IASC

2023-2026

The International Arctic Science Committee´s

STRATEGIC PLAN

IASC Strategic Plan 2023-2026
Online version available on the IASC website
https://iasc.info/about/publications-documents/

IASC Secretariat
Borgir, Norðuslóð
600 Akureyri - Iceland
info@iasc.info I +354 515 5824

Photos, from up-right to left: Federica Scarpa, Delphin Ruche, Martin Luethi, and Susan Christianen

Preface

The **International Arctic Science Committee (IASC)** is a non-governmental and international scientific organisation. It encourages and facilitates cooperation in all aspects of Arctic research, in all countries engaged in Arctic research, and in all areas of the Arctic.

IASC promotes and supports interdisciplinary research to foster greater scientific understanding of the Arctic and its role in the Earth system. The IASC Founding Articles call upon IASC to provide scientific and technical advice and promote cooperation and links with other national and international organisations and to periodically review the status of Arctic science.

Considering the depth and breadth of the environmental and social changes taking place in the Arctic, a much greater scientific understanding of the region and its role in the global system is needed. Despite the many challenges, truly open, ambitious, and mutually empowering international scientific cooperation and partnership with Indigenous Peoples and Arctic residents has never been more necessary.

The Strategic Plan is our public commitment to demonstrate how IASC will prioritise its work, measure success and inspire change. It will guide IASC's contribution to the ICARP IV process in 2022-26 and support the crucial planning stages for the Fifth International Polar Year in 2032-33.

Henry Burgess
IASC President

Executive Summary

IASC's core mission is to encourage and facilitate cooperation throughout the Arctic research community. In 2015, IASC therefore released the publication "**Integrating Arctic Research – a Roadmap for the Future**", resulting from the 3rd International Conference on Arctic Research Planning (ICARP III) bottom-up process that was initiated by IASC in cooperation with many partners and involved over 700 scientists from 27 countries. The ICARP III 'Roadmap' highlighted three key science priorities (see Box A):

- The Role of the Arctic in the Global System
- Observing and Predicting Future Climate Dynamics and Ecosystem Responses
- Understanding the Vulnerability and Resilience of Arctic Environments and Societies and Supporting Sustainable Development

This ICARP III roadmap was the basis for the first IASC Strategic Plan for the period 2018-2023 that defined the directions in which IASC worked during this period.

The planning for the 4th International Conference on Arctic Research Planning (ICARP IV) to be held in 2025 has started, and its outcomes will profoundly influence IASC strategic planning in the future. The IASC Council, therefore, decided to wait for the results of the ICARP IV process to develop a new strategy for IASC for the years 2027 onward.

To bridge the gap between its existing and the future Strategic Plan based on the ICARP IV outcomes, the IASC Council decided to:

- extend the existing IASC Strategic Plan to 2026 with only a minor internal revision and update of its content, based on the work of an Action Group composed of representatives of the IASC Working Groups and Council; and
- continue to annually update the Implementation Plan for the Strategic Plan 2018 – 2023, developed at the ASSW 2019, within the same timeframe based on guidance from the IASC Council.

