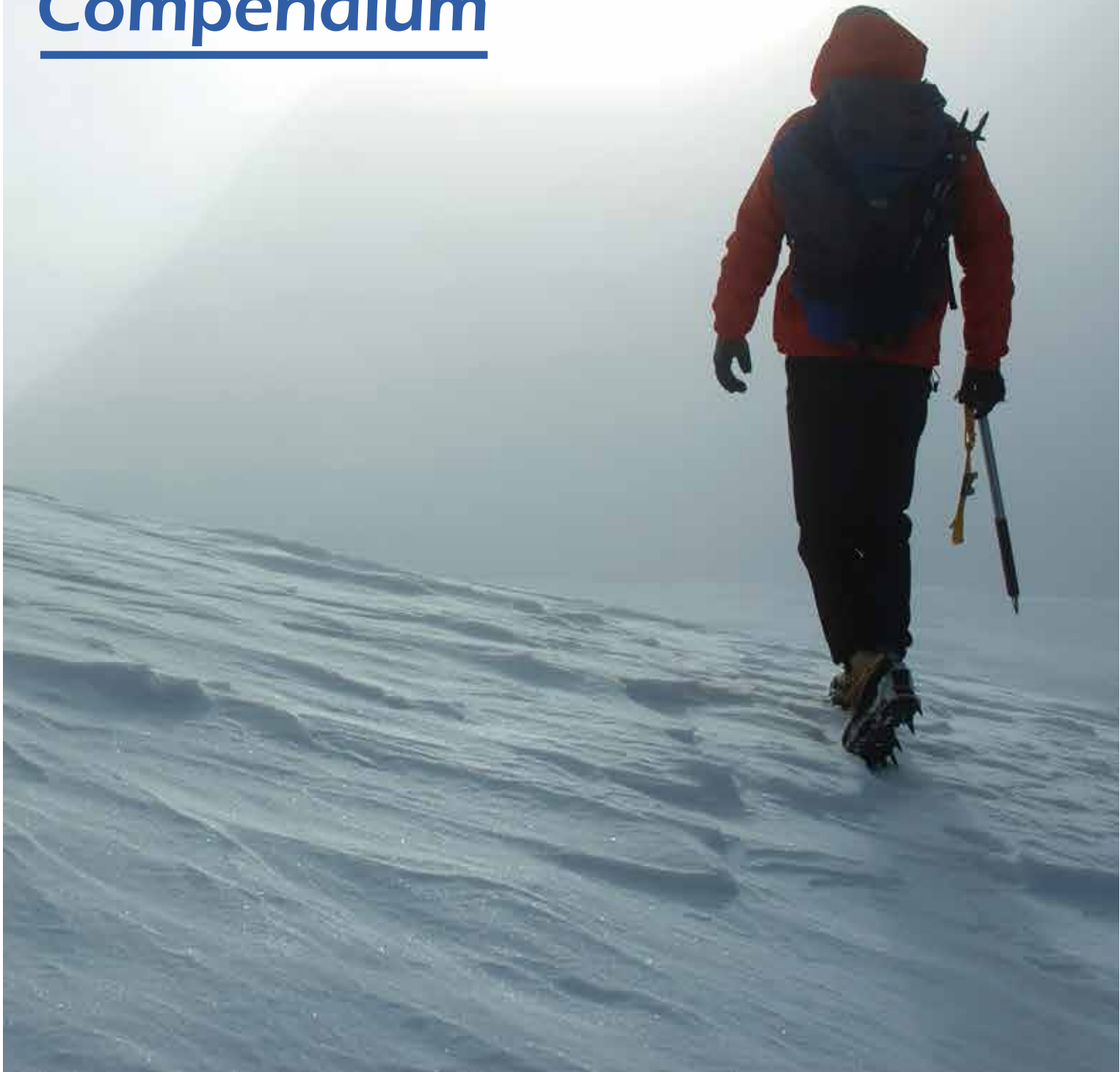




Strategic Environmental Impact
Assessment of development of the Arctic

European Arctic Initiatives Compendium



European
Commission

Preparatory Action project: Strategic Environmental
Impact Assessment of development of the Arctic
(Service contract 191 105/2012/637465/SER/EI)

WP 1 EU Arctic Information Centre Feasibility Study

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European Arctic Initiatives Compendium

