MUSCAT GLOBAL KNOWLEDGE DIALOGUE

January 2025

International Science Council
The global voice for science

حوار المعرفة العالمي مسقط
Muscat Global Knowledge Dialogue

وزارة التعليم العالي والبحث العلمي والابتكار
Ministry of Higher Education Research & Innovation

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About the International Science Council

The ISC is an international non-profit organization with a unique global membership that brings together 250 scientific organizations around the world, including international scientific unions and associations, national science academies and research councils, international and regional federations and societies, and academies and associations of young scientists.

About the Ministry of Higher Education, Research and Innovation, Oman

The ministry works to foster comprehensive higher education, promote sustainable learning and advance scientific research, thereby contributing to a knowledge-based society and enhancing national competitiveness in Oman.

Its mission is to develop competent national capacities that reflect the values and principles of Islam and the Omani identity, and align with the goals of sustainable development and Oman Vision 2040, by providing inclusive opportunities for higher education, research and innovation.

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FOREWORD

In January 2025, more than 415 representatives from 132 countries gathered in Muscat, Oman, for the Global Knowledge Dialogue. This landmark event brought together scientists, policy-makers and other stakeholders to explore how science can more effectively contribute to sustainability, innovation and global development.

'We, who are concerned with science, have a great responsibility to work continuously for humanity, especially for a better future for future generations, which must be provided with knowledge that develops awareness and understanding of individual and societal responsibility towards the world as a whole. Therefore, our forum represents a vital platform for building international scientific partnerships that support humanity and contribute to achieving tangible progress in the areas of sustainable development that concern all people.

Today, with this generous patronage, we send an Omani message from its ancient capital, Muscat, to all friends in various countries of the world: Science must be at the heart of our priorities, and enhancing the capabilities of scientists and researchers and empowering them is the way to build a better future for humanity.'

H.E. Rahma Al-Mahrooqi
Minister of Higher Education, Research and Innovation of the Sultanate of Oman

'The science community has important responsibilities and opportunities. We have a universal language. Our goal is to better understand the world around and within us. Science is an essential part of the route to environmental wellbeing and social and economic development. As a broad and uniquely representative organization we have a critical role to play, but it will be more effective when the global science community works together.

The Muscat Global Knowledge Dialogue has demonstrated the importance of international scientific collaboration in addressing the world's most pressing issues. By building a shared vision for the future of science, we strengthen our collective ability to advance sustainable development and improve lives globally. The Muscat Declaration, adopted today, underscores our shared vision and reaffirms our commitment to leveraging science for the benefit of all.'

Sir Peter Gluckman
President of the International Science Council

EXECUTIVE SUMMARY

Held under the patronage of His Highness Sayyid Asaad bin Tariq Al Said, Deputy Prime Minister for International Relations and Cooperation Affairs and Personal Representative of His Majesty the Sultan, the Muscat Global Knowledge Dialogue formed a key part of the Third ISC General Assembly (26–30 January 2025). Hosted by the Ministry of Higher Education, Research and Innovation, this was the first in-person General Assembly since the creation of the ISC in 2018 and served as a vital occasion for ISC Members, Fellows and partners to engage in strategic cross-disciplinary discussions.

Over three days, including pre-event workshops, participants discussed how to build more equitable, open and transformative science systems capable of addressing today's global challenges. Their discussions concluded with the adoption of the Muscat Declaration, a collective call to action affirming science as a global public good. The Declaration urges the international community to promote equitable access to knowledge, foster stronger scientific collaboration and empower scientists everywhere to take an active role in shaping a more sustainable and just future.

A highlight of the event was the signing of a letter of intent between the ISC and Oman's Ministry to establish a Regional Focal Point for the Middle East and North Africa. The agreement reflects a shared commitment to strengthening cooperation in science, technology and innovation both within the region and beyond. The signing ceremony, held during the Dialogue's opening, underscored Oman's leadership in advancing science as a driver of development and international partnership.

The Muscat Dialogue brought to a close the ISC's Global Knowledge Dialogue series, which began in 2022. Earlier gatherings in Africa, Asia-Pacific and Latin America and the Caribbean laid the groundwork for regional and global exchanges on how science can serve societies more effectively. The Muscat event built on these experiences, providing a forum for reflection and future-oriented dialogue as the series reached its final destination.

The ISC acknowledges with gratitude the Ministry of Higher Education, Research and Innovation of Oman, whose leadership and financial contribution made the event possible, as well as ISC Members that supported participation from low-income countries. Thanks to their generosity, more than 80 delegates from financially constrained organizations were able to attend, ensuring that the Dialogue reflected the truly global and inclusive spirit of science.

The Dialogue also placed a strong emphasis on engaging early career scientists, with dedicated roundtables, speaking opportunities and travel bursaries to ensure that young researchers could contribute to global conversations. This commitment was made possible through the support of the China Association for Science and Technology (CAST), which enabled many early and mid-career researchers to attend both the Dialogue and the ISC General Assembly.

KNOWLEDGE DIALOGUES

The conference was a vibrant gathering of ideas and perspectives, bringing together leading voices from across the global scientific community on three broad themes:

1. **Science systems and science futures**, focusing on emerging developments such as artificial intelligence (AI), open science and new models of research assessment;
2. **Science and just transformations to sustainability**, exploring the role of science in addressing environmental and social challenges; and
3. **Science and society**, addressing public trust in science, science diplomacy and questions of equality and social cohesion.

These interconnected themes reflected the scientific community's most pressing priorities and demonstrated the diverse perspectives needed to tackle complex global issues.

1. Opening session

SPEAKERS

- **H.E. Rahma Al-Mahrooqi,** Minister of Higher Education, Research and Innovation, Oman
- **Sir Peter Gluckman,** ISC President
- **H.E. Csaba Kőrösi,** President of the 77th United Nations General Assembly
- **Ruth Morgan,** Director of the University College London (UCL) Centre for the Forensic Sciences
- **António Guterres,** UN Secretary-General
- **Salim Abdool Karim,** Director, Centre for the AIDS Programme of Research in South Africa (CAPRISA) and ISC Vice-President for Membership
- **Françoise Baylis,** Distinguished Research Professor Emerita, Dalhousie University and President-Elect of the Royal Society of Canada
- **H.E. Abdulsalam Al Murshidi,** President, Oman Investment Authority and ISC Global Commissioner
- **H.E. Munir Eldesouki,** President of King Abdulaziz City for Science and Technology

The opening ceremony of the Global Knowledge Dialogue in Muscat brought together leaders from science, policy and diplomacy to initiate a week of exploration on science's role in building a more cooperative, inclusive and resilient global society. Set against a backdrop of rising global fragmentation and mistrust, the session served as a call to rethink how science is organized and governed to meet contemporary challenges.

The event began with welcome speeches from H.E. Rahma Al-Mahrooqi, Oman's Minister of Higher Education, Research and Innovation, and ISC President Sir Peter Gluckman. Minister Al-Mahrooqi highlighted Oman's aspirations to act as a regional hub for scientific dialogue, rooted in principles of openness and collaboration. Gluckman emphasized the urgency of creating more inclusive and anticipatory science systems and called for a renewed compact between science and society.

The keynote speeches offered complementary perspectives. H.E. Csaba Kőrösi, President of the 77th UN General Assembly, focused on data-informed multilateralism and science's role in supporting peace, planetary health and resilience.

Ruth Morgan, Director of the UCL Centre for the Forensic Sciences, stressed the importance of designing science systems that prioritize purpose, trust and actionable outcomes.

