics around Diagnostics were explored (R&D, bio-manufacturing, assay development, biotech start-up)

2. The session had a panel of speakers at different stages of their careers and ethnicity.

3.1.586 Key lessons learnt

The importance of collaboration and partnership.

Effective communication is critical when convening a session. You'll learn how to communicate your session's objectives, manage discussions, and facilitate dialogue among participants with varying levels of expertise and backgrounds.

Organizing a session involves meticulous planning, from selecting speakers and setting the agenda to managing time constraints. You'll gain valuable experience in event management, which can be applied to future endeavors.

Session 125: Medical Advances toward the SDGs: Achievements from Human Space Exploration

Session Convenor
Kim E Degnan
Thais Russomano
Juliana Herbert

Position
Executive Director
Moderator
Co-convenor

Organisation
Alliance for Collaboration in the Exploration of Space-ACES Worldwide

Country
United States
Brazil
Brazil

3.1.587 Abstract

INTRODUCTION:

Humankind first flew into space in 1961, with Yuri Gagarin. Since then, we have acquired a vast quantity of knowledge related to the body and mind of astronauts in extraterrestrial environments and its simulations on Earth. It is now well known that all cells, organs and body systems are affected when humans are exposed to the microgravity of space. This very unique environment has motivated space scientists to develop new medical devices, diagnostic methods, management and treatment of diseases, including the application of digital technology and telehealth to monitor and improve the well-being and health of astronauts.

The numerous benefits derived from this extensive space research, conducted worldwide and over many years, have not been solely applied to extraterrestrial medicine. Most of the knowledge and technologies acquired in human space exploration studies have been transferred to advance terrestrial medicine.

This Session aims to present and discuss the scientific knowledge and technological developments achieved by human space research and how these have had a positive impact on global health care on Earth, contributing to the United Nations Sustainable Development Goals; (SDGs).

Gravity on Earth has played an integral role in determining the development of life over billions of years and has shaped the anatomy and physiology of all living beings, including humankind. The removal of this force when entering the microgravity of space has been shown to affect the whole body, causing numerous changes, such as a reduction in heart size

and blood volume, disturbances of the neurological system, decreases in bone density and muscle mass, and impairment of the immune function. In addition, there are psychosocial aspects faced by astronauts, such as confinement and isolation, that can have detrimental effects.

These psychophysiological changes can lead to undesirable health consequences. Furthermore, these alterations become even more relevant when considering the imminent increase in space tourism and longer-duration crewed missions to the Moon and Mars.

The advances made in space health monitoring and care have been driven by the need to preserve human health in an austere environment, in which medical assistance or resupply from the ground is not possible. Therefore, in terms of health care and medical technology, space has become a driver of medical innovation, as the underlying research-development chain addresses the implementation of medical assistance and health care under extreme environment conditions.

Nonetheless, the knowledge acquired and technologies developed for extraterrestrial missions are not restricted to monitoring and maintaining the health of astronauts. Advances achieved in space life sciences research are being translated to healthcare on Earth, particularly when considering the delivery of health care to remote locations or in natural disasters.

This Session will present several relevant topics related to the medical knowledge acquired from short- and long-term space missions, considering the required new or adapted health equipment, devices, and systems of data acquisition and transmission, as well as the use and optimization of satellite data for health care on Earth. The achievements gained from extensive research in microgravity, parabolic flights and ground-based simulations of microgravity will be discussed, and current and future digital technology systems applied to the improvement of health care on Earth and in space will be debated.

A total of eight experts, coming from different professional backgrounds and countries, will bring a very interdisciplinary and international approach to the theme being presented. The main goal of this Session is to discuss the health-related challenges of human space exploration, current and future approaches to managing astronaut clinical health and medical emergencies, and the technological achievements from the application of digital technology for the health care of space travelers, much of which has translated to health care provision on Earth, contributing to the United Nations SGDs.

EXPECTED OUTCOMES:

An important outcome of this Session is to raise awareness of the significance of advances in space medicine in relation to their positive impacts on terrestrial health care. The knowledge acquired from space missions can be applied as the basis for a better understanding and more effective management of similar medical conditions on Earth.

A further Session outcome will be the provision of a comprehensive view of how medical technology developed for use in space missions can be successfully transferred to global health on Earth.

