

SCIENCE ADVICE IN ACTION

THE INTERNATIONAL SCIENCE COUNCIL AND THE UNITED NATIONS

Morgan Seag, ISC Liaison to the UN System
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ABOUT THE ISC

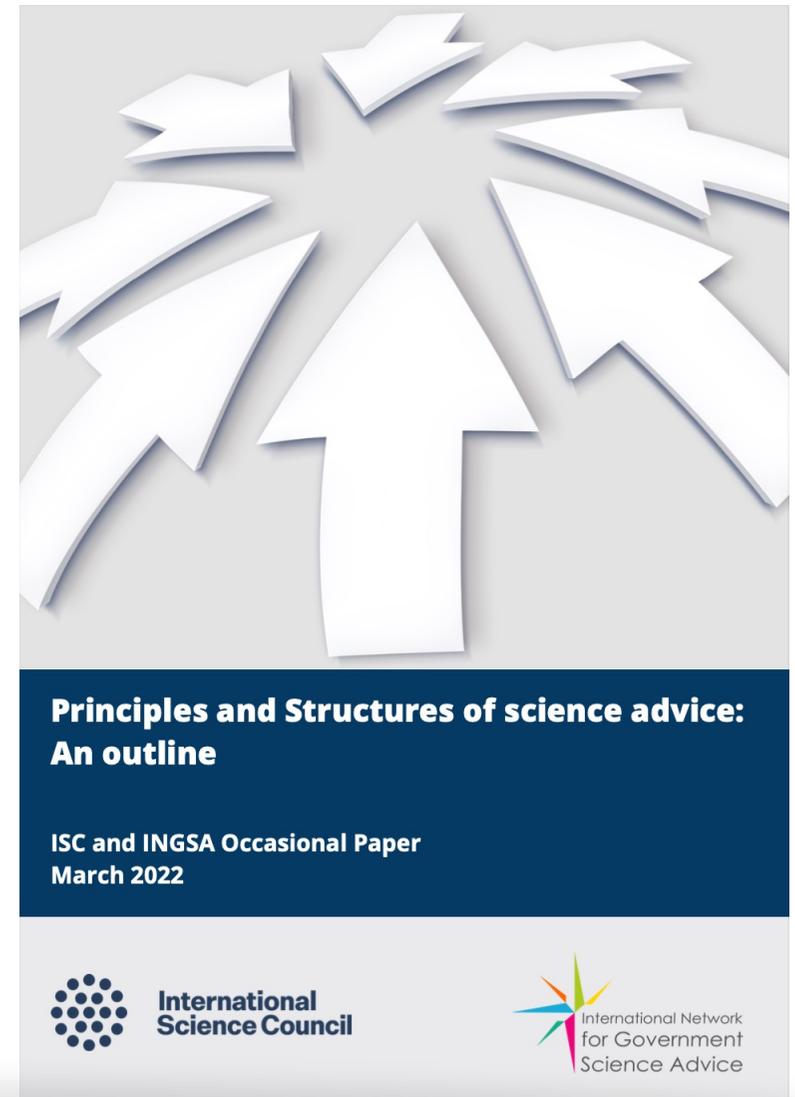
- **Catalyzes and convenes global scientific expertise** to support evidence-informed decision-making on issues of multilateral concern.
- **Unique global membership** including:
 - National scientific Academies and Research Councils from 120+ countries
 - 40+ international scientific Unions, Associations, and Societies representing both natural and social sciences
 - Young Academies and Associations
- Together, the ISC's members work to advance **science as a global public good.**

THE ISC AND THE MULTILATERAL SYSTEM

- **UN partnerships** to deliver knowledge products
- Network of scientific organizations associated with the **UN Secretary-General's Scientific Advisory Board**
- Secretariat, jointly with UNESCO, of **UN Group of Friends on Science for Action**
- High-level ad-hoc **science advice to UN leaders**
- Co-coordinator, **UN Scientific and Technological Community Major Group**
- Topical, actionable **science-policy dialogues**