A recorded message from the UN Secretary-General António Guterres reinforced these themes, urging the global community to harness science for sustainable development and global solidarity.

A high-level panel discussion with Salim Abdool Karim, Françoise Baylis, H.E. Abdulsalam Al Murshidi and H.E. Munir Eldesouki covered the changing expectations placed on science, the need for regional leadership and the value of ethical, inclusive engagement. Speakers emphasized the necessity of involving younger generations, building trust with communities and enabling science to respond more effectively to societal needs.

The session closed on a hopeful and action-oriented note, setting the stage for in-depth dialogue throughout the week and reinforcing a shared commitment to strengthening science as a tool for global cooperation.

2. Rethinking international science collaboration for the 21st century

CHAIR

- **Lidia Brito,** UNESCO

SPEAKERS

- **Quarraisha Abdool Karim,** The World Academy of Sciences (TWAS)
- **H.E. Saif Al-Hiddabi,** Sultanate of Oman
- **H.E. Macharia Kamau,** Ambassador and Special Envoy, Kenya
- **Seteney Shami,** Director, Arab Council of Social Sciences (ACSS)
- **Teatulohi (Lohi) Matainaho,** Pacific Academy of Sciences
- **Mark Walport,** Royal Society, UK

Key takeaways

- **Science diplomacy is more crucial than ever:** Geopolitical tensions and global crises demand stronger and more resilient international science collaboration frameworks.
- **Inclusivity must be a guiding principle:** Collaboration must reflect regional diversity and promote equitable participation of underrepresented countries and communities.
- **Trust and openness are foundational:** Global cooperation in science depends on long-term trust, open access to knowledge and transparent data-sharing practices.
- **Science systems must adapt to complexity:** Cross-border challenges, such as pandemics and climate crisis, require systems thinking and new models of transdisciplinary collaboration.
- **Global South leadership matters:** Science from the Global South should not only be included but play a leading role in shaping agendas and governance models.

This high-level plenary explored the future of international science collaboration against a backdrop of growing global fragmentation, environmental urgency and rising mistrust. Chaired by Lidia Brito of UNESCO, the session featured speakers from various regions, who reflected on the limitations of current models and the bold rethinking required to ensure impactful, open, equitable and globally relevant scientific collaboration.

Speakers agreed that science diplomacy – once largely symbolic – must now be recognized as an essential tool for solving cross-border challenges. In an era marked by competition over technologies, data and influence, international scientific partnerships serve not only research goals but broader societal and geopolitical aims.

There was concern that global crises such as pandemics and climate change reveal gaps in coordination, especially when cooperation is hindered by mistrust or lack of infrastructure.

Several panellists emphasized that inclusive collaboration must become a central pillar of global science. This means not just extending opportunities to researchers from low- and middle-income countries, but truly rebalancing governance structures and research priorities. Without such change, science risks reinforcing inequities it seeks to address.

Trust, both institutional and interpersonal, was described as foundational to successful science collaboration. Open science practices, transparency in funding and equitable data sharing were seen as essential to building this trust. Some warned that current practices still reflect colonial or extractive patterns of knowledge production and urged reform in how partnerships are initiated and maintained.

This plenary session also addressed the need for science systems to better respond to complexity. Emerging global challenges require integrated approaches across disciplines and sectors. Collaborative models must evolve to accommodate more fluid, rapid and inclusive methods of knowledge generation and use.

Importantly, participants highlighted the role of the Global South not only as contributors, but as leaders. Speakers from Africa, the Pacific and the Arab region made clear that their regions bring distinct knowledge systems and priorities that must help shape global science frameworks. Calls were made for stronger representation in global decision-making bodies and for support structures that enable meaningful South–South and South–North partnerships.

The session closed with a call for a cultural and institutional shift, to recognize international science collaboration not as a technical add-on, but as a moral and strategic imperative in the 21st century.

3. Transforming science: Open science, research assessment, science publishing

CHAIR

- **Geoffrey Boulton,** Edinburgh University and ISC Governing Board

SPEAKERS

- **Mohammed Al Badi,** Arab Open University
- **Priya Bondre-Beil,** Deutsche Forschungsgemeinschaft (DFG)
- **David Castle,** University of Victoria
- **Sarah de Rijcke,** University of Leiden
- **Graciela Diaz de Delgado,** International Union of Crystallography (IUCr)
- **Asja Prohic,** Springer Nature
- **Ana Persic,** UNESCO

Key takeaways

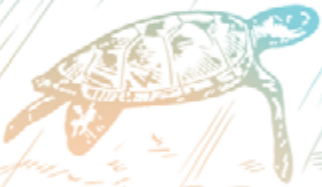
- **Prioritizing science over profit:** The current publishing model often prioritizes commercial profitability over scientific needs, requiring a shift to serve science as a global public good.
- **Expanding open science:** True open science must focus beyond publications to include transparency in scientific processes and ensure equitable inclusion for the wider public.
- **Reforming research assessment:** Reliance on ranking-based metrics encourages gaming of the system, necessitating criteria based on societal needs rather than targets.
- **Managing AI risks:** While AI accelerates publishing, it poses risks to authenticity and reliability, requiring strict ethical boundaries to maintain quality assurance.
- **Addressing global inequality:** Significant challenges persist for research in local languages and non-commercial models like 'Diamond Open Access', which requires better governance structures.

The session tackled the urgent need to overhaul a scientific infrastructure that increasingly fails to serve the global public good. The discussion painted a picture of a fractured community where commercial interests often supersede scientific merit. Participants argued that the prevailing business models prioritize profitability and reputation over the actual dissemination of knowledge, creating a system where the 'measure has become the target'. This pressure to publish quickly not only floods the landscape with unverified information but also forces universities to 'game' ranking systems rather than focusing on societal impact.

Moving beyond these critiques, the dialogue outlined a vision for open science that transcends the mere sharing of final products. The narrative emphasized that true reform requires opening the entire scientific process to scrutiny and ensuring access is not restricted to a privileged academic circle. While initiatives like 'Diamond Open Access' offer a path towards making publication open to all, the group acknowledged substantial hurdles, particularly regarding the sustainability of such models. The governance of scientific data and the exclusion of research produced in local languages are also significant concerns.

Looking towards the future, the integration of AI emerged as a double-edged sword. While acknowledging AI's ability to accelerate publication processes, speakers warned that it cannot replace human quality assurance. There are concerns that AI-generated research lacks authenticity and could widen the gap between consumers and the scientific community if not strictly regulated. There are also concerns regarding the sale of articles to AI platforms for training without authors' knowledge. Ultimately, the session concluded that the International Science Council could take a leading role in facilitating these reforms, ensuring that research priorities shift away from short-term metrics towards scientific progress, long-term impact and socially and policy-relevant research.

4. Ocean science for sustainability



CHAIR

- **Martin Visbeck,** GEOMAR Helmholtz Centre for Ocean Research Kiel; King Abdullah University of Science and Technology (KAUST) and ISC Governing Board

SPEAKERS

- **Rashid Sumaila,** University of British Columbia
- **Felix Bast,** Central University of Punjab
- **Sergey A. Dobretsov,** Sultan Qaboos University
- **Marie-Alexandrine Sicre,** National Centre for Scientific Research (CNRS) and Scientific Committee on Oceanic Research (SCOR)
- **Teatulohi Matainaho,** Pacific Academy of Sciences
- **Maria Paradiso,** University of Naples and ISC Governing Board

Key takeaways

- **Ocean science must be policy-connected:** To be impactful, ocean research must be designed with policy relevance in mind and actively engage decision-makers.
- **Sustainable ocean governance is urgent:** Fragmented governance, underfunding and political inertia threaten the sustainable use of ocean resources.
- **Science needs to represent coastal and Indigenous communities:** Effective ocean policy must reflect the lived realities and knowledge systems of coastal populations and Indigenous peoples.
- **Transdisciplinarity and data sharing are critical:** Cross-sector collaboration and open data are essential for holistic, solutions-oriented ocean science.
- **The UN Ocean Conference is a key moment:** UNOC-3 presents a strategic opportunity to align global science and policy for ocean sustainability.

