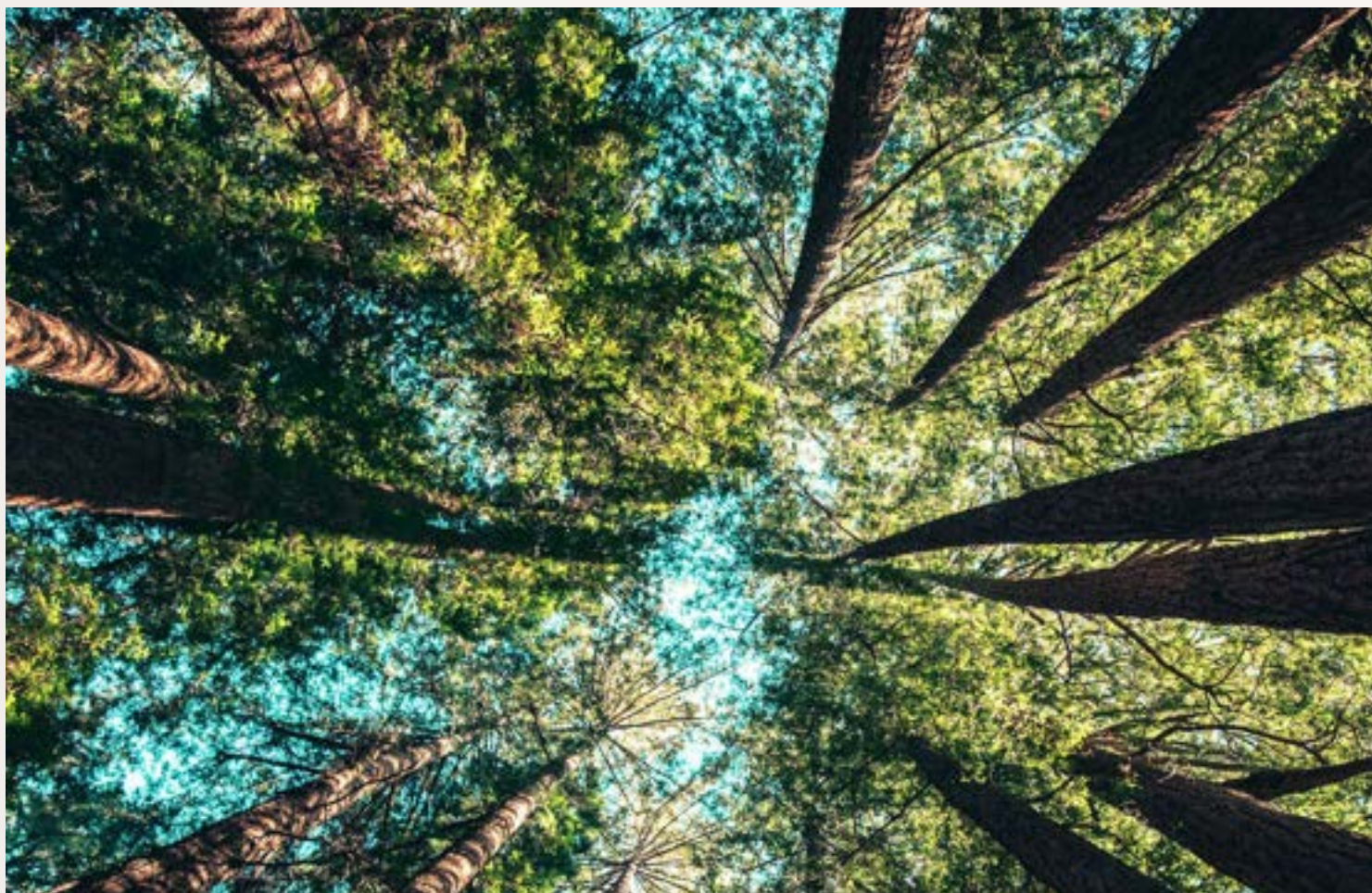


THE TRANSFORMATION IMPERATIVE:

EXPANDED EVIDENCE  
FOR INCLUSIVE POLICIES  
IN DIVERSE CONTEXTS



# INGSA2024



5TH INTERNATIONAL CONFERENCE  
ON SCIENCE ADVICE TO GOVERNMENTS

**VIEWPOINTS.** KRISTIANN ALLEN, GRANT MILLS (EDS.)  
NAOMI SIMON-KUMAR, ROKIA BALLO



**Remi Quirion**  
Chief Scientist of Quebec and President of INGSA

## Leaving no one behind

This year marks the 10th anniversary of INGSA. Thanks to the leadership of our chapters in Africa, Asia, and Latin America/Caribbean, we can be proud of our accomplishments towards our main goal – building capacity in governmental science advice. Our membership is growing (6,000+ in over 100 countries), and we are developing a presence in Europe and North America too. Yet much remains to be done in this time of converging crises.

Science advice and science diplomacy have never been more relevant. The importance of organisations like INGSA has never been greater. We must continue to find new ways to support evidence-informed policy and governance practices at all levels. We must broaden the base of evidence and adapt advice to diverse contexts. Our training also must adapt to changing contexts and demands, something that was not obvious ten years ago.

As INGSA President, I am very proud that our flagship event is being held for the first time in the global south, in beautiful Kigali. I thank His Excellency and the government of Rwanda for all their support. I am also grateful for the support of the leaders at the University of Rwanda. As we gather in Kigali, we acknowledge the 30th anniversary of Rwanda's most tragic chapter. At the same time, we can draw inspiration and hope from the country's present and future successes. Rwanda's ambition in science and innovation, and its prioritisation of future generations is something we can all learn from.

I believe it is critical that we continue to learn from each other and to collaborate in capacity building for science advice everywhere, but especially in the Global South. A key aim of INGSA is to foster South-South networking and learning, and the Kigali meeting will explore various avenues for this. We must be ambitious in our efforts to be inclusive, and to not leave anyone behind. Indeed, inclusion is a key theme of this conference.

As I look back on the decade since INSGA was established, it is clear that the launch of the SDGs helped build the case for organised, coordinated science advice for public policy making at global scale. At the time, broadening science advice beyond national innovation was not (and still is not) without struggle. The science of the sustainability agenda has shone a stark light on entrenched factors driving unsustainable and emissions-heavy practices and their consequences. Yet path-dependencies are hard to overcome, regardless of the best evidence. This has made the work of our community all the more urgent, while the acceleration of algorithmic social

media has made it more difficult. The emergence of mis- and dis-information is stress-testing science advice structures and practices. Never was this more evident than during the pandemic, which revealed both our successes, and our failures.

Emerging from this instructive, if tumultuous, first decade of INGSA and of the SDGs, I am struck by how our community has continually refined our collective understanding and practices. We have expanded the types, sources and pathways of evidence to respond to local and global challenges, while also proactively raising alerts. But now this work must also be intentional about large-scale transformations that can both strengthen and leverage our connectedness to each other and to our natural environment.

The essays in this collection, and indeed all the speakers at this year's conference reflect and advance this thinking and our changing global, national and local contexts. You will see, for instance, how knowledge generation and knowledge application are brought back together with more flexible institutional supports that are helping to diversify how robust evidence is (co)-developed and deployed. You will see the emergence of new tools and methods, including our inevitable plunge into AI-assisted evidence development, and the appropriate balance of enthusiasm and skepticism that must be applied. Perhaps most significantly, you will read the voices of seasoned and emerging science advice practitioners in the Global South.

We are reminded that access to scientific knowledge and infrastructure is not yet equally distributed. Better global science advice will come from more equitable distribution of scientific resources, better mobility of scientists, and more support to work like transdisciplinary research, informed deliberation and other innovative methods that bring knowledge production and decision-making practices into dialogue. Just as we have been united in striving for evidence-informed policy, let us continue to build unity in expanding tools and networks to confront shared challenges in innovative and equitable ways.

I am grateful for the productive partnerships that INGSA has developed, from our foundational funders to our implementation allies. You will see them listed on our partners pages recognising their commitment and support.

I hope you enjoy the conference and the conversations and ideas it is designed to generate.

Welcome to Kigali!

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**Hon. Gaspard Twagirayezu**  
Minister of Education, Republic of Rwanda

We the Ministry of Education are honoured to host the 5th Global Conference of the International Network of Governmental Science Advice (INGSA2024), entitled: *The Transformation Imperative - Expanded Evidence for Inclusive Policies in Diverse Contexts*.

The International Network for Governmental Science Advice (INGSA) as a collaborative platform for policy exchange, capacity building, and research across diverse global science advisory organisations and national systems. It works to increase the capability, resilience, and positive outcomes of these systems and the people that comprise them. The network aims to enhance the global knowledge-to-policy interface and improve the potential for evidence-informed policy formation at all levels of governance.

INGSA2024 highlights what the network has achieved in the last decade, since its establishment. Such highlights include the establishment of the INGSA-Africa Hub Rwanda, which will, when fully operational, help to understand, coordinate, and strengthen the national and regional science advice ecosystems by acting as a focus point for training and networking opportunities in Africa. INGSA is partnering with the University of Rwanda in the development of this Hub.

Rwanda aspires to become an upper-middle income country by 2035, and a high-income country by 2050 with high quality and standards of life for all Rwandans. To achieve this vision, Rwanda recognises the critical role of Science and Technology as a vehicle for social economic transformation. Rwanda is ambitious to leverage the transformative potential of Science, Technology, and Innovation to position us as a globally competitive, knowledge-based economy.

STEM education is our priority, the mission of the Ministry of Education is to transform the Rwandan citizen into skilled human capital for socio-economic development of the country by ensuring equitable access to quality education focusing on combating illiteracy, promotion of science and technology, critical thinking, and positive values.

In Rwanda, we host African and global centres of excellence in Science and Technology including the African Centres of Excellence in: Internet of Things, Data Science, Energy for Sustainable Development; the regional Centre of Excellence for vaccines, immunisation, and health supply chain management; Carnegie Mellon University-Africa, African Institute of Mathematical Science (AIMS), just to mention a few.

INGSA2024 takes place in Rwanda, the first time in Africa; making Rwanda the first African destination for this global event. This is in line with many initiatives in Rwanda, including the recent groundbreaking of the BioNTech Plant and the first mRNA vaccine manufacturing in Africa. The value of INGSA2024 to Rwanda and Africa in developing the science advice ecosystem cannot be overemphasised.

Welcome to Rwanda, the Country of a Thousand Hills and a Thousand opportunities.



**Dr Didas Kayihura Muganga**  
Vice Chancellor, University of Rwanda

## Navigating the Intersection of Science Advice and Policy Making: Addressing Silent Demands and Claims

The crucial role of science advice in shaping policy decisions is increasingly recognised worldwide, spanning from the global North to the Global South. However, despite this acknowledgement, there exist notable gaps at the intersection of science and policy, particularly in developing nations. While the significance of science in policy formulation is undeniable, quantifying its impact and outcomes remains a challenge. Over time, we have witnessed what could be described as a “silent demand for science advice from policymakers” juxtaposed with a “silent claim from scientists seeking recognition for their contributions.” Notably, this demand has recently become more pronounced, positioning science advice at the forefront of national socio-economic transformation.

A compelling example of this heightened demand is evident in the response to the Covid-19 pandemic, which underscored the imperative of collaborative efforts between scientists and policymakers. Such collaboration is essential for implementing timely interventions and developing vaccines to mitigate the global impact of the pandemic.

In the context of developing countries grappling with unfinished interventions amid the backdrop of advanced economies in the 4th Industrial Revolution, science is expected to drive the innovations necessary to address pressing challenges. These challenges include poverty, food insecurity, population growth, unemployment, rural-urban migration, and inefficient utilization of land and resources. Addressing these issues requires nations to bolster their innovative capacities through investments in research and technological advancements. However, the progress of innovation is hindered by excessive reliance on imported technologies and the limited ability to internalize and adapt innovative science, technology, and innovation (STI) within domestic economies.

Africa, in particular, often finds itself as a consumer of innovative products rather than a designer of STI-based import substitution strategies. To overcome

this paradigm, there is a pressing need for enhanced coordination in research and development (R&D) at national, regional, and global levels. Moreover, targeted science interventions in sectors where Africa holds a competitive advantage, such as agriculture, tourism, mining, and manufacturing, are crucial for driving sustainable growth.

Moving forward, to ensure the effective integration of science advice into policymaking and foster productive linkages between science and policy, several areas warrant attention. These include supporting STI investments in the corporate sector to drive product development and process innovation, adapting and strengthening educational systems to equip individuals with the requisite knowledge to address sustainability challenges, addressing disparities in global scientific capacities and knowledge access, and monitoring indicators of technological progress in sectors where Africa holds competitive advantages.

In conclusion, enhancing the synergy between science and policy is paramount for driving sustainable development and addressing pressing socio-economic challenges. By addressing the silent demands for science advice and recognizing the contributions of scientists, we can forge a path towards inclusive and evidence-based policymaking that serves the needs of all stakeholders.



**Dr M. Oladoyin Odubanjo**  
Chair, INGSА-Africa Chapter

## Welcome to INGSА2024

E ka abo! Karibu! Murakaza neza! Welcome! Welcome to the continent of diversity of peoples and tongues. Welcome to the cradle of humanity, Africa.

The biennial conference of the International Network for Government Science Advice is being held for the first time in the global south, and the first time in Africa. With 54 countries in Africa, there is no better place to explore the theme of this year's conference. To quote our organising committee, "INGSА2024 will be governed by an overarching theme of diversity and inclusion within the iterative and dynamic process of science advice. We want to reflect the complexity of the evidence/policy/society interfaces and the challenges that these interfaces need to address."

Let's talk about transformation, expanded evidence, and inclusion. As the first chapter of INGSА to be fully constituted (in 2016), INGSА-Africa is glad to welcome everyone to discuss these topics and issues. Over the years INGSА-Africa has driven conversations and capacity-building around these and other issues in a bid to strengthen science advice in Africa. In that regard, the chapter (working with national academies of science and other partners in Africa) published a report on [The Evolving Science Advice Landscape](#) as an instrument to stimulate discussion and as a reference document. INGSА2024 will greatly enrich this discussion.

Finally, INGSА-Africa looks forward to new partnerships to further the cause of science advice in Africa and globally. While at the conference, and afterwards, I encourage you to engage the leadership of INGSА and INGSА-Africa about how such partnerships can work.

Welcome to INGSА2024!

Welcome to INGSА2024! Welcome to Kigali!

Our 2024 biennial conference marks the 10th anniversary of INGSА. The network was first established as an informal community of practice to share ideas and build capabilities at the intersection of science and public policy. From these beginnings in an SDG-inspired and pre-pandemic world, we remain committed to continuous learning and sharing. We work to help build, adapt and enhance structures and skills of governmental science advice that are fit for purpose and context.

But what was fit for purpose when INGSА started may no longer be so today. Collective global progress on the SDGs has been slow, while risks and conflicts have multiplied. At the same time, public trust in institutions is faltering for multiple and interconnected reasons. These range from the growth of mis- and dis-information to the inability of successive governments to meaningfully address intensifying societal challenges. Doing things in the same way, based on the same assumptions is not working. The transformation imperative is clear.

It is little wonder then, that 'transformation' was the foremost challenge on the minds of the INGSА2024 program committee as they developed the guiding theme of this year's conference. In turn, they issued this challenge in the conference Call for Submissions. They intentionally left much open to interpretation, knowing that INGSА2024 would be an opportunity to co-create ideas. They were not wrong!

The growing INGSА community responded to our call with characteristic creativity and innovation. Some themes started to emerge across the session proposals, which you will see reflected in the associated Viewpoints essays from speakers and panelists in the pages that follow.

Among the emerging themes is the increasing understanding of science advice as part of a broad knowledge ecosystem. Whereas a decade ago, distinguishing the roles and remits around 'science for policy' and 'policy for science' was part of the discourse, there is now a more sophisticated understanding of their interdependence. Indeed, the ecosystem approach to evidence-informed policy making is prompting critical reflection on how public research is funded and organised. It looks at the institutional barriers that keep both knowledge production and application siloed and path-dependent.

This approach takes us beyond 'interfaces between' science and policy, to instead consider their relationship. In doing so, it highlights the need and potential for innovation in both knowledge and policy making institutions. Rethinking notions of scientific excellence and reshaping the roles and relationships of scientists, citizens and officials in public decision making are just some examples. As is new thinking about the role of funders in supporting actionable knowledge generation.

Institutions, however, are built and reproduced on underpinning shared assumptions. We are reminded that the INGSА biennial conference is an opportunity to shed new light on the internal assumptions of science advising, thereby making them explicit and available to scrutiny. In this way, we gain more nuanced and critical understanding of the implicit logics that affect our practice, whether in science, decision-making, or policy implementation. We are challenged also to critically consider assumptions about quality and legitimacy of evidence, and to understand what it means to be expansive in building policy-relevant knowledge. We are encouraged not to measure all relevant knowledge by the same metric, but to see how pluralism and diversity of knowledge can fill in the evidence picture and build consensus for policy action. But in doing so, we are reminded to remain vigilant, anticipating the ways in which the legitimacy of science could be undermined and resulting uncertainty leveraged by powerful interests.

At the same time we are challenged on where to look for expanded evidence. In this, an African theme runs through the conference, and with good reason. The region inaugurated INGSА's chapter model and continues to innovate new modes of collaboration and pathways of science advice. We are reminded that the relative lack of infrastructure and research funding in the global south must be redressed, but does not limit countries showing leadership on evidence-informed transformative practices. In many countries of the global south research is already asking policy-relevant questions in societally-engaged ways. And in developing science advice ecosystems, they need not borrow outdated linear models, but are already innovating from local foundations.

Of course another potential source of expanded evidence is coming at us more quickly than we might have expected. AI-generated insights are set to revolutionise our practice. But with what safeguards? AI-assisted science advice is therefore another



emerging theme across sessions and related essays. Its relevance to science diplomacy, a field that is going through its own critical evolution, is also variously explored.

In sum, the mix of essays in this collection mirror the sessions at the conference and are designed to be read as the opening provocation of session speakers. Taken together they are a useful window onto the current challenges and preoccupations in science advice and science diplomacy. They may also help to point the direction for the next 10 years in our field. To quote Jaakko Kuosmanen of the Finnish Academy of Sciences in this collection: "The future of science advice is still very much a work in progress."

We are grateful to the visionary funders, partners and leading practitioners who have been helping to progress this future! Foundational and project funders like the IDRC, the Wellcome Trust, the Royal Society, the Fonds de Recherche de Quebec, the National Science Foundation, the World Universities Network and the Economic and Social Research Council (UKRI), along with leadership teams in our regional chapters, and countless champions in governments and academia globally are what make INGSA. We are also grateful for the career scholars and policy practitioners who are the wellspring of reflexive thought and practice that benefits us all.

