

ICARP IV Research Priority Teams (RPTs)

Terms of Reference

Final Version 6 June 2023



Introduction and Rationale

From 2022 to 2026, the International Arctic Science Committee (IASC) in cooperation with many partners worldwide, is organising the decadal Arctic research planning process **International Conference on Arctic Research Planning (ICARP)** for the fourth time since 1995.

ICARP IV is a community-wide undertaking engaging Arctic researchers, Indigenous Peoples, policy makers, residents, and stakeholders from around the world to discuss the state of Arctic science and the place the Arctic occupies in global affairs and Earth systems. The process:

- considers the most urgent knowledge gaps and research priorities for the next decade, and
- explores avenues to address and implement these research needs.

The main culminating event of ICARP IV is the **ICARP IV Summit / Arctic Science Summit Week 2025** convened in Boulder, Colorado, USA in 2025. The final outcomes of the ICARP IV process will be available in 2026.

The ICARP IV process is overseen and coordinated by an International Steering Committee (ISC) consisting of appointees from all ICARP IV partner organisations and other representatives. The ISC identifies and develops the process's overall goals, themes and agenda and mechanisms for action and implementation of the ICARP IV outcomes.

The Steering Committee will convene several **Research Priority Teams (RPTs)** between 2023 and 2025 with the aim to define the most urgent knowledge gaps and research priorities for the next decade and explore avenues to address and implement these research needs. These Terms of Reference outline the work and tasks of these RPTs.

Scope

ICARP IV is a forward-looking research priority process that is aimed at defining Arctic research priorities and their visions for implementations for the next decade until 2035.

Throughout 2023 and 2024, **community engagement** within the ICARP IV process is encouraged with the goal of the process being truly inclusive, diverse, and engaging to ensure that the research priorities for the next decade are firmly grounded on the advice and needs of Arctic scientists and science organisations, Indigenous peoples and Arctic residents, stakeholders, and rights-holders. Individuals of all career stages, groups, networks, institutions, and organisations are encouraged to contribute to this ICARP IV engagement process.

The **RPTs** will operate mainly in 2024 and 2025. They will work with the input provided through this community engagement process to:

- Organise engagement events for their topic area during the engagement phase (this will include among others a webinar each for community input into their topic area as part of the IASC-EPB-ICARP IV Webinar series).
- Review and summarise the wider community input provided for their topic areas.
- Define knowledge gaps and research priorities for their topic areas.
- Develop science and educational, outreach and communication plans as well as recommendations for implementation of the research priorities.

The preliminary results of the RPTs work will be presented at the ICARP IV Summit / ASSW 2025 in March 2025, starting a community-wide public consultation phase with the aim to finalise the outcomes of the ICARP IV process by 2026.

Deliverables

The RPT will define the **Arctic research priorities** for the ICARP IV process and will develop for them:

- Rationale for the priority within current and future Arctic and international contexts
- Research plans
- Communication and Education plans
- Implementation plans / recommendations

Preliminary drafts should be presented during the ICARP IV Summit / ASSW 2025 and final versions submitted to the ICARP IV International Steering Committee by October 2025.

Membership

The RPTs should include Arctic researchers at all career stages, as well as individuals and community leaders with knowledge, skills, and experience relevant to Arctic research planning, particularly Indigenous Knowledge Holders nominated via self-nominations by individuals, as well as nominations by ICARP IV partner organisations.

Nomination Process

A nomination form will be made available on the ICARP IV website that individuals and partners can use for the nominations. **Nominations will be accepted until 29 September 2023.**

All nominations will be reviewed in October 2023 by the ICARP IV Steering Committee who will make the final decision on the composition of each RPT.

To be as effective and impactful as possible the ICARP IV engagement process needs to hear from a truly diverse range of people. So, decisions on the make-up of the RPTs will be made on an inclusive basis,

reflecting the diverse nature of the community, including by taking account of gender, knowledge systems and career stage.

Mode of Operation

The RPTs will mainly communicate via email and online meetings throughout their work.

Hybrid or in-person activities for the RPTs will be:

- two-day open hybrid workshops held by each RPT during the ASSW 2024 (Edinburgh, Scotland, UK from 21 - 29 March 2024). The workshops will also be open to other ASSW 2024 participants.
- 2 - 3 day **ICARP IV Planning Retreat** in October 2024 (Akureyri, Iceland, TBC) for the chairs / co-chairs (or alternatively two designated other representatives) of the RPTs and members of the Steering Committee for cross-cutting reviewing of the preliminary outcomes of the RPTs work.
- Sessions at the ICARP IV Summit / ASSW 2025 (Boulder, Colorado, USA from 21 - 28 March 2025)

Budget

IASC will provide:

- Limited travel support for RPT members who have otherwise no financial support through their institutions / organisations to attend the RPT workshops at ASSW 2024.
- Logistics costs for hosting the ICARP IV Planning Retreat
- Limited travel support for RPT representatives who have otherwise no financial support through their institutions / organisations to attend the ICARP IV Planning Retreat in autumn 2024.