This plenary addressed the role of ocean science in supporting global sustainability goals, with a focus on the lead-up to the 2025 UN Ocean Conference (UNOC-3) in Nice. Chaired by Martin Visbeck, the session brought together scientists, policy-makers and representatives from multilateral organizations to explore how ocean knowledge can be more effectively mobilized to serve societies and the planet.

The sharp decline in ocean health relates to multiple drivers from climate change to pollution (including land-based pollution), overfishing and overexploitation, which are all undermining sustainable development. We need to shift the global discourse from ‘the ocean we want’ to ‘the ocean we need’.

Speakers emphasized that science alone is not enough – it must be connected to the policy-making process from the outset. Several participants noted that while vast knowledge exists about ocean systems, too little of it translates into sustainable management or governance. There is a critical need to design science that is policy-relevant, use-inspired and co-produced with the people who need to act on its findings.

The discussion highlighted several systemic barriers to progress: fragmented governance regimes, inadequate funding and siloed research cultures. Panellists stressed the urgency of transitioning to a more coordinated approach to ocean stewardship to integrate across sectors and levels of governance and prioritize long-term sustainability over short-term exploitation. This starts with recognizing the multiple values of the one shared ocean, including for the diverse cultural heritage and identities, beyond its resources.

Equity and inclusion were recurring themes. Speakers called for the meaningful integration of coastal communities, Indigenous knowledge holders and small island states into ocean science initiatives. They noted that the people most affected by ocean degradation are often those least represented in governance processes and scientific decision-making. This must change if ocean science is to be effective and just.

The plenary also underscored the importance of data sharing and transdisciplinary collaboration. Holistic solutions require contributions from across natural and social sciences, as well as non-academic sectors. Speakers urged the creation of open data platforms and the adoption of collaborative research practices that break down disciplinary and institutional silos and foster enduring partnerships, including through South–South collaboration.

With UNOC-3 in 2025 serving as a key moment for global ocean advocacy, the ISC's role as a convenor and voice of the science community is critical. Participants encouraged continued ISC engagement, including the promotion of evidence-informed policy, the amplification of underrepresented voices and the coordination of international scientific input to multilateral ocean negotiations.

5. The changing context for science diplomacy

CHAIRS

- **Frances Colón,** Center for American Progress and ISC Governing Board
- **Anne-Teresa Birthwright,** Belmont Forum

SPEAKERS

- **Salim Abdool Karim,** CAPRISA and ISC Governing Board
- **Yousuf Al Bulushi,** German University of Technology (GUtech)
- **Anna-Maria Arabia,** Australian Academy of Sciences
- **Chagun Basha,** Office of Principal Scientific Adviser to the Government of India
- **Karen Lips,** International Institute for Applied Systems Analysis

Key takeaways

- **Science diplomacy has evolved:** It now extends beyond government-to-government engagement to include universities, think tanks, non-governmental organizations and the private sector.
- **Geopolitics shape the agenda:** Rising global tensions are complicating science collaboration, requiring more intentional and values-driven diplomacy.
- **National and regional strategies are needed:** Countries and regions should develop their own science diplomacy frameworks aligned with local capacities and goals.
- **Science must be both a tool and a goal:** Diplomatic initiatives should not only use science instrumentally but also strengthen science systems themselves.
- **Institutions like the ISC can lead:** Global organizations can foster neutral platforms, amplify voices from the Global South and promote inclusive approaches.

This plenary focused on the rapidly shifting landscape of science diplomacy and what it means for science organizations, governments and multilateral institutions. Chaired jointly by ISC Governing Board member Frances Colón and Anne-Teresa Birthwright from the Belmont Forum, the session featured speakers from research, policy and international development sectors.

The session aimed to present a discussion paper that highlighted possible directions for ISC's science diplomacy work, including the ISC's unique role in fostering equitable dialogue on issues of global concern, promoting international scientific collaboration and equity in science, encouraging responsible governance of disruptive technologies and the protection of the global commons (such as the oceans, atmosphere or the polar regions) and strengthening science–policy interfaces and providing science advice to inform decision-making. All ISC Members were invited to comment on the role of the ISC and highlight their own contributions to science diplomacy.

Panellists began by reflecting on how diplomacy is no longer the domain of foreign ministries alone. Universities, non-governmental organizations and even the private sector are increasingly active in this space. The conversation acknowledged that science diplomacy now involves a diverse ecosystem of actors working to bridge national and scientific interests in a time of global uncertainty.

Geopolitical tensions were noted as a defining feature of today's context. Speakers cautioned that polarization and competition over technologies and data may hinder collaboration and erode trust. In response, science diplomacy must become more intentional, guided by values of openness, reciprocity and mutual benefit. Regional and national contexts matter, and speakers called for governments to craft tailored strategies that align diplomatic objectives with local science capabilities.

Importantly, science was seen not only as a tool of diplomacy but also as an outcome to be strengthened. Participants argued that effective science diplomacy should lead to more resilient research ecosystems, support capacity building and foster long-term partnerships that go beyond transactional engagement.

Speakers from the Global South emphasized the need to redefine the narrative of science diplomacy to be more inclusive and co-creative. They urged international platforms like the ISC to actively engage in convening diverse voices, especially from underrepresented regions, and to support alternative models of collaboration that are less extractive and more equitable.

The plenary emphasized that science organizations and networks need to play a more active role in shaping science diplomacy agendas. As geopolitical shifts challenge multilateralism, neutral spaces like the ISC can offer continuity and foster global scientific solidarity. The session also highlighted the importance of knowledge diplomacy, recognizing the value of collaborative science in building peace, resilience and shared global progress.

6. Pilot science missions for sustainability

CHAIR

- **Megha Sud,** ISC

SPEAKERS

- **H.E. Macharia Kamau,** Ambassador and Special Envoy, Kenya
- **H.E. Abdulsalam Al Murshidi,** President, Oman Investment Authority and ISC Global Commissioner
- **Salvatore Aricò,** ISC
- **Anik Bhaduri,** Asia Science Mission for Sustainability
- **João Campos-Silva,** Jurua Institute
- **Gilbert de Gregorio,** Frontiers Planet Prize
- **Ronit Prawer,** ISC Regional Focal Point for Asia and the Pacific

Key takeaways

- **Two initial missions were announced:** The first mission focuses on sustainable livelihoods and conservation in the Brazilian Amazon, while the second supports regional sustainability collaboration across Asia.
- **Science missions aim to address systemic sustainability challenges:** The pilot missions are designed as experimental, transdisciplinary collaborations that bring together science, policy and society to co-design solutions.
- **Political and philanthropic support is critical:** Strong backing from national governments and philanthropic organizations was emphasized as essential to enabling long-term mission impact.

This session marked the public announcement of two pilot science missions selected by the International Science Council as part of its initiative to develop and test a mission model for transdisciplinary collaboration in support of sustainability.