Enjoy Viewpoints and INGSA 2024!

Your curatorial team:

Kristiann Allen, Executive Secretary, INGSA

Grant Mills, Senior Program Officer, INGSA

Naomi Simon-Kumar, Program Officer, INGSA

Rokia Ballo, Project Lead (INCLUSIVE), INGSA

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# Table of Contents

8	Day 1 of INGSA2024
35	Day 2 of INGSA2024
76	Global Developments
81	Author Index
86	Acknowledgements





# INGSA2024 DAY ONE

## CONFERENCE THEMES ●●



Science Diplomacy



Institutions & Ecosystems



Expanded Evidence



Capabilities Development



Focus on Africa



## CHAPTERS PLENARY INTRODUCING INGSA





## Overview of the INGSA Global Network

### INGSA Secretariat and Office of the President



### INGSA Regional Chapters



Including the INCLUSIVE project - See next page

### INGSA Thematic Divisions



**Rokia Ballo**  
Project Coordinator  
INGSA-Europe/UCL

Since INGSA's formation in 2014, many global challenges have highlighted differences in how advice is constructed, communicated, and used, and the challenges that remain for practitioners working across complex social, cultural and political contexts whether these are within a single national advisory ecosystem, or across national borders.

As part of the development of an INGSA chapter in Europe, INGSA launched the 'INfluence of Culture and LangUages on Science adVice in Europe' or 'INCLUSIVE' project\* to explore how language, culture and context affect the provision and use of scientific evidence and to see how INGSA can complement the well-established and diverse range of European science for policy mechanisms both inside and outside the EU.

The project combined, syntheses of peer reviewed and grey literature in multiple languages, structured expert interviews, an in-person workshop and roundtable discussions with experts from across Europe.

It soon became clear that the project could usefully focus on questions of language, and some initial findings in this area are below. At INGSA 2024, the European chapter welcomes challenge, opportunities to reflect on similarities and differences experienced in other regions, and practical solutions to explore further.

Language choice can open up or limit the range of evidence taken to matter, and the selection of experts, shaping where evidence is sought and how it is received.

Despite improvements in the quality and access of technological tools for direct language translation concepts such as 'risk' or 'uncertainty' remain difficult to translate accurately in context and the differences may affect judgements, and the public reception of advice when shared between languages. For some advisory systems, it might be helpful to provide scientifically trained translators or translation services (as is done in the EU for legal translations).

As in international relations and diplomacy more generally, language choice can affect negotiation and debate. For example, where those present are

able to operate in more than one language, the selection of language can be used for effect and to exclude or include subgroups within the room.

English has a particular role because of its historic and widespread use as a shared means of communication between scientists for whom it is not their first language. Some practitioners said that creating science advice in language that is not the native tongue of anyone in the room can have benefits: it makes everyone slow down and check their understanding of each other. However, adopting any single language as the basis for communications brings its own challenges, including associations of colonialism, and potential unfair advantage to those for whom it is the native tongue.

Finally, while language is important and its uses often relatively unexamined, in many cases practitioners said that the challenges they experienced due to language were still less than those created by wider aspects of culture including framing, dominant narratives and local politics. These challenges exist across languages, academic disciplines and across contexts and are, of course, widely considered in practice and literature associated with science advice and widely discussed within INGSA. Looking across Europe's very wide range of national science advisory ecosystems, a particular challenge is when a smaller nation has to rely on experts recruited internationally, or on pre-existing advice that is not sufficiently culturally specific.

INGSA Europe plans to build on its work so far by providing informal spaces for problem-sharing and networking that complement the more formal regional structures, and by drawing in the Early Career Researchers who will provide the science advice of the future.

\* The project was coordinated by INGSA, in association with the International Public Policy Observatory, and funded by the Québec government and the Fonds de Recherche du Québec.



## AI FOR EVIDENCE-INFORMED POLICYMAKING: DEVELOPING A FRAMEWORK

A new generation of AI-based tools could present an opportunity in the near future to dramatically improve science advice, making it more agile, rigorous and targeted. In the future, new AI-based platforms should be able to make evidence syntheses less time-intensive and free subject matter experts to focus on more complex analytical aspects of the process. However, leveraging such tools for good will require science advisers and policy institutions to create guidelines and carefully consider the design and responsible use of the nascent technology. And collaboration will be needed to build new tools in a responsible way. The technical know-how will likely come from academia and technology companies, while demands for robust governance, transparency and accountability can only be met by governments. Science advice needs to be scientifically credible, politically legitimate, and relevant to the needs of policymakers. And that must remain so if AI tools are used, which has consequences ranging from appropriate system design, to content selection, and to governance.

In this session, the panel members will present a series of proposals for how to harness responsible AI to support government science advice and then invite session participants to share their perspectives and participate in developing the framework.

### AI for Evidence-Informed Policymaking: Developing a Framework



**Ronald Munatsi**

Executive Director

Zimbabwe Evidence Informed Policy Network



The demands for inclusivity, transparency, and accountability, as well as the challenges associated with sustainable development, are creating pressure for evidence-informed decision-making (EIDM). EIDM can be enhanced by artificial intelligence (AI) or AI-based machine learning (ML) and deep learning (DL) technologies, which streamline complex decision-making processes and boost impartiality and efficiency. "ML and DL technologies using AI can enhance EIDM". Research suggests that early computer applications were more beneficial for transaction processing and less useful for complex decision support systems. Since then, this position has changed. These days, there are data management, analytics, and visualisation agencies that facilitate evidence integration through the application of sophisticated analytics and more user-friendly visualisation, which makes the evidence easily understandable for decision-makers.

Artificial intelligence (AI) has made it possible to automate complex decision-making processes. These processes include data trend analysis, data consistency development, forecasting, uncertainty quantification, anticipating user information needs, providing information in the most appropriate format, and proposing multiple courses of action. It is now possible to forecast decisions' future outcomes. In this manner, transformative insights can be obtained by policymakers to enhance policy outcomes in crucial sectors. Automating intricate decision-making procedures is now feasible thanks to artificial intelligence (AI). These procedures include analysing data trends, developing data consistency, forecasting, quantifying uncertainty, predicting user information needs, delivering information in the most suitable format, and suggesting several courses of action. The future results of decisions can now be predicted. Policymakers can thus gain transformative insights to improve policy outcomes in critical sectors.

As a result, workers might be able to focus on more important tasks, which could accelerate the provision of services. The literature from study areas linked to AI and its use in supporting EIDM demonstrates that the implementation of AI in EIDM is not something that is "science fiction" or futuristic, but rather something that is currently being deployed and integrated in different

sectors. These study areas include computer science, data science, informatics, industry and technology, governance, and public policy. Everyday ML and DL technologies that leverage AI are already being used by the world; examples include virtual audio assistants, Internet cookies, automated devices, online search predictions and suggestions based on past online activity, and other "thinking systems."

With the advent of big data, ML, DL, and highly performing computer systems, AI is bringing in a new era of EIDM backed by software that mimics human behaviour. Even with the mentioned security, disruption, and moral issues, intelligence includes things like insight, discernment, analytical skills, and hands-on learning. When decisions could have unfavourable effects on the people impacted by them, such as when there is political or legal repercussions in the event of unfavourable outcomes, ML and DL technologies that use AI are even more desirable.

Innovative AI-supported fourth industrial revolution (4IR) technologies that use ML and DL to generate, access, and synthesise evidence have enormous potential to enhance evidence-informed decisions for global transformation. These technologies offer greater assurances against unintended effects than those technologies. The use of ML and MDL streamlines this process, given the trend towards the use of multidisciplinary, interdisciplinary, and transdisciplinary approaches in understanding global challenges and formulating policy decisions to address complex socio-economic, political, and environmental challenges. In this way, we can contribute solutions to the sustainable development agenda that more effectively and suitably address our problems. e-government and e-parliament systems that are fully operational, responsive research and information services that stay up to date with technological advancements, and decision makers who place a high value on evidence, as demonstrated by better policy and implementation.





## CITY-LED SCIENCE DIPLOMACY: LEVERAGING EVIDENCE AND COOPERATION FOR MORE RESILIENT CITIES

The goal of this session is to present the significance of implementing a science diplomacy strategy for nurturing a thriving science and technology ecosystem in emerging global cities. Our primary aim is to promote city-led science diplomacy through evidence-based policies, enabling cities to unlock collaborative opportunities and position themselves as key players in the global arena.

We endeavour to raise awareness regarding the pivotal role that cities play and the potential they have in tackling global challenges, as well as to delve into the risks and realities faced by local stakeholders. This session will address how multi-level governance, involving scientific and diplomatic actors with their corresponding internationalization strategies, can pave the way for cities to establish a solid foundation of mutual trust and cooperation. Furthermore, the session will provide some of the essential tools and mechanisms, supported by case studies and best practices, that empower the interface of science and diplomacy in rapidly expanding urban epicentres through a regional perspective.

Ultimately, the overarching goal of the session is to forward a perspective that transcends the conventional understanding of diplomacy and science by enabling a space for dialogue and cooperation among diverse stakeholders, thus capitalising on the opportunities offered by the conference environment.

### City-led Science Diplomacy: Leveraging Evidence and Cooperation for More Resilient Cities



#### The Transdisciplinary Nature of Science Diplomacy in African Cities

**Jackie Kado**

Executive Director

Network of African Science Academies (NASAC)



From 2016 to 2021, the Network of African Science Academies (NASAC) co-managed a programme with the International Science Council (ISC) through the funding support of the Swedish International Development Agency (Sida). The programme, Leading Integrated Research for Agenda 2030 in Africa (LIRA 2030 Africa), sought to enhance the capacity of early career researchers in Africa to undertake transdisciplinary research and foster scientific contributions to implementing Agenda 2030 in African cities, at a continental scale. The lessons learnt from this programme shed light on the importance of science diplomacy for resilient cities in Africa to realise the SDGs.

To achieve sustainable transitions in African cities, research, policy, and society must interface. Even though these transitions are being addressed on a global scale through the SDGs, their realisation in Africa remains unique. The LIRA programme advocated for the creation of robust links for new knowledge impact decision-making for urban planning with the inclusion of local communities. To navigate each sphere seamlessly, the researcher must employ science diplomacy to gain even the most basic understanding of the mechanisms that create and maintain cities. This builds an appreciation for contextualised research and the inclusion of citizens in academic research.

Even when city-led science diplomacy is at work, sustainability efforts remain complex, and knowledge from different disciplines may result in different and even sometimes, unexpected outcomes when combined. This is because different levels of interactions among different actors from different spheres of interest remain unpredictable and location-specific. Pertinent data is still required to convert social economic knowledge into research questions that can address and influence policymaking needs and processes. Academic research requires transdisciplinary practices that co-produce knowledge about cities and effectively bridge science-policy divides. Science diplomacy can be a vehicle for facilitating the production of new knowledge in different and unconventional ways to forge much-needed connections for resilient cities. The LIRA programme demonstrated this point in the various research projects undertaken.

City authorities, local communities, and resident researchers can leverage science diplomacy to support African cities in building resilience to climate change, natural hazards, and other urban challenges, ultimately contributing to sustainable development and improved quality of life for urban residents across the continent. The glue that keeps these interested parties continually motivated to work together in knowledge co-creation and research co-design is mutual trust and respect.



INSTITUTIONS & ECOSYSTEMS & FOCUS ON AFRICA

# SCIENCE GRANTING COUNCILS AND INNOVATION AGENCIES AS ADVOCATES FOR STRONG NATIONAL STI SYSTEMS

In addition to disbursing funds, key national organisations such as granting councils and innovation agencies play an increasingly large role as advisors and advocates for effective and impactful national science, technology and innovation (STI) systems. They operate with a keen understanding of national public policy environments and STI landscapes, meaning that they are often best placed to develop, fund, and manage science and innovation in their respective countries in the Global South. This includes providing advice to decision-makers on strategic STI priorities, on funding modalities for STI, on how to promote effective coordination within the national STI system, and on how to develop mechanisms for knowledge uptake. In this panel, we will hear about experiences from various funders and agencies that have sought to transform STI systems in their countries, as well as across Africa. We will also hear about some challenges and opportunities in navigating their many roles as public organisations, particularly in terms of providing effective STI policy advice and promoting the use of research results in various aspects of public policy.

Science Granting Councils and Innovation Agencies as Advocates for Strong National STI Systems



**Naser Faruqi**

Director of Education and Science  
International Development Research Centre



## IDRC

As part of Canada's foreign affairs and development efforts, IDRC funds research and innovation within and alongside developing regions to catalyse global change. We proudly serve as a science granting council providing support to scientists and science organisations in the Global South.

## Founding Partner of SGCI

The Science Granting Councils Initiative in sub-Saharan Africa (SGCI) is a multilateral initiative established in 2015 that is strengthening the institutional capacities of public science funding agencies in Sub-Saharan Africa in order to support research and evidence-based policies that will contribute to economic and social development. IDRC is founding partner of SGCI, standing alongside South Africa's NRF, the FCDO, and the African councils from the very beginning. And we are delighted that today, Sida, Norad, DFG, and 17 African Councils join us in supporting the initiative.

## Decolonising knowledge

We have a long way to go to decolonise aid and localise the production of knowledge. But SGCI is a very critical step in this direction. We know that Southern-led research is of high quality, as demonstrated in recent independent evaluations of IDRC-supported initiatives, showcasing their scientific robustness and relevance. And a follow up evaluation this year confirmed that IDRC supported Southern-led research is world-class. This is not surprising. We know that those closest to a problem are best placed to address it.

## A need to transform the global research funding landscape

The same is true for funding research. Southern Granting Councils are best placed to develop, fund, and manage science and innovation for the Global South. Yet Northern institutions still dominate research for development. And much Northern support for science and innovation for the South still circumvents Southern Science Funding organisations. We recognise the importance of shifting this paradigm, and that's why SGCI is a flagship initiative for IDRC.

## Funding research is not enough

Having research funding driven by the Global South is only one piece of the puzzle towards transformational change. IDRC's Research Quality Plus framework emphasises not just scientific rigour but also incorporates additional criteria to ensure research makes a tangible impact. This includes a strong focus on gender analysis and engagement with local stakeholders.

It also includes positioning the research for use and impact. This includes ensuring that policymakers and other users of knowledge inform the research design, sometimes even being embedded in research teams, as well as synthesis and translation of knowledge for easier uptake, and direct science advice to governments.

Therefore, while national science funders need to focus on their core mandates, to truly achieve impact, they must also reflect on and engage in their role within their science system in mobilising knowledge for impact. This includes not just providing effective science advice to governments but also forming alliances and engaging with a wide array of stakeholders such as community groups, the academic community, civil society, policy makers, and the private sector. They need to build strong partnerships across the globe and understand the changing research landscape, linking to international networks and multilateral organisations like the International Science Council.

Science granting councils have an opportunity to be advocates for strong and inclusive national science systems and can play a key role in moving policy priorities into research and innovation agendas that can make a difference. IDRC is proud to be their partners on this journey to strengthen national and regional science systems in the Global South.





## Towards a knowledge-based economy through a strong National Innovation System

**Giff A. Kadzamira**

Director General

National Commission for Science and Technology, Malawi



The negative trends of youth unemployment, infrastructure deficit, slow regional integration, climate change and social inequality can be reversed if the Malawian society can also utilise knowledge for its socioeconomic development, rather than just relying on the traditional factors of production such as capital, labour, and land. The creation, dissemination, and effective use of knowledge provides organisations not only with vast new market opportunities but also stimulates cultural change and the ability to build learning organisations (Quast, 2012).

To achieve such a Knowledge Society, the focus is placed on the interconnection between the knowledge structures and ICT infrastructure through the three pillars, namely: Education; ICT; and Science, Technology, and Innovation.

A strong National Innovation System (NIS) is one that is open, evolving, and complex, encompassing institutions and economic structures among others (Chaminade et al., 2018). It also depends on the linkages for knowledge use among its actors as one of the key dimensions, just like in a knowledge system.

It is on this premise that Malawi faces challenges associated with low levels of interactions among its NIS stakeholders, alongside a lack of a coordination framework and low levels of research, all of which contribute to hampering the building up of sustainable innovation capabilities.

Furthermore, the lack of effective coordination in the system has contributed to duplication of efforts and wastage of resources, thereby limiting the extent to which innovation contributes to sustainable and inclusive socio-economic development.

Key issues to be considered to strengthen the NIS include mapping all the players and their respective roles in the NIS to pinpoint mismatches within the system, as well as finding ways of improving the Innovation measurement for evidence-based decision-making.

Understanding that Malawi is not an island, the emergence of the globalising economy such as SGCI has led to the inevitable question as to the appropriateness of the concept of NIS when the significant flow of finance, knowledge, skills, and production are also increasingly influenced by factors outside the national boundaries. However, it is widely accepted that domestic policies, actors, and

institutions still play an important role. It is argued that although capital and knowledge could flow across national boundaries, other important factors such as human capital do not flow easily across national boundaries and nations possess distinct governmental policy regimes, institutions, and natural resources. Therefore, national borders and locations are still relevant.

As a result, analysing the knowledge outputs that are produced from research and innovation collaborations with other countries addressing solutions for our common challenges should also be prioritised.

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CAPABILITIES DEVELOPMENT

## TOWARDS A GLOBAL DEFINITION OF EXCELLENCE IN RESEARCH

Researchers are mostly praised for their skills in generating knowledge, often evaluated through metrics like the number of publications or prizes. This definition of excellence is restrictive, not recognising the role of scientists in science advice and communication. Turning knowledge into evidence and evidence into advice requires another set of skills. If science policy was a recipe, we could say that researchers are trained into getting the good ingredients, but not in turning them into a great meal. Hence, the required competencies for science advice go far beyond the “excellence” criteria currently required by funding agencies, stakeholders, or universities, and on which successful research careers are built. In order to build a stronger, more diverse and more impactful scientific community, it is essential to redefine excellence so as to encourage emerging researchers to develop hone expertise and generate excellent knowledge while also learning how to be ‘impactful’ for policymakers and publics. This would imply allowing to demonstrate and reward policy engagement and a plurality of career paths, life paths, skills and experiences as part of an ‘excellent’ researcher’s career.



## Research excellence: A powerful tool for legitimising underrepresentation in academia

**Edmond Sanganyado**

Assistant Professor

Northumbria University & Global Young Academy



Research excellence is widely used as a basis for recognition, reward, and appointment in higher education despite being an essentially contested concept. It is a response to the scarcity of resources in the research enterprise and the expansion of research as a global enterprise. The idea of research excellence emerged as an 'objective' indicator of quality to aid in a meritocratic allocation of scarce resources. For example, a university recruiting for a professorial role might require a candidate with demonstrable research excellence in a specific discipline. Such a requirement assumes that individuals with 'demonstrable research excellence' can easily secure research grants, attract top research candidates, and receive media attention. These assumptions of what makes good research, in the end, determine who gets hired, who gets promoted, who gets funded, and who gets recognised. I argue that research excellence perpetuates the underrepresentation of minoritised groups and main hindrance to true scientific progress in the 21st Century.