PRINCIPLES OF SCIENCE ADVICE

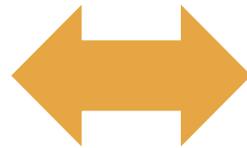
- **Knowledge synthesis**
 - Aims to establish the state of available knowledge on a given issue
 - Methods include literature reviews, scientific assessments, expert inputs
 - Considers multiple disciplines/framings that should contribute knowledge to the question in hand
- **Knowledge brokerage**
 - Interactive, iterative process of dialogue between science and policy
 - Helps decision-makers interpret meaning, implications, and limitations of scientific information
 - Helps structure policy problems, frame related questions, communicate certainties/uncertainties, and communicate implications
 - Policy relevant but **not policy prescriptive**



SCIENCE ADVICE IN PRACTICE: THE ISC AT THE UN

Advice Delivery:

- Formal requests
- Ad-hoc requests
- Formal mechanisms
- Informal mechanisms



Awareness-raising:

Creating enabling conditions and demand for science advice

GROUP OF FRIENDS ON SCIENCE FOR ACTION

- Informal intergovernmental coalition
- Led by Belgium, India, and South Africa
- The ISC and UNESCO as joint secretariat
- Opportunity to enhance SPI in the UNGA



GROUP OF FRIENDS ON SCIENCE FOR ACTION

- What kind of advice?
 - ✓ Understanding context of scientific inputs and science-policy interfacing
 - ✓ Understanding possible modalities for effectively engaging scientists
 - ✓ Framing consistent, overarching key messages
 - ✓ Providing talking points for statements
 - ✓ Convening and preparing policy briefs
 - ✓ Recommending expert speakers



AD-HOC SCIENCE ADVICE

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- Example: Policy brief on sea-level rise for the President of the General Assembly



POLICY BRIEF: Global Sea-Level Rise

Author: International Science Council (ISC)

Contributors: Théophile Bongarts Lebbe; John Churn; Florence Colleoni; Michael Elliott; Jochen Hinkel; Hélène Jacot des Combes; Michelle Mycoo; Tim Naish; Joanna Post; Michelle Scobie; Anne-Sophie Stevance; Adelle Thomas; Roderik van de Waal; D.G. Webster

Coordination: Morgan Peag, ISC Liaison to the UN System

Acknowledgments: Special thanks to the Scientific Committee on Oceanic Research, Scientific Committee on Antarctic Research, Future Earth Coasts, Future Earth Ocean Knowledge Action Network, and IOC Global Sea Level Observing System



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Photo: Last House on
Holland Island
baldeaglebluff/ticker

This briefing note is prepared by the International Science Council (ISC) on the occasion of the Informal Plenary Meeting on Sea-Level Rise taking place on 3 November 2023, convened by the President of the UN General Assembly. The brief outlines key messages related to sea-level rise, convened from a global community of active scientists from different regions, bringing diverse disciplinary perspectives from across the natural and social sciences. Mobilized through the ISC network, they include renowned experts who have contributed to global processes such as IPCC reports. Their insights here shed light on key considerations for policy-makers on a wide range of issues related to sea-level rise, highlighting the value of engaging actionable, interdisciplinary scientific knowledge in responding to current and future challenges. The brief is intended to inform the PGA and Member States, while serving as a starting point to provide further and more comprehensive inputs from the active scientific community in response to PGA and UNGA requests on sea-level rise and other issues of global concern. The ISC stands ready to mobilize its membership to support continued and strengthened engagement of actionable scientific knowledge for evidence-based decision-making in the UN General Assembly.



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KEY MESSAGES

1

Sea-level rise (SLR) is accelerating and will continue for centuries under all emission scenarios. However, decisions made today can impact the timing and degree of SLR, with significant consequences for centuries to come.

2

SLR manifests in a variety of ways, including storm surges, floods, saltwater intrusion into soils and aquifers, increased frequency of extreme events, and submersion.