A third outcome is the motivation of further discussion focused on digital technology and data from space, highlighting how these can be safely and efficiently applied to healthcare not only considering astronauts, space tourists, and future crewed trips to the Moon or Mars, but for the improvement of health care for Earth-based populations.

The final expected outcome of this Session is clarification of the links connecting the main achievements related to human space exploration research with the United Nations SDGs, emphasizing how extraterrestrial studies contribute to these goals.

3.1.588 Key messages

Essential messages:

- The need for and importance of interdisciplinary collaboration between space exploration, medical research, and sustainable development experts.
- Technology transfer from space exploration to medical applications and vice-versa.
- The significance of international cooperation and partnerships in both space exploration and achieving the SDGs, for the benefit of all humanity.
- The need for a long-term vision for scientific and technological research.
- How space exploration serves as a source of inspiration for future scientists and engineers, promoting STEM education and fostering innovation.

Examples

- Telemedicine and remote monitoring - how technologies developed for remote health monitoring of astronauts in space can be applied to remote and underserved areas on Earth, improving healthcare access.
- Radiation research - how studies on the effects of space radiation on human health can lead to advancements in radiation therapy for cancer treatment.
- Biomedical imaging - how advancements in imaging technology for space telescopes can also enhance medical imaging, diagnosis, and treatment planning.

Outcomes:

- Policy recommendations for governments and international organizations to promote the transfer of space technologies to healthcare, as well as funding and support for space-medical research collaborations.
- Encouragement for attendees to commit to global efforts to advance scientific research and innovation in ways that contribute directly to achieving the SDGs, both through space exploration and other fields.
- Proposal of initiatives to inspire and educate the next generation of scientists, engineers, and innovators, emphasizing the exciting possibilities in space and medical science.

- Promotion of inclusivity and diversity in both space exploration and medical research, ensuring that the benefits of innovation are accessible to all, regardless of geographical location or background.

3.1.589 Collaboration outcomes

Establish Cross-Sector Collaboration Initiatives:

Recommendation: Governments, space agencies, and health ministries should establish dedicated initiatives or task forces that facilitate collaboration between space exploration and healthcare sectors.

Practical Implications:

• Develop funding programs and incentives for joint research projects that focus on adapting space technologies for healthcare and addressing specific SDGs, such as improving healthcare access in remote areas.

• Create policy frameworks that encourage the sharing of knowledge, data, and best practices between space agencies, healthcare institutions, and industry partners.

Invest in Technology Transfer and Adaptation:

Recommendation: Governments and international organizations should allocate resources to support the adaptation and transfer of space technologies to medical and sustainable development applications.

Practical Implications:

• Establish technology transfer offices or mechanisms within space agencies to identify promising technologies with potential healthcare and SDG applications.

• Fund research and development projects that focus on repurposing and optimizing space-derived technologies for terrestrial use, particularly in resource-constrained environments.

Promote STEM Education and Workforce Development:

Recommendation: Governments and educational institutions should prioritize STEM (Science, Technology, Engineering, and Mathematics) education and workforce development programs with a focus on space and medical sciences.

Practical Implications:

• Allocate funding to educational institutions to expand STEM programs and scholarships, emphasizing the potential for careers in space-related fields and healthcare.

• Create mentorship and internship opportunities for students, connecting them with professionals working at the intersection of space exploration, healthcare, and sustainability.

• Develop outreach initiatives to engage underrepresented communities in STEM fields, ensuring inclusivity and diversity in the future workforce.

3.1.590 Building inclusion and equity

The following aspects were considered when the session was planned:

• Speakers from different countries, continents, backgrounds and perspectives.

• The session was conducted online and free of charge, in a way that people from all around the world could participate.

• Different topics were considered.

• Participation of the audience was highly stimulated by the moderator of the session.

3.1.591 Key lessons learnt

The main lesson learnt was to exercise the connections between human space exploration (knowledge and technology developed for space use) and the real benefits that it can bring to societies on Earth, especially those that are less privileged and have more scientific and technological limitations.