Published by the Arctic Centre, University of Lapland

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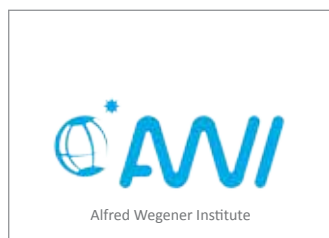
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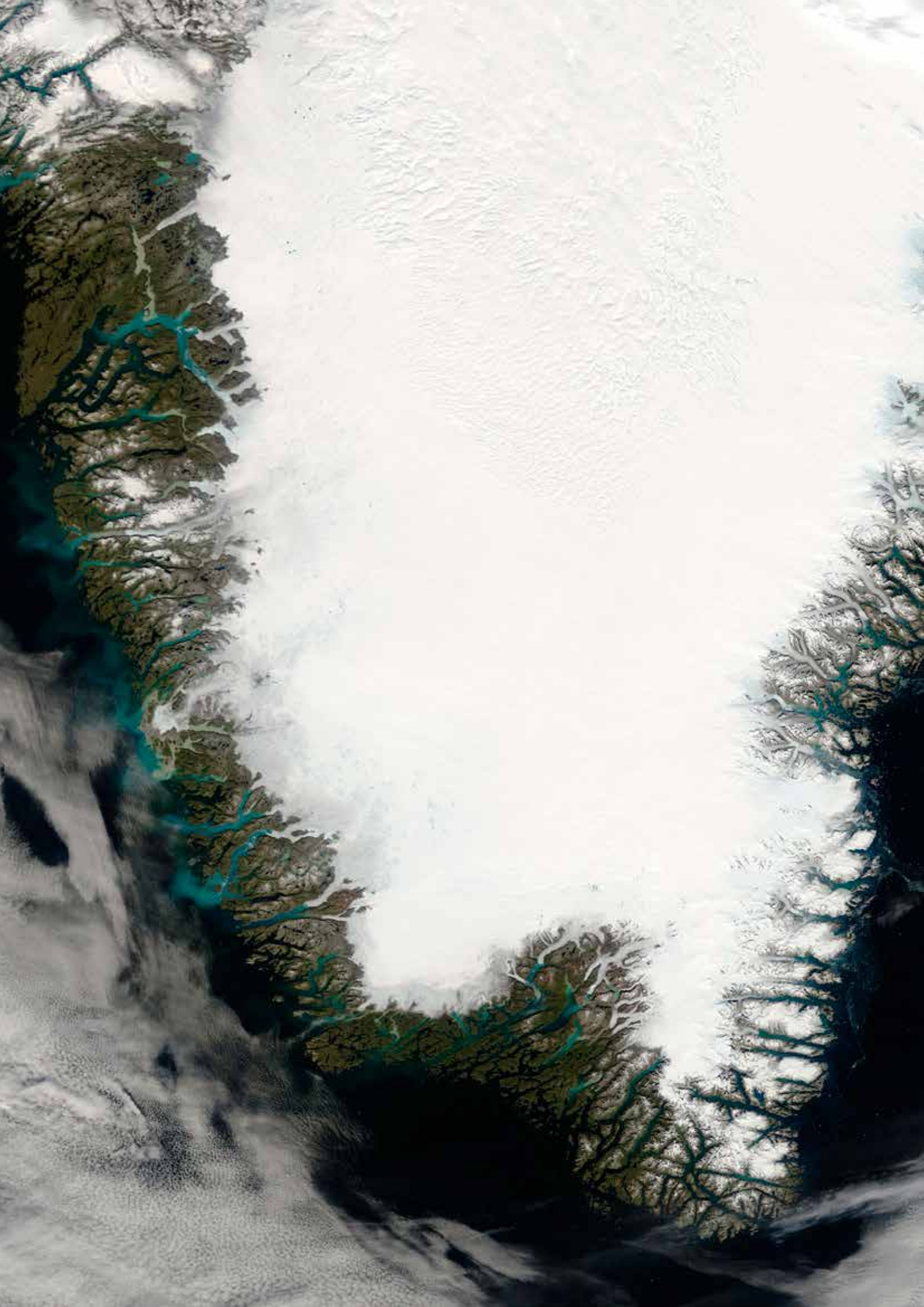
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Chapter cover image: Southern Greenland.
Photo: GettyImages

INTRODUCTION

The European Arctic Initiatives compendium presents flagship initiatives undertaken by the European Union in Arctic regions, as well as initiatives undertaken by member states and actors operating within states belonging to the European Union (EU). Furthermore, it includes initiatives by European states such as Norway and Iceland, as well as territories such as Greenland, which are highly relevant in the context of the European Arctic, and in many cases strongly linked to the EU, for example, the European Research Area (ERA). The compendium has been compiled as part of the Preparatory Action for a Strategic Environmental Impact Assessment of the Arctic.