3

Ambitious mitigation in line with the Paris Agreement target of 1.5°C is critical to avoid crossing thresholds that would yield rapid and irreversible SLR, and to enable more successful adaptation.

4

Sea-level rise is a global issue that impacts differently on different communities, with some considerably more vulnerable than others. Responses to SLR need to be integrative and context-specific; there are no one-size-fits-all solutions or panaceas.

5

Interdisciplinary and transdisciplinary scientific inputs provide crucial benefits to successful policy-making on mitigation, adaptation, finance, and resilience related to SLR. This requires a more systematic dialogue between policy-makers and scientists on evidence-based policy options to support concrete action and anticipate future risks.

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I. PHYSICAL DYNAMICS OF SEA-LEVEL RISE

Sea-level rise (SLR) is happening now. Evidence of sea-level rise is well documented and clearly points to the role of anthropogenic climate change as well as accelerating rates of SLR (see, e.g., IPCC 2019; IOC-UNESCO 2022; IOC-UNESCO 2023; IPCC 2023).

Some degree of SLR is inevitable. Two main mechanisms combine to increase sea levels: thermal expansion of the oceans and melting ice from mountain glaciers and polar ice sheets. These mechanisms, and especially polar ice sheets, respond very slowly to global warming, trapping heat and releasing it on a long timescale. Sea-level rise will therefore continue to occur for centuries to come, even with net zero emissions. Up to 0.5m of sea-level rise above 2005 level can no longer be avoided.

Today's decisions will impact the future of SLR, with significant impacts on the degree and timing of sea-level rise. Projections show substantial differences between low- and high-emissions scenarios especially after 2050, with a high-emissions scenario projected to result in multi-meter SLR in the coming centuries. It is not too late to avoid worst-case-scenario impacts.

Major, irreversible changes may be triggered in the coming decades. Significant uncertainties remain around long-term projections, including "low-likelihood/high impact" scenarios in which 2m of sea-level rise by 2100 cannot be ruled out. The future of sea-level rise partly depends upon "thresholds" or "tipping points": critical values of global warming that could be crossed during the 21st century and trigger irreversible ice sheet melt committing the world to high sea level rise, permanently inundating low-lying areas. Evidence suggests that thresholds may be crossed between 1.5°C and 2°C of global average warming, which highlights the risks of overshooting the Paris Agreement target of 1.5°C.

SLR will vary regionally. Decision-makers also

II. MULTIFACETED IMPACTS OF SLR

SLR manifests in a variety of ways, including storm surges, floods, saltwater intrusion into soils and aquifers, and submersion. Rising sea levels significantly increase the frequency of extreme events, with the current 1-in-100-year coastal flooding event occurring several times a year by 2100. In many areas, human activities such as artificialization, sand extraction, and the destruction of ecosystems exacerbate the risks of SLR. There is clear evidence that SLR has caused damage and loss in diverse regions, and internal displacement and migration because of SLR are already taking place.

SLR poses existential threats, especially to Small Island Developing States (SIDS). For hundreds of millions of people living in coastal zones worldwide, SLR threatens wellbeing, food security, freshwater supply, health, economic livelihoods, human settlements, infrastructure, biodiversity, ecosystem services, knowledge systems, and natural and cultural heritage. Many of the world's megacities and much of the world's agriculture, industry, and infrastructure are located near the coast, along with key cultural sites. Impacts of SLR amplify social inequalities, both within and among countries, and threaten cultural identities. Inundation threatens habitability and statehood for some SIDS, and in some cases, the limits of adaptation will be reached if warming exceeds 1.5°C. The scientific community stands ready to provide further policy-relevant insights related to the nature, scale, and projected timing of SLR impacts.

EMCRS ENGAGING IN GLOBAL POLICY PROCESSES

- ✓ In 2022, the ISC invited Young Academies and Associations to apply for **affiliate membership** in the spirit of promoting the participation of Early and Mid-Career Researchers in its activities and governance, thereby enlarging opportunities for EMCR to be represented in international science.