The current system heavily emphasises past research output as an objective indicator for future research success. For example, in my discipline environmental chemistry and toxicology, individuals who were lucky to do their pre-doctoral or postdoctoral research in research teams that had high-end equipment have an advantage of publishing in the so-called top journals early in their careers making it easier for them to acquire research grants. In most reputable academic journals, the novelty and impact of the research are often measured according to the recency and fancifulness of the equipment the researchers used. Coming to recruitment for faculty positions, individuals with experience with such fancy equipment or who published in these so-called top journals are often ranked highly. In the end, career progression and grant success in environmental chemistry and toxicology is now a classic case of the Matthew effect.

The problem with research excellence is it demands conformity to an ill-defined mirage as a route for acquiring collegial legitimacy. The norms that the candidate needs to conform to are often established by the career paths and subjective beliefs and norms of gatekeepers. In the end, it is not the best that is

selected, but the one that conforms best to the demographics and experiences of the gatekeepers. As a result, research excellence pushes out true quality that can shift disciplines and bring true change in favour of the typical.



## The Metrics Trap: Rethinking Research Excellence for Early Careers

**Rini Astuti**

Research Fellow

Australian National University, Centre for the Public Awareness of Science



Early career researchers face a significant hurdle in securing stable academic positions. A major culprit? The narrow focus on publication counts as the sole metric for research excellence and academic success. This incentivises researchers to prioritise publications over activities with broader societal impact, such as effective teaching and policy engagement. This emphasis is ingrained in the "neoliberal university" model, which rewards traditional academic outputs over real-world contributions.

This obsession with metrics creates a disconnect between university research and the vital intersection of science and policy needed for global well-being. Furthermore, the pressure to publish relentlessly erodes the core values that many early career researchers hold dear – the desire to contribute to positive change and a sense of hope.

### Redefining Research Excellence: A Broader and More Inclusive Approach

We urgently need a new definition of research excellence for two key reasons.

First, we must "walk the talk" and exemplify the values we teach our students. We advocate for the importance of impactful policy work and the role of open and inclusive science in achieving sustainable development. Our research practices need to reflect these same goals. Second, we have a responsibility to marginalised communities disproportionately affected by biased research leading to unequal policies and uneven development.

### A More Inclusive Approach to Research

So, how do we redefine research excellence? It starts with how we conduct research itself.

Collaborative Research and Coproduction of Knowledge: Based on my experience as a social scientist whose work is based on empirical research, true research excellence prioritises genuine collaboration and coproduction of knowledge. It avoids "parachute science", where researchers swoop in, gather data, and leave without meaningful local engagement. This

extractive approach marginalises certain knowledge systems, such as the knowledge and experience of local and Indigenous communities. Collaborative research fosters richer understanding and leads to more just and effective policies.

Rethinking Policy Impact with a Local Lens: Not every researcher will achieve Nobel Prize-level global impact. Celebrating local policy impact is equally important. The complex wicked problems of our world rarely have one-size-fits-all solutions. Researchers should be encouraged to identify the scale at which their work can demonstrably contribute, fostering a sense of progress rather than paralysis.

### Transforming Education to Support Participatory Research

To achieve participatory research with local, positive social impacts, we need to transform our education systems. This means addressing the elephant in the room: the university model built on narrow metrics that prioritise traditional academic outputs over social and policy impact. Donors and research funding bodies need to integrate time and effort spent on collaborative and participatory research into their success metrics. Finally, we need a pedagogy of hope in our classrooms. Our teaching should cultivate future researchers driven by empathy, not solely focused on producing cogs for the capitalist machine. By prioritising collaboration, valuing diverse knowledge systems, and recognising the significance of local impact, we can redefine research excellence and empower early career researchers to contribute meaningfully to a more just and sustainable world.





## Toward a reform of research assessment: the global initiative Coalition for Advancing Research Assessment (CoARA)

**Menico Rizzi**

University of Piemonte Orientale, Italy; Coalition for Advancing Research Assessment



There is a broad consensus among research communities worldwide that the existing tools of academic rewards and recognition criteria, such as h-indexes or the weight of publisher prestige, particularly if determined on the basis of indicators such as the journal impact factor, have ceased to accurately reflect what we most value in, and need from research. A wide range of innovative, born-digital scholarship such as databases, visualizations, software development, or contributions to research infrastructures, are still invisible from formal research administration and assessment. Besides, beyond focusing solely on the end products of research, in the Open Science paradigm, it is also clear that it is the integrity and transparency of research processes that lead to truly innovative, open and high-quality research; therefore, it is essential that a qualitative-centered approach and not a quantitative one must characterize research assessment activities.

Building on progress made so far (DORA, Leiden Manifesto, Hong Kong Principles), over 700 research organisations, funders, assessment authorities, professional societies, and their associations have agreed on a common direction and principles for reforming the assessment of research, researchers, and research organisations, outlined in the Agreement on Reforming Research Assessment (ARRA). They commit to a common vision, which is that the assessment of research, researchers and research organisations recognises the diverse outputs, practices, and activities that maximize the quality and impact of research. This requires basing assessment primarily on qualitative judgement, for which peer-review is central, supported by responsible use of quantitative indicators. They also pledge to disclose their progression in evaluating or constructing criteria, tools, and procedures, aligned with the core commitments, and following an action plan with milestones defined by the community by the end of 2023 or within one year of signing the Agreement.

Further, they can also join the Coalition of Reforming Research Assessment (COARA), a global coalition that offers a platform for member organisations for collaboration and mutual learning. It was founded in December 2022. As of March 2024, 13 Working Groups

and 15 National Chapters has been established within CoARA to facilitate exchange and develop resources that member organisations can rely on in their reform journeys.

The CoARA initiative started in Europe and is growing—as it must for an equitable global system of research. Keeping the essentially global, transnational nature of research in mind, the mobility of researchers and ideas, enabling a systemic change is impossible without the involvement of research and research-related institutions in the broadest possible scope. Therefore, widening the Coalition's membership in Europe and beyond, developing equitable policies and practices that benefit all is a strategic priority for CoARA.

For more information, see:

<https://coara.eu/> and <https://coara.eu/agreement/>



## Promoting Diverse Pathways to Excellence

**Marie-Violaine D. Ponte**

Member of the Chief Scientist of Québec's Intersectoral Student Committee

Université Laval



The Intersectoral Student Committee (CIE) actively advises the Chief Scientist of Québec and the Québec Research Funds' Boards of Directors by recommending innovative strategies to promote and empower the next generation of researchers, enhancing their impact on society.

In the last years, the CIE questioned the fit between the evolving trends in young researchers' training pathways or career interests, and the traditional concept of research excellence. To reconcile the growing gap between the two, the CIE explored alternative approaches to evaluating excellence, as it is a recurring concern in most stages of scientific instruction. Excellence determines success, funding, and often, the possibility or not for a career in academia. It establishes trustworthiness in the scientific advice provided to public policymakers.

It is essential to promote "atypical pathways". These encompass diverse academic trajectories that do not follow to the linear progression from high school to graduate education and then into the workforce. Individuals following these alternative routes can no longer be set aside. They balance work and study, manage family responsibilities while pursuing academic studies, are returning to formal education, or pursue divergent training paths. First-generation students and those from ethnic or gender minorities may be more inclined to undertake such pathways, but they are entitled to equal consideration. In addition, people pursuing atypical pathways might be better suited to tackle the complex challenges of the 21st century. Since empirical data contradict the persistent idea that non-traditional career paths are linked with a lack of will, commitment, and enthusiasm, prejudice and bias should be excluded from any evaluation of career paths.

Moreover, current models for assessing research excellence seem to be heavily influenced by the high-performance academic culture, according to the CIE's consultations with the next generation of researchers. This results in quantity instead of quality-based evaluation, as well as mental health issues among the concerned populations. Lacking a widely accepted and inclusive definition of excellence, efforts were directed at reshaping it. Many initiatives

have led to significant progress in developing standards and practices that support this type of systemic change.

The CIE believes that a universal definition of research excellence, which recognises and promotes differences in career paths, life courses, skills, experiences, research subjects, and methodologies, would foster a more cohesive research community. Scientists who inform policymakers would then represent more adequately the diversity of the people.



## PUSH AND PULL: SCIENCE ADVICE FOR LEGISLATURES

Science advice is essential to debate, scrutiny and lawmaking in all legislatures, yet most legislatures are lacking dedicated science advisory systems. Research and practice on legislative science advice has primarily focussed on legislatures with substantial human and monetary resources. Developing countries very often lack qualified science-policy intermediaries and/or the resources to hire them into their legislatures. A dedicated effort is needed to identify the common challenges and opportunities for science advice in less well-resourced legislatures.

This session will bring together the latest research on legislative science advice that incorporates the global (rather than just global north) perspectives, and practitioners who have grappled with the issues of providing science advice for legislatures in developing countries. The primary goal is to identify the specific needs of under-resourced legislatures and to explore a potential range of options for solving problems in the near and long term. Human resources, systems and process, as well as new AI and information tools, will be on the table for discussion.

### Push and Pull: Science Advice for Legislatures



**Denis Naughten**

Member of Parliament, Ireland



The intersection of science and policy is a crucial point where the ethical responsibilities of scientists and legislators meet. Both parties aim to solve problems and improve the world, albeit through different methods.

Scientists have a duty to share their work and findings with the public and decision-makers. Conversely, decision-makers must acknowledge their responsibility to utilise scientific research to offer evidence-based solutions to societal issues. This relationship requires a balance of give and take.

Countries with a robust scientific research infrastructure often benefit from science intermediaries who facilitate connections between science and legislators. However, not all countries have these resources and must strive to bridge this gap.

As Chair of the Inter-Parliamentary Union's Science and Technology Working Group, I am developing a practical toolkit for legislators wishing to engage with science. I am heartened by the various ways in which parliaments are collaborating with scientists to leverage this valuable expertise and knowledge.

One example is the creation of a network of scientists from a country's diaspora when the institutions within that lower-middle-income country lacked the capacity for such policy collaboration.

A common challenge, regardless of the country we work in, is the increasing ownership of science by global commercial organisations, a domain traditionally controlled by academic institutions or governments. This underscores the need for collective efforts to pool information, understand global developments, and address the diverse challenges faced by different communities, countries, and regions.

This brings us to the issue of open data. Scientific research should be freely and easily accessible to all in a readily understandable format. Preliminary results from the Science in Parliament research project indicate that the presentation of research (its length, clarity, ease of understanding) is a key factor in a parliamentarian's decision to use that research evidence.

As parliamentarians, we should approach the necessary global democratic process with a spirit

of equality, acknowledging the validity of others' views and being prepared to question our beliefs and claims. This willingness to moderate our views through respectful information exchange can lead to a deliberation that results in more equitable outcomes for our societies.



## CONNECTING SCIENCE DIPLOMACY AGENDAS IN A FRAGMENTED WORLD

Many countries or groups of countries are currently reflecting about the development of national or regional science diplomacy agendas, frameworks and strategies. However, these processes largely occur in isolation, mostly driven by the respective foreign policy imperatives. As a consequence, the potential of science diplomacy as a soft power is not fully harnessed, while being more needed than ever in the current geopolitical context. Therefore, the aim of this session is to arrange a dialogue between several such initiatives globally, in order to explore the potential of synergies that may help easing the current fragmentation in international relations – not only by using science diplomacy, but also through cooperation on science diplomacy itself.



**Motoko Kotani**

S&T co-advisor to the Minister for Foreign Affairs  
Ministry for Foreign Affairs, Japan



Science, technology, and innovation are sources of new value creation and economic growth and are key to solving global challenges and achieving the SDGs. The rapid development of science and technology has a significant impact on our values, lifestyles, and society. The diplomatic area is no exception, and the importance of science and technology in diplomacy has increased in recent years. In this regard, Japan established a Science and Technology Advisor to the Minister for Foreign Affairs in 2015. The advisor is supported by a Co-advisor and the Advisory Board for Promoting Science and Technology Diplomacy comprising 20 experts in various fields of science and technology, which discusses how to develop science diplomacy in a strategic and effective manner.

Even in geopolitically challenging situations, open and secure research and development ecosystem needs to be built internationally. Human resource development is another important aspect. International cooperation is essential for capacity building of research personnel and for ensuring talent mobility and circulation. Those points were focused in the G7 Science and Technology Ministerial Meeting hosted by Japan last year and should be addressed not only by the G7 but also on a global scale. It is also important for scientists to understand the narratives of policy-making and to constantly examine the nature of science advice. In this respect, fora such as INGSA and FMSTAN provide important opportunities for scientists in a position to provide science advice to meet, exchange views, and learn from each other about the possibilities and practices of science diplomacy.





## Doing science diplomacy by connecting science diplomacy agendas

**Jan Marco Müller**

Coordinator for Science Diplomacy and Multilateral Relations  
European Commission - DG Research and Innovation



In view of the disruptive changes we see in both the geopolitical and the scientific-technological environment, more and more countries or groups of countries as well as multilateral organisations worldwide are currently developing, or have recently developed, science diplomacy agendas or strategies. Examples include the European Union, which has embarked on developing a European framework for science diplomacy, individual EU Member States like Germany, France, and Spain, as well as many other countries around the world, from Panama to Switzerland, from South Africa to Pakistan.

These developments are supported by a vibrant community of science diplomacy scholars and practitioners that has emerged globally in recent years. The number of publications, projects and networks in the field has sky-rocketed and there is an increasing number of conferences where science diplomacy issues are debated internationally, such as the European Science Diplomacy Conference, recently held in Madrid, or the Japanese Symposium on Science and Technology Diplomacy, recently held in Tokyo. In addition, many new initiatives entered the scene, including the Geneva Science and Diplomacy Anticipator (GESDA), SciTechDiploHub in Barcelona, or the South African Science Diplomacy Capital for Africa initiative.

Given all this science diplomacy buzz in the corridors of government and university departments, the question arises whether international cooperation on the subject of science diplomacy can be used not only to advance science diplomacy as a research concept and practice, but in so doing can also help creating trust between nations in the challenging current geopolitical context, and thus be used to apply science diplomacy itself. For instance, the Science Diplomacy Working Groups that have been established by the EU to discuss the future European framework are living laboratories of science diplomacy, as their members do not only include EU nationals, but also those from other countries such as the UK and Türkiye.

Of course, science diplomacy is no panacea, and it will always serve national interests. But the discussions on the evolving concept of science diplomacy and its relevance in contemporary politics do not only connect scientists, they also connect diplomats. Therefore, the

creation of interlinkages between the various ongoing science diplomacy agendas, strategies and initiatives may also serve to create avenues for diplomatic engagement, including between countries that may be "like-minded" in terms of research policy but not "like-minded" in terms of foreign and security policy.



FOCUS ON AFRICA

## UNLEASHING THE TRANSFORMATIVE POTENTIAL OF AFRICAN SCIENCE ADVICE: TOWARDS AN AFRICA SCIENCE LEADERS FORUM

This session seeks to engage attending participants on the opportunities and challenges towards a more transformed, sustainable, and responsive African STI system. In particular, the session intends to discuss the idea of an African STI Leaders Forum which has emerged from consultations with key stakeholders in the African STI ecosystem. The forum intends to foster the next level of collaborative action required to leverage the multitude but fragmented STI advisory platforms and stakeholders on the African continent. The proposed Forum is not a new institution, but an alliance of committed partners that will regularly convene and connect African STI system leaders across STI sectors. It is envisioned that such a strategic forum or alliance of committed partners could work together for a common purpose and shared value to:

- Review and influence key developments in STI on the African continent;
- Exchange strategic information and ideas on African science systems development;
- Raise awareness of and advocate engagement with and support for the needs and interests, opportunities and challenges of African science;
- Provide scientific leadership and advice on the development of Pan-African initiatives: research, policy, infrastructure, etc;
- Support the positioning of African science and amplify its negotiating voice in global science and policy fora, including within the UN, and;
- Provide coordinated high-level engagement with and representation in international scientific organisations (e.g., the ISC, IAP, WFEO).





## Unleashing the Transformative Potential of African Science Advice: Towards an Africa Science Leaders Forum: "Camels and Donkey No More!"

**Chomora Mikeka**

Associate Professor & Director of Science, Technology and Innovation  
Republic of Malawi



This essay begins with a creative re-imagining of part of the famous speech delivered by Kwame Nkrumah to independent African states in Addis Ababa Ethiopia in May 1963. Here an excerpt from the speech is updated with red annotations.



In the Figure: The proclamation of Kwame Nkrumah on 24th May 1963, "Camels and Donkey No More!"

"It is within the possibility of science and technology (and innovation) to make even the Sahara (and all Africa) bloom into a vast field with verdant vegetation for agricultural, tourism and industrial development through data, evidence and mining. We shall (and already are) harnessing the radio, television, internet and giant printing presses to lift our people from the dark recesses of illiteracy through education transformation, re-imagining education and digitalising education for quality, equity and access, leaving no one behind, "the maiden call in UN SDG #4". Decades ago, these would have been visionary words, the fantasies of an idle dreamer. But this is the age in which science has transcended the limits of the material world, in that the world is technology-driven and innovation-led thereby invading the silences of nature.

It is with our naked eyes that we see giant robotic machines that construct smart intelligent roads, dig multi-purpose dams for water supply, irrigation and fish farming, lay airstrips for drones or unmanned air vehicles' landing and take-off; huge laboratories manufacturing drugs and vaccines; and colossal factories erected – all at an incredible speed."

No wonder this INSGA conference session argues for an African STI Leaders Forum which emerged from consultations with key stakeholders in the African STI ecosystem. The forum intends to foster the next level of collaborative action required to leverage the many but fragmented STI advisory platforms and stakeholders on the African continent.

My arguments in this session are two-sided (Government as Policy Maker and as Technocrat in STI). The proposed Forum is not a new institution, recognising the active and strategic roles played by the Regional Economic Blocs like SADC (ET-STI) and African Union Specialised Technical Committee on Education, Science and Technology. The Forum is an alliance of committed partners that will regularly convene and connect African STI system leaders across STI sectors. It is envisioned that such a strategic forum or alliance of committed partners could work together for a common purpose and shared value to:

1. Influence key developments in STI on the African continent; Through *Champions*, a functional national observatory (cf. AOSTI) and National STI Policy (NSTIP), Act and Fund
2. Exchange strategic information; Through a digital platform and cloud service; with stratification via portals or dashboard entries of Government, Academia, Industry, Civil Society, Environmentalists STI Champions
3. Raise awareness of and advocacy for African science; Challenges on NSTIP formulation, adoption and implementation and building of equitable partnerships
4. Provide leadership on the development of Pan-African initiatives: research, policy, infrastructure, etc; Strategies for STI infrastructure development and sharing in-country and across Africa
5. Support the positioning of African science and amplify its negotiating voice in global science and policy fora; Agenda setting for African Continent STI at European Union, UN General Assembly (UNGA) and G77 + China
6. Provide representation in international scientific organisations (e.g., the ISC, IAP, WFEO). Including Science Forum for Southern Africa.
7. Strategic, Political engagement with the donor communities and funding agencies like Banks (World Bank, African Development Bank, The Islamic Development Bank (IsDB) and others.