The compendium's aim is three-fold: to assist in an Arctic Information Centre feasibility study; to provide a window onto Arctic initiatives that may inform the European Arctic Impact Assessment (EUAIA) which forms part of the Preparatory Action; and to inform the European Commission on European Arctic Initiatives.

European Union Arctic Information Centre feasibility study

The compendium is the first step in conducting a feasibility study to gauge the effectiveness and sustainability of a network of leading polar research centres and universities specialising in Arctic issues. Ultimately, the goal of this feasibility study is to test the workability of a European Union Arctic Information centre. Such a centre could facilitate information exchange between EU institutions, Arctic stakeholders and the general European public. The idea of establishing an EU Arctic Information centre is rooted in the EU's objective of having a responsible and active presence in the Arctic. The idea of such a centre already appears /is referred to in the European Commission's 2008 Communication on The European Union and the Arctic Region, the first articulation of a European Union approach to the Arctic.¹ Exploring the possibilities for such a centre is one of the proposals for action to contribute to the enhancement of multilateral governance in the Arctic. International cooperation is one of the EU's main objectives in the Arctic, alongside the promotion of sustainable management and use of natural resources, as well as protecting and preserving the Arctic in collaboration with its population. The Joint Statement on Progress since the 2008 Communication further clarified how a European Union Arctic Information Centre can contribute towards these objectives, through harnessing information in a way that ensures policy-makers are well-informed and that the development of the Arctic can proceed in a

manner that is both responsible and beneficial to Arctic states and local communities.²

The Commission subsequently implemented a preparatory action to test the feasibility of an information platform consisting of a network of leading Arctic centres within the EU and EEA/EFTA, together with a strategic assessment of the impact of development in the Arctic. The European Union Parliament has reiterated its support for an Arctic Information Centre in a "Joint Motion for a Resolution on the EU strategy for the Arctic", adopted in March 2014.³

The description of Arctic initiatives undertaken by the EU and of relevance to the EU outlines the nodes of knowledge-producing initiatives. This can be drawn upon to identify knowledge strengths as well as ascertaining opportunities to build capacity to address potential information and knowledge gaps.

The Compendium aids in the identification of recent and current initiatives on a cross-sectorial basis. As such, the Compendium can be used by a variety of actors within the European Commission, but also by European institutions interested in building collaborations. A continuously updated Compendium will be invaluable in minimizing the duplication of work, and in identifying gaps and opportunities for the EC and European institutions to contribute to the sustainable development of the Arctic.

1. Communication from the Commission to the European Parliament and the Council. The European Union and the Arctic Region. Brussels 20.11.2008. Available at eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0763:FIN:EN:PDF

2. European Commission High Representative of the European Union for Foreign Affairs and Security Policy. Joint Communication to the European Parliament and the Council. Developing a European Union Policy towards the Arctic Region: progress since 2008 and next steps. Brussels, 26.6.2012. Available at eas.europa.eu/arctic_region/docs/join_2012_19.pdf

3. European Parliament. Joint Motion for a Resolution on the EU strategy for the Arctic (2013/2595 (RSP)). 10.03.2014. <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+MOTION+P7-RC-2014-0229+0+DOC+PDF+V0/EN>





Chapter cover image: Tower in Snow.
Photo: GettyImages

I. METHODOLOGY AND LITERATURE OVERVIEW

This chapter discusses the methodology underlying the different sections of the Compendium, as well as gives an overview of existing compendia and reports that complements this product.

I.1 METHODOLOGY

The content of the European Arctic Initiatives Compendium has been divided into three sections in order to give an account that is comprehensive and integrative. The methodology underlying each section differs slightly depending on the data and the aims of the section.

The sections are:

- European Union Initiatives in the Arctic
 - European Union initiatives in the framework of developing a European Union Arctic policy
 - European Union Initiatives in addressing Arctic trends
- European Union Member States' Arctic Initiatives
- Other European Initiatives

I.1.1 EUROPEAN UNION INITIATIVES IN THE ARCTIC

European Union Initiatives in the framework of developing a European Union Arctic policy

Initiatives can take the form of self-contained programmes or projects, which makes out the largest part of this compendium. However, there are initiatives in the framework of developing a European Union Arctic policy which can be identified as strategic processes followed by institutions within the EU that inform and shape its Arctic activities. This includes leadership, regulation and adaptive co-management strategies, such as taking part in consultative workshops or having delegates present at policy-shaping meetings such as those internationally coordinating governance strategies or lobbying initiatives.