Other ICARP IV partners are strongly encouraged to also contribute financially to the work of the RPTs.

Timeline

- **29 September 2023:** Deadline for nominations by ICARP IV partners for members to the RPTs
- **October 2023:** Invitations sent out to RPT members and chairs
- **December – March 2024:** Online meetings of the RPTs
- **21 – 29 March 2024:** Two-day in-person RPT Workshops at the ASSW 2024 in Edinburgh, Scotland, UK
- **April – October 2024:** The RPTs will refine their workshop results
- **October 2024:** ICARP IV Planning Retreat
- **21 – 28 March 2025:** ICARP IV Conference / ASSW 2025
- **March - June 2025:** Public consultation phase on the preliminary ICARP IV outcomes
- **July - October 2025:** Finalising the research and implementation plans
- **Mid-2026:** Publication of the ICARP IV outcomes

Research Priority Teams - Topic Areas

The following topic areas for RPTs are based on the discussions of the ICARP IV International Steering Committee Meeting in February 2023. To ground the process in the outcomes of the last ICARP III, the topic areas include the ICARP III themes (from the final [ICARP III report](#)) plus additional relevant themes. Each RPT should also consider several **cross-cutting themes** in their work, including but not limited to co-production of knowledge.

Topic Area 1: The Role of the Arctic in the Global System

The team will address research priorities and their implementation regarding topics such as: the needs for further scientific understanding of the role of the Arctic in the global climate system (past, present, and future); extreme events; permafrost thaw and SLCF; temporal and spatial distribution of precipitation (spatio-temporal aggregation); teleconnection patterns; impacts of rapid changing Arctic on extreme events locally and remotely; and global consequences (including concerning human / social aspects).

Topic Area 2: Observing, Reconstructing, and Predicting Future Climate Dynamics and Ecosystem Responses

The team will address research priorities and their implementation regarding topics such as: Arctic observing needs (including prioritisation and planning tools for selecting observables and the engagement of indigenous peoples and stakeholders in these processes); climate system and transformations; predicting future climate dynamics; and the need for, and nature of, sustained observations and monitoring systems including spatio-temporal comparable monitoring of abiotic and biotic factors (e.g. atmosphere - vegetation - soil). In addition, the potential of paleobiology and paleoclimatology as a basis for conservation practices and evidence-based modelling will be assessed.

Topic Area 3: Understanding the Vulnerability and Resilience of Arctic Environments and Societies and Supporting Sustainable Development

The team will address research priorities and their implementation regarding topics such as: sustainable and equitable Arctic economy; adaptive management and nature-based solutions (actions/adaptations/measures); healthy Arctic and healthy peoples (multi-stressor effects, contaminants and climate interactions, One Health); energy systems; sustainable energy production; green transition and green energy; reliability; resilience; food systems; sustainable production; resilience; water systems and drinking water; sanitary health; infrastructure and migration.

Topic Area 4: Scientific cooperation and diplomacy

The team will address research priorities and their implementation regarding topics such as: effective international pan-Arctic cooperation in joint-funding and delivery of Arctic research outcomes; connecting and coordinating national and international funding agencies; utilising the role, contribution

and value of Arctic science at times of high geopolitical tension; pathways to effective research cooperation; research exchange programs; and collaborative observing amid geopolitical constraints.

Topic Area 5: Co-Production and Indigenous-led methodologies

The team will address research priorities and their implementation regarding topics such as: co-production of knowledge; empowerment; capacity sharing; creating space and opportunities for Indigenous institutions / scholars to lead research and develop collaborations; Indigenous leadership; bringing education, science, and Indigenous knowledge together; producers and users of knowledge; and Indigenising Arctic research.

Topic Area 6: Preparing present and future generations through Education, Outreach, Communication, Capacity Building, and Networking

The team will address *how* Arctic research planning and traditional knowledge are preparing present and future generations living in the Arctic and beyond to build community resilience and sustainability. Topics include: connecting Arctic issues, research priorities and their implementation; effective outreach, science communication and capacity building between research teams, local communities, decision-makers and the wider public; engaging young people, local communities, decision-makers and others in research planning; training a new generation of Arctic researchers, equipped to lead and be engaged in Arctic research at all levels; the role of EOC working at the interface of academic science and Indigenous traditional and local knowledge helping to combine and harmoniously integrate these different knowledge systems; measuring impact - effective planning and evaluation; equality, diversity, access and inclusion in EOC.

Topic Area 7: Technology, Infrastructure, Logistics, and Services

The team will address research priorities and their implementation regarding topics such as: Arctic infrastructure needs; engineering; new and emerging technologies (e.g. AI and machine learning), the potential for further automation and remote operation in research; the requirements and opportunities presented by new large-scale research equipment and monitoring systems; the potential for step-changes in the sharing of national infrastructure and the creation of new international platforms.