Kwame Nkrumah's 1963 speech is reprinted [here](#).



## THE TRANSFORMATION IMPERATIVE: SCIENCE AND SHAPING THE TRANSFORMATIONS WE WANT TO SEE

As global communities are now compelled to address large-scale transformations in our socio-ecological and socio-technical systems, how we frame issues, and therefore the remit of science advising, is evolving. Beyond simply technical diagnoses or solutions to discrete policy problems, we need the knowledge and know-how for broader and more complex transformative approaches. How will this new imperative change the principles and practices of science advice?

This panel brings together some of the most experienced and innovative thinkers and doers on the multi-transformation agenda. In an engaging discussion, panellists will address for instance:

- How science advice might help to reset our socio-ecological relationships and to guide us in our new and emerging socio-technical ones.
- How it can support the development of shared priorities and approaches at scale.
- The roles and responsibilities of science advice for the equitable, ethical, and just transformations that are needed.



## Promoting Science for the SDGs

**Ambassador Macharia Kamau**

Commissioner

International Science Council (ISC)



The global recognition of science's crucial role in achieving the Sustainable Development Goals (SDGs) by 2030 underscores the need for decisive leadership and collective action. The International Science Council's missions are pivotal in identifying and harnessing these actions to maximise the benefits of science within the allotted timeframe.

However, disparities in scientific development, particularly evident in developing countries and regions like Africa, hinder the effective integration of science into government policies and business research and development. This discrepancy limits the potential impact of science and innovation on accelerating progress towards the SDGs.

To overcome these challenges and drive transformative scientific actions, several strategies can be implemented:

- **Capacity Building and Infrastructure Development:** Prioritise investments in developing countries to enhance scientific capacity and infrastructure, enabling them to conduct research aligned with national development priorities and the SDGs.
- **Promotion of Collaborative Research Initiatives:** Foster partnerships between developed and developing countries, academia, government, and industry to address pressing development challenges and accelerate progress towards the SDGs through resource and expertise sharing.
- **Policy Alignment and Integration:** Develop policies that integrate science and innovation into national development agendas, including supportive regulatory frameworks, funding mechanisms, and incentives for private sector engagement in scientific endeavours.
- **Promotion of Indigenous Knowledge Systems:** Incorporate indigenous knowledge systems into scientific research processes to enhance the relevance and effectiveness of interventions, particularly in marginalised communities.
- **Ethical and Responsible Research Practices:** Promote ethical research practices prioritising community and environmental well-being while mitigating potential negative impacts of scientific advancements.

- **Policy Coherence:** Ensure coherence between science and technology policies and broader development frameworks, such as the SDGs, to foster inclusive and sustainable development.
- **Support for Entrepreneurship and Innovation Ecosystems:** Foster entrepreneurship and innovation ecosystems by providing support for startups, SMEs, and research-driven enterprises, translating scientific research into viable solutions contributing to the SDGs.

In addition to these strategies, addressing the challenges posed by emerging technologies like artificial intelligence (AI) and the fourth Industrial Revolution is imperative. Unequal access to AI technologies and infrastructure across Africa exacerbates existing disparities, necessitating investments in education and capacity building to equip the workforce with necessary skills. Ethical considerations surrounding AI adoption, such as algorithmic bias and data privacy, must be addressed to ensure responsible use and mitigate potential harms.

By implementing these scientific transformative actions, governments, international organisations, and stakeholders can harness the full potential of science to accelerate progress towards the SDGs, particularly in regions with limited scientific capacity and resources. This requires sustained commitment, collaboration, and investment to ensure that science becomes a powerful driver of inclusive and sustainable development for all.



## The need for tangible and accessible science and speed to address global environmental challenges

**Andrea Hinwood**

Chief Scientist

United Nations Environment Programme



The evidence is unequivocal: the environment and climate are changing in extreme ways that will have significant consequences for planetary health and human wellbeing for generations to come (UNEP, 2019). In the next decade, the need for a speedy transition towards climate stability, halting nature loss and reducing pollution will be essential. While numerous positive actions are being taken to address the signs and symptoms of environmental damage, they are not substantially addressing the root causes.

In 2022, United Nations Environment Programme (UNEP), the leading global environmental authority that sets the global environmental agenda celebrated its 50th anniversary. It paused to reflect on the past and consider the future to enhance delivery of its mandate in the face of a global environment with unprecedented and increasingly complex pressures. UNEP identified 4 key enablers to enhance the impact of its science-policy-interface and decision making (UNEP, 2021), including engaging with more diverse stakeholders and decision makers; becoming more solution-focused; applying foresight tools to be more anticipatory; and digital transformation with a focus on providing open, transparent, and accessible data, information and knowledge to support decision making.

Supporting evidence-based decision making requires a significant transformation in the way data and information resources are managed and shared. The availability of transparent and accessible data, information, and knowledge - meaning access that is understandable - and regionally relevant data are required. However, this can be challenging given that 37% of the world's population does not have access to internet (UN International Telecommunication Union, 2023). But accessibility alone is not enough. Enhancing analytical capacity to interpret new forms of data and information is critical - there is no value in having accessible data and information if it can't be interpreted. These elements are vital to support decision making in the context of emerging technologies and responsiveness to a rapidly changing environment focusing on solutions, prevention, preparedness, and resilience.

When relevant and tangible information is readily available, along with equitable capacity to analyse and interpret it, positive outcomes include increased knowledge sharing, potential for co-creation and collaborative decision making and enhanced trust in science, thereby advancing the objective of achieving climate stability, protecting nature, and preventing pollution. UNEP aims to deliver on these goals by providing open, accessible, and transparent data information and knowledge to support its mandate of setting the global environmental agenda and keeping the environment under review while further mainstreaming environmental issues across all endeavours and entities. It encourages others to do the same.

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CONFERENCE THEMES ● ●



Science Diplomacy



Expanded Evidence



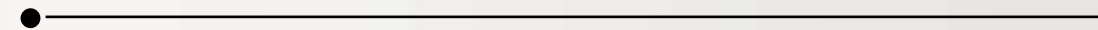
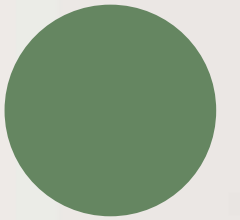
Focus on Africa



Institutions & Ecosystems



Capabilities Development



INGSA2024  
**DAYTWO**





## EXPANDED EVIDENCE: NEW WISDOM FOR COMPLEX PROBLEMS

In keeping with our conference title themes, Day 2 will kick off with a look at what is meant by 'expanded evidence' to underpin societal transformations. From theory to practice, our esteemed panelists will share their thoughts and experiences about broadening the sources of evidence. Expanding evidence makes the practice more inclusive of knowledge traditions, disciplines and methodologies, of diverse populations, and of interacting policy sectors in formulating evidence for policy innovations.

This engaging panel will ask, for instance:

- How, and in what ways, can evidence formulation be more inclusive?
- Do we have good examples of the impact of diversifying and expanding types of evidence?
- How does it affect public trust in evidence?
- How are national research and innovation systems adapting (or not) to produce expanded and actionable evidence for science advice on complex issues?
- What are the incentives for national funders on one hand and academics on the other?
- We will explore the 'how', the 'what' and most importantly the 'why' of expanded evidence in developing governmental science advice.

### Expanded Evidence: New Wisdom for Complex Problems



#### Bridging Knowledge and Action: AI and the Impact of Science and Scholarship in Policy Making

**Ann Gabriel**

SVP Global Strategic Networks  
Elsevier



Science and scholarship have delivered innumerable breakthroughs, innovations and ways of understanding ourselves and our world. Over the last century, broad public support (and funding) of research and the professionalisation of the field have contributed to the proliferation of ever finer-grained disciplines: there are few topics in which research does not make a contribution.

Yet it remains important to recognise that not all of the world's problems can be solved by science and scholarship. Not every problem finds its solution in the laboratory or the library. Often, the answers we seek lie not in further discovery, but in the application of what we already know. Thus, the challenge of our time lies in bridging the gap between knowledge and action, ensuring that our insights translate into tangible outcomes. A critical challenge today is to make that knowledge actionable by ensuring that it – along with other sources of high-quality evidence - is used to support better decision-making.

This challenge has driven an increasing focus over recent decades in academic and government research contexts on the so-called 'impact agenda', though the extent of this focus varies widely by country. The impact agenda recognises that real-world impact is not an inherent property of research and scholarship and is enabled – but not driven – by the outputs and outcomes of knowledge production. For example, a peer-reviewed journal publication on ocean acidification (an output) may be referenced in the landmark IPCC report series documenting the evidence on anthropogenic climate change, but it is only when timely decisions and actions are taken by governments, corporations, and individuals that the impact of this knowledge is realised.

Advanced AI tools trained on such high-quality evidence sources are now being investigated to support the collection and analysis of research-based knowledge for exploring and supporting public policy choices. Complementing - but not replacing - human judgement and oversight, such tools have the potential to enable rapid and unbiased horizon scanning and evidence synthesis for policy briefings. Recent research has suggested that during under

the immensely time-pressured early stages of the COVID-19 pandemic, education policymakers reverted to "research they were already familiar with, or articles published by people they trusted." Emerging technologies, particularly artificial intelligence, offer promise in this endeavour.

Ultimately, AI may also have a role in supporting the evaluation of public policy by analysing disparate evidence on the efficacy of policy interventions. But in all cases it will remain critical to place human wisdom and judgement at the centre of policy-making, augmented by AI trained on the stock of human knowledge and understanding represented by science and scholarship.







## Expanded Evidence: New Wisdom for Complex Problems

**Sheikh Manssour Bin Mussalam**

Secretary-General

Organisation of Southern Cooperation



We live in an era of uncertainty and volatility, in which rapid technological change, inequality, environmental degradation, social disruption and political divisions are turning our political, social and economic order upside down. The Global South is not immune to the consequences of these crises of our time either. Current trends in knowledge production suggest that innovative approaches are needed to expand evidence to solve current complex problems and ensure societal transformations. Transdisciplinarity, contextuality, intraculturalism, and dialecticism can serve as important pillars, as enshrined in the Universal Declaration of Balanced and Inclusive Education, to collectively encounter the challenges that humanity is facing. These mentioned pillars may help all stakeholders understand "The Third Way of Development" which will be based on the contextualised needs of the South. In this context, it is vitally important to have broader perspectives and consider other viewpoints, 'subaltern' approaches, and local wisdom.

In this regard, integration of the vast, dynamic and adaptable traditional knowledge systems with modern sciences is crucial. The issues that need to be addressed in our time include: Is there a need for a more imaginative, flexible, adaptive, and responsive approach to address our problems? How can we extend our evidence-base further to address and resolve our urgent and multiple problems? How can we promote and tap on humanity's rich indigenous wisdom to contribute to systematic social transformation? How can we best combine multiple perspectives and knowledge sources to shape the future that we want? In this regard, the importance of expanding evidence to come up with new wisdom for complex issues becomes very clear. The new complex challenges may require new and innovative responses, however, this can and should be done by also relying on endogenous knowledge accumulated over centuries. Gathering and expanding evidence also requires investment in the scientific and research capacities of the Global South countries. This will enable scientific efforts to regularly feed into decision-making processes for the development of contextualised solutions to complex

and shared challenges facing the Global South. The Organisation of Southern Cooperation (OSC), as mandated by its Member States, is in the process of taking practical steps in this direction, for instance, by establishing Regional Transdisciplinary Research Centres which will draw upon cumulative scientific capacity of the Global South. It also promotes a vision aiming to reinforce the network among the scientific and academic institutions of our part of the world.



## The value of harnessing traditional Knowledges in shaping sustainable future policy

**Justine Geramo Nzweundji**

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With pressing challenges facing the world such as climate change, food insecurity, health and environment, traditional knowledges (TKs) are important in providing insights to guide the development of societies and shaping future sustainable policies. TKs are crucial as they encompass practices, beliefs, and skills of indigenous and local communities. They are helpful in understanding the world, community resilience and sustainable living, which are important assets for sustainable policymaking. Inclusive policies depend on the context and challenges specific to society and thus represent the best way to guide the development of societies in driving transformative change.

- Local communities developed over years of skills and know-how in predicting seasonal farming periods, management of natural resources and preservation of biodiversity to address effects of Climate change. Hence, knowledges cannot be dissociated from a people's history, and so any policy for development.
- The Nagoya Protocol, an international agreement under the Convention on Biological Diversity (CBD), plays a significant role in this context, especially for African societies. It emphasises the protection of African traditional knowledges and ensures fair sharing of benefits arising from utilisation of genetic resources and associated TKs, representing a fundamental opportunity for the wellbeing of African rural populations.
- When it comes to health, 80% of Africans rely on traditional medicine for their primary health care, thus emphasising the necessity to include those knowledges into health policies.
- Despite the underrepresentation of Africa in global research output, the richness of TKs is crucial to support policies and the creation of innovative platforms for co-creation among policymakers, scientists, and traditional knowledge holders.
- TKs can be a channel for social cohesion and experience of rich cultural diversity. This gives a sense of inclusion and valorisation of minorities, acknowledging their value.

Despite challenges such as lack of intellectual property rights and the value of traditional knowledge (little known or not known), addressing them will enrich policymaking with deep insights. It also provides an opportunity for empowering communities through recognition of their role as custodians of environment. TKs will allow not just relevant policy, but sustainable policy to drive the development and the transformation of communities.



## The need for evidence know-how should be part of policy advice

**Tracey Brown**

Director

Sense about Science



It is a curious thing that, after nearly two decades of talking about research outreach and policy engagement, the ascendancy of data in decision making finds our societies so dreadfully underpowered to scrutinise the major interventions, remedies and risks they are now confronted with. Data processing and products are opening up new opportunities and vulnerabilities from farming to shipping, while politicians, communities - and even regulators and advisers - fumble for the right questions to ask.

We need a more conscious effort to establish the necessary language, concepts and transparency to scrutinise both the policy evidence and the need for policy, to guide adoption of innovations at macro and micro level. We might describe this as 'evidence know-how'. It is about knowing the right questions to ask to gate-keep the information and applications we are prepared to put our confidence in.

Has this gap between innovation and the more distributed, critical policy discussions we need arisen because of the speed and scale at which data is transforming science? Clearly that has been hard to adapt to. We are seeing outputs of data science and AI landing in low-code environments with few tools to assess their relevance and benefits. Even the most technologically advanced hospitals are awash with applications that no-one can track and evaluate.

But my experience is that there has been a long-standing underestimation of the need for evidence know-how. A risk know-how initiative we are trialling internationally, to help people use data about risk in their communities, has shown that, from Kenyan farmers to sea-farers in the Philippines, the data provided by major agencies omits relevant context and evaluation tools.

Efforts to support evidence know-how can move quickly. Last year, the European Commission's Joint Research Centre and Sense about Science produced a guide on what to ask when presented with evidence from simulation models in policy making. It was prompted by frustrations among the Commission's modellers that policymakers adopt models without asking 'was it designed for our context?' or 'what

has been left out of the model?'. It had input from politicians and citizens who are concerned that people are alienated from discussions about the reliability of such evidence. Together, they quickly managed to identify a page of questions they should be asking. This included stating what kind of transparency to expect.

'What evidence know-how is needed for this?' must become a part of science advice.



INSTITUTIONS & ECOSYSTEMS

## INSTITUTIONAL DEVELOPMENT/MAPPING: FROM MECHANISMS TO ECOSYSTEMS

As policy issues become increasingly complex and interconnected and politics ever more polarised, robust institutions that ensure that scientific knowledge is mobilised, synthesised, translated, and integrated into the policy-making process become increasingly relevant. To inform and structure the debates about capacity-building in support of robust, interconnected science-for-policy advisory bodies, the notion of "ecosystems" of science for policy have gained significant momentum. Developing new mapping tools and evaluation frameworks for the institutional capacity of such ecosystems is high on the global agenda. This session aims to provide an overview of global examples of mapping tools and assessment frameworks that support policymakers and other stakeholders at the science-policy interface in designing an evaluation process for the ecosystems that connect scientific research with policy-making. Particularly, the panel will explore opportunities for developing a framework for evaluating the quality and capacity of science for policy ecosystems. The focus is on regional and national science-for-policy ecosystems with examples from Africa, Latin America and the European Union, reflecting an interest in institutional conditions (rules, structures, procedures, norms, networks) conducive for evidence-informed policy-





## Mapping and Strengthening Ecosystems of Science for Policy

**David Budtz Pedersen**

Professor and Knowledge Broker

Aalborg University Copenhagen



In recent years, the notion of science-for-policy ecosystems has attracted increasing attention among scholars and practitioners. Inspired by similar trends in innovation management, science policy scholars have noted that evidence, advice, and data are not simply transferred from one set of actors to another. Rather, scientific advice is orchestrated through a series of interacting mechanisms, institutions, and functions that constitute the regional, national, or transnational ecosystem for science advice. Just like in a vibrant innovation ecosystem, creating value is not merely a matter of effective “knowledge transfer” from universities to companies. Innovation today is perceived to emerge as the result of co-production among several complex institutions: companies, universities, incubators, venture capital, regulation, government policies, and market forces. The same holds true for scientific advice. Rather than emerging as the result of transactions between evidence “providers” and “users” (or between “supply-” and “demand-side”) access to robust scientific advice is the result of complex interactive processes in a fluid ecosystem.

Key among the institutions that has promoted the notion of science-for-policy ecosystems are the European Commission and the EU Joint Research Centre (JRC). In 2021, the JRC launched a series of thematic workshops focused on mapping and strengthening national ecosystems of science for policy to closely engage with scientists, experts, knowledge brokers and science advisers. These workshops sought to showcase national advisory bodies, covering countries such as France, Portugal, Latvia, Lithuania, Greece, Belgium, Spain, Estonia, and Denmark. The workshops featured examples of the complementary and cross-cutting role of chief scientific advisers, scientific councils for government, science advisers in national ministries, government planning and analysis units, applied research units, parliamentary offices of science and technology, public research institutes, universities, national academies, foresight units, think tanks, regional science-for-policy mechanisms, and other knowledge brokering mechanisms and bodies.