European Union Initiatives addressing Arctic trends

The Compendium is part of a much broader Preparatory Action of which the main product is the European Union Arctic Impact Assessment (EUAIA). The EUAIA methodology report and the assessment itself used trends as a basis as well as baseline for assessment. Trends resonate well with the focus on the changing

Arctic and with the DPSIR (driver-pressure-state-impact-response) framework (although focusing on dynamic change rather than a static “state”). Thinking in terms of trends also fits well into the current work of the European Strategy and Policy Analysis System on the EU and global trends in the 2030 perspective.¹

Trends were understood as changes occurring in the region in the recent past, currently and expected in the near future, their general direction and pace. We acknowledge that discussing “Arctic trends” has been to a great extent a major simplification, as each general trend is in fact a bundle of various changes, developments and transformations, temporal and spatial diversity. Nevertheless, to organize diverse Arctic developments into a broad assessment (as is the case with the Compendium or the EUAIA), it has been necessary to generalize the direction of Arctic change and a broad notion of ‘trends’ served this purpose well. The analysis of trends made it possible to understand the causes leading to the current situation, and the current dynamics and driving forces influencing, in turn, future values and developments. EU policies are seen in this context as affecting both the drivers of these changes and as possible measures to limit the adverse trajectories as well as offer responses to the effects of these changes both in the Arctic and within the EU.² The relevance of the initiative to addressing a specific trend is explained in each case.

The identified themes, within which trends have been identified, are:

- Climate Change in the Arctic
- Changes in Arctic Maritime Transport
- Changing Nature of Arctic Fisheries
- Developing Oil and Gas Resources in Arctic Waters
- Increasing Land Use Pressures in the European Arctic
- Mining in the European Arctic
- Social and Cultural Changes in the European Arctic

1. Adam Stepien et al, “EU Arctic Impact Assessment: Methodology Report” Strategic Environmental Impact Assessment of development of the Arctic, 30.04.2013.

2. Adam Stepien et al, “EU Arctic Impact Assessment: Methodology Report” Strategic Environmental Impact Assessment of development of the Arctic, 30.04.2013.

A thematic approach does not only cut across a variety of EU bodies and instruments, but also illustrates how the EU is responding to the complexities of Arctic change, and the broad range of programmes and projects involved. Moreover, by utilizing trends, which have also been pivotal during the extensive stakeholder consultations, the compendium draws on the internal coherence of the Preparatory Action. This sub-section is also attached as an Annex to the EUAIA. The factsheets on each theme were developed for the stakeholder consultations and are available online.³

I.1.2 EUROPEAN UNION MEMBER STATES' ARCTIC INITIATIVES

Individual European Union Member States undertake a many Arctic initiatives and it is crucial in the context of developing an EU Arctic policy, and EU Arctic initiatives, to have an overview of these. These initiatives, however, differ vastly in scale and type. In the context of the larger goals of the Preparatory Action – to test the feasibility of a European Arctic Information Centre and to strategically assess the impact of development of the Arctic – we chose to focus on initiatives with the following characteristics:

- **Initiatives that are taking place on a country level, whether is on national, bilateral, multi-lateral or non-governmental scale.** In other words, this does not exclude initiatives which have not been mandated by national governments. This makes it possible to include major industrial or business initiatives and initiatives taken by, for example, lobbying groups.
- **Initiatives that are long-term, currently on-going and high level in the context they are taken.** The compendium seeks to describe major initiatives undertaken in the respective countries. Given the diversity of European countries in terms of, for example, how their Research and Development sectors are structured, this approach allows for the mention of comparatively major or influential initiatives undertaken in countries with different resource allocations.
- **Initiatives that self-identify as Arctic, or have the Arctic region at its core.**
- **Initiatives that fall within the framework of development of the Arctic.**

We used two main avenues to identify European Arctic Initiatives.

- Consulting existing inventories and published materials
- Soliciting input from partners in the PA by asking them to act as channels into their countries' Arctic initiatives.

The section on European Union Member States' Initiatives is divided into two parts. The first is descriptive of **processes**, namely on-going activities and procedures to deliver products that may impact sustainable development in the Arctic. One of the more manifest ways in which countries take Arctic initiatives is through the articulation of an Arctic strategy or position, for example, and these are listed.