<https://council.science/EMCR>



ISC EMCR FORUM

- ✓ The ISC launched in 2023 an **Early and Mid-Career Researchers (EMCR) Forum** which convenes young scientific groups within a space for exchange, learning and collaboration.
- ✓ Join us for the May Meeting on 27 and 28 May





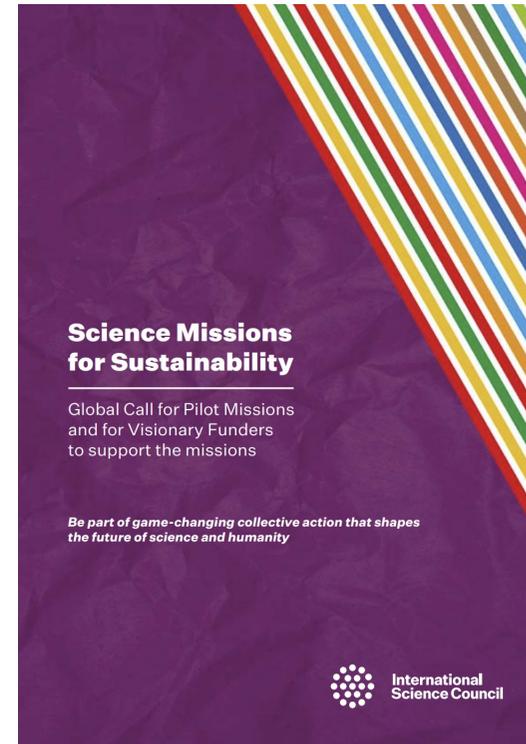
TRAININGS

- ✓ The ISC, the ISC Regional Focal Point for Asia and the Pacific and invite EMCR to a **“Storytelling in Science: Science Communication and the Media”** workshop exploring how young researchers can promote and communicate their work in a creative, memorable and accessible way and build relationships with trusted journalists and media.
- ✓ **Join us for the workshop on 15 May**



OPPORTUNITIES

- ✓ The International Science Council and its Global Commission on Science Missions for Sustainability proudly announce the launch of the **Science Missions for Sustainability Global Call**. Consortia are invited to submit pilot proposals to become part of the transformative collective action to shape the future of science and humanity.





**International
Science Council**

**ISC EARLY AND MID- CAREER
RESEARCHERS
(EMCR) NEWSLETTER**

[COUNCIL.SCIENCE/EMCR/NEWSLETTER](https://council.science/emcr/newsletter)