Session 126: Virtual

Session Convenor
Ferdinand Ottoh

Position
Associate Professor/ Lecturer

Organisation
University of Lagos, Lagos, Nigeria

Country
Nigeria

3.1.592 Abstract

The paper assesses the extent to which Nigeria’s agriculture Promotion Policy for poverty and reduction and zero hunger to achieve Sustainable Development Goals (SDGs). SDGs is an assessment of the extent members of the United Nations are able to implement various targets set by MDGs. It examines the present agricultural policy (APP) and the Anchor borrowers’ programme aimed at promoting agriculture. The problematic of the study are how poverty and hunger continue to pose major challenges to the country in achieving SDGs 1&2. The Anchor Borrower’s Programme has been hijacked by people who are not directly involved in agribusiness. The study would be conducted using available reports from the government on the implementation of APP and other publications in relation to government policies on agriculture.

It uses the SDGs 1&2 and APP as framework for the assessment of the extent of the Federal Government of Nigeria implementation of SDGs 1&2 from 2016-2020. Preliminarily finding reveals that farming households experience greater poverty due to low income from farming activities. This is because of low productivity which lead to poor income from agriculture. In investing in agriculture would help to generate employment through agro-based business, reduction of high poverty rate by ensuring efficiency in the supply of food and improving per capita income.

3.1.593 Key messages

-Poverty and hunger are responsible for conflict and Insecurity in Nigeria

-Agriculture sector should remain a critical sector that the Government attention is directed.

Scientific research in agriculture practices would help to increase productivity and reduce hunger and poverty

Policy recommendations are

Attention should be focused on how to improve agriculture productivity and address the problem of food Insecurity

Improve rural infrastructure would go a long way in encouraging rural farmers and also attract young graduates to engage in commercial agriculture instead relying on Government paid employment.

3.1.594 Collaboration outcomes

I have not engaged in collaborative research with any of the Convers partly because I had virtual presentation.

3.1.595 Building inclusion and equity

The session was inclusive as the attendees made useful contributions that will help in improving on the paper

3.1.596 Key lessons learnt

The summit afforded me the opportunity to present my research findings on the progress made by my government in achieving SDGs

Session 127: CSIR, India: An Innovation Hub for Global Sustainable Developmen

Session Convenor
Yatendra Kumar Satija

Position
Scientist, International S&T Affairs Directorate

Organisation
Council of Scientific and Industrial Research, India

Country
India

3.1.597 Abstract

About the Organization:

Council of Scientific and Industrial Research (CSIR), India

Council of Scientific and Industrial Research (CSIR), India, is the largest industrial organization in India, under the Department of Scientific and Industrial Research (DSIR) of Ministry of Science and Technology, Government of India. CSIR, established in 1942 has 37 multidisciplinary institutes located across India that are working in a wide spectrum of fields from oceanography, geophysics, chemicals, drugs, genomics, biotechnology and nanotechnology to mining, aeronautics, instrumentation, environmental engineering and information technology.

SCIMAGO Institutions Rakings 2022 has ranked CSIR, India 39th among 1745 Government institutions worldwide with a Research; rank of 186 among the 8084 ranked institutions globally. CSIR, India lies in the 4th percentile in Research ratings among with World institutions and lies in the 2nd percentile in Research rating among the institutions in Asiatic region.

The Network of laboratories are being manned by about 9000 highly skilled manpower. Its need-based and industry-focused and technology development, strength in basic and applied research, and the world-class infrastructure have contributed immensely to India's prowess in as measured by patents, publications and innovations.

CSIR has been contributing immensely to the industrial, societal and economic development and growth of India for eight decades now. CSIR has helped India overcome many challenges and crisis, from promoting self-sufficiency in the face of technology denials, to handling natural disasters such as earthquakes, floods, pandemic, through appropriate technological solutions.

CSIR has developed CSIR@80: Vision Strategy 2022 New CSIR for New India which envisions pursuing science that strives for global impact, the technology that enables innovation-driven

industry and nurtures trans-disciplinary leadership thereby catalyzing inclusive economic development for the people of India.

CSIR has been immensely contributing to the UN Sustainable Development Goals. The Session on CSIR, India: An Innovation Hub for Global Sustainable Development will briefly present these contributions. These can be viewed at

3.1.598 Key messages

Counties like India have huge assets of population related data (e.g. in Healthcare sector). With appropriate data sharing and data usage related policies put in place, the data may be converted into a valuable resource which may lead to favourable outcomes for global upliftment.

Industries throughout the world should be better engaged with Research and Technology organisations for effective and impactful partnerships towards achievement of SDGs. Sustainable entrepreneurship need to be promoted. Such entrepreneurs may be brought together to address the concerns related to sustainability in all sectors.