This model is outlined in the Global Commission on Science Missions for Sustainability's report 'Flipping the Science Model: A Roadmap to Science Missions for Sustainability', unveiled at the 2023 UN High-Level Political Forum. It seeks to elevate the collaboration between science, policy and society to new heights, tailored for our unprecedented era. The goal is to render knowledge fully actionable, integrated and engaged, aiming for solutions that match the scale of humanity's most critical challenges.

The session brought together mission leads, high-level partners and funders to introduce the ISC Science Missions for Sustainability, explain the development of the concept and its rationale and discuss next steps.

ISC CEO Salvatore Aricò provided background on the evolution of the science missions concept, developed in response to the urgent need for integrated, long-term scientific engagement with the world's most pressing challenges. He emphasized the missions as a bold departure from fragmented, short-term project models towards systemic, impact-oriented science engaged with society and policy.

Ambassador Macharia Kamau, Chair of the Missions Oversight Committee, formally announced the two pilot missions, selected following a call that attracted over 250 global submissions. The first, led by the Jurua Institute in Brazil, represented by João Campos-Silva, will use protected areas to catalyse sustainable livelihoods in the Amazon region. The second, coordinated by Future Earth Asia, represented by Anik Bhaduri, will develop a Meta-Network Hub for Sustainability to connect researchers, policy-makers and funders across Asia.

Remarks by Abdulsalam Al Murshidi, Ronit Prawer, and Gilbert de Gregorio highlighted the importance of both regional ownership and diverse funding mechanisms. Panellists underscored that long-term, challenge-driven science missions require flexibility, strategic alignment and trust-building among all stakeholders.

In closing, speakers emphasized the missions as test beds for a broader shift in how science collaborates with society, anchored in co-design, led by regions and guided by shared goals. The pilot phase will inform the development of future missions and help embed this approach in global science systems.

7. Emerging technologies and the evolution of science

CHAIR

- **Françoise Baylis,** Royal Society of Canada and ISC Governing Board

SPEAKERS

- **Ali Al Shidhani,** Ministry of Transport, Communications and Information Technology, Sultanate of Oman
- **Daniel Andler,** Paris-Sorbonne University, Académie des sciences morales et politiques
- **Marileen Dogterom,** Royal Netherlands Academy of Arts and Sciences (KNAW)
- **Shohini Ghose,** Quantum Algorithms Institute (remote)
- **Anicia Peters,** National Commission of Research, Science and Technology, Namibia

Key takeaways

- **Science and technology co-evolve:** Emerging technologies are reshaping how science is done, what questions are asked and who participates in knowledge creation.
- **Ethics must keep pace with innovation:** Anticipating ethical, legal and social implications is critical as technologies like AI, gene editing and neurotechnology advance.
- **Infrastructures need strategic investment:** Science systems require upgraded infrastructure to support open, collaborative and responsible tech-enabled research.
- **Governance should be forward-looking:** Policy-makers and institutions must move from reactive to anticipatory governance to guide technological development responsibly.
- **Inclusivity and equity cannot be an afterthought:** Ensuring diverse voices and values are represented in tech design and implementation is key to legitimacy and impact.

This session explored how scientific inquiry and emerging technologies are increasingly entangled, reshaping not only tools and techniques but also the cultures and values of science. Chaired by Françoise Baylis, the panel featured voices from diverse disciplines who emphasized the need for adaptive systems capable of navigating both potential and peril.

Several speakers reflected on how new technologies are not merely extensions of existing practices but fundamentally alter what is knowable and actionable. AI-driven modelling, for example, enables analysis at scales and speeds previously unimaginable. At the same time, it raises questions about authorship, accountability and the role of human judgment. These shifts are challenging traditional scientific norms and making space for new actors and forms of knowledge production.

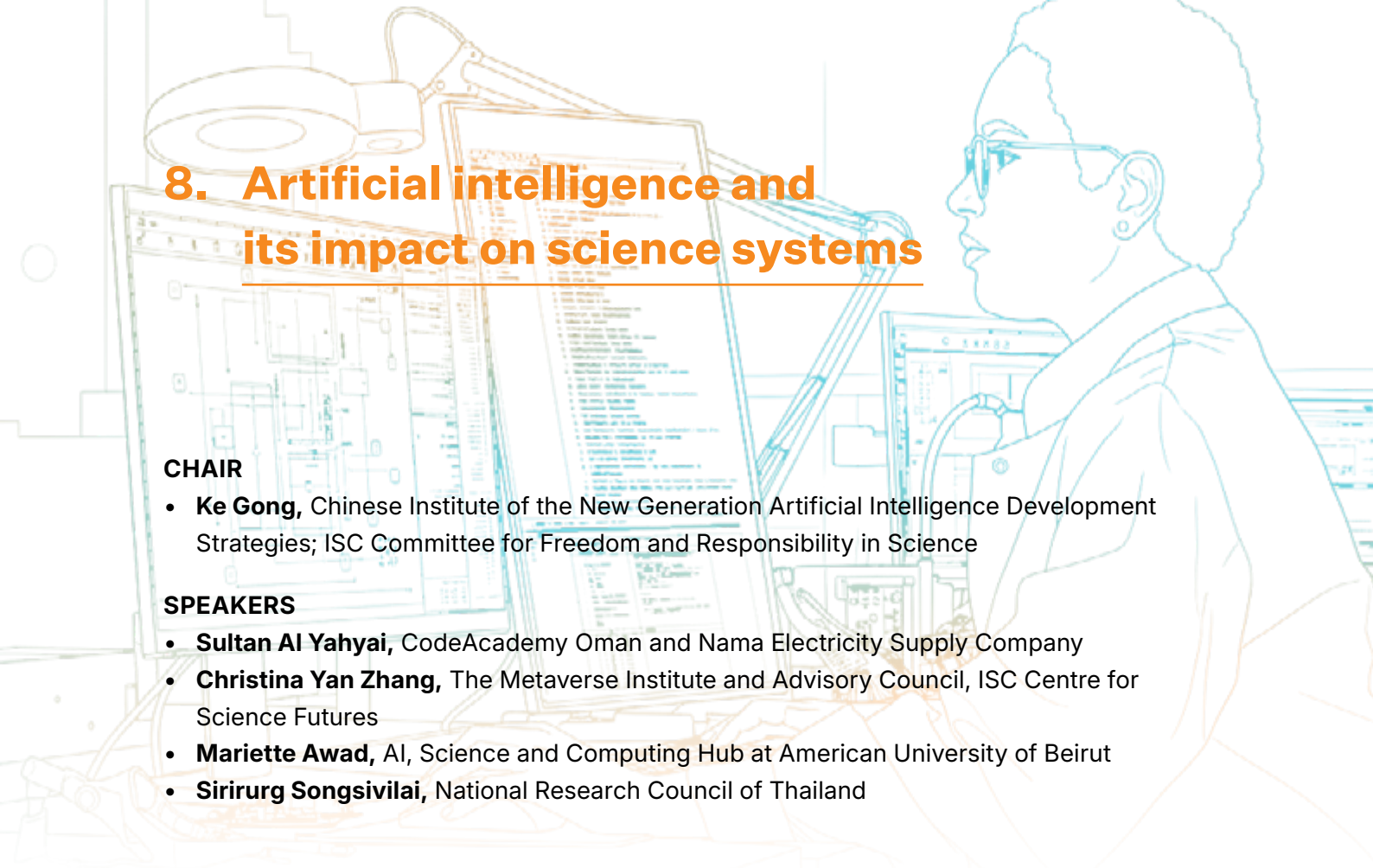
A recurring concern was the difficulty of keeping ethical frameworks aligned with the rapid pace of innovation. Panellists noted that ethical guidance is often too slow, too narrow or disconnected from practice. Instead, what is needed is embedded, participatory and forward-looking approaches to ethics that engage researchers, policy-makers and affected communities early in the design and deployment of technologies.