This European peer learning exercise immediately raised the question of evaluation: how can we re-think evaluation and impact assessment to focus on the complex interplay between institutions rather than the performance of individual scientific

advisory bodies? To better understand the national advisory ecosystems, the JRC commissioned a newly published guidebook focused on presenting An Evaluation Framework for Institutional Capacity of Science-for-Policy Ecosystems in EU Member States (December 2023). This toolkit is designed to support policymakers and evaluators tasked with assessing the institutional capacity of the national science-for-policy ecosystem. For professionals in this role, the guidebook is intended to help shape and inform the assessment of institutions, mechanisms, roles, and structures that public administrations have at their disposal to facilitate the generation of evidence and its circulation and translation in policymaking.

Ideally, a framework for evaluating the institutional capacity of science-for-policy ecosystems should address both the performance of individual institutions as well as the coordination between them. By adopting the metaphor of an ecosystem, it becomes relevant to design an assessment framework, which identifies individual system components as well as system linkages across the science-policy nexus. This is the starting point for the guidebook, [which is available to download](#).



## Mapping the Organisational and Procedural Challenges for Ecosystem of the Science-Policy Interface (SPI)

**Yasushi Sato**

Professor

Niigata University



In recent discussions on Evidence-Based/Informed Policy Making (EBPM/EIPM), the term “evidence” tends to be used more flexibly than in the past. Although Randomised Controlled Trials (RCTs) and other well-designed methods which can demonstrate causality of policy interventions are still often valued, they are in reality difficult to implement in many cases. It is more realistic to consider evidence as encompassing data, facts, future projections, cost-benefit analyses, etc.

The types of evidence and the manners in which evidence affects policy vary greatly by policy area. Yet challenges for the Science-Policy Interface (SPI) are often common. For this reason, studies comparing EIPM of multiple areas can be highly suggestive. One such study was Boas et al. (2019); my colleagues and I have conducted another for EIPM in Japan. In doing so, we have adopted a conception put forward by Gluckman et al. (2021) that SPI is a dynamic ecosystem of organisational structures and processes performing four functions: the generation, synthesis, brokerage, and communication of evidence. This conception of SPI, which can be readily understood by anyone in any policy area, has conveniently served as a common framework for our comparative study of twelve policy areas, including such areas as climate change, school education, energy, and science, technology, and innovation (STI).

Our study supports Boas et al.'s observation that evidence can be conceived more broadly to include, for example, practitioner's expertise and practical knowledge; and that the role of evidence is not only to provide a basis for policy, but also to have a gradual, long-term effect, stimulating discussion among stakeholders and generating new policy thinking. Our study also suggests that organisational and procedural challenges for SPI can be mapped onto six general categories: (1) collecting and accumulating data, (2) data analysis using diverse models, (3) integrating evidence with disciplinary and practical expertise, (4) securing modes of evidence brokerage, (5) coordinating process of evidence brokerage, (6) communicating with society. Approaches for addressing challenges in these categories are diverse depending on policy areas, which is natural given the unique characteristics of evidence use in those areas. Although good practice in one area does not necessarily apply to another area, mutual learning is possible. We now need EIPM suitable to particularities

of individual policy areas, and further empirical studies on the structure of SPI are desired.



## Reararticulating the role of science in science-policy interface

**Selim Louafi**

Deputy Director for Research and Strategy

Cirad



Solving sustainability issues calls for greater mobilisation of knowledge in political processes. Yet the ability of science-policy interfaces to initiate deliberation mechanisms and forms required to address complex problems of sustainability often fall short. This is classically manifested in the environmental field, where there have never before been so many assessments produced on, for example, the state of biodiversity or climate change, and where political action remains well below what is needed to respond to these findings.

How can we explain the discrepancies between the state of knowledge and the political and regulatory frameworks that are supposed to respond to increasingly pressing global challenges?

Existing institutions at the interface between science and decision-making have been set up to organise the mobilisation of knowledge to inform the political agenda and the policy agenda setting process.

While improvement of these interfaces is often formulated as increasing science in decision-making, it is critical to forge in the opposite direction - to integrate more voices in science, or, to put it another way, to democratise science.

As long as science sees its contribution to collective decision-making processes solely in terms of shedding light on substantive and technical issues, without questioning the conditions under which this knowledge is produced or how knowledge is intended to induce change, its influence on steering change toward sustainability will necessarily remain limited. New values and approaches at the science policy interface must not only seek knowledge integration across disciplines, but also reject the artificial dichotomies between understanding and practice, and knowledge production and use.

Greater democratisation of science, and thereby improving the science policy interface, should be envisaged at least at three levels: i) increasing plurality in disciplines by breaking the disciplinary monopoly on certain topics (e.g. GMOs to geneticists) and providing support for the production of new narratives on science and technology; ii) bringing in greater plurality of social values associated to sustainability challenges, thereby enabling reflection on how questions are formulated and how we organise ourselves collectively to solve them; and iii) enforcing

greater plurality in the collective design of rules and work modalities to achieve goals and reflecting on the redefinition of roles different actors play in the co-production process and in the implementation of collective solutions. Taken together, these three dimensions not only allow expansion of the knowledge base necessary to solve complex sustainability problems, but they also enhance reflexivity and collective learning on the social conditions for success of any solution.

By focusing on reflexivity and collective learning at the science production side, these three dimensions renew the link between science and policy and makes it possible to generate more actionable knowledge.



## Strategic Foresight for Science Technology and Innovation (STI) Policy Advice

**Precious Lukhele**

Policy Specialist



Now more than ever, the world needs proactive governments. On the other hand, governments are in need of foresight infused strategies to enable them to navigate ever changing tides.

It is increasingly evident that, one off foresight exercises that are often conducted by a small group of experts on an irregular basis are no longer sufficient (OECD, 2019; Pouris & Raphasha, 2016). Governments are more in need of foresight systems that will consistently improve anticipation, ensure policy innovation and future proof policies (OECD, 2019). Building strong systems of foresight requires a degree of institutionalisation at a national level.

A select few countries have successfully established some institutional arrangements such as having one or more centralised structures to drive the mainstreaming of foresight across government. Many other countries are yet to capitalise on the use of institutionalised foresight to enhance their ability to understand change and imagine alternative futures. This is arguably not because the governments do not acknowledge the need of the capability. Rather, it is likely because of the persistent gap between foresight theory and practice (Andersen & Andersen, 2014). The lack of 'know how' continues to rob many states of an opportunity to influence and realise futures that they would have preferred.

Unfortunately, even in cases of inaction, futures are influenced. Consequently, such a nation is not able to prepare for resulting futures or worse, they walk into futures that others would have chosen for them (Conway, 2015). The latter scenario rings many bells of risks in the contemporary world of rising conflicts.

Foresight is a powerful tool. Sharing knowledge, methods, and best practice approaches for the institutionalisation of foresight is necessary and important. This knowledge will improve science advice and empower governments to understand change and future operating environments. On the international arena, it will facilitate strong ecosystems of trust and promote healthy relations.

Given this, it would be interesting to have discussions around the institutionalisation of foresight at an implementation level. That is- discussions that do not only discuss the theory and high-level strategic importance of institutionalised foresight but also discusses practical aspects. For example, what are

the arrangements required to institutionalise foresight? What are the methods? How can we create accessible platforms to facilitate foresight technical learning programmes? In other words, how can we ensure that all science, technology, and innovation advisory bodies are equipped with the necessary tools and knowledge to better understand change and advise government in a more future proof manner? How can we ensure that government and societies are empowered to autonomously influence and choose their desired futures, from a technical perspective?

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## Science advice to governments: Viewpoints through a study in the Australasian region

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The provision of appropriate science advice to governments is of national, regional, and global importance. However, many countries, especially in the developing world, lack an effective framework to provide science advice to governments, which was laid bare during the COVID-19 pandemic. Hence, there is an urgent need to describe and analyse the structures and processes providing science advice to governments to strengthen the associated processes/framework.

Science advice requires synthesising and brokering valid, relevant, and reliable scientific evidence in respect of different policies. The National Academy of Sciences of Sri Lanka conducted a study on the status and processes of institutionalising science advice to governments in the Australasian region.

The study aimed to achieve the following objectives:

Propose and facilitate the development and strengthening of systematic science advice in member countries and its institutionalisation;

Improve awareness among partners on a range of laws and regulations that exist legitimising institutions and the processes used for government science advice;

Develop capacities of participating science academies in providing science advice

Enable science academies to play a role and be part of the science advice process;

The methodology included the development of a questionnaire, a series of webinars to validate the questionnaire and gather information from representatives in partner agencies (viz. Australian Academy of Science, Bangladesh Academy of Sciences, KG University of Medical Sciences, Asian Chapter of the International Network of Government Science Advice, Korean Academy of Science and Technology, Academy of Sciences Malaysia, Nepal Academy of Science and Technology, National Academy of Science and Technology Philippines, Science Society of Thailand and Turkish Academy of Sciences) to describe the Situation Analysis with respect to science advice in partner countries, including Sri Lanka. The data was complemented by Case Studies developed by the partner agencies

focusing on their experiences in providing science advice to governments.

The questionnaire responses were categorised and presented during a workshop in Colombo under the 'Colombo Framework'. This included selection of advisors, organisational structures to provide advice, the process followed to collate and synthesise advice (framing the questions etc), the process of communication, and evaluation of the process and impact of advice. The workshop also agreed on developing a structured framework for the roadmaps for institutionalising science advice to governments, a process, which is ongoing.

The results showed a diversity of responses indicating a range of structures and processes that operate in regional countries influencing science advice frameworks in operation. These include the processes of legitimising institutions mandated to provide science advice, selection of appointees as science advisers, methods used in seeking and delivering science advice and the impact assessment. The analysed data continues to be used in developing contextualised roadmaps in study settings through an iterative process. We hope to replicate this study in other countries and take forward the agenda of institutionalising science advice to governments.

Financial assistance and partnership of the InterAcademy Partnership (IAP) and The Association of Academies and Societies of Sciences in Asia (AASSA) are gratefully acknowledged.







EXPANDED EVIDENCE

## EVIDENCE FOR SCIENCE ADVICE AND DIPLOMACY: CONSIDERING QUALITY, EQUITY, AND DIVERSITY OF SOURCES

As the challenges we face become more complex and interacting, we are more aware than ever of the limits of so-called 'technical advice.' Expanding the sources of evidence has emerged as one response to addressing the structural inequalities that can be perpetuated by conventional methodologies of evidence formulation. Moreover, evidence pluralism can help position science advice to play a central role in addressing inequality for more just transitions. What (and whose) evidence counts, when, and under what conditions?

At the same time, while broadening the sources and types of evidence can help to engender equity of outcomes for, and the trust of those not typically represented, some have raised concerns about quality of evidence according to established standards. This engaging panel, a collaborative effort between INGSA's Francophone Division, the Global Commission on Evidence, and the School of Public Policy at Georgia Tech, brings together a distinguished group of experts to explore the ways that societies create and legitimize diverse sources of knowledge and build trust in the quality of such of evidence to inform policy.

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Evidence for Science Advice and Diplomacy: Considering Quality, Equity, and Diversity of Sources



### Intersectional Inequalities in Science: Implications for Policy and Practice

**Thema Monroe-White**

Associate Professor of Technology, Entrepreneurship, and Data Analytics



The scholarly literature on intersectional inequalities in science highlights the critical role of identity markers (i.e., race and gender) in shaping the U.S. scientific ecosystem. This ecosystem encompasses institutions of varying levels of prestige (e.g., Harvard University) and commitment to diversity (e.g., Howard University), the scientific workforce (i.e., academic scholars, technicians, lab managers); the topics under investigation (i.e., Alzheimer's vs. Malaria), national science policies (e.g., U.S. Chips Act 2022) and sources of funding (e.g., National Science Foundation, National Institutes of Health).

This talk leverages evidence from bibliometric studies from a critical quantitative lens to interrogate the relationship between scientists' race and gender identities, their institutional affiliation, federal funding, and topical landscapes in scientific publications.

These studies are then connected to the rapid proliferation of transformative technologies such as Generative AI and language models, highlighting the amplification of intersectional biases in a variety of learning contexts with implications for the future of the U.S. scientific workforce.

Emphasis is placed on understanding the U.S. academic climate, where the resurgence of anti-DEI (Diversity, Equity, and Inclusion) legislation, the erosion of affirmative action policies, and targeted attacks against Black women and critical race scholars threaten to cast long-lasting shadows over the scientific landscape, shaping the trajectory for years to come.

By exploring these ecosystem dynamics our aim is to provoke critical reflection and dialogue, paving the way for informed strategies directed towards fostering a scientific ecosystem that is necessarily more equitable and inclusive, capable of empowering the most minoritized stakeholders for national and international benefit.







### Science advice: Multiple voices and journeys towards uptake

**Dorothy Ngila**

Director, Business Advancement  
National Research Foundation



What movements take place within boundary organisations when they receive scientific advice? How does change happen when they are required to make fundamental changes in how they operate? And how does that change continue to be enabled when shifts in knowledge occur?

This intervention tells the story of how through engagement in the Science Granting Councils Initiative in Sub-Saharan Africa (SGCI) and the Global Research Council (GRC), select public funding agencies in Sub-Saharan Africa have utilised institutional capacity strengthening, the commissioning of research, and expert groups to learn together and support system changes on how gender and inclusivity can be integrated and considered in research funding.

It reinforces the notion that uptake of science advice is a journey and that a multiplicity of tools (including sources of evidence) can be utilised to support the changes desired.



CAPABILITIES DEVELOPMENT

## SKILLS FOR TRANSFORMATION: TRAINING THE NEXT GENERATION OF EXPERTS AT THE INTERFACES

As the challenges we face become more complex and interacting, we are more aware than ever of the limits of so-called 'technical advice.' Expanding the sources of evidence has emerged as one response to addressing the structural inequalities that can be perpetuated by conventional methodologies of evidence formulation. Moreover, evidence pluralism can help position science advice to play a central role in addressing inequality for more just transitions. What (and whose) evidence counts, when, and under what conditions?

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## Rethinking Science Advice: Towards a Hypothesis-Driven Engagement

**Jaakko Kuosmanen**

Academy Secretary

Finnish Academy of Science and Letters



The merits and deficiencies of existing institutions and practices of science advice are well-established. In turn, the future of science advice is still very much a work-in-progress.

In traditional science advice, the interaction is often framed around a question-and-answer logic. Policymakers ask questions, and scientists attempt to answer them with the best available evidence. While many of these traditional approaches have their merits, simultaneously, the conceptual foundation of science advice requires fundamental rethinking.

Especially in systemic policy issues that are interconnected, science advice could benefit from complementary modes of interaction following an inverse operating logic: instead of starting from questions and aiming for answers, start with early hypotheses and test their tenacity with scientific evidence and expertise. This form of interaction is well-established, e.g., in the context of cybersecurity, where it is known as 'red teaming'.

In the context of policymaking, blurred lines between policy themes, information overload, and diffuse evidence can significantly complicate evidence-informed policymaking. In such instances, the logic of hypothesis testing can be utilised to, e.g., stress-test early policy drafts collaboratively by scientists and policymakers.

The Finnish Academy of Science and Letters has applied this logic in a model of interaction called Science Sparring, which has been developed jointly with the government. It has been tested and developed with seven ministries on topics such as the Nature Conservation Act, Public Sector Strategy, and National Climate Adaptation Plan. The sparrings bring together the drafters and multidisciplinary scientific teams in early phases of policy design work. The engagements are organised around pre-circulated draft documents; the scientists review them with a critical lens, scrutinising evidence-related "issues", "assumptions", and "gaps" in the drafts.

This form of interaction can be inclusive in terms of scientific disciplines. Drafting, for example, an account of vulnerable groups in the context of climate adaptation, can benefit not only from inputs from the natural sciences and social sciences but also from the humanities.

Multidisciplinary interaction focusing on early formulations of policy documents can be helpful in exploring known-unknowns and unknown-knowns relating to policy work. Early interventions in the drafting process, through the lens of scientific expertise, can aid in uncovering hidden questions requiring further review and scrutiny, risks or side costs relating to policy means, problematic framing of concepts, or assumptions about causality and interdependencies requiring a broadened scope of consultations.

We, of course, shouldn't abandon traditional models of science advice, which currently work well, but there is definitely room for new, creative solutions and conceptual rethinking.



## Reflexivity for Communicating Systems Change

**Rita Agha**

PhD Candidate

The Australian National University Centre for the Public Awareness of Science



Recent global shocks and concerns, such as the COVID-19 pandemic, have unravelled the depth of existing societal inequities. Current scientific, technological, and economic inadequacies in addressing these issues have exacerbated these concerns. Considering this, the transformative imperative to expand the evidence for scientific advice in diverse contexts is essential. This imperative includes transforming knowledge systems and practices across different research areas and the interface of societal institutions. A quintessential skill for communicating this transformation is reflexivity.

Scholars have conceptualised reflexivity as the examination of one's own bias, position, values, ideals, and worldview as it affects knowledge and practice. Examining power and privileges in knowledge systems and practices allows one to account for what is excluded (Haraway, 2016; Harding, 1987). This skill is significant for science advice in the African context.

The African continent has been flooded by Western norms, knowledge systems, and practices that have come to be represented as ideals. However, the continent is one of the historically marginalised heterogenous knowledge systems, philosophies and values that could influence scientific practices and processes, for instance, the South African Ubuntu philosophy "I am because we are", which emphasises the values of community and social relations for development, this philosophy has been expanded as an approach to addressing issues of climate change by scholars (Okoliko & de Wit, 2021). Other examples include the use of traditional communication techniques in the national guidelines by the Nigeria Presidential Task Force on Covid-19, and the Kanyeleng Fertility Society (Music) performers for health communication among women in Gambia (Bolu et al., 2022; McConnell, 2016).

Reflexivity in this context can be a skill that examines how science advice reflects the epistemological and ontological positions and values of the communities it will serve. The importance of this skill has been demonstrated by researchers who examined means to strengthen the contribution of evidence to national energy policymaking in the Nigerian context and the creation of a Francophone science advice network in Quebec, Canada (Québec Research Funds, 2021;

Sesan & Siyanbola, 2021). Given these examples of how scientific evidence that informs scientific advice can intertwine with diverse knowledge systems and practices in Southern and Northern contexts, respectively, reflexivity in science advice should encompass an awareness of excluded knowledge and examination of power and privilege.