IASC Strategic Plan 2023-2026

PILLAR 1
FACILITATING ARCTIC RESEARCH COOPERATION

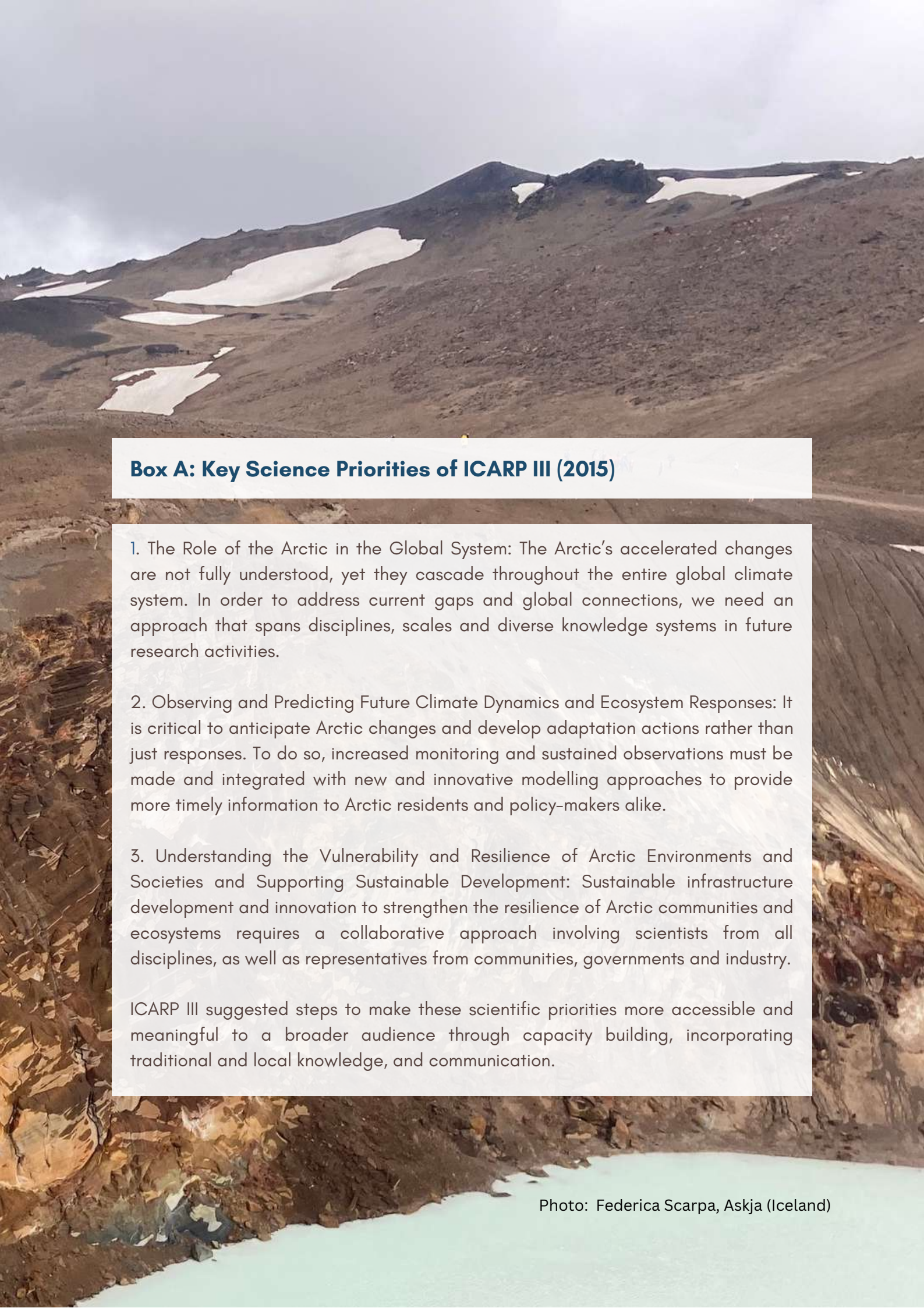
- Stimulating and promoting cutting-edge interdisciplinary research
- Supporting sustained and coordinated observations
- Facilitating data and information management and sharing
- Supporting the reduction of carbon footprint in all IASC activities and research co-operations

PILLAR 2
PROMOTING ENGAGEMENT

- Building Arctic research capacity
- Supporting participation by Indigenous Peoples and local residents in science activities
- Nurturing and expanding IASC partnerships

PILLAR 3
ENSURING KNOWLEDGE EXCHANGE

- Encouraging high-quality scientific output
- Transferring knowledge to policy and decision makers
- Increasing Arctic science education, outreach and communication



Box A: Key Science Priorities of ICARP III (2015)

1. The Role of the Arctic in the Global System: The Arctic's accelerated changes are not fully understood, yet they cascade throughout the entire global climate system. In order to address current gaps and global connections, we need an approach that spans disciplines, scales and diverse knowledge systems in future research activities.