The second part mostly focusses on initiatives to establish underlying systems for activities in the Arctic, or **infrastructures**. 'Infrastructures' entail physical infrastructural initiatives that is necessary for operations in the Arctic. Institutions are administrative or organizing initiatives, virtual or actual, that facilitates activities in the Arctic. These systems also enable initiative processes – for example the research programmes or commercial development.

Within the context of a European Union Arctic Information Centre feasibility study, the focus is on formalised knowledge production capacity with reference to the Arctic. Since the partners in the Preparatory Action are overwhelmingly research institutions, research infrastructures and institutions form the majority of initiatives described in this section. We mainly include initiatives which are intended to be permanent or open-ended. These are organised by country. Only listing traditional research infrastructures and institutions could, however, exclude important systems that underlie the knowledge production process. For example, industries and cultural institutions (whether indigenous or not), are also influential sources of information and knowledge production. A short section on industry is therefore included.

Since categorisation is ultimately arbitrary, and the same initiative can take on different roles, we encourage readers to consult other sections of the compendium as well.

I.2 LITERATURE REVIEW

Recent reports and inventories that are readily accessible include texts and databases prepared by or in commission of a European Union body, compilations made by other pan-European bodies such as the European Science Foundation's European Polar Board and materials produced by various research institutes. There are also digital sources that can be used to search for specific kinds of resources.

This section is intended as an overview of the content of these reports and digital sources, also providing links to these for further consultation.

3. Available at <http://www.arcticinfo.eu/en/the-u-arctic-impact-assessment-factsheets>

I.2.1 REPORTS AND DOCUMENTS

Joint Staff Working Document: The inventory of activities in the framework of developing a European Union Arctic Policy.

The most recent is a joint staff working document detailing activities that have been undertaken in the framework of developing a European Union Arctic policy.⁴ It is a thorough document which describes activities according to the three- pronged policy goals of the European Commission:

- Protecting and preserving the Arctic in unison with its population
- Promoting sustainable management and use of resources
- Contributing to enhance cooperation

EU Competencies Affecting the Arctic

A more specific report, regarding the legal competences of the EU affecting the Arctic, was commissioned by the European Parliament's Directorate- General for External Policies' Policy Department. Whilst legal competencies are not Arctic initiatives as such- and the vast majority of these competencies are not Arctic specific – they do provide a legal framework in which EU Arctic initiatives take place. It is therefore prudent to take cognisance of this report when scanning for opportunities for Arctic initiatives.⁵

EU Arctic Footprint and Policy Assessment

The EU Arctic Footprint and Policy Assessment⁶ aimed to improve the effectiveness of EU environmental policies with respect to the Arctic region. The study undertook an assessment of the EU's footprint on the Arctic environment and evaluated how it could change over time. The effectiveness of the EU's current environment -related policies were also be analysed, including how these policies relate to current and future footprint scenarios. Options for improving EU policy were also developed. The report, initiated by the European Commission, DG Environment contained comprehensive information on EU policies that may impact the Arctic.

4. In the interests of transparency the disclaimer to this particular document is noted here in full: 'This document is a European Commission and EEAS staff working document for information purposes. It does not represent an official position of the Commission and of the EEAS on this issue, nor does it anticipate such a position.' The inventory of activities in the framework of developing a European Union Arctic Policy. Available at eeas.europa.eu/arctic_region/docs/swd_2012_182.pdf

5. Koivurova et. al. EU Competencies Affecting the Arctic. Available at www.europarl.europa.eu/committees/sv/studies/download.html?languageDocument=SV&file=33381

6. Sandra Cavilieri et. al. 'The EU Arctic Footprint and Policy Assessment' 21.12.2010. Contract: EuropeAid/128561/C/SER/Multi. Available at http://arctic-footprint.eu/sites/default/files/AFPA_Final_Report.pdf

FP 5, 6 and 7 supported reports

In the last decade, several reports were released that documented major public research initiatives in the polar regions, or reports that mapped potential research initiatives. The run-up to and execution of the International Polar Year of 2007/2008 can be considered a catalyst for many of these. It helped build capacity to conduct science in the polar regions and added momentum to increasing public interest in polar science. European countries played a central role during the IPY 2007/2008. The results of the FP 5 and FP 6 projects which fed into the IPY were summarised in a special report that focussed on Polar Environment and Climate research. The report captures research conducted at both poles.⁷ The IPY joint committee also published a hefty summary report detailing the science initiatives launched during the IPY 2007/2008, as well as existing initiatives which were augmented by the IPY.⁸