Even today, the Large population of the world lives in Rural areas. Therefore, smart planning and smart governance is of utmost importance for their well-being and livelihood development. Similarly, it is necessary to make healthcare affordable and accessible for all.

Research and Technology Organizations like CSIR can play a vital role in international policy and decision-making especially due to their vast coverage across their respective nations

Research and Technology Organizations like CSIR can play a vital role in international policy and decision-making especially due to their experience and understanding of regional issues

Promoting and incentivizing usage of Non-carbon based energy sources including, Hydrogen, Solar, Lithium or ion based, Tidal, Geophysical, etc. Transition from fossil carbon to Green carbon

India is one of the largest producer and exporter of generic drugs. The similar concept and course is being adapted in the sector of Chemicals (Bulk and specialty)

With support of Government and Product-linked incentive scheme, India has already taken a lead in this path. Global partnerships with industries may rapidly upsurge the developments.

3.1.599 Collaboration outcomes

Yes. (a) Professor Saba Mylvaganam from Norway is interested in collaboration in the field of Energy and Mobility; (b) Shweta Frederick, PGT Chemistry- Content developer, Teacher and Innovator; etc.

3.1.600 Building inclusion and equity

The two-day event of CSIR India encompassed 5 sessions with 22 eminent speakers/ experts and a panel discussion. The first day of the event presented talks focused on theme "Sustainable Utilization of Resources" with 3 thematic sessions on (a) Green Energy and Mobility; (b) Chemicals and Sustainable Materials; and (c) Exploration and Sustainable Unearthing of Treasures.

The second day of the event held on 28 September 2023 focused on "Societal and Rural Development: Efforts of CSIR" with 2 thematic sessions on (a) Affordable Healthcare for Global Society; and (b) Rural Development & Traditional Knowledge. In addition, a panel discussion on "Innovations for Global Sustainable Development" featured a moderator & 11-panel experts which summarized the discussions and deliberated on the future priorities and significance of international collaboration for global sustainable development.

Both days of CSIR event included presentations from Women speakers exhibiting gender balance. CSIR event featured four (4) speakers from industry/line ministry (as CSIR partners) to share their viewpoints, expectations and experiences. Further, panel discussion included experts from diverse organisations including The World Academy of Sciences (TWAS), National Institute of Rural Development and Panchayati Raj, etc.

3.1.601 Key lessons learnt

(a) Creating ambassadors for identifying social problems and liaising with Research and Technology organisations to identify and implement appropriate scientific interventions/solutions.

(b) Evolving role of AI and data-driven approaches in all domains of sustainable development including smart agriculture, smart cities, energy utilization, storage & distribution, healthcare, climate change, etc.

(c)Transforming innovation systems to innovation ecosystems

(d) Restructuring global value chains especially due to the increasing role of the emerging economies.

Session 128: CSIR, India: An Innovation Hub for Global Sustainable Development

Session Convenor
Yatendra Kumar Satija

Position
Scientist, International S&T Affairs Directorate

Organisation
Council of Scientific and Industrial Research, India

Country
India

3.1.602 Abstract

3.1.603 Key messages

Counties like India have huge assets of population related data (e.g. in Healthcare sector). With appropriate data sharing and data usage related policies put in place, the data may be converted into a valuable resource which may lead to favourable outcomes for global upliftment.

Industries throughout the world should be better engaged with Research and Technology organisations for effective and impactful partnerships towards achievement of SDGs. Sustainable entrepreneurship need to be promoted. Such entrepreneurs may be brought together to address the concerns related to sustainability in all sectors.

Even today, the Large population of the world lives in Rural areas. Therefore, smart planning and smart governance is of utmost importance for their well-being and livelihood development. Similarly, it is necessary to make healthcare affordable and accessible for all.

1. Research and Technology Organizations like CSIR can play a vital role in international policy and decision-making especially due to their vast coverage across their respective nations.
2. Research and Technology Organizations like CSIR can play a vital role in international policy and decision-making especially due to their experience and understanding of regional issues
3. Promoting and incentivizing usage of Non-carbon based energy sources including, Hydrogen, Solar, Lithium or ion based, Tidal, Geophysical, etc. Transition from fossil carbon to Green carbon
4. India is one of the largest producer and exporter of generic drugs. The similar concept and course is being adapted in the sector of Chemicals (Bulk and specialty)

5. With support of Government and Product-linked incentive scheme, India has already taken a lead in this path. Global partnerships with industries may rapidly upsurge the developments.