2. Observing and Predicting Future Climate Dynamics and Ecosystem Responses: It is critical to anticipate Arctic changes and develop adaptation actions rather than just responses. To do so, increased monitoring and sustained observations must be made and integrated with new and innovative modelling approaches to provide more timely information to Arctic residents and policy-makers alike.

3. Understanding the Vulnerability and Resilience of Arctic Environments and Societies and Supporting Sustainable Development: Sustainable infrastructure development and innovation to strengthen the resilience of Arctic communities and ecosystems requires a collaborative approach involving scientists from all disciplines, as well as representatives from communities, governments and industry.

ICARP III suggested steps to make these scientific priorities more accessible and meaningful to a broader audience through capacity building, incorporating traditional and local knowledge, and communication.

Photo: Federica Scarpa, Askja (Iceland)

About IASC

IASC was founded in 1990 by representatives of the eight Arctic countries. Since then, IASC has evolved into the leading international science organization of the North, and its membership today includes 24 countries active in Arctic research.

The mission of IASC is to encourage and facilitate cooperation in all aspects of Arctic research. The main scientific working bodies of IASC are its five Working Groups, which foster both disciplinary and interdisciplinary science: Atmosphere, Cryosphere, Marine, Social & Human, and Terrestrial Sciences. They define their scientific foci (listed in Box B) and work plans (available on the IASC website https://iasc.info/our-work/working-groups), define and advance research priorities, encourage science-led programs, promote future generations of Arctic scientists, and advise the IASC Council. Occasional Action Groups also provide strategic advice to IASC on narrowly defined issues and actions and assist IASC in the implementation of IASC´s mission.

Overall, IASC promotes and supports leading-edge interdisciplinary research in order to foster a greater scientific understanding of the Arctic region and its role in the Earth system.

How does IASC do this?

- IASC coordinates reviews of the status of Arctic science and seeks to identify research priorities through, for example, its leadership of the International Conference on Arctic Research Planning (ICARP) processes that take place every 10 years (1995, 2005, 2015, and 2025).
- IASC fosters major international research programs, such as MOSAiC (the Multidisciplinary Drifting Observatory for the Study of Arctic Climate) and the Year of Polar Prediction (YOPP).
- IASC convenes and co-organizes the annual Arctic Science Summit Week (ASSW) with local and international partners, the biennial Arctic Observing Summit (AOS) with strategic partners, and scientific workshops through its Working Groups.
- IASC promotes observations, monitoring, and data management by supporting SAON (Sustaining Arctic Observing Networks) and the ADC (Arctic Data Committee).
- § IASC is an accredited Observer and scientific advisor to the Arctic Council and has contributed to activities such as the Arctic Council's Scientific Cooperation Task Force.
- § IASC provides scientific advice by contributing to syntheses such as the Arctic Freshwater Synthesis (AFS), the Arctic Human Development Report (AHDR), and the Snow, Water, Ice, and Permafrost in the Arctic (SWIPA) report.
- IASC supports early career Arctic researchers through the IASC Fellowship Program and through travel grants.
- IASC supports involvement of Indigenous Peoples and the co-creation of knowledge through its Standing Committee on Indigenous Involvement, the IASC Indigenous Fellowships, travel grants and IASC-funded projects, and by acknowledging that Indigenous knowledge, Traditional knowledge, and scientific knowledge systems are coequal and complementary.

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IASC

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Box B: Scientific Foci of IASC Working Groups

IASC's scientific Working Groups provide scientific advice, guidance, and drive to IASC activities. Their priorities for the coming years are:

Atmosphere Working Group (AWG):

The AWG addresses topics around interactions between the atmosphere, ocean, and cryosphere, the role of the atmosphere in Arctic socio-economic development, rapid Arctic climate change, and extreme weather and Arctic predictability. Specific topics of interest include:

- Cloud, Water Vapor, Aerosols, Fluxes
- Arctic Air Pollution
- Coupled Arctic Climate System
- Arctic Weather Extremes
- Linkages: Role of the Arctic in the Global Climate System