The European Polar Consortium was a coordination action funded by the EC's Framework Programme 6 from 2005 until 2009. The consortium's products included two publications mapping the landscape of European polar research. Volume I contained an assessment of current strategic management, polar programme definition and processes and Volume II gave an overview of European research infrastructures in the Arctic and the Antarctic. Most of the research infrastructures listed in the consortium's publications are still operational, with some of them being long-term, for example the maintenance and upgrading of research vessels. The European-wide survey of types of funding-lines and strategic research initiatives, however, has not been categorized in terms of individual countries because within countries these systems are largely incommensurable. As a result, the publication only referred to types of funding initiatives, rather than the initiatives themselves.⁹

The European Science Foundation's European Polar Board (bi-polar) released a strategy document in 2010 describing running research initiatives and calling for the full integration of research in the polar regions into the European Research Area. The document identified ten priority issues which are worth repeating here, as they were distilled following a survey of on-going research

7. European Commission. European research on Polar Environment and Climate: Results and Information from FP5 and FP6 projects, EUR 22415. Available at ec.europa.eu/research/environment/pdf/Polar_catalogue_final.pdf

8. IPY Joint Committee. Understanding Earth's Polar Challenges: International Polar Year 2007-2008. World Meteorological Organization (WMO) and the International Council for Science (ICSU). Available at www.icsu.org/publications/reports-and-reviews/ipy-summary/IPY-JC-Summary-Full.pdf

9. European Polar Consortium. The landscape of European polar research. Volume I: An assessment of current strategic management, polar programme definition and processes. 2010. Available at www.esf.org/fileadmin/Public_documents/Publications/ESF_polarV1.pdf and European Polar Consortium. The landscape of European polar research. Volume II: European polar capacity – an overview of research infrastructures in the Arctic and Antarctic. 2008. Available at www.esf.org/fileadmin/Public_documents/Publications/ESF_polarV2.pdf

initiatives.¹⁰

- The polar regions have a significant impact on the regional climate of Europe.
- Research in the polar regions is multidisciplinary and crosses many domains.
- The results of successful European polar science programmes in crucial fields have significant socioeconomic implications.
- European polar research is characterised by significant differences in scale and scope between national polar programmes and the disparity between the approaches of small versus large countries.
- European supranational funding is important to provide an order of magnitude difference in implementation of research beyond national sources.
- The research assets that are involved require continuous and significant investment and coordination.
- The human and social dimensions of research in the Polar Regions are critical components of the interconnected system and need to be continuously integrated with natural sciences.
- The legacy of the International Polar Year 2007-2008 involving over 50,000 scientists and 60 nations resulted in an explosion of ideas and clusters of research groups. A major issue is the sustainability of these efforts into the future for the benefit of society.
- The political dimension of carrying out research in the Arctic will become increasingly complex and polar research is an important factor in the relations between Europe and other nations.
- The public's affinity towards the polar regions, especially by young people, can be enhanced by increasing the visibility of polar research in traditional media and in the newer forms of social media.

Adaptation Actions for a Changing Arctic

The Arctic Council adopted an initiative, "Adaption Actions for a Changing Arctic". "Taking Stock of Adaptation Programs in the Arctic"¹¹ represents one element (Component B) of this larger initiative. It focused on climate change adaptation activities that are being implemented at national, sub-national, regional and local levels within the Arctic region. The primary means to collect information for this project was by a written survey using a template that included a mix of open-

ended and multiple choice questions, supplemented by follow-up consultations with Arctic Council state and Permanent Participant project representatives identified for the project. The analysis of the information gathered provided a "snapshot" of a range of adaptation activities that are occurring in the Arctic region and has allowed for the elaboration of a number of descriptive factors related to these activities. The intent of the project was not to present a fully representative picture of all Arctic adaptation-related initiatives, but it nevertheless provides a substantial basis for further research on this theme.

I.2.2 OTHER DIGITAL LISTS AND DATABASES

The major Arctic research stations and infrastructures run by European Countries are listed on the website of the Forum of Arctic Research Operators.¹² The Arctic Centre at the University of Lapland, Finland is maintaining and developing web services dealing with the Arctic and Barents region.¹³

The Community Research and Development Information Service (CORDIS) has a searchable database which details research output from EU-funded projects, including individual projects as well as major multi-institution projects, such as programmes funded by the Seventh Framework Programme (FP 7).