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## Transforming to what? Contextualising science advice with richly imagined 'afters'

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The notion of 'transformation' sets up an imaginary of a 'before' and an 'after'. Much work is being done within the sciences to richly understand the present crises, and to make knowable our current trajectories - the outcome of which is motivating the urgency of widespread transformation around the globe. In these conversations of transformative change, our present is the state we hope becomes our 'before', and its proximity makes it more easily knowable in a rich and intersecting sense. But as Bai et al. (2016) posit, we pay much less attention to the 'after' - yet this is a question of what kind of a world we want to transform into. If we do not know where we want to go, how can we develop the skills we need to do this? And how can we equip the next generation with skills to navigate this change?

Knowing we do not want to be on the trajectories we are on is not enough - we need to be able to envision where these paths of transformation take us. To do this we will need to develop visions of the future that are complex enough to allow us to investigate the values, assumptions, and expectations we hold within them, and to consider the implications of these on people, science, governance, and the relationships therein (Wyborn et al., 2020). A stronger understanding of our potential futures can then also serve to strengthen the co-benefits we might achieve from pairing societal transformation on a technological level with matters of justice and inequality.

But imagining in this way is not straightforward. There is a need to develop skills in methods that enable us to collectively hold conversations about the future and processes that are able to integrate multiple sectors and develop these visions to a point that they feel as rich and complex as our world today (Cork et al., 2023). Doing this work will require collaboration, creativity, and imagination (Pereira et al., 2019). Envisioning richly connected and believable 'afters' necessitates input from diverse actors, perspectives, roles, and representatives and crucially - to have impact it must connect with existing policy processes for societal change.

Science advice will be contextualised by these visions of the future and can strengthen and be strengthened by these imaginative methods. Integrating these perspectives and the insights from visions of a

transformed 'after' will be a necessary skillset for science advice work to incorporate and engage with in this generation and the next.

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## Immersive Strategies Unleashed: Transforming Science Communication for Challenges in Asia

**Wee Hoe Tan**

Chair

INGSA-Asia



The three immersion strategies—tactical, strategic, and narrative—can be effectively adapted from game design into science advice communication in addressing complex issues in the Asia context by enhancing engagement and understanding. Here's how each strategy could be deployed when dealing with transboundary haze, South China Sea tensions, and concerns over the Fukushima nuclear wastewater ocean release.

The tactical immersion involves engaging individuals in the moment-to-moment decisions and actions within the context of science. For the issue of transboundary haze between Indonesia, Singapore, and Malaysia, interactive simulations, or experiments where the stakeholders can simulate the effects of various policy decisions or interventions in real-time through interactive platforms. This could help in understanding the immediate impacts of actions such as peatland management practices or cross-border cooperation on haze reduction. Decisions are made based on real-time data, creating a sense of immediacy and involvement, while making the scientific process more tangible and comprehensible.

The strategic immersion strategy focuses on long-term planning and strategy development. In science communication, this could involve engaging the audience in problem-solving scenarios related to global challenges, such as turning the South China Sea tensions into a Zone of Peace, Freedom, and Neutrality (ZOPFAN). Workshops or scenario planning sessions may be held to allow policymakers to explore different futures based on varying levels of cooperation and conflict resolution strategies. By allowing people to strategise solutions based on scientific evidence, it encourages a deeper understanding of the broader geopolitical implications and identifying sustainable paths towards peace and neutrality.

Through narrative immersion, storytelling can be a powerful tool for reconstructing trust in scientific concepts and discoveries into compelling narratives, e.g. the Fukushima nuclear wastewater ocean release. Science communicators can capture the stakeholders' imagination and make complex ideas more relatable. This could involve crafting compelling narratives that communicate the scientific consensus, safety measures, and monitoring results to the public. Storytelling can bridge the gap between complex

scientific data and public perception, making the information more accessible and understandable. This approach can involve sharing stories from scientists, affected communities, and environmental advocates to build a multifaceted understanding of the issue and the measures taken to ensure safety.

By employing these immersion strategies in science advice communication, content becomes more engaging and accessible, fostering a more informed and participatory approach to tackling these intricate issues, promoting better understanding of scientific concepts and their impact on our world, while building trust among stakeholders.



## ANTICIPATORY SCIENCE DIPLOMACY AND DISRUPTIVE TECHNOLOGY: TOWARDS RENEWED MULTILATERALISM

Tackling today's challenges both imminent and emerging from the transformations in our socio-ecological and socio-technical systems is key yet remains reactive and responsive. The acceleration of scientific developments places additional needs on global governance, requiring better anticipatory tools, and ensuring the science community is embedded as a stakeholder in multilateralism. By anticipating the full potential of scientific breakthroughs and ensuring that their development, their impact, and their governance are addressed together before they are ready for deployment, diplomacy can frame its opportunities and risks in an equitable, inclusive, and just manner.

The session will address the following questions:

- What is the need for anticipatory science diplomacy and policy advice to prepare for future transformations expected from science breakthroughs, and how can we use that window to devise multilateral responses together in pursuit of the SDGs?
- Considering major geopolitical shifts, new geostrategic alliances, conflicts, and technological competition, how is science diplomacy being transformed, and how its concepts, structures and practices must evolve?
- How to ensure the inclusion and participation of underrepresented nations, communities and young people in this work?



### State of the Quantum Revolution: African Perspective

**Winnie Nakiyingi**

Research and Academic Coordinator

African Institute for Mathematical Sciences (AIMS)



At the forefront of the global scientific community, the quantum revolution has emerged as a paradigm-shifting force with profound implications for technology, innovation, and society. It is imperative to foster a nuanced understanding of the state of the quantum revolution in Africa, navigating the landscape of opportunities and challenges that lie ahead.

Academic institutions across the continent have embarked on ambitious initiatives to advance quantum research and development. From South Africa's National Institute for Theoretical Physics (NITheP) to the African Institute for Mathematical Sciences (AIMS), these institutions serve as hubs of excellence, driving interdisciplinary collaboration and knowledge exchange in quantum science and technology. Specifically, the AIMS Research and Innovation Centre (AIMS RIC) intentionally focuses on research in quantum science, a field poised to revolutionise computing and information science. AIMS RIC's aim is to position Africa to harness the vast benefits offered by the quantum revolution. The institution has established a dedicated research chair in quantum science and supports several junior scientists whose work centres on quantum exploration. Through these efforts, there is steady expansion of capabilities and expertise in this critical area of study, paving the way for ground-breaking advancements and innovations in quantum.

Against this backdrop, the development of a quantum blueprint strategy for African countries holds immense promise in charting a course for sustainable growth and innovation. For example, in Rwanda, this strategy is spearheaded by AIMS and the National Council for Science and Technology (NCST). These efforts will employ contributions from national stakeholders and policymakers, leveraging Rwanda's unique strengths and capabilities while addressing key challenges in infrastructure, funding, and human capital development. By fostering strategic partnerships with global leaders in quantum research and industry, Africa is poised to position itself as a key player in the quantum landscape, driving socioeconomic development and technological advancement across the continent.

Initiatives like the Open Quantum Institute (OQI) offer unprecedented opportunities for African researchers and innovators to access cutting-edge resources and

collaborate on groundbreaking quantum projects. By providing open access to quantum computing platforms, tools, and educational resources, OQI empowers individuals and institutions to explore the frontiers of quantum science and technology, catalysing innovation and entrepreneurship in the process.

As we prepare to engage with the quantum revolution in Africa, it is essential to consider key questions that will shape the trajectory of this transformative journey. How can we foster interdisciplinary collaboration and knowledge exchange to accelerate quantum research and development across Africa? What strategies are needed to address the existing disparities in infrastructure, funding, and talent retention in the quantum ecosystem? And how can we leverage international partnerships and collaborations to maximise the impact of Africa's quantum initiatives on a global scale?

By grappling with these pressing issues and embracing a spirit of collaboration and innovation, we have the opportunity to catalyse positive change and unlock the full potential of the quantum revolution for Africa and beyond. We need to chart a course towards a future where quantum technologies empower individuals, transform industries, and drive sustainable development across the continent.







**Anne-Sophie Stevance**

Head of Global Science Policy Unit  
International Science Council



We need pluralistic and networked science advisory mechanisms that can tap into diverse expertise and be agile in the face of rapidly shifting environmental, technological, social, and geopolitical conditions.

In a context of accelerated changes and polycrises, science has a key role to play in working with the policy making community and other stakeholders to provide integrated and context relevant insights on multi-faceted issues. While the interconnected nature of the challenges we face is often acknowledged, our knowledge and institutional mechanisms remain organised around sectors and silos that work against a holistic understanding of issues, their underlying root causes and the range of options and levers that invariably span multiple sectors and scales.

Calls for transformation abound for instance in relation to the SDGs, but they fall short of identifying with the necessary level of specificity in the solutions spaces, assessing feasibility, potential risks and associated co-benefits and trade-offs. In the international space, the discussion on solutions becomes even more fraught as actors working at the science-policy interface need to navigate the contradicting demands of providing actionable knowledge with very limited spaces for true dialogue between scientific, policy and stakeholder communities that take full account of the diverse realities across countries and help redress inequalities.

In a context where slow burning issues and external shocks co-occur and have cascading impacts, a culture of evidence-informed decision-making becomes essential beyond isolated structures. Such a culture of working with scientific evidence and expert knowledge requires:

- Capacity to synthesize and make sense of evidence across disciplines,
- A stronger emphasis on social sciences, and the social, political, cultural dimensions of the issues that need to be addressed,
- Foresight capabilities to identify risks and opportunities on the horizon, enable preventative measures and shift from a culture of response to one of anticipation,
- Evaluate more systematically knowledge on policy interventions and their effectiveness, and why,
- Connect science and policy communities across

scales to support local innovation and context-specific solutions, as well as a better understanding of the implications of new planetary realities across locales.

A diverse, inclusive, and transdisciplinary scientific advisory community is critical for supporting the major transformations that are needed and build resilience for the future.



INSTITUTIONS & ECOSYSTEMS

## SYSTEMIC INSTITUTIONAL INNOVATION: CREATING BETTER CONDITIONS FOR TRANSFORMATIVE EVIDENCE- INFORMED POLICYMAKING

Is science advice enough? Science advice is developed and conveyed in administrative systems that still tend to silo policy-making sectors even while trying to tackle the most complex and interacting challenges. Sectoral priorities (and their champions) compete for attention and resources, and addressing one issue may undermine others. At the same time, national research and innovation systems are increasingly expected to direct new knowledge and technology at societal challenges, but may not be appropriately structured to do so. Even when knowledge and policy communities do connect, their respective logics and ways of working often clash, particularly as policy-making must consider many other kinds of knowledge and interests that are relevant to decisions.

As the nature of both knowledge creation and of policy-making evolve to respond to increasingly complex policy challenges, important questions emerge: Can research and innovation systems produce necessarily transdisciplinary knowledge and advice? If so, where and how should advice on multi-sectoral or cascading policy challenges be aimed? Can we be more deliberate and innovative about connecting and enabling knowledge creation and policy-making to address complex issues in more systemic ways? How can/should knowledge and policy communities work together to accommodate public values in advisory work?

This session will build off of work of the European commission that is co-creating national 'roadmaps' between national STI and public policy systems to better address sustainable development and societal transformation. Through concrete examples it will also bring into the conversation real-world lessons in politics and policy-making. Panelists will shed light on the need and the potential for institutional (and administrative) innovations that support evidence-informed policy-making, while recognising the role of diverse knowledges and values in complex issues.



## Humanising evidence: what makes evidence ecosystems effective?

**Sir Geoff Mulgan**

Professor

University College London



What we might want of an 'evidence ecosystem' seems quite simple: that decision-makers at every level should have access to the best available evidence, in easily digestible forms and when it's needed. But achieving that goal turns out to be far from simple and these ecosystems turn out to be as varied as ecosystems are in nature.

Many people involved in evidence have an implicit ideal model in their mind which includes: significant investment in research and experiments; sophisticated interpretation and analysis of that evidence; and provision in digestible forms to rational decision-makers who have a sophisticated understanding of research, and want their policies or actions to work, and to be cost effective.

There are many examples globally that aspire towards this ideal, from the Cochrane and Campbell Collaborations to the work of the OECD, bodies like the EU's Joint Research Centre, the UK's many 'what works' centres and the US Evidence-Based Policy Act. But experience shows that the ideal model often clashes with political and other realities, and too much evidence goes unused. The next generation of evidence ecosystems needs a sharper understanding of how the supply of evidence meets demand, and the human dimension of evidence: what makes sense to the people involved in these systems, and how best to engage them. That means cultivating lasting relationships rather than relying too much on a linear flow of evidence from researchers to decision-makers; it means using conversation as much as prose reports to ensure evidence is understood and acted on; and it means making more use of stories as well as dry analysis. It depends, in other words, on recognising that the users of evidence are humans.

A crucial starting point is understanding that evidence eco-systems straddle several different logics, which are different ways of seeing the world. These (explained in more detail in my book 'When Science Meets Power') include:

- The logic of science and research which tends to be neutral, sceptical, cumulative, peer-based, impersonal, has long time horizons, and usually sees knowledge as inherently good;
- The logic of politics which tends to favour narrative, anecdotes and examples; is fluid and pragmatic; concerned with values; empathic with lived experience; and oriented to achievement in the present and action, often short-term;
- The logic of officials and bureaucracies which tends to be pragmatic, oriented to problem solving, with a bias to order, rules, representations, outcomes as well as process, as well as implementation as well as policy - the how as well as the what;

The logic of professions which tend to have a strong sense of moral vocation, a commitment to autonomy (and suspicion of politicians and bureaucrats) and an ethos which privileges individual judgement grounded in practice and experience as much as codified knowledge.

The logic of engineering and technology, which links imagination to practicality, problem-solving and at its best integration of hardware and software, material things and people.

These logics are simply different ways of seeing the world. They are necessarily different, though they have overlapping interests and can broker compromises. But researchers who genuinely believe that it is only stupidity or ignorance that makes politicians ignore their ideas are bound to be ineffective. The existence of these divergent logics explains why individuals, or institutions, who can bridge these logics and are truly 'multi-lingual' and empathic are particularly valuable.

Experience also confirms that it is much easier to organise evidence around professional practice – in medicine, teaching, or policing – than around policy, and that evidence is most impactful when it's embedded. For example, NICE in the UK embedded itself into health commissioning decisions and addressed cost-effectiveness as well as 'what works. New Zealand's Integrated Data Infrastructure, which links large-scale data sets on many social, economic and health indicators, makes it easier to assess policies in real-time rather than waiting for evaluations. Meanwhile, some of the new tools using large language models trained on validated research to provide evidence syntheses may make it easier – and more automatic – for policymakers to draw on the best available research.

Just as important, however, we've learned that evidence has to be made human. Politicians and policy-makers are deluged with information and become adept at selecting what will be most useful to them. This isn't always or even usually the most rigorous research but rather research which is most likely to resonate with their world, a world in which the media, commentators and other politicians matter much more than academics. This means that influence is often most effective when it's indirect rather than direct, and when sophisticated evidence is distilled into vignettes, anecdotes, and stories about real people rather than only numbers.



## How can science advice put the SDGs back on track?

**Liliana Pasecinic**

Deputy Head of Unit

European Commission - Joint Research Centre



Policy makers are increasingly confronted with cascading crises, conflicts, natural disasters, health threats and a contested global order, all of which call for urgent action. Thus, the long-term imperative to deliver on Sustainable Development Goals (SDG) appears to be superseded by shorter term priorities.

Yet, non-delivery on SDGs could lead to a point of non-return. Insights from UN (2023) on SDG implementation paint a gloomy picture: about 15% of targets are on track to be achieved by 2030; 48% deviate from intended trajectory and circa 37% are stalled or are even below the 2015 baseline. If these trends continue, by 2030, 575 million people will remain locked in extreme poverty. Moreover, the pace of SDG data reporting is insufficient and inadequate: high-income countries are falling behind low- and middle-income countries in data reporting. This clearly shows that the SDGs need to regain their status of top agenda priority.

While acknowledging Eisenhower's matrix on urgency and importance, one has to recall that SDGs are an integrated blueprint for a sustainable future, charting the course for advancement in critical and interlinked areas, such as poverty eradication, environmental sustainability, and economic development.

STI has emerged as a potent driver of SDG delivery and progress-monitoring. STI-based solutions have the potential to enhance the efficiency, scalability, and sustainability of interventions, whether through the application of artificial intelligence for data analysis, or the use of biotechnology for sustainable agriculture.

In addition, interdisciplinary approaches are paramount to understand the interlinkages and trade-offs between different SDGs, as these may result in both positive and negative impacts. Considering their complexity and interdependence, the SDGs are a "wicked problem" in policy making, which can only be successfully addressed through a systems approach carried out via targeted strategies. Such strategies, contextually designed, building upon existing knowledge and capabilities, show the directionality for the use of emerging technologies and have already been successfully implemented in several countries.

The EU's Smart Specialisation methodology underpins socio-economic transformation by tailoring policies to local realities and valorising diverse innovation pathways. This approach is recognised also at the UN level and has inspired a variety of countries across the globe, including in Africa, supporting effective science advice.

In this pivotal moment, the science advice community gathered at the INGSA conference in Kigali should leverage its knowledge and influence to spearhead international commitment for the SDG.





## New Actors for Science Diplomacy for Cities in Africa

**Jackie Kado**

Executive Director

Network of African Science Academies (NASAC)



Science academies and early career researchers are two new actors for science diplomacy in cities that cannot be overlooked, especially in Africa. The common mandate of science academies is to support economic and social advancements through the wise application of science, technology, and innovation. The convening power of science academies brings different stakeholders together to deliberate on pertinent issues for the common good of society. Academies have the capability to diplomatically influence socio-economic policymaking in cities and offer support for evidence-informed policy for development at national and regional levels. Science diplomacy in Africa faces challenges like conflicting political and economic goals, cultural sensitivities, and mistrust. Skilled practitioners, weak research-policy linkages, and minimal involvement from institutions exacerbate the issue. Non-partisan academies and early career researchers can address these issues.

Early career researchers who practice transdisciplinary research (TDR) have mastered the skills essential for science diplomacy. TDR encourages scientists to go beyond traditional barriers between science, policy, and society, and do research that is original, engaging, and relevant, ultimately contributing to social change. An appreciation of citizen science is also acquired in the process as local communities are engaged by framing research questions and contributing to methodology and uptake of research outputs. TDR is therefore critical for equipping the next generation academics with the mindsets and instruments required for science orientated toward transformative and systemic change in cities. In this way, TDR practitioners are poised to become science diplomats more easily than conventional researchers.

Science diplomacy can help overcome regional and global challenges, such as environmental, health, and security issues. The African Union's Agenda 2063 and the United Nations Agenda 2030 recognise science's importance for sustainable development. Science will generate knowledge for long-term transformations, while diplomacy sustains ongoing city transformations.

NASAC, a consortium of 30 science academies on the continent, has not labelled science diplomacy explicitly in its activities, but the concept is applied.