These topics have been put under the three pillars of:

1. Atmosphere in the coupled Arctic system
2. Arctic Climate, Weather, and Predictability
3. Arctic Pollution, socio-economic and environmental change

Cryosphere Working Group (CWG):

- Improve knowledge of the past, current, and future state of the Arctic cryosphere across wide-ranging spatial and temporal scales
- Advance understanding of melt and thaw processes, ice and snow dynamics, and complex cryospheric interactions with atmosphere, terrestrial, ocean, and biological systems.
- Quantify and project cryospheric change and the frequency and intensity of extreme cryospheric events
- Improve understanding of interactions between the cryosphere and human society
- Achieving the CWG scientific foci requires interdisciplinary research and collaboration with other working groups and local communities, where applicable. Our approach emphasizes open and collaborative science; ethical, sustainable, and responsible science practices; diversity, equity, and inclusion; and using cryospheric knowledge to support society.

Photo: Federica Scarpa,
View of Longyearbyen, Svalbard

Marine Working Group (MWG):

The MWG identified the following five themes that address major unknowns that remain to be resolved in order to contribute to an integrated and predictive understanding of the Arctic System and its interactions with the overall Earth System. These themes, in no specific order of importance are:

1) Marine Life

- How and where will the net primary production change?
- How will changes in sympagic, pelagic and benthic community structure impact food web and biodiversity?
- How will higher trophic level species abundance and distribution change?

2) Sea Ice and Stratification

- How will the changing length of the freezing season, thickness of sea ice and drift pattern influence freshwater distribution, light penetration and habitat for ice associated organisms?
- How will changes in the drivers and strength of stratification affect nutrient availability, heat and momentum exchange and carbon fluxes?

3) Disturbances

- How will increased human activity influence marine life?
- How will changing physical conditions influence the distribution and levels of pollutants?
- How will changes in exposure to ocean acidification, pollutants, marine litter and (micro) plastics, noice, light and invasive species impact Arctic ecosystem health?

4) Biogeochemical Cycles

- How are Arctic carbon, oxygen, nutrient and trace metal biogeochemical cycles and distributions responding to changing conditions?
- How are the changing conditions in the Arctic Ocean influencing its role as a sink of CO2 and source of potent greenhouse gases such as methane and nitrous oxide?

5) Connectivity and Borealization

- How is the transport of heat, water masses, nutrients and plankton to and from, and within the Arctic changing?
- How are the migratory patterns, distributions, feeding strategies and phenology of marine organisms changing in response to habitat contraction and expansion?

Photo: Wenkai Guo

Social and Human Working Group (SHWG):

- Demographics: COVID impacts in Arctic communities, monitoring emerging infectious diseases, migration.
- Climate Change: Food sovereignty and security, social and environmental determinants of health, changing landscapes and impacts on community wellness, community adaptation.
- Arctic Cooperation: Geopolitics and drivers of Arctic cooperation, decision making and social/political inclusion, comparative health and social policies (sharing best practices and evidence-informed policy).
- Thriving communities: Cultural wellbeing, mental wellness, Indigenous languages, land-based observations, and healing.
- Land use for Sustainable Livelihoods: Resource stewardship in a changing environment, land use by Indigenous peoples

Terrestrial Working Group (TWG):

- Improving knowledge at multiple temporal and spatial scales of the current state of Arctic terrestrial geosystems and ecosystems, with special attention to impacts of permafrost degradation and Critical Zone processes
- Determining the net effect of the terrestrial and freshwater environmental and biosphere's processes that amplify or moderate climate warming
- Developing unifying concepts, fundamental theories, and computer models of the interactions among species, interactions between species and their environment, and the biology of life in extreme environments
- Estimating past changes in arctic geo- and biodiversity, measuring current change and predicting future changes.
- Improving our knowledge in past ecosystems dynamics (before current Global Change). Determine baseline conditions to frame "natural variability and rate of change" versus "current variability and rate of change.