Speakers also addressed the material and organizational underpinnings of science in a tech-driven world. From computing power and data architectures to collaborative platforms and lab infrastructures, science systems require new forms of investment. Yet such investment must be guided by values – open access, equity, environmental sustainability – not just efficiency or competitiveness.

Governance was another key theme. Panellists urged institutions to avoid chasing headlines or reacting only once harm is visible. Instead, they advocated for anticipatory governance: a capacity to identify possible risks, weigh trade-offs and engage publics before technologies are fully entrenched. Examples were drawn from AI regulation, gene editing frameworks and neurotechnology guidelines.

Finally, the panel returned repeatedly to issues of equity and inclusion. Emerging technologies often reproduce or exacerbate existing biases unless inclusivity is a core design principle from the outset. Ensuring diverse voices in technology development across gender, geography and discipline was framed as a prerequisite for both legitimacy and innovation.

Rather than offering simple solutions, the session painted a picture of science systems in flux. It called attention to the need for flexible infrastructures, creative governance and ongoing ethical reflection as emerging technologies continue to transform the scientific enterprise.



8. Artificial intelligence and its impact on science systems

CHAIR

- **Ke Gong,** Chinese Institute of the New Generation Artificial Intelligence Development Strategies; ISC Committee for Freedom and Responsibility in Science

SPEAKERS

- **Sultan Al Yahyai,** CodeAcademy Oman and Nama Electricity Supply Company
- **Christina Yan Zhang,** The Metaverse Institute and Advisory Council, ISC Centre for Science Futures
- **Mariette Awad,** AI, Science and Computing Hub at American University of Beirut
- **Sirirurg Songsivilai,** National Research Council of Thailand

Key takeaways

- **AI is reshaping scientific methodologies:** AI is not just a tool but a transformation in how scientific research is conducted, from hypothesis generation to peer review.
- **Context matters in AI adoption:** AI strategies must consider local infrastructure, data availability, regulatory environments and cultural readiness.
- **Ethical, transparent AI is essential:** Building trust in AI tools requires fairness, transparency, explainability and mechanisms for accountability.
- **Skills development must catch up:** Scientists, policy-makers and educators need new competencies to work effectively with AI-driven systems.
- **Global collaboration can offset inequities:** Equitable access to computing power, talent and governance expertise requires stronger international cooperation.

This session focused on how AI is reshaping science systems, from the lab to the policy arena. With panellists from academia, industry and international organizations, the conversation explored concrete examples, emerging risks and pathways for responsible integration.

Speakers opened by illustrating the expansive role AI now plays across the scientific process. From identifying novel patterns in genomic data to accelerating material discovery, AI is altering the speed, scope and structure of research. It has the potential to automate routine tasks, improve reproducibility and enhance collaboration, but also raises new questions about validation, authorship and intellectual responsibility.

Several panellists emphasized that there is no one-size-fits-all model for AI in science. The effectiveness and ethical application of AI depend heavily on local contexts. Access

to clean and relevant datasets, sufficient computing resources and policy frameworks all shape whether AI adds value or creates dependency. In low-resource settings, strategic investments and regional cooperation are essential to avoid widening global research disparities.

Trust emerged as a recurring concern. The opacity of many AI models, particularly those used in high-stakes areas like health or education, can erode public and professional confidence. Building trust means ensuring that AI systems are transparent, auditable and aligned with human values. Speakers urged the creation of common ethical standards and governance structures that are not overly reactive or overly centralized.

Education and skills development were identified as bottlenecks. While AI literacy is spreading among tech-savvy researchers, many decision-makers and domain experts still lack the capacity to engage critically with AI. Equipping the next generation with both technical and ethical training will be essential. Additionally, interdisciplinary collaboration between AI specialists and domain scientists should be normalized and incentivized.

The discussion also acknowledged the role of geopolitics and global inequality in shaping the future of AI in science. Some regions face steep barriers to accessing computing infrastructure or retaining AI talent. To counterbalance this, the panel advocated for international alliances that prioritize open science, equitable funding and shared governance mechanisms.

Rather than treating AI as an external disruptor, the panel positioned it as a co-evolving partner to science, one that demands institutional adaptation, cultural shifts and new forms of global solidarity.

9. Decade of Sciences for Sustainable Development: Post-2030 agenda

CHAIR

- **Mike Meadows,** International Geographical Union (IGU)

SPEAKERS

- **Lidia Brito,** UNESCO
- **Silvina Ponce Dawson,** International Union for Pure and Applied Physics (IUPAP)
- **Daniel Muth,** Vrije Universiteit Amsterdam and Frontiers Planet Prize national champion
- **Mia Strand,** Nelson Mandela University, Frontiers Planet Prize national champion
- **Nathalie Lemarchand,** Université Paris 8 and International Geographical Union (IGU)

Key takeaways

- **A coordinated decade of action:** The initiative seeks to consolidate efforts across sectors, disciplines and regions to accelerate progress on sustainability goals.
- **Science missions as catalysts:** The ISC pilot science missions illustrate a shift towards more ambitious, impact-oriented collaborations with real-world relevance.
- **Sustainability science must be integrative:** Effective responses require systems thinking and integration of environmental, social and economic dimensions.
- **Stakeholder engagement is central:** Active involvement from governments, communities, funders and the private sector is needed to align agendas and drive the Decade activities.
- **Institutional commitment and support:** Sustained success will depend on leadership, investment and structural backing from research institutions and science organizations.

Framed as a forward-looking dialogue, this session examined the role and impact of the UN Decade of Sciences for Sustainable Development (2024–2033). Building on the momentum from the ISC pilot science missions introduced earlier in the event, participants discussed what it would take to make the Decade meaningful, strategic and aligned with global development needs.

The discussion focused on the intersection of diverse disciplinary perspectives and their collective capacity to influence future sustainability agendas. Participants examined the specific mechanisms that facilitate interdisciplinary collaboration, alongside the national frameworks and funding streams necessary to support such holistic approaches. Ultimately, the dialogue aimed to identify tangible outcomes that would empower Members to advance both their individual and their shared sustainability goals.

A recurring theme was the need for coherence and scale. The sustainability landscape is crowded but also fragmented. Speakers stressed that science must act as a unifying force, connecting disciplines, institutions and sectors through a shared understanding of complex systems. A coordinated push across the Decade could help convert scattered good intentions into cumulative impact.

The pilot science missions were presented as both proof-of-concept and inspiration. These missions seek to focus scientific effort on areas where knowledge gaps coincide with pressing policy needs. Their design reflects a broader shift towards science that is oriented not only towards understanding but also towards enabling real-world solutions. Panellists welcomed the approach but also flagged challenges, particularly around financing, scaling and institutional inertia.

Central to the conversation was the call for stronger and earlier involvement of stakeholders. Sustainability cannot be delivered by scientists alone, nor should it be. Government agencies, funding bodies, community leaders and private actors must be partners from the outset. This kind of engagement, while sometimes messy or unpredictable, is essential to ensuring that research is not just published but implemented.

Several speakers emphasized the importance of institutional structures in sustaining the momentum of the Decade. It is not enough to generate enthusiasm; a support system is needed to anchor initiatives, provide continuity and reward contributions that may not fit traditional academic metrics. Universities, academies and international science councils all have a role to play in providing this backbone.