Science academies have strong convening power, which is a crucial element of science diplomacy. Making meaningful contributions as providers of evidence-informed policy advice requires co-production and co-designing science advice with the end-users like policymakers, the public, and the private sector in cities. To achieve this, science academies must engage in non-scientific work to get a seat at the policymaking table and have a voice in the cities. Building trust is an important part of that, but it takes time.





FOCUS ON AFRICA

## DISRUPTIVE TECHNOLOGIES: IMPACT AND LEADERSHIP FROM AFRICA

We are currently in the heart of a great technological revolution which is evolving fast in all fields, including AI, quantum computing and astronomy. The private sector, with large resources, is developing at an unprecedented pace the next generation of disruptive technologies. In parallel, states and organisations are still looking into how to approach this technological shift with a local perspective, with limited international inclusion and solidarity.

There are huge opportunities for the leadership from the African continent and for African states to stay ahead in this transition in supporting and promoting its experts and research centers and developing policies adapted to the Countries and continent's realities. The panel will aim at looking into these technological advances and discuss with actors for change in different fields of expertise inside and outside of the African continent to collect their perspectives for the next step. How south-south and south-north collaboration will unfold?

Disruptive Technologies: Impact and Leadership from Africa



### Astronomy for a Better World - Powered by Africa

**Kevin Govender**

Director

International Astronomical Union Office of Astronomy for Development



Astronomy is one of the most complex sciences that pushes humanity to its limits (and beyond) in terms of knowledge, innovation and technology. It has enabled us to look up at the night sky and figure out, using just these trickles of photons from unimaginably far away, that out there are stars, planets, galaxies, black holes, supernovae, and so much more.

The exploration of incomprehensibly large scales of space has expanded human knowledge to the brink of us even knowing whether there is life elsewhere in the universe. It has necessitated the innovative construction of large research infrastructure - our telescopes are advanced light buckets dotted around this tiny planet desperately collecting the light that rains down on us from all around this place in space. In large international astronomy projects like the SKA and LOFAR, multiple buckets are combined to form continent-sized telescopes collecting every single photon we can (with the African continent actually co-hosting the former). To enable such infrastructure, new technology needs to be developed for immense scales of data acquisition, analysis, and processing.

Naturally, the (disruptive) technologies required for all this are nothing short of astronomical. Africa, through world leading projects like MeerKAT (the South African precursor to the SKA), is playing a leading role in the astronomy field globally.

But what does this mean for the people of this planet who live in poverty; who are plagued by conflict; who face increasingly frequent natural disasters? These are the questions that any responsible government will need to ask when choosing to support investment in such scientific and technological development. Fortunately, it is not unimaginable that even something as esoteric as astronomy can have a direct impact on the most vulnerable in society. The International Astronomical Union's Office of Astronomy for Development, a global initiative led from the African continent through the South African National Research Foundation, is a living example of what is possible when we intentionally bring the metaphorical ivory tower down to earth. It serves as an example to policy makers of the direct societal impact that even blue skies science is capable of, by using astronomy for things such as stimulating economic development

in rural villages, improving mental health and applying data skills across disciplines.

Any policy adopted by any government has to take into account the diversity of its population. And in a world where diversity is often a euphemism for inequality, we have to recognise, with humility, that disruptive technologies will remain a catalyst of inequality as long as those technologies are not being actively applied to disrupt the inequality itself.





## ADVANCES IN CAPABILITY DEVELOPMENT FOR SCIENCE ADVICE: FRAMEWORKS AND TOOLS

As jurisdictions recognise the benefit of science advice for policy, and as researchers seek to demonstrate public relevance in new ways, the demand to build capabilities in the practice of science advice has grown. But fundamental to developing capabilities in an establishing field, is to clarify the competencies and tools of that field in the first instance. This session will consider a variety of activities under the broad heading of 'capability development,' but rather than looking at specific implementation mechanics, it will instead consider the higher level rationales, approaches and frameworks that underpin capabilities development in science advice.

Through concrete examples from a diverse mix of state-of-the-art programs and approaches, the session will identify and explore their common aims and their challenges. In doing so, it will address questions like:

- Can/are we building a common language and understanding of science advice to governments to support its institutionalisation?
- Can/are we developing a common view of skills and evidence quality criteria to support implementation?
- How should we think about the relationship between capabilities (skills) development and institutional development and innovation?



### Reframing Capability Development: Perspectives and Standards from the Global South

**Binyam Mendisu**

Professor of African Languages and Linguistics

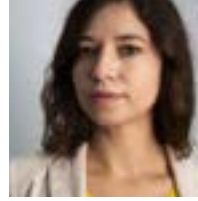
The Africa Institute, Global Studies University, Sharjah



As the practice and science of science advice continue to evolve in response to complex global challenges, continuously developing capabilities and sharing experiences are crucial for consolidating progress and facilitating further discussion on key emerging issues. Since its inception in 2014, INGSA has launched numerous capacity development initiatives, which I can personally testify are highly effective, having benefited from one such initiative in Kigali in 2018. In just a decade, INGSA has grown into one of the largest global networks of policymakers, academics, thought leaders, students, and practitioners working on the intersection of knowledge, society, and policy. Recently, INGSA expanded its organisational structure to include divisions that transcend geographical and thematic boundaries, reflecting a commitment to inclusivity and diversity. With nodes in many parts of the world, this expansion is a remarkable achievement for a relatively young organisation with such a broad mandate and global scope. Nonetheless, balancing global perspectives with local relevance poses an inherent challenge, given the organisation's rapid expansion, broad global mandate, and commitment to local impact.

Capability development and setting frameworks need not only build skills, provide tools, and share experiences but also instil agency for local ownership and encourage a nuanced understanding of context, thereby opening possibilities to recreate, reimagine and adapt as necessary. These high-level abilities demand openness to diversity of context, different cultures and languages, and creative ways of doing things. Thus, one needs to invest time substantially in understanding the specific context and local conditions so that developing capabilities could bring about the intended impact. It is crucial to avoid operating based on assumptions and over-generalisations that privilege experiences from developed science advice systems, which in turn relegate emerging systems to the periphery. True capability is inherently internal and unique to each situation, and it can only function optimally when it is tailored to specific needs. What are the ways, processes and approaches that can help us ensure relevant and contextualised capability development? These are questions that are worth engaging in developing frameworks and tools within the science and policy

interface. One unique and bold way to address these challenges is to approach framework setting in science advice from the vantage point of the Global South. What would it take and what would it be like to begin from the experiences of the Global South? This new approach might have numerous potential benefits. Among others, it could guarantee inclusivity and foster diversity, offering fresh perspectives and new insights that are often overlooked when relying mainly on established systems.



## A digital infrastructure to support mediation at the science-policy interface

**Natalia Sokolovska**

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Intermediaries or knowledge brokers at the science-policy interface are increasingly acknowledged as indispensable professionals for bridging boundaries between researchers and decision-makers. Alongside their distinctive skills and profound understanding of how the science-policy interface operates, a digital infrastructure could play an essential role in curating and sustaining an ever-growing corpus of expert knowledge. Repod is a centralised repository in Germany that was collaboratively created by a multidisciplinary team of researchers and developers. It serves as a central access point to scientific knowledge tailored for policymakers.

After the pandemic, when the cost of unqualified expertise feeding into political decisions was often paid in human lives, many countries are reviewing their existing science-policy mechanisms and reflecting on ways to improve it. Searching for scientific expertise especially under time pressure and urgency can be tedious and time-consuming, often findings are scattered on various websites of different research institutes and cannot be searched in a targeted manner.

Repod addresses this challenge in two ways. First, the repository consolidates advisory documents created by researchers to inform political processes. This enables policymakers to search faster and more easily across institutions and disciplines, allows them to compare different findings, including conflicting ones, and uncover new research organisations or disciplines addressing similar topics. Researchers, on the other hand, get a direct channel through which they can share their policy papers, position papers, statements, and other kinds of advisory documents with policymakers.

But what exactly qualifies as an advisory document? Each institution, research organisation, or even team has the autonomy to define it according to their own criteria. This brings us to the second issue Repod tries to tackle - the need for a "common language" at the science-policy interface. Our research team came up a first classification of advisory documents and distinguish them according to their:

- Type: Is it a short statement or an in-depth lengthy report?

- Content: Does it include recommendations, assessments or offer a non-normative presentation of the state-of-the-art knowledge?
- Underlying expertise: Are the findings based on an empirical study, a comprehensive meta study, or is it an informed preliminary opinion?

We believe that having a central access point to advisory documents from research, a unified logic of creating such documents can help to curate knowledge flows more efficiently and contribute to more transparency and quality in the communication on the science-policy interface.

I am looking forward to a critical discussion about the potential of a digital infrastructure in supporting knowledge brokerage and input on the possibilities of creating a common language for the science-policy interface.

### Relevant links:

The repository: <https://repod.zbw.eu/>

Information on Repod: <https://www.hiig.de/en/project/scientific-policy-and-society-advice/>



## It is time to institutionalize science advice training

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The role of the scientist has transcended the traditional boundaries of academia to become a critical agent of evidence-informed decision-making, through science advice. However, conventional academic instruction - usually a PhD - does not provide all the necessary skills to be an effective science advisor. Thus, it is critical to acknowledge the need for training to establish and sustain trust among stakeholders of the science advice ecosystem, including policymakers.

The Americas have some successful cases of training programs. For example, the AAAS fellowships in the United States, SNI's program in Panama and IAI's STeP fellowship across the continent. There are also local experiences, such as Mexico City's training program from 2019 to 2021. However, its termination underscores the importance of supporting such efforts, especially in the initial stages when they are vulnerable to externalities.

Nevertheless, these cases are all extracurricular. It is time to question the relevance of having elective programs in the curriculum to instruct our scientists.

Arturo Rosenblueth, neurophysiologist, and the founding director of Cinvestav in Mexico, used to say that "great institutions prepare pupils superior to their instructors consciously and generously". Since 2021, in Cinvestav, we have developed elective courses science advice. A specific course on legislative science advice has been also requested by the Chamber of Deputies with a more practical focus.

Despite all this, unfortunately and to our surprise, we have found that the attitude of the scientific community can be a powerful barrier to institutional change. Those who reject the involvement of academia in creating professionalizing capacities on science advice usually argue the preservation of a narrow scope of academia and the fear of loss of resources. Indeed, the challenge of valorizing capacity building for science advice as a fundamental activity for addressing critical issues takes place on different fronts, in governments, in public opinion, but also within the scientific community itself.

The scale of challenges such as climate change, pandemics, and disruptive technologies demands more than just sporadic and incidental advice. It is imperative to establish professionalized pathways

through the institutionalization of training programs that rely on trust, certainty, evaluability, and other systematic virtues. These institutional capacities can augment the conventional training of scientists, offering them a career pathway in science advice.

Only through a comprehensive approach involving all stakeholders can we address the complex challenges of the 21st century with the rigor and responsibility they require.





## Science Advice in Times of Conflict

**Shaheen Motala-Timol**

Head of Academic and Quality Enhancement

Middlesex University Mauritius/INGSA-Africa Steering Committee



In today's interconnected world, effective and relevant science advice to governments is essential. The International Network for Governmental Science Advice (INGSA) has established regional chapters, including INGA-Africa, to address the unique dynamics of the science-policy interface in the different continents.

Fostering networking, capacity building and lesson-sharing across Africa are the main goals of INGA-Africa. The continent's diversity requires tailored approaches that consider linguistic, cultural, and contextual nuances.

The flagship capacity-building program of INGA-Africa, the Science Advice Skills Development Program (SASDP), aims to empower early and mid-career scientists to communicate their research effectively to policymakers and broader audiences. March 2024 marked the conclusion of the journey of the second mentor-mentee cohort of INGA-Africa's mentoring program, with twelve African mentees being supported throughout this initiative by twelve international mentors. By recognising the importance of equity, diversity, and inclusion, the program ensures access to growth opportunities and networking for all participants.

Technology plays a crucial role in overcoming geographical barriers and facilitating distance mentoring. Utilising online platforms, the SASDP extended its reach to scientists throughout the continent and to mentors worldwide, facilitating mentorship and skill-building activities regardless of physical location. However, the program faces limitations in reaching mentees and mentors residing in conflict regions where communication infrastructures are frequently disrupted. Conflicts are thus significant obstacles to the dissemination of scientific knowledge and science advice.

In the face of extraordinary crises, the relevance of science advice extends beyond technical expertise: it intersects with broader societal challenges, including political instability and social unrest. By advocating for evidence-based approaches, scientists amplify the voices of marginalised communities and foster democratic resilience. However, in times of conflict, scientists are also at risk of losing their lives, their jobs, of being displaced, resulting in the irreversible loss of valuable local knowledge. The integrity of

the science advisory process is then compromised. Concurrently, in time of conflicts, when the very idea of democracy across the world is called into question, disparities erode trust in governmental institutions and exacerbate existing inequalities.

Science advice needs first and foremost to advocate for justice for all. Science as a process does not exist in isolation. At its very core lies humanity. This principle holds true for science advice to decision makers and must be embedded in capacity building efforts, guided by the principles of collective responsibility, of ethics and values.



## Deliberative-democracy and third-wave science advice for public decision-making

**Kristiann Allen and Tatjana Buklijas**

INGSA Secretariat and Koi Tū Centre for Informed Futures  
University of Auckland, New Zealand



The evolving relationship between public science and public policy is often viewed from the perspective of changing practice and organisation of research (Arnold & Barker, 2022; Benner et al., 2022; OECD, 2020b). The rise of the 'impact agenda' and the growth of transdisciplinary research are recent examples of how public science systems are evolving in a bid to generate more actionable knowledge and socially legitimate evidence for governmental advice.

Less often, perhaps, has this evolving relationship been viewed from the perspective of the changing practices of policy making by governments. Yet, like knowledge production, this too has undergone significant transformation, from highly centralised public service regimes, through 'new public management' reforms, toward a more consultative practice (Capano et al., 2015). This evolution is underpinned by changing policy theory. Whereas the role of rational choice or structuring institutions might once have been unquestioned heuristics for policy makers, now new ideas from both democratic theory and communication theory are emerging in response to complex policy challenges like climate change mitigation and adaptation where public values are in tension and public trust in evidence may be low as a result.

Viewing the relationship between science and policy through a multi-focal lens of changing practices of science and policy making as they address increasingly complex problems in turn sheds new light on practices and frameworks of science advice. The shift from the first-wave linear model of evidence 'supply and demand' toward second-wave iterative approaches spanning the 'interface' between science and policy communities is well understood. But the language and frameworks of science advice continue to adapt to new contexts. An emerging third-wave model of science advice must now confront the demonstrable public mistrust of institutions (e.g. of government and science). Both the scientific and policy communities must work harder and collaboratively to maintain public trust and legitimacy through greater transparency, accessibility and impact.

One place where these imperatives converge is in the practices and processes of 'deliberative democracy', which are designed to move difficult issues away from powerful interests and ideological positions. Instead, citizen participation in decision making is prioritised and empowered. The climate crisis has been a big driver of deliberative democracy internationally, as most governments struggle to give sufficient regard to the needs and values of diverse citizens and future generations. In deliberative processes, groups of citizens are given time and resources to learn from experts about complex issues and to collaboratively

weigh up evidence-informed solutions to make recommendations to government (OECD, 2020a; Willis et al., 2022). Scientists are thus challenged to present evidence in new ways that directly respond to diverse public considerations.

In Aotearoa New Zealand, our research group ([www.complexconversations.org.nz](http://www.complexconversations.org.nz)) has been designing and studying new forms of deliberative democracy through local citizens' assemblies on long-term questions that demand future-focused perspectives. These questions transcend government mandates and have been out of scope for science advisors (e.g. infrastructure decisions for the major city; reducing urban congestion and emissions; planning for equitable climate risk reduction). In innovating democratic practices, we are also innovating science advice, as citizens are empowered to frame questions and identify knowledge gaps iteratively with direct access experts across a variety of disciplines. The directness and transparency of the process create new and exciting possibilities for science advice and the dynamic relationship between public science and public policy making, as evidence is interpreted by citizens, who bring it to bear on their recommendations to governments.

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# INCLUSIVE POLICIES FOR DIVERSE CONTEXTS

The final Plenary Panel of the conference is worth the wait! It will gather up the key themes to consider (and anticipate) how the structures, cultures, and practices of science advisory ecosystems might adapt to address converging challenges at an increasing pace.

How do we coordinate and organise evidence-informed advice for systemic transformations? How do we make room for public values and diverse interests, without losing sight of, or trust in, evidence? How can we be sure we are seeking the appropriate evidence from multiple perspectives? What new roles, skills, competencies might be needed for an anticipatory, multi-level, multi-sectoral science advice for complex issues? How do we get there while maintaining public trust and legitimacy?

Our esteemed panellists will bring thoughtful and fresh perspectives to the future of governmental science advice and the structure of science/policy/society interfaces.



## Designing New Public Institutions for Science And Technology

**Sir Geoff Mulgan**

Professor

University College London



Science depends on institutions: universities, labs, funders and corporate R&D departments, that bring together expertise, resources, tools and values. Science also links to policy and governance through institutions, such as NASA and DARPA in the US, the IPCC and IPBES at a global level, and hundreds of intermediaries and funding bodies.

Strangely, however, there is no science or even craft to guide on how best to design these. While the business world benefits from hundreds of consultancies and academic centres focused on new models of organisation, from platforms to blockchain, mutuals to social enterprises and BCorps, the public sector has nothing comparable. As a result, it often reverts to very traditional methods: appointing a committee of senior figures and trying to replicate the models of the past. And while business has high levels of churn (the lifespan of corporations on the Standard & Poor's 500 index fell from an average of 60 years in the 1950s to 10 years in the 2000s) the public sector often gets stuck for decades with ineffective old models.

A new initiative is seeking to address this and is working on many projects that have a strong science and technology component. The Institutional Architecture Lab, TIAL ([tial.org](http://tial.org)), with support from the Rockefeller Foundation, is working with partners (from national governments to the UN) to develop a more systematic theory, practice, and knowledge of the options. Some of these are directly relevant to INGSA, including:

- Artificial intelligence, governance, regulation and safety. There are some existing models – such as China's Cyberspace Administration. But how should nations design new regulators? And what might new global organisations look like (including a possible 'IPCC for AI')?
- Global environmental public goods – nearly forty years after the creation of the IPCC there are many collaborations that synthesise knowledge, from IPBES to IUCN and the Clean Air Coalition. But how might these be organised in the future? Where are the gaps (eg geo-engineering or food)? And do we need counterparts to the IPCC focused on the 'how' of action and implementation to complement the work of diagnosis?

- Mental health – across the world there is a striking imbalance between the strength of institutions for physical health and their relative absence for mental health, especially population level mental health. What might future public institutions look like that aim to improve the wellbeing and mental health of significant population groups?