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3.1.606 Key lessons learnt

(a) Creating ambassadors for identifying social problems and liaising with Research and Technology organisations to identify and implement appropriate scientific interventions/solutions.

(b) Evolving role of AI and data-driven approaches in all domains of sustainable development including smart agriculture, smart cities, energy utilization, storage & distribution, healthcare, climate change, etc.

(c)Transforming innovation systems to innovation ecosystems

(d) Restructuring global value chains especially due to the increasing role of the emerging economies.

Session 129: The GLOBE Program: an international science and education program that cultivates the next gen

Session Convenor
Tony Murphy

Position
Director, GLOBE Community Engagement and Program Strategy

Organisation
GLOBE Implementation Office

Country
USA

3.1.607 Abstract

Participants learn about The GLOBE Learning and Observations to Benefit the Environment (GLOBE), its alignment with the SDGs and possible strategies that help in their implementation. They will also be aware of GLOBE members supporting the attainment of SDGs using GLOBE.

Since its official launch on Earth Day 1995, The GLOBE Program has provided students and the public with the opportunity to meaningfully contribute to our understanding of the Earth system and global environment. As an international science and education program, GLOBE is dedicated to supplying the future STEM professionals with the scientific knowledge necessary to tackle Earth's biggest challenges. Over 120 countries participate and have contributed almost 237 million environmental science measurements. It has several resources aligned with the SDGs, and many GLOBE members implement the program with this alignment in mind.The panelists will present the story of GLOBE in their countries, its implementation and how the program is helping to meet the country's SDGs. The panelists, one each from the six GLOBE regions (Africa, Asia & Pacific, Europe & Eurasia, Latin America & Caribbean, Near East & North Africa, and North America) will cite specific case studies to illustrate this work and any visible results.

The presentation will take a panel format with one representative from each of GLOBE's six regions, as well as the GLOBE Implementation Office Director of Community Engagement and Program Strategy.The panel will be co-moderated by Larisa K. Schelkin (UNITAR Global Diplomacy Fellow, GLOBE US Partner, GLOBE International Science Network, GLOBE International Virtual Science Symposium judge, and a teaching faculty at the UN General Assembly President's Fellowship Program HOPE) and Distinguished Science Education Professor Michael Jabot (SUNY Fredonia, GLOBE International Virtual Science Symposium judge, and a teaching faculty at UNITAR Global Diplomacy Fellowship Diplomacy Fellowship Program).

Panelists will have approximately 20 minutes to give their presentation. During the allotted time, they will tell the story of the implementation of the program in their country. Following this summary, they will outline the GLOBE protocols and learning activities that aligned with the SDGs that they are implementing. The format will be a mixture of powerpoint slides, video clips, images, data analysis (tables and figures), and other media that help to illustrate the use of the program infrastructure and the diverse resources and materials available.

3.1.608 Key messages

The Global Learning and Observations to Benefit the Environment (GLOBE) Program is innovative in its concept and implementation. Bringing together countries under one mission to understand the earth and its systems and our role in that brings enormous attention to the role of science diplomacy in our modern world.

1. Once a country joins the program, that it dedicates funding to the implementation of the program to increase capacity, increase accessibility and inclusion, and maximize the program's benefits.
2. GLOBE is integrated into the curricula of countries, irrespective of educational systems.
3. Providing students with a nationally recognized opportunity to present their research in person or virtually to their peers and STEM professionals.

3.1.609 Collaboration outcomes

As a result of our participation 2 years in a row, we would propose to create three groups of participants from those who attended the presentations.

The first group is current active GLOBE countries where we would encourage the participants to reach out to the GLOBE Country Coordinator and learn more about the program in their countries.

The second group are GLOBE countries that are inactive at this time and we could encourage them to reach out to the ministry that signed the bilateral agreement to become part of the program.

The third group are non GLOBE countries and we would encourage them to reach out to the Regional Coordination Office in their region and /or the GLOBE Implementation Office for further information about engaging with the program and its benefits.

3.1.610 Building inclusion and equity

The panel was representative of the program at large. Presenters were female and male, people of color, different races, ages and nationalities. all 6 regions and therefore continents were represented.