SCAN TO SUBSCRIBE



THANK YOU

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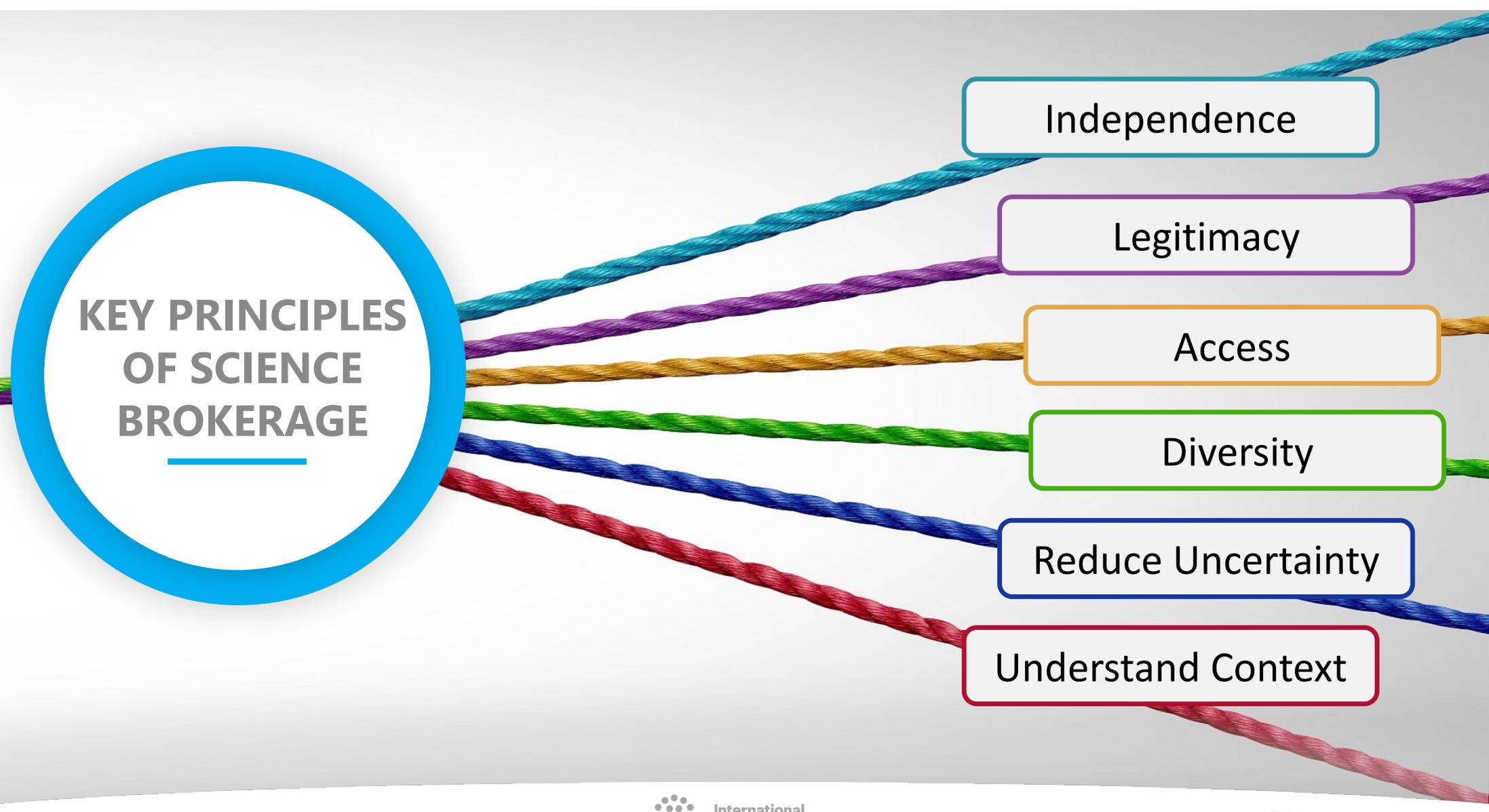
 [InternationalScienceCouncil](https://www.youtube.com/InternationalScienceCouncil)

 [InternationalScience](https://www.facebook.com/InternationalScience)

 [council.science](https://www.instagram.com/council.science)

 [@ISC](https://twitter.com/ISC)

[additional slides below,
not planning to use]



**KEY PRINCIPLES
OF SCIENCE
BROKERAGE**

Independence

Legitimacy

Access

Diversity

Reduce Uncertainty

Understand Context

An interdisciplinary scientific perspective on sea-level rise and related policy challenges

Summary and Rationale:

This brief is prepared on the occasion of the meeting of the Group of Friends on Science for Action taking place on [date], focused on the subject of global sea-level rise and its implications for decision-making in the UN General Assembly.

The brief outlines key messages related to sea-level rise, convened from a global community of active scientists from different regions, bringing diverse disciplinary perspectives from across the natural and social sciences. Their insights are synthesized into five key messages for policy-makers, highlighting the value of engaging actionable scientific knowledge in responding to current and future challenges (i.e., what do scientists recommend decision-makers should know about sea-level rise?). These are followed by five key questions on the subject of sea-level rise highlighted by the scientific community, which can enrich multilateral science-policy engagement (i.e., what do scientists recommend decision-makers ask the scientific community about sea-level rise?).