The documents and data bases described above tend to focus primarily on initiatives that are often closely tied to academic research. Academic research and the knowledge sector more broadly, are crucial actors in the sustainable development of the Arctic. However, if major European Arctic Initiatives are only defined within the broader framework of public research, it excludes major initiatives that are being undertaken by industries in the Arctic, or major political-strategic initiatives, or initiatives that are run by non-governmental organisation whose primary goal may not be knowledge creation. We attempt to also cover some of these initiatives here.

10. European Science Foundation, EPB strategic paper. European Research in the Polar Regions: Relevance, strategic context and setting future directions in the European Arctic Research Area. November 2010. Available at www.esf.org/fileadmin/Public_documents/Publications/European_Research_PolarRegions.pdf

11. Arctic Council "Taking Stock of Adaptation Programs in the Arctic" May 2013. Available at <http://www.amap.no/documents/download/1890>

12. <http://faro-arctic.org/>

13. <http://www.arcticcentre.org/InEnglish/SCIENCE-COMMUNICATIONS/Arctic-Databases-and-portals>





Chapter cover image: A global view over Europe and the Arctic.
Photo: GettyImages

II. EUROPEAN UNION INITIATIVES IN THE ARCTIC

II.1 EUROPEAN UNION INITIATIVES IN THE FRAMEWORK OF DEVELOPING A EUROPEAN ARCTIC POLICY

II.1.1 ARCTIC SPECIFIC INTERNATIONAL AND INTERGOVERNMENTAL AGREEMENTS AND REGULATORY BODIES (ALPHABETICAL)

Arctic Council¹

The Ottawa Declaration of 1996 formally established the Arctic Council as a high level intergovernmental forum to provide a means for promoting cooperation, coordination and interaction among the Arctic States, with the involvement of the Arctic Indigenous communities and other Arctic inhabitants on common Arctic issues, in particular issues of sustainable development and environmental protection in the Arctic. Arctic Council Member States are Canada, Denmark (including Greenland and the Faroe Islands), Finland, Iceland, Norway, Russian Federation, Sweden, and the United States of America. In addition to the Member States, the Arctic Council has the category of Permanent Participants and observers. The EU applied for permanent observer status to the Arctic Council in 2008. In 2013 the Arctic Council received the EU's application affirmatively, deferring the final decision until some concerns are addressed. In the meantime the EU can observe Council Proceedings. The EU actively engages in several working groups of the Council, including the Arctic Monitoring and Assessment Programme (AMAP); Arctic Ocean Review; Protection of the Arctic Marine Environment (PAME); and the Emergency Prevention, Preparedness & Response (EPPR) working groups.

Barents-Euro Arctic Council²

The EU is a principal partner in the BEAC through the Northern Dimension. The Northern Dimension is a policy framework for cooperation involving the EU, its Member States and partner countries Iceland, Norway and Russia. It aims at providing a common platform for promoting dialogue and concrete cooperation as well as strengthening stability and promoting economic integration, competitiveness and sustainable development in Northern Europe.

Sustained Arctic Observing Network (SAON)³

1. <http://www.arctic-council.org/index.php/en/>
2. <http://www.beac.st/in-English/Barents-Euro-Arctic-Council>
3. <http://www.arcticobserving.org/>

SAON is a process to support and strengthen the development of multinational engagement for sustained a coordinated pan-Arctic observing and data sharing systems that serve societal needs, particularly related to environmental, social, economic and cultural issues. It was established by the Arctic Council and the International Arctic Science Committee (IASC).⁴ The European Environmental Agency (EEA) is represented on the SAON Board. The EEA is an agency of the European Union, tasked with providing sound, independent information on the environment.⁵

II.1.2 POLICIES AND INITIATIVES THAT INFLUENCE THE ARCTIC (SELECTION)

International, regional and intergovernmental agreements and regulatory bodies

Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants⁶

The EC joined the coalition that aims to reduce short-lived climate pollutants in 2012. This initiative should complement UN efforts to reduce global greenhouse gas emissions, including those affecting the Arctic.

The Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC)⁷

The convention and the conferences forge a legally-binding global regime and is a core international strategy of the EU. Negotiation roadmap initiatives also address climate change in the Arctic.

4. <http://www.iasc.info/>

5. <http://www.eea.europa.eu/>

6. <http://www.unep.org/ccac/>

7. <http://unfccc.int/2860.php>

The Convention for the Protection of the marine Environment of the North-East Atlantic (OSPAR Convention)⁸

OSPAR is the mechanism by which fifteen Governments of the western coasts and catchments of Europe, together with the European Union, cooperate to protect the marine environment of the North-East Atlantic, including Arctic waters.