- Data – how should data be organised and curated in ways that maximise public trust and public value for a city or nation, for example to make the most of transport data (from trains and buses to cars, taxis and micro-mobility)?

- Public engagement – after decades of experiment – from Denmark's consensus conferences to organisations like the UK's Human Fertilisation and Embryology Authority – what's been learned about how best to link science, politics, ethics and public engagement? New institutions may be even more vital for handling synthetic biology and quantum computing, where there are both huge potential benefits and huge risks.

- Adoption of technology – Germany is creating a new agency, DATI, to improve adoption of new technologies, particularly digital, by smaller companies and the public sector. How should such institutions be organised? What might work in different contexts?

These are just a few live examples. They require both practicality (working with the realities of politics and financial constraints) and imagination (using creative models, including flatter networked structures more like myceliums than pyramids).

After a long period of diminished confidence in public institutions, the next few years look set to demand more creativity and imagination in the design of effective public institutions that can make the most of available data and knowledge, and ensure more voice for those affected by decisions. Science, and science policy, have in the past been pioneers of new institutional forms, and they should be in the future too. For more on these issues see 'When Science Meets Power' (Polity, 2024) and the website of the Institution ([tial.org](http://tial.org)).

When Science Meets Power: <https://bit.ly/WhenScience>





## Transparency and mutual learning in science-policy interactions

**Sonja Ochsenfeld-Repp**

Head of Division Research Culture

Deutsche Forschungsgemeinschaft (German Research Foundation, DFG)



Evidence-based policy advice is one of the statutory tasks of the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation), the central self-governing research funding organisation in the area of knowledge-driven research in Germany (DFG, 2023c). Science-policy interactions are crucial for addressing complex societal challenges, necessitating trust and mutual respect between researchers and policymakers (Science Europe, 2023).

The DFG employs various methods for policy advice, including first and foremost its research funding but also expert exchanges, and scientific commissions. These activities encompass diverse levels of formalisation and intensity (DFG, 2024). In addition, the DFG shapes and contributes to discourses at national, European and international level (for example in the context of Science Europe, the Global Research Council and the International Science Council) through its committees (and members), and through the staff of the DFG head office.

Regarding the expert groups and scientific commissions, the following key points are essential for evidence-based policy advice and mutual trust: independence of the respective commission, transparency in recruiting and working processes, comprehensive range of specialist expertise, and inclusive and diverse spectrum of perspectives and stakeholders. Additionally, comprehensible recommendations should be made on the basis of interdisciplinary criteria.

However, the translation of research findings into policy decisions remains the responsibility of policymakers; they have to make judgements about how to interpret evidence, to weigh risks, reconcile differing values and goals, and evaluate the inevitable trade-offs that actions or inactions entail (Mills, 2021).

These requirements for policy advice were recently confirmed, updated, and expanded by the DFG's Interdisciplinary Commission for Pandemic Research: "Policy advice by science and the humanities requires bodies (e.g. expert councils, committees) which are bound by rules and transparent procedures, structures, staffing and decision-making processes, and they also need the appropriate resources to enable an academic approach to the issues. Scientific advice is supported by the appropriate structures for rapid evidence generation and synthesis" (DFG, 2022). Central communication

structures to improve the implementation of knowledge while at the same time counteracting misinformation and disinformation, as well as strengthening trust throughout society are of vital importance.

Adapting science advisory ecosystems to address complex challenges of our time, such as artificial intelligence and sustainability, requires constant and mutual learning of all actors in science-policy interactions and agile approaches (DFG, 2023a, 2023b). Thus, initial regulatory approaches and recommendations for action have to be successively revised in the light of new knowledge.

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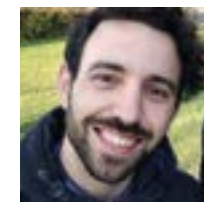
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## Global Development Awards Competition



Global Development Awards Competition - Japanese Awards for Outstanding Research on Development - Innovative solutions and methodologies from/to Global South voices

**João Costa**

Senior Program Manager

Global Development Network

The [Global Development Network's \(GDN\)](#) mission is to improve development outcomes and livelihoods through high-quality, policy-oriented research in the social sciences, produced in developing countries and connected globally. In GDN's strategy, research is seen not only as a source of knowledge but also as an instrument and a process to equip development actors with critical skills, analysis, and evidence for high-impact activities. For GDN, research capacity that is put at the service of development debates and implementation is itself development.

The Global Development Awards Competition (GDAC) exemplifies this vision by combining research- and implementation-focused awards in 2 different categories. This initiative, administered by GDN, funded under the Policy and Human Resources Development Fund (PHRD) trust fund managed by the World Bank, and generously supported by the Ministry of Finance, Government of Japan, is GDN's longest-running project with 21 years of continuous implementation. It has granted over US\$4 million worth of awards.

The [Japanese Awards for Outstanding Research on Development \(ORD\) category](#) of GDAC not only emphasises the importance of research as a source of knowledge but also equips individuals with critical skills, analysis, and evidence for impactful activities. This is achieved by targeting early-career researchers to delve into the intricate links between various challenges to foster a deeper understanding of the issues at hand. While emphasising innovative solutions and methodologies, it not only seeks to unravel the complexities of the challenges but also aims to provide actionable insights that can inform policy recommendations.

The 2023 edition's focus on the [Nexus of Education, Development, and Human Security](#) amplifies the importance of holistic approaches to human well-being. Education emerges as a cornerstone for imparting knowledge and skills and as a pivotal factor in ensuring human security. By addressing fundamental needs and rights alongside education, the winners will recognise the multidimensional nature of human security, offering a comprehensive perspective to push for evidence-based policymaking.

GDAC is not just about recognition and financial support. This program symbolises a collective effort to push the boundaries of knowledge, promote diversity in research, and generate solutions that can transform the lives of those most in need. As we navigate an increasingly interconnected world, this program aims to act as a catalyst for positive change, shaping a future where development is inclusive, informed, and sustainable.

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The winners will be announced at INGSA2024!

Check the finalists and the projects of the [2023 edition](#) and the [brochure of GDAC](#).

Explore the [Global Development Awards Platform](#) where all the past winners and their projects are displayed by country, theme, and keywords among other criteria.

INGSA2024

GLOBAL DEVELOPMENTS





## Global Development Awards Competition



## Global Development Awards Competition - Japanese Award for Most Innovative Development Project - Innovative and impactful projects to support the most marginalized communities

**João Costa**

Senior Program Manager

Global Development Network

The [Japanese Award for Most Innovative Development Project \(MIDP\)](#) under the [Global Development Awards Competition \(GDAC\)](#) supports non-profit organisations and civil society groups striving to make a meaningful impact on the most marginalized and disadvantaged communities in the Global South.

This initiative, administered by GDN, funded under the Policy and Human Resources Development Fund (PHRD) trust fund managed by the World Bank, and generously supported by the Ministry of Finance, Government of Japan, is part of GDN's longest-running project with 21 years of continuous implementation having provided over US\$4 million worth of awards.

By focusing on projects at the implementation stage, the MIDP recognises the value of tangible efforts and the potential for scaling up interventions that address the complex challenges faced by exceptionally marginalised groups. What sets MIDP apart is its emphasis on grassroots initiatives managed by local NGOs, acknowledging the pivotal role these organisations play in identifying and addressing development issues within their communities.

The MIDP's logical progression to the [Japan Social Development Fund \(JSDF\) Award](#) further highlights GDN's commitment to turning innovative projects into tangible solutions. The JSDF Award is a scale-up grant available to one of the MIDP winners after its implementation. It therefore funds the project that has demonstrated potential for development impact and replicability, thus bridging the gap between recognition and real-world application following the MIDP Award.

In the 2023 edition, where the focus converges on the [Nexus of Education, Development, and Human Security](#), the goal was to underscore the vital role education plays in safeguarding the basic needs, rights, and security of individuals and communities, aligning seamlessly with the comprehensive concept of human security. The emphasis on community engagement, participation, and empowerment reflects a commitment to sustainability and locally-led solutions. The focus on improving access to education for all age groups, addressing gender-specific shortcomings, and considering the broader context of poverty reduction promotes a nuanced understanding of the multifaceted nature of

development challenges.

As we navigate an ever-changing global landscape, this initiative aims to highlight the value, importance, and power of collaboration, innovation, and community-driven solutions.

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The winners will be announced at INGS2024!

Check the finalists and the projects of the [2023 edition](#) and the [brochure of GDAC](#).

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## Exploring Global Challenges



## Exploring Global Challenges

**Bernard Voyer**

Polar Explorer, Mountain Climber, Honorary Nepalese Consul of Montréal, Canada

Bernard Voyer explorateur

The world is undergoing an unprecedented period of transformation, characterised by rapid technological advancements, heightened risks of definitively impairing our ecosystems, and profound societal impacts that transcend borders. These global changes are significantly reshaping our lives and our ambitions.

As a polar explorer and mountain climber, I have traversed some of the world's most remote and challenging environments, including the Arctic, the Antarctic, and the highest peaks like Everest. Through my journey, I encounter complex, dynamic, and highly unpredictable realities. In these few lines, I aim to illuminate how these extreme challenges I have faced, resonate with broader issues confronting humanity today.

Firstly, these challenges underscore the urgent need to adopt a mindset that is more resilient, adaptive, and forward-looking to address global grand challenges such as pandemics, biodiversity loss, deepening inequalities, the climate crisis, global governance addressing technological change, preserving democracy, to initiate an efficient transformation to a sustainable, equitable and resilient world.

These urgent challenges elevate the importance of prioritising scientific knowledge and a more inclusive and transdisciplinary approaches under the pressure of high expectations for impactful results. Recognising the interconnectedness of social, ecological, and technical domains is essential and requires adapting our action in the light of their co-evolving nature over time.

In conclusion, one of the key lessons I have learned is the significance of considering local contexts in addressing extreme challenges. Each situation is influenced by its own unique cultural, geopolitical, and socio-economic factors. Engaging local communities in the process of reflection and solution design is paramount, and this can only be achieved by investing time in building strong relationships beforehand. Fostering collaborative ties with communities is essential and requires patience, as it is based on tangible results, shared objectives, values such as respect, openness, and ultimately, trust.

I would like to add my voice to stress the significance of a collaborative, inclusive, and concerted effort involving all sectors of our society, to safeguard what is most valuable to us: our humanity and our planet.





## Beyond lessons to action: Collaboration for pandemic preparedness in Africa

**Adebisi Adenipekun**

Policy Specialist

Pandemic Sciences Institute, University of Oxford



The COVID-19 pandemic underscored the importance of timely evidence-based policymaking and revealed the gaps in the adoption of scientific advice. The unprecedented nature of COVID-19 and the preponderance of misinformation and disinformation further complicated the policymaking and policy implementation processes. Many governments and policymakers faced the twin challenge of a weak science advisory system involving researchers and a high distrust in politicians and government officials (Cairney & Wellstead, 2021).

African researchers are well-placed to offer scientific advice and create innovative approaches and solutions for governments to prepare for and tackle outbreaks, epidemics, and pandemics. However, with a few exceptions, African universities and research institutions rarely receive sufficient government funding to conduct cutting-edge research to solve pressing national or regional problems (Umvilighozo et al., 2020). As a result, in times of crisis, such as pandemics, governments must often look to evidence generated from countries with better-developed research systems.

Reflecting on lessons from COVID-19 pandemic, we must prioritise action across Africa to prepare for the next pandemic. African epidemic and pandemic sciences research and preparedness must receive sustained increases in investment. This is a matter of national and regional health security and economic stability that we cannot afford to outsource. To help respond to this need, the Science for Africa Foundation – in partnership with the Pandemic Sciences Institute at the University of Oxford and Mastercard Foundation – has launched a call to establish Epidemic Science Leadership and Innovation Networks (EPSILONs) across Africa.

Furthermore, pandemic researchers and policymakers must be equipped to translate research into policies and practices. We must close the gaps between what we know works in our context and what we do. As we generate evidence for policymaking, we must also support governments and policymakers in evaluating implemented or ongoing policies. Hence, a knowledge exchange forum, including individual

policy exchange programmes (iPEP) and annual science-policy knowledge exchange activities, will be included in the EPSILONs initiative. These activities will advance and nurture professional relationships between pandemic researchers and policymakers aiming to facilitate collaborations to translate pandemic research into improved policy across Africa.

African researchers and policymakers must collaborate to sustainably consolidate the lessons and gains from the response to the continent's COVID-19 pandemic and other outbreaks. Actions to improve Africa's pandemic preparedness and its significant role in global health security and pandemic response will be discussed at the INGSA 2024 Satellite event titled "Translating research into policy and practice: Insights from COVID-19 pandemic response in Africa and plans for the EPSILONs initiative".

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# INGSA2024 AUTHORINDEX





NAME	PAGE
ADENIPEKUN, Adebisi	80
AGHA, Rita	53
ALLEN, Kristiann	71
ASTUTI, Rini	21
BALLO, Rokia	11
BROWN, Tracey	40
BUKLIJAS, Tatjana	71
COSTA, João	77, 78
FARUQUI, Naser	17
GABRIEL, Ann	37
GOVENDER, Kevin	65
HERNÁNDEZ-MONDRAGÓN, Alma Cristal	69
HINWOOD, Andrea	33
KADO, Jackie	15, 62

NAME	PAGE
KADZAMIRA, Gift A.	18
KAMAU, Macharia	32
KARUNAWEERA, Nadira	46
KOTANI, Motoko	27
KUOSMANEN, Jaakko	52
LOUAFI, Selim	44
LUKHELE, Precious	45
MENDISU, Binyam	67
MIKEKA, Chomora	30
MONROE-WHITE, Thema	49
MOTALA-TIMOL, Shaheen	70
MULGAN, Geoff	60, 73
MÜLLER, Jan Marco	28
MUSSALAM, Manssour Bin	38

NAME	PAGE
<b>NAKIYINGI, Winnie</b>	57
<b>NAUGHTEN, Denis</b>	25
<b>NGILA, Dorothy</b>	50
<b>NZWEUNDJI, Justine Geramo</b>	39
<b>OCHSENFELD-REPP, Sonja</b>	74
<b>PASECINIC, Liliana</b>	61
<b>PEDERSEN, David Budtz</b>	42
<b>PONTE, Marie-Violaine D.</b>	23
<b>RIZZI, Menico</b>	22
<b>SANGANYADO, Edmond</b>	20
<b>SATO, Yasushi</b>	43
<b>SOKOLOVSKA, Natalia</b>	68
<b>STEVANCE, Anne-Sophie</b>	58
<b>STRUDWICKE, Indigo</b>	54

NAME	PAGE
<b>TAN, Wee Hoe</b>	55
<b>VOYER, Bernard</b>	79





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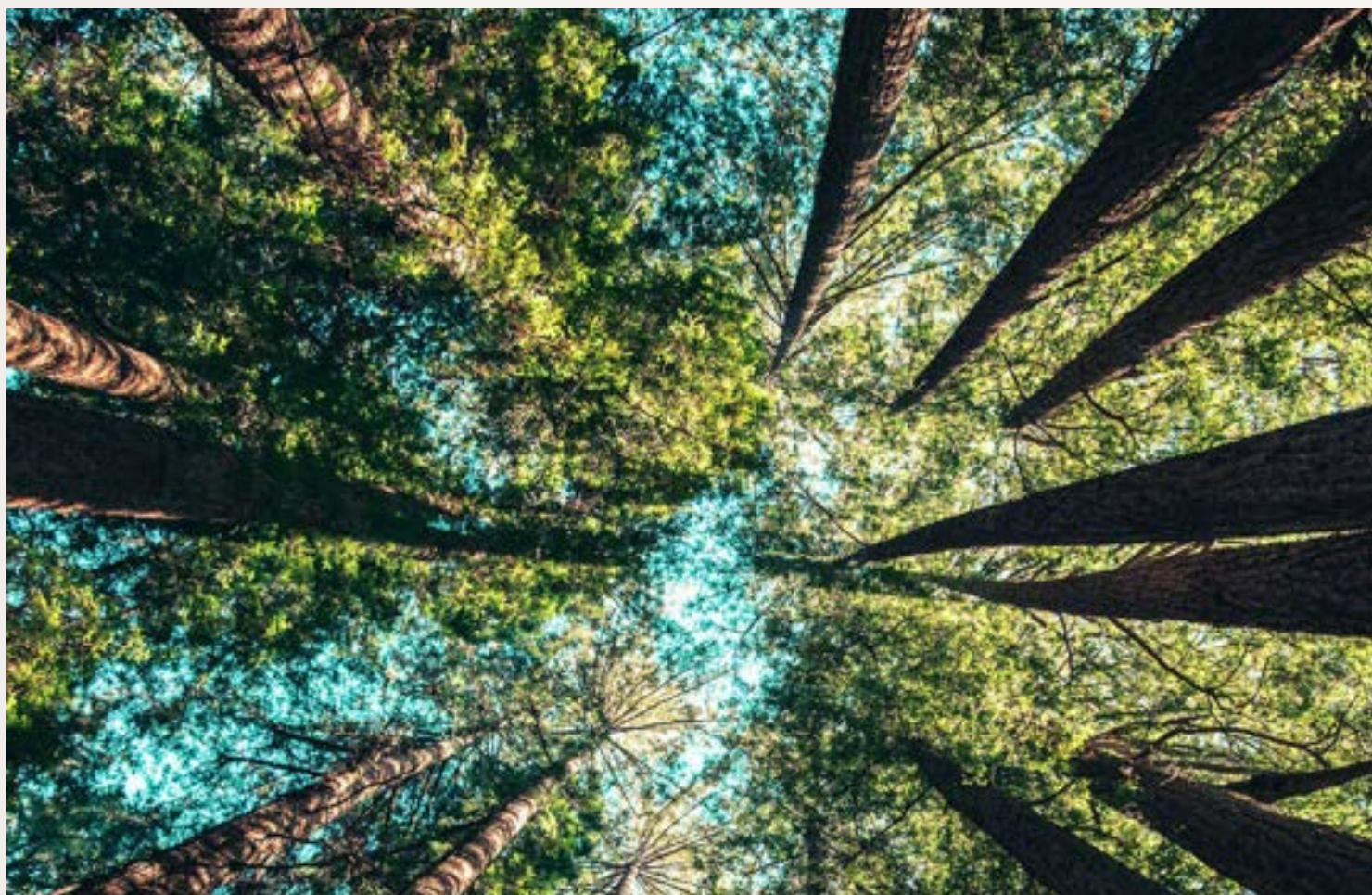
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THE TRANSFORMATION IMPERATIVE:

# EXPANDED EVIDENCE FOR INCLUSIVE POLICIES IN DIVERSE CONTEXTS



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