The brief is intended to inform Member States, while serving as a starting point for more targeted and comprehensive exchange between multilateral decision-makers and the global scientific community during the upcoming Group of Friends meeting and in follow-on discussions.

5 key messages from the global scientific community on sea-level rise:

1. Sea-level rise (SLR) is accelerating and will continue for centuries under all emission scenarios. However, decisions made today can impact the timing and degree of SLR, with significant consequences for centuries to come.
2. SLR manifests in a variety of ways, including storm surges, floods, saltwater intrusion into soils and aquifers, increased frequency of extreme events, and submersion.
3. Ambitious mitigation in line with the Paris Agreement target of 1.5°C is critical to avoid crossing thresholds that would yield rapid and irreversible SLR, and to enable more successful adaptation.
4. Sea-level rise is a global issue that impacts differently on different communities, with some considerably more vulnerable than others. Responses to SLR need to be integrative and context-specific; there are no one-size-fits-all solutions or panaceas.
5. Interdisciplinary and transdisciplinary scientific inputs provide crucial benefits to successful policy-making on mitigation, adaptation, finance, and resilience related to SLR. This requires a more systematic dialogue between policy-makers and scientists on evidence-based policy options to support concrete action and anticipate future risks.

5 recommended questions for science-policy engagement around sea-level rise:

1. What are the main drivers of sea-level rise? How certain are scientists about this?
2. What is known about anticipated timing and extent globally/regionally? Will sea-levels rise the same everywhere? How certain are scientists about this?
3. What are the expected social, economic, and cultural impacts of sea-level rise?
4. What institutional, governance, and policy options are available and what do we know of their effectiveness? What kinds of trade-offs and synergies should be considered?
5. How can science support decision-making on this issue? What resources are available?

Conclusion:

Sustained engagement between policy-makers and actionable, interdisciplinary knowledge is critical to effectively mitigate and adapt to climate change, and to address the existential threats of sea-level rise and the multiple factors that can magnify its impacts. This is essential to understand root causes of multidimensional, multiscale challenges and to identify effective solutions.

The Group of Friends on Science for Action stands ready to support Member States to apply actionable knowledge in policies and programs to achieve greater progress in meeting the Sustainable Development Goals, and to ensure that the UN and Member States have access to actionable knowledge for purposes of evidence-based decision making.

Select recommended resources:

- IPCC, 2019: [IPCC Special Report on the Ocean and Cryosphere in a Changing Climate](#)
- IOC-UNESCO, 2022: [State of the Ocean Report](#)
- UNDRR & ISC, 2021: [Hazard Information Profile EN0023 on Sea Level Rise](#)

This brief has been prepared by the International Science Council and UNESCO, which serve jointly as secretariat to the Group of Friends on Science for Action. Special thanks to expert contributors Théophile Bongarts Lebbe; John Church; Florence Colleoni; Michael Elliott; Jochen Hinkel; Hélène Jacot des Combes; Michelle Mycoo; Tim Naish; Joanna Post; Michelle Scobie; Adelle Thomas; Roderik van de Wal; and D.G. Webster.

FORMAL REQUESTS

- Usually as structured input into a formal process
- Requested information usually substantive and tied to specific documents or processes
- Often a short turnaround time
- Example: Stakeholder inputs into the Pact for the Future

UN Summit of the Future: an opportunity to advance evidence-informed decision-making?



Pact for the Future: ISC Submission to the Zero Draft

Version dated 31 December 2023, revised on 7 February 2024

Chapeau

Science¹ is a critical, cross-cutting tool to support multilevel, multisectoral action across the entire multilateral agenda. It is an essential tool for enhancing evidence-informed decision-making, international relations, and collective action, and is essential to accelerating progress on shared global challenges. Because science has been historically underutilized at all levels of decision-making and in particular multilateral, Member States, the UN and other actors are increasingly acknowledging the need to strengthen the interface between global science and the multilateral system. This is all the more urgent in order to catalyze effective multilateral action on major global issues during this time of rapid change and polycrises.