The discussion avoided utopian language, focusing instead on pragmatic steps. These included developing adaptable mission templates, strengthening regional science–policy interfaces and learning from what has and has not worked in past global science initiatives. Rather than reinventing the wheel, the Decade can build on existing successes, provided it brings the right actors to the table and sustains focus over time.

In all, the session highlighted the Decade not as a branding exercise but as an opportunity to reimagine science's role in society. It underscored that achieving sustainability is not simply about what science knows, but about how science is organized, shared and embedded in the decisions that shape our collective future.

10. From barriers to breakthroughs: Shaping the future of gender equality in science

CHAIR:

- **Catherine Jami,** National Centre for Scientific Research (CNRS), International Union of History and Philosophy of Science and Technology, Standing Committee for Gender Equality in Science

SPEAKERS

- **Beatriz Caputto,** Science Academy of Argentina and Inter-American Network of Academies of Sciences
- **Javier García-Martínez,** International Union of Pure and Applied Chemistry
- **Palesa Sekhejane,** Human Sciences Research Council
- **Tonya Blowers,** Organization for Women in Science for the Developing World

Key takeaways

- **Monitoring of gender-based data and evidence-based action is fundamental:** Systematic monitoring of gender-disaggregated data by scientific institutions and their analysis are required to guide effective strategies for advancing gender equality in science.
- **Systemic barriers persist across contexts:** Despite progress, entrenched biases and structural inequities continue to limit participation and advancement in all types of scientific organizations.
- **Intersectionality deepens understanding:** Addressing gender alone will not solve all representation and participation gaps. Policies must account for intersecting forms of discrimination. There again, action will depend on the availability of data.
- **Collective commitment drives change:** Tangible improvement depends on shared responsibility across institutions, funders and leadership.
- **Monitoring and accountability are crucial:** Sustainable progress requires tracking commitments and outcomes with transparent mechanisms.

This session served as an introduction of the newly launched ISC-IAP-SCGES project 'Advancing gender equality in scientific organizations' to representatives of the ISC membership – stakeholders of scientific organizations. The project aims to update global data, collected through upcoming surveys and interviews, to offer a clearer picture of the current state of gender equality in scientific organizations globally. This evidence base will

be critical for crafting targeted interventions that reflect lived realities and organizational dynamics.

The session also introduced a number of initiatives carried out by ISC partners or Members to improve the representation and participation of women in their organizations.

Speakers addressed the enduring barriers that women and gender-diverse individuals face across the research ecosystem. From funding gaps and career progression bottlenecks to harassment and unequal caregiving expectations, systemic issues were identified as ongoing impediments to inclusive participation. Several panellists noted that progress often stalls due to a lack of structural change, not a lack of will.

Intersectionality emerged as a key theme, with repeated calls to consider the overlapping forms of disadvantage that compound gender-based inequalities. Race, geography, disability and socio-economic status all intersect with gender to create distinct and sometimes overlooked experiences. Panellists urged institutions to move beyond generic diversity frameworks and engage with the complexity of individuals' identities.

Institutional commitment was described as non-negotiable. Policies must be backed by leadership, funding and an internal culture that rewards equity work. Participants praised emerging frameworks that include gender equality criteria in research funding and evaluation, but also pointed to a need for more robust accountability mechanisms. Promises without progress can erode trust and momentum.

In addition to policies and metrics, speakers underlined the importance of collaboration. Change will not come from isolated efforts but from coordinated action across scientific societies, funders, publishers and governments. The role of allies, especially those in positions of power, was highlighted as vital in challenging norms and enabling institutional shifts.

Throughout the discussion, the tone remained grounded in pragmatism rather than idealism. The session framed gender equality not just as a moral imperative, but as a structural and strategic issue for science systems. Progress will depend on transparent monitoring, shared accountability and a willingness to reimagine power structures.

As the new survey and report move forward, the initiative aims to provide the tools and evidence necessary to empower institutions and communities to take meaningful action. The session provided an opportunity to help shape this action.

11. Science education for our future: Building capacity for global challenges

CO-CHAIRS

- **Motoko Kotani,** ISC Governing Board
- **Mei-Hung Chiu,** ISC Governing Board

MODERATOR

- **Heide Hackmann,** Stellenbosch University

SPEAKERS

- **Nathalie Fomproix,** International Union of Biological Sciences
- **Francis Akena Adyanga,** Society for the Advancement of Science in Africa
- **Abdullah Ambusaidi,** Ministry of Education, Oman
- **Anne-Teresa Birthwright,** Belmont Forum

Key takeaways

- **Education must align with future needs:** Science education should evolve to equip learners with skills for uncertainty, complexity and interdisciplinary thinking.
- **Capacity building is a collective endeavour:** Universities, governments, civil society and private sector actors must work together to strengthen science systems globally.
- **Equity in access and opportunity is essential:** Efforts to build capacity must prioritize inclusion across gender, geography and socio-economic lines.
- **South–South collaboration has untapped potential:** Regional and interregional networks offer powerful pathways to share resources, knowledge and innovation.
- **Lifelong learning and flexibility are key:** Science systems need to support ongoing professional development and embrace more flexible, adaptive learning models.

Focusing on the foundational role of science education and institutional development, this session brought together educators, policy advisers and capacity building leaders to examine what is needed to prepare for future global challenges. The discussion underscored both universal needs and contextual realities shaping science education systems around the world.

Speakers emphasized that traditional models of science education are inadequate for today's rapidly evolving world. Beyond technical knowledge, learners must develop the ability to navigate complexity, adapt to change and engage across disciplines. Education systems should shift towards more participatory, problem-oriented learning models that prepare students not only to work in science, but to shape it.

The panellists also emphasized the importance of collaboration across sectors. Capacity building is not a task that any one institution or country can shoulder alone. Universities, research centres, non-governmental organizations, governments and private stakeholders all have complementary roles to play. When their efforts align, especially in supporting early career researchers and educators, the science ecosystem as a whole becomes more resilient.

Several interventions focused on inclusion. Gender disparities, regional inequalities and lack of access to educational infrastructure remain major barriers to building equitable capacity. The need for data-informed strategies to address these gaps was frequently raised, as was the importance of listening to underrepresented voices when designing education and training programmes.

Speakers pointed out that many solutions can come from the Global South. South–South collaboration remains an underutilized avenue for innovation and support. Regional networks, twinning programmes and mentorship initiatives were cited as mechanisms that foster mutual learning and reduce reliance on extractive North–South dynamics.

In the face of accelerating global transitions, from digitalization to climate change, education and capacity building must become more flexible. Lifelong learning, micro-credentialing and interdisciplinary curricula were all proposed as means to help individuals and institutions remain agile. Several examples were shared of local and national programmes adapting these ideas with promising results.

The session emphasized that building capacity is not simply about scaling existing models. It requires rethinking the purpose and practice of education itself. Preparing for the future will demand more inclusive, adaptive and collaborative approaches grounded in both global and local realities.

12. Polar science and the International Polar Year (2032–2033)

CHAIRS

- **Mike Sparrow,** World Climate Research Programme (WCRP)
- **Johanna Grabow,** Scientific Committee on Antarctic Research (SCAR)

SPEAKERS

- **H.E. Ólafur Ragnar Grímsson,** Arctic Circle
- **Anna Mauranen,** University of Helsinki
- **Ramcharan Vijayaraghavan,** Polar Educators International
- **Paul Arthur Berkman,** Science Diplomacy Centre
- **Mark Wuddivira,** Caribbean Academy of Sciences
- **Anne Husebekk,** Arctic University of Norway and ISC Governing Board

Key takeaways

- **The Fifth International Polar Year is in active planning:** Building on past successes, the upcoming IPY aims to unify and energize global polar research efforts.
- **Polar regions are climate barometers:** Changes in the Arctic and Antarctic offer early warnings for global environmental transformations.
- **Collaboration must be strengthened:** Effective polar research requires enhanced coordination between nations, disciplines and Indigenous communities.
- **Data accessibility and integration are priorities:** There is a need to improve access to historical and real-time polar datasets and ensure interoperability.
- **Education and public engagement are key:** Increased awareness of polar science can inspire action and attract the next generation of researchers.