3.1.611 Key lessons learnt

GLOBE must be represented at the UNGA Science Summit because:

The UN platform provides a unique opportunity to showcase the collaborative work of the GLOBE community (students, teachers, Country Coordinators, STEM professionals, diplomats, university faculty, citizen scientists, etc) in safeguarding the future of the planet and our role in that.

The program is outstanding, unique, and innovative in its approach to harnessing community action in the implementation of the SDGs

Session 130: Advancing a dialogue between Indigenous and Western legal frameworks related to Environmental Challe

Session Convenor
Rebecca Barnes

Position
AAAS Science Technology Policy Fellow

Organisation
Belmont Forum

Country
US/Uruguay

3.1.612 Abstract

The session aims to open a dialogue on the importance of evolving the Legal Frameworks related to Environmental Change, which enable or not the effective inclusion of historically excluded populations, such as the Indigenous Peoples in the decision and science-making processes.

Legal Frameworks related to Environmental Change frameworks also have the potential to foster the development and implementation of Transdisciplinary approaches to deal with the most pressing societal/environmental issues.

Through this panel, we aim to co-develop a roadmap to continue advancing the dialogue between Indigenous and Western legal frameworks related to Environmental Challenges, based on the panellists' previous experiences working in the field in Canada and Latin America also from the decolonial and anti-colonial perspectives.

Some of the questions that will be explored in co-building the roadmap are:

-What is the current state regarding the integration of the Indigenous and Western legal frameworks related to Environmental Challenges?

-What are the main limitations/obstacles identified for an effective integration?

-What can be done from your institution's end to advance the dialogue between and effective integration of the Indigenous and Western legal frameworks related to Environmental Challenges?

Expected outcomes

A contribution to a roadmap to continue advancing the dialogue between Indigenous and Western legal frameworks related to Environmental Challenges, based on the panelists' previous experiences working in the field in Canada and Latin America also from the decolonial and anti-colonial perspectives.

3.1.613 Key messages

The session consisted of four talks representing different approaches to bridging communities as well as the underlying contextual differences between Indigenous and Western law, illustrated through two case studies (Canada and Bolivia). Discussion amongst the panelists and moderator yielded many great insights, including:

-Recognize the differing hierarchies underlying Indigenous and Western laws, importantly the role of humans in managing the ecosystem. Indigenous peoples manage less than 5% of the Earth's landscape but more than 80% of its biodiversity in part because their management practices are informed by the outcomes of the ecosystem (in contrast to Western management where human decisions often determine ecosystem outcomes).

-To move forward equitably, we need to acknowledge the great diversity of Indigenous laws and norms within Western jurisdictions

Both the InterAmerican Institute for Global Change Research (IAI), an international governmental organization representing 19 nations within the Americas, and the Belmont Forum, a facilitator of multilateral research projects focus on transdisciplinary and sustainable research around global change challenges. Both institutions are working to change the way we work together on these important issues. For example:

-The IAI now has an Indigenous peoples advisory body that informs leadership alongside the science advisory and science policy advisory committees.

-All funding opportunities via both institutions require transdisciplinary consortia that include societal partners in addition to natural and social scientists.

Current scientific enterprise does not reward transdisciplinary research. We need to change the academic incentive structure (e.g., away from first-authored English language, often pay-walled journal articles) to promote use-based community driven research.

1. Elevate Indigenous and local knowledge holders within the science-policy space
2. It is critical that we broaden the definition of expert
3. Promote pluralism within the international governance space
4. We need to change the incentive system within academia and the scientific enterprise more broadly so that transdisciplinary work is rewarded.

3.1.614 Collaboration outcomes

Lessons learned from this session are being incorporated into an impact story around building equitable partnerships for innovative sustainable research around global change research.

3.1.615 Building inclusion and equity

We brought together panelists who represent the different knowledge spaces -- both that of Indigenous communities in the Americas (First Nations of Canada, Plurinational Authority of Mother Earth) and "Western" legal frameworks (Belmont Forum, InterAmerican Institute for Global Change Research) -- as they apply to global change challenges in the Americas

3.1.616 Key lessons learnt

Overall, the sessions I attended provided me with hope and information. Hope: because there are so many others out there who are really trying to rethink how we do science, to make the scientific (and diplomatic) enterprises more welcoming and inclusive. Information: the speakers and conveners not only provided their expertise and shared their vision, but many were so willing to connect after the sessions to continue the conversations.