Therefore, the Chapeau should:

Reaffirm Member States' commitment to meaningful engagement of science in multilateral, regional and national processes, noting the importance of science for evidence-informed decision-making and action across all chapters of the Pact for the Future.

About the International Science Council

The International Science Council is a non-governmental organization with a unique global membership that brings together 250 organizations including international scientific Associations and Societies, national and regional scientific Academies and Research Councils, and Young Academies and Associations. <https://council.science>

Focal point: Morgan Seag, ISC Liaison to the UN System, morgan.seag@council.science

¹ Throughout this submission, "science" refers to the systematic organization of knowledge that can be rationally explained and reliably applied, tested against reality and the scrutiny of peers, referring to a knowledge community inclusive of natural sciences and social sciences as well as humanities, medical, health, computer, and engineering sciences. This submission also refers to "interdisciplinary science," which indicates scientific practice involving multiple disciplinary approaches, as well as "transdisciplinary science," which indicates the co-design of research and co-production of knowledge by scientific and societal

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systems worldwide to advance evidence-informed decision-making across scales.

Chapter IV. Youth and future generations

The following input has been coordinated with the Global Young Academy².

Chapter IV represents a critical opportunity for Member States to acknowledge and leverage science as an essential tool to support youth and future generations, and to facilitate the engagement of youth and early career scientists in advancing evidence-informed policymaking for the benefit of all.

international associations, stands ready to support the UN in its aims to include the voices of early career scientists in UN scientific mechanisms and processes, such as the newly established Group of Friends on Science for Action and the UNSG's Scientific Advisor Board. See: <https://council.science/current/blog/isc-engagements-emcr-2023/>.

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Chapter I. Sustainable development and financing for development

1. Science is an essential tool for sustainable development.

Science is essential to accelerating the implementation of the SDGs¹. It plays a key role in breaking deep-seated siloes in understanding and action, enabling decision-makers to address the root causes of challenges and identify synergies and trade-offs among solutions. Science also can help decision-makers assess vital transformation pathways and roadmaps, while identifying key areas for sustainable investments that maximize development and sustainability co-benefits.

Therefore, Chapter I should:

- **Affirm the crucial importance of disciplinary, interdisciplinary and transdisciplinary science to understanding and addressing interconnected obstacles to achieving the SDGs and related intergovernmental commitments.**

2. Evidence-informed sustainable development requires multilateral support.

Among the most urgent challenges for the global scientific community is to support accelerated progress toward the transformative vision of the SDGs.

Both natural and social sciences have made significant contributions in this regard; however, to effectively support the rapid progress required to achieve the SDGs, new approaches to conducting, harnessing, assessing, and funding science are urgently needed.

To unlock the full potential of science for sustainable development requires a

transformative approach by Member States. This includes a well-funded, globally-supported, “big science” approach, including the social sciences, to complex sustainability challenges (especially in regions where SDG progress is most lagging); implementation of “science missions for sustainability,” which mobilize and implement knowledge across disciplines and sectors for societal transformations towards sustainability; and a shift in funding and institutional arrangements away from intense competition and fragmentation, and toward transdisciplinary integration, collaboration, and societally-relevant outcomes².

Therefore, Chapter I should:

- **Express Member State support for transformative approaches to sustainable development via transdisciplinary and mission-oriented science as a key priority in pursuing the SDGs.**

Chapter II. International peace and security

1. Science is vital to advancing international peace and security.

Scientific inputs are vital to understanding the root causes of conflict and advancing conditions that enable social stability and sustainable development in diverse contexts. Science also is crucial to mitigating and managing the impacts of complex environmental, social, and economic challenges that exacerbate risk and instability³, and for facilitating anticipatory action to meet emerging security challenges related to energy, climate, environment, health, technology, nuclear weapons, inequality, and more.