This session set the stage for renewed global focus on polar science through the launch of the Fifth International Polar Year (IPY-5). Organized by the Scientific Committee on Antarctic Research and the World Climate Research Programme, the session highlighted the unique role of the polar regions in Earth's climate system and the need for coordinated, interdisciplinary research efforts.

Speakers began by revisiting the history of past Polar Years, noting how each one – from 1882 through 2007 – has helped catalyse scientific breakthroughs and international partnerships. The proposed IPY-5 would continue this legacy by addressing 21st century challenges, including climate feedback loops, permafrost thaw, biodiversity loss and sea level rise. Unlike earlier efforts, however, IPY-5 also aims to deeply integrate Indigenous knowledge systems and local perspectives.

A central theme was the urgency of understanding polar change. The Arctic and Antarctic are experiencing environmental transformations at rates that outpace most other regions. Melting ice sheets, shifting ocean currents and vanishing ecosystems are not just regional issues, they are signals of broader planetary shifts. Polar research, therefore, is not a niche interest but a vital component of global sustainability science.

The conversation highlighted the importance of cooperation. Large-scale polar research demands logistic coordination, data harmonization and scientific openness. Speakers acknowledged the ongoing efforts of existing networks, but called for even stronger linkages among national programmes, Indigenous communities and multidisciplinary teams. Cooperation was especially emphasized in relation to research infrastructure, such as vessels, stations and data platforms.

Data remains both a challenge and an opportunity. While vast amounts of information have been collected, much of it remains fragmented, inaccessible or underutilized. Building a new generation of interoperable, open-access polar databases was identified as a key priority, not just for science, but also for informing policy and adaptation strategies.

Finally, the panel stressed the role of education and outreach. Polar research can capture the public imagination and serve as a powerful entry point for climate literacy. Engaging schools, universities and the media in the IPY process will be crucial for mobilizing political and public support and for cultivating future polar researchers.

As the planning for IPY-5 advances, the session offered both strategic insights and practical recommendations. It underscored that polar research is no longer peripheral: it is central to understanding and addressing our planet's most pressing challenges.

13. Social cohesion and inequality

CHAIR

- **Don Kalb,** Global Research Programme on Inequality (GRIP), Law and Social Transformation programme, University of Bergen

SPEAKERS

- **Karina Batthyany,** Latin American Council of Social Sciences (CLACSO) and ISC Governing Board
- **Craig Calhoun,** Arizona State University
- **Maretta Kula-Semos,** Pacific Academy of Sciences
- **Kathryn Robinson,** Australian National University

Key takeaways

- **Inequality undermines social trust and democratic processes:** High levels of inequality weaken civic engagement, deepen social fragmentation and erode confidence in institutions.
- **Multidimensional metrics are essential:** Traditional economic indicators are insufficient. Better tools are needed to assess wellbeing, exclusion and resilience.
- **Scientific institutions have a role in bridging divides:** Science can support social cohesion by fostering inclusive knowledge systems and shaping equitable policy.
- **Development models must be rethought:** A shift away from narrow growth-focused frameworks is needed to centre dignity, sustainability and fairness.
- **Interdisciplinary and global perspectives add value:** Addressing inequality requires integrating social science insights with global–local dialogue and action.

This session took a closer look at the complex relationship between inequality and social cohesion – issues that have surfaced throughout the conference as fundamental to sustainability and collective wellbeing. Drawing from work on rethinking human development and multidimensional wellbeing, panellists explored how inequality is measured, understood and addressed across different contexts.

Speakers pointed out that inequality is not merely a matter of income disparity. It manifests in access to education, healthcare, political participation and recognition. These layered forms of exclusion impact individual lives but also erode the trust needed for societies to function. As one panellist noted, rising inequality undermines confidence in democratic institutions and leads to the fragmentation of public discourse.

One of the central arguments made was the need to move beyond GDP and other narrow economic indicators when evaluating social progress. The panel emphasized the development of more holistic and multidimensional tools to assess wellbeing and exclusion. These would better capture the lived realities of diverse populations and offer a fuller picture of the gaps that exist within and between societies.

The discussion also explored the potential for science to play a more active role in supporting social cohesion. Scientific institutions are not neutral. They have the capacity to shape public narratives, support inclusive evidence generation and guide policies that either reinforce or reduce inequality. Participants called on researchers and research funders to be more reflective about how their work intersects with social justice goals.

Importantly, several speakers highlighted that the dominant models of development may be part of the problem. Emphasizing growth above all else often leads to trade-offs that marginalize already vulnerable communities. The call was made to reframe development models around principles such as human dignity, planetary boundaries and intergenerational equity. Rethinking what success looks like at the national and global levels is a necessary step towards more inclusive societies.

Finally, the session emphasized the value of integrating insights from the social sciences and humanities into broader sustainability efforts. Whether through participatory approaches, narrative change or historical perspective, these disciplines can deepen our understanding of inequality's roots and pathways to cohesion. At the same time, speakers advocated for fostering North–South dialogue and collaboration, recognizing that social challenges are shared but also deeply contextual.

Rather than offering prescriptions, the session created space to reflect on how inequality shapes science and how science might in turn help to address inequality in more intentional and impactful ways.

14. Beyond borders: Science, public trust and multilateral policy

CHAIRS

- **Anna-Maria Arabia,** Australian Academy of Sciences
- **Peggy Oti-Boateng,** African Academy of Sciences

SPEAKERS

- **Hugo Mercier,** CNRS (Institut Jean Nicod, Paris)
- **Abdul Monem Al Hasani,** Ministry of Information, Oman
- **Robbert Dijkgraaf,** ISC
- **Luisa Fernanda Echeverría King,** Universidad Simón Bolívar, Colombia
- **Sir Jeremy Farrar,** World Health Organization
- **H.E. Ólafur Ragnar Grímsson,** Arctic Circle
- **Julia Marton-Lefèvre,** Tyler Prize for Environmental Achievement and Villars Institute Foundation

Key takeaways

- **Science must build and sustain public trust:** Trust is essential for science to play its role in addressing global challenges, especially in politically polarized or fragmented environments.
- **Effective multilateralism requires scientific input:** Science must be embedded more deeply in multilateral institutions to inform collective action and foster global cooperation.
- **Science systems need to be more open and inclusive:** Equity in access to scientific resources and representation is fundamental to earning trust and achieving global legitimacy.
- **Transparent communication is critical:** Scientists and institutions must communicate uncertainty honestly and engage with diverse publics respectfully and consistently.
- **Transdisciplinary approaches enhance policy relevance:** Bridging natural and social sciences is key to developing policy solutions that are both scientifically sound and socially responsive.

The final plenary explored how science can contribute more meaningfully to global governance in an era of rising fragmentation and declining institutional trust. The session convened scientists, diplomats and leaders of multilateral organizations to consider how science must evolve to serve societies in transition.

The discussion opened with an assessment of the perceived erosion of public trust in institutions, including science itself. Global data presented suggest that science remains

trusted overall, although not all sciences are trusted equally, and science education is the main determinant of trust in science. Misinformation, political polarization and perceived elitism in research institutions have created barriers to effective communication and uptake of scientific advice. Speakers emphasized the need for greater transparency, humility and active engagement with diverse publics as essential steps to restore and sustain that trust.