For further information and deliverables, see the full IASC Working Group Work Plans: https://iasc.info/our-work/working-groups

Photo: Federica Scarpa, Nuuk, Greenland

Strategy in Action

IASC activities will support both basic and applied research that answers societally relevant questions, relating to the Arctic. IASC encourages all those associated with the organization to adhere to community standards of ethical conduct.

The IASC strategy is built on three central pillars to ensure that IASC increases the outreach and impact of Arctic science, enhances connections within the Arctic science community, and remains the leading promoter of coordinated international Arctic research. Steps to make these scientific priorities more accessible and meaningful are listed below.

Photo: Irek Sobota, Svalbard

Pillar 1 – Facilitating Arctic Research Cooperation

Stimulating and promoting cutting-edge interdisciplinary research. IASC will:

- Address societally relevant questions that are inherently interdisciplinary, to help cross-cutting interactions between the Working Groups.
- Through its Working Groups, expand their interdisciplinary work together and with other scientific organizations, including the initiation of interdisciplinary, international projects that continue to address key ICARP III priorities (see Box A) and develop priorities for ICARP IV. Overarching themes of sustainability, resilience, and responsibility will help define priorities.
- Continue to facilitate the International Science Initiative in the Russian Arctic (ISIRA).
- Continue to work with member countries and partners to support and expand international Arctic scientific cooperation, as expressed but not limited by the Agreement on Enhancing International Arctic Scientific Cooperation.
- Endorse and support planning and implementation of the 5th International Polar Year in 2032-33.

Supporting sustained and coordinated long-term observations and monitoring. IASC will:

- Continue efforts to develop sustained Arctic observations and monitoring, focusing on SAON (Sustaining Arctic Observing Networks), a joint initiative of IASC and AMAP (the Arctic Council's Arctic Monitoring and Assessment Programme).
- Help SAON achieve its goals of creating a roadmap to a well-integrated Arctic Observing System via the SAON Roadmap for Arctic Observing and Data Systems (ROADS) process, promoting free and ethically unrestricted access to Arctic observational data, and ensuring sustainability of Arctic observing systems.
- Encourage national programs to invest in and contribute to international observation networks, including platforms, resources, and shared understanding.

Facilitating data and information management and sharing. IASC will:

- Encourage best practices in data archiving, management, and open data sharing, and will support the Arctic Data Committee's goal of establishing a persistent consortium of Arctic data organizations.

Supporting a reduction of carbon footprint in all IASC activities and research co-operations. IASC will:

- Develop a long-term roadmap with tangible, measurable goals to reach carbon neutrality.
- Develop policies (e.g. travel policies) for IASC activities that will help to reduce the carbon footprint in all IASC activities.
- Encourage sustainable activities within its funded projects and activities. The recommendations of the IASC Action Group on Carbon Footprint published in 2022 will be the basis of this work.

Pillar 2. Promoting Engagement

Building Arctic research capacity. IASC will:

- Further develop and expand its Fellowship Program (including through participation with partner organisations) by encouraging, supporting and investing in early career researchers and will continue to contribute at least 30% of its scientific funds to support early career researchers and capacity building activities.
- Further develop opportunities for mentorship within its own structure and will continue to strengthen its cooperation with organizations like the Association of Polar Early Career Scientists (APECS) and the University of the Arctic (UArctic).
- Promote equality, diversity and inclusion in all of IASC´s activities and committees, including but not limited to a more balanced participation of gender in the IASC community

Supporting participation by Indigenous Peoples and local residents in science activities. IASC will:

- Commit to recognizing that all knowledge and scientific systems (including Indigenous Knowledge, Traditional Knowledge, and Local Knowledge), are equal and complementary, and should inform the work of IASC.
- Acknowledge that the Arctic is the home to many different Indigenous Peoples. As researchers and others who are working in, or residing in, the Arctic we recognize these lands and waters as the mostly unceded traditional homelands of Indigenous Peoples. IASC honours and recognizes the place-based knowledge of Arctic Indigenous Peoples, and the ancestral and contemporary stewardship of their homelands.
- Continue to work with Indigenous and local populations in the Arctic and finance Indigenous participation in IASC events and the IASC Indigenous Fellowships.
- Promote community-based observing programs, co-production of knowledge, and training of local communities to take part in research programs to gain new knowledge and benefit Indigenous communities.
- Strengthen Indigenous involvement, representation, and leadership within IASC´s work, and create a new IASC Standing Committee on Indigenous Involvement. Recommendations from the IASC Action Group on Indigenous Involvement published in 2020 will be a basis for this work.