Equally important was the call to rethink how science interfaces with international policy-making. Global challenges, such as climate change, pandemics and digital governance, do not respect borders and neither can scientific solutions. Participants underlined that multilateral bodies must embed science not as a peripheral consultation, but as a central pillar of decision-making processes. However, this requires both institutional change and investment in mechanisms that bridge the gap between knowledge and policy.

Equity and openness emerged as core themes. For science to be relevant on the global stage, it must reflect the diversity of contexts across the world. This includes supporting researchers from underrepresented regions, ensuring access to data and infrastructure, and creating governance models that distribute voice and responsibility more evenly. Building globally trusted science systems is not only about credibility, it is also about justice.

Panellists also discussed the importance of communication, not only as dissemination, but as an ongoing, two-way process. Public trust is not granted once and for all; it is earned and maintained through dialogue, especially when uncertainty is high and trade-offs are difficult. Science communicators and institutions must become better equipped to navigate this complexity without oversimplifying or alienating key audiences.

Finally, the session reiterated the importance of transdisciplinary approaches. Scientific credibility today depends not only on technical rigour but also on social relevance. To navigate the political and ethical dimensions of policy, the natural and social sciences must work together, alongside communities and policy-makers, in co-producing knowledge that is actionable, inclusive and grounded in shared values. Upcoming processes like the International Polar Year (2032–2033) present an opportunity to show the value of international science in driving collaboration on shared challenges in times of geopolitical tensions.

In closing, the session offered not just analysis but an invitation – to build science systems that transcend national, disciplinary and institutional borders in pursuit of a more trusted and collaborative global future.

LOOKING AHEAD

The Muscat Dialogue marked not an end, but a beginning. Building on the solid foundations and shared commitment expressed throughout the event, the International Science Council is determined to carry this momentum forward. The spirit of collaboration, openness and ambition that united participants in Muscat provides a strong platform for future cooperation. These discussions reaffirmed that global challenges – from climate change to technological transformation – require collective scientific engagement that transcends borders, disciplines and institutions.

The agreement to establish a Regional Focal Point for the Middle East and North Africa, signed between the ISC and the Ministry of Higher Education, Research and Innovation of Oman, exemplifies this commitment in action. It stands as both a symbol and a practical step towards strengthening science systems that are connected, inclusive and globally engaged. The ISC recognizes the region's rich heritage of scholarship and innovation, which has, for centuries, shaped scientific and cultural progress around the world. Building on this legacy, the Regional Focal Point will harness local and regional strengths while connecting them with global networks of knowledge and expertise.

The Regional Focal Point will play a pivotal role in facilitating international research cooperation and exchange, enabling scientists across the region to participate more fully in global initiatives. It will also promote cross-regional scientific dialogue, fostering mutual understanding and shared action on issues of critical global importance – from sustainability and public health to digital transformation and emerging technologies.

Through these efforts, the ISC seeks to ensure that the commitments made in Muscat translate into concrete progress. By working closely with regional partners, Member organizations and the broader scientific community, the ISC will continue to build a more connected, equitable and resilient global science system – one that reflects the diversity of the world's knowledge and the collective drive to use science for the common good.

THE MUSCAT DECLARATION ON GLOBAL SCIENCE

Preamble

The Global Knowledge Dialogue is an initiative of the International Science Council (ISC) to periodically consider key issues at the science-society and science-policy interfaces. This edition was convened jointly by the ISC and the Ministry of Higher Education, Research and Innovation of the Sultanate of Oman.

The International Science Council's global membership brings together 250 international scientific unions and associations, national and regional scientific organizations, including academies, government agencies and ministries, research and science councils, international scientific federations and societies, young scientific organizations.

Recalling that the vision of the ISC is of science as a global public good, meaning that scientific knowledge and its practice should be universally considered as shared resources from which everyone should be able to benefit,

Recognizing the diversity of ambitions, challenges, opportunities and approaches in science globally, the growing disparities in research capacity and quality of education between countries and regions, and the need to address these gaps to foster global progress,

Recalling that to realize its vision, the mission of the ISC is to provide a robust, effective, and trustworthy global voice for science,

Considering that the global context in which science is done has changed significantly in the last decade, and that emerging technologies are further changing the paradigms of scientific research,

Noting that in this context, science has a key role to play in promoting social justice, peace, security, and sustainability,

Considering the role of the ISC in strengthening the voice of scientists and their diversity, advancing their freedom and safety, and promoting the right to participate in and benefit from science.

Actionable statements

Participants in the Muscat Global Knowledge Dialogue, therefore,
defend and ***promote*** the free and responsible practice of science by:

- *Advancing* the right to participate in and benefit from science and, more broadly, upholding the role of science as a global public good
- Maintaining cross-border scientific collaboration in times of tensions and crisis
- *Supporting* the protection of science ecosystems and scientists in emergency and conflict settings, with particular attention to displaced scientists
- *Supporting* the free, safe, ethical, inclusive, accountable and equitable conduct of science,

Stimulate and ***support*** international, inter- and transdisciplinary collaborations in scientific research and scholarship on issues of global concern, including by:

- *Actively* supporting the UN International Decade of Sciences for Sustainable Development as a tool to advance the sustainability agenda
- *Mobilizing* for the International Polar Year 2032–33 and the UN Decade for Cryospheric Sciences
- Taking a holistic approach that integrates all formal and applied sciences (natural, medical, social, humanities, engineering sciences) as necessary in addressing these complex challenges
- *Encouraging* the pursuit of research on inequality and social cohesion, including gaps where science can play an effective role
- *Calling upon* funding organizations, philanthropic entities, and leading scientific institutions worldwide to take proactive steps in supporting under-resourced regions by investing in capacity-building initiatives
- *Working collectively* to develop practical solutions to prevent or reduce pollution and achieve the vision of zero-emissions,

Contribute to the fair evolution of science systems, in the context of emerging technologies and global inequalities, including by:

- *Engaging* with science and research funders, policy-makers and other relevant stakeholders to provide expert guidance on the transformation and reform of science systems (in, for example, open science, research assessment, and science publishing) and the enhancement of their transparency, efficiency, inclusion and integrity,
- *Promoting* a transformation in the higher education institutional environment by equipping future scientists globally with the necessary transdisciplinary knowledge, tools, and skills to tackle urgent and complex societal and environmental issues,
- *Critically evaluating* the potential impacts of artificial intelligence and other emerging technologies on multiple facets of science and education systems,
- *Ensuring* that scientific data is generated, stored, managed and accessed in a way that facilitates the address of cross-domain grand challenges,
- *Supporting* academies and associations of young scientists,

Continue advocating for the value of science and promoting evidence-based understanding and decision-making at all levels,

Promote capacity-building initiatives, appropriate training, and adoption of principles and models to strengthen science's role in the multilateral system,

Promote and ***assist*** the use of science diplomacy to advance the common good and address global challenges,

Advocate for the growth and maintenance of investment in international science programmes and free and open knowledge sharing,

Encourage the contribution of scientific research and innovation to the goals of global peace, human well-being, planetary stewardship, and global sustainability,

Reiterate the importance of improving the representation of women scientists and underrepresented groups in the governance of scientific organizations and in science endeavours in general,

Conclude that science is a universal endeavour that can act as a positive force to bridge divides, foster trust, and catalyse collective action on shared global challenges at multiple levels.

Work with the ISC to advance science as a global public good.

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