Nurturing and expanding IASC partnerships. IASC will:

- Produce tangible cooperative outcomes such as increased information exchange, joint meetings, and initiatives from existing and future memoranda of understanding and letters of agreement.
- Expand its partnership with SCAR (the Scientific Committee on Antarctic Research) and other appropriate polar science groups to identify and address themes of international polar priority.
- Strengthen its cooperation with the industry and business communities based on recommendations from the IASC Action Group published in 2020

PILLAR 3. ENSURING KNOWLEDGE EXCHANGE

Encouraging high-quality scientific output. IASC will:

- Continue to conduct, promote, and contribute to Arctic science syntheses, white papers, reports, peer-reviewed journal articles, and special issues.
- Further strengthen the role of the Arctic Science Summit Week (ASSW) as a means to establish partnerships, enhance collaborations, and to share and disseminate Arctic research results.

Transferring knowledge to policy and decision-makers. IASC will:

- Continue to contribute scientific advice and expertise for such bodies as the Arctic Council, its working groups, and relevant international initiatives such as the UN's IPCC and other action groups.
- Translate scientific understanding and information into policy relevant information and implement and promote the recommendations of the IASC Action Group "Connecting Arctic Scientists and Policymakers" published in 2018.
- Contribute to and support development of actions in support of the United Nations Decade of Ocean Science for Sustainable Development (2021 – 2030) and its Arctic Action Plan.
- Further expand the publication of an annual IASC State of Arctic Science Report and work to engage in two-way exchange of ideas and knowledge with national entities supporting Arctic science in IASC member countries.

Increasing Arctic science education, outreach, and communication. IASC will:

- More purposefully use appropriate and targeted communication tools to reach out to inform the media, educational systems, and the broader public about Arctic science.
- Identify audiences and use available tools, through the IASC Council and Working Groups, for representatives to help provide information both to and from IASC member countries regarding IASC initiatives and opportunities.
- Serve as the communication medium which brings national scientific priorities to the attention of the Arctic science community, highlighting actions that require implementation through international cooperation.
- Strive, within financial and practical possibilities, to coordinate active member representation at relevant workshops, meetings, and similar fora that are consistent with IASC scientific priorities.
- Further enhance the range of its communication by strengthening its presence on relevant social media and web platforms.

LOOKING FORWARD – IASC STRATEGIC PLANNING FOR THE COMING DECADE

This Strategic Plan sets out IASC's priorities until 2026. Over the next two years IASC will help to coordinate and support the ICARP IV process. This important and high-profile Arctic research community initiative plays a critical role in identifying the most pressing scientific priorities and outlining a strategy to support key partnerships to address them. IASC will leverage information from the ICARP IV process and the resulting final report to inform the next IASC Strategic Plan. It is anticipated that a new 10-year plan will be developed for 2027, incorporating a review in 2032.

IASC is proud to have advocated strongly and successfully with other partners for the creation of a Fifth International Polar Year in 2032-33. The next IPY is a fantastic opportunity to inspire Arctic and global communities, Indigenous Peoples, researchers, funders, and communicators to create new initiatives to understand and answer the most pressing challenges facing the Arctic region and its role in the global system. Together, IASC and partners will ensure that planning for the next IPY is implemented in an inclusive manner, and that the planning phase receives as much attention as the IPY itself to ensure the best possible impact of this coordinated research activity

Photo: Norwegian Polar Institute, Trine Lise Sviggum Helgerud, Instrument moorings RAS NPI ARCTIC OCEAN CRUISE2022 .