Espoo Convention on Environmental Impact Assessment⁹

The convention sets out the obligations of Parties to assess the environmental impact of certain activities at an early stage of planning. It also lays down the general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries. Since 2011, the EU has collaborated closely with the Russian Federation's launch of internal procedures to ratify the convention, which impacts the European Arctic.

International Whaling Commission (IWC)¹⁰

The International Whaling Commission (IWC) is the global intergovernmental body charged with the conservation of whales and the management of whaling. The European Union is a member. Whaling regulations has an impact on the human and non-human Arctic environment.

The International Maritime Organisation (IMO)¹¹

The EU is involved on a number of IMO committees with Arctic relevant mandates, for example such as the Maritime Environment Protection Committee and the Maritime Safety Committee, to which the sub-committee designing the Polar Code reports. The Polar Code¹² will regulate safety for ships operating in polar waters, covering the full range of design, construction, equipment, operational, training, search and rescue and environmental protection matters relevant to ships operating in the inhospitable waters surrounding the two Poles.

Minamata Convention on Mercury¹³

The EU was a driver of the negotiations leading up to the Minamata Convention on Mercury. The Treaty was signed in 2013 and is an international treaty designed to protect human health and the environment from

anthropogenic emissions and releases of mercury and mercury compounds. Several Arctic Council reports have contributed to the global understanding of mercury and its effects in the Arctic in particular.¹⁴

Regional Fisheries Management Organisations (RFMO)¹⁵

RFMOs are international organisations formed by countries with fishing interests in an area. RFMOs with an Arctic dimension that the EU is a partner of includes the North East Atlantic Fisheries Commission (NEAFC); North Atlantic Salmon Conservation Organization (NASCO) and bilateral agreements with Greenland, Faroe Islands, Iceland and Norway.

Stockholm Convention¹⁶ and the Protocol of the United Nations Economic Commission for Europe Convention on Long-Range Transboundary Air Pollution (UNECE LRTAP)¹⁷

The Stockholm Convention (2004) is a global treaty to protect human health and the environment from persistent organic pollutants (POPs) to which the EU is a signatory. The EU contributed to Arctic related initiatives under UNECE LRTAP as well as to the Arctic Council's Task Force on short lived climate forces and tipping points, whose regulation are sought by these protocols and conventions.

United Nations Declaration on the Rights of Indigenous Peoples¹⁸

The 2007 United Nations Declaration on the Rights of Indigenous Peoples frames the context of EU engagement with indigenous peoples in the Arctic.

United Nations Law of the Sea (UNCLOS)¹⁹

The EU is fully compliant to UNCLOS including in terms of the Arctic. The EU also sponsored on e.g. "Legal Aspects of Arctic Shipping" (2010).²⁰ The EU is following developments in the Northern Sea Route and North-West Passage in context of UNCLOS and shipping regulations.

8. http://www.ospar.org/content/content.asp?menu=0148120000000_000000_000000

9. <http://www.unece.org/env/eia/eia.html>

10. <http://iwc.int/home>

11. <http://www.imo.org/Pages/home.aspx>

12. <http://www.imo.org/MediaCentre/HotTopics/polar/Pages/default.aspx>

13. <http://www.mercuryconvention.org/>

14. Arctic Council, "Statement to the Diplomatic Conference on the Minamata Convention on Mercury" 9-11 October 2013. Available at <http://www.arctic-council.org/index.php/en/document-archive/category/407-statements?download=1898:minamata-convention-on-mercury-october-2013>

15. <http://ec.europa.eu/fisheries/cfp/international/rfmo/>

16. <http://www.unido.org/index.php?id=5279>

17. <http://www.unece.org/env/lrtap>

18. http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf

19. http://www.un.org/depts/los/convention_agreements/convention_overview_convention.htm

20. http://ec.europa.eu/maritimeaffairs/documentation/studies/documents/legal_aspects_arctic_shipping_summary_en.pdf

Research and research related agreements

Black carbon research

The EC Joint Research Centre (JRC) in cooperation with the United Nations Environment Programme (UNEP), World Meteorological Organization (WMO) and several other partners conducted research on black carbon, with Arctic implications. The resultant article, published in 2012, was entitled 'Simultaneously mitigating near-term climate change and improving human health and food security'.²¹ It was rooted in the 2011 UNEP led Integrated Assessment of Black Carbon and Tropospheric Ozone.²²

Galway Statement on Atlantic Ocean Cooperation²³

The 'Galway Statement on Atlantic Ocean Cooperation' was signed by representatives of the European Union, the United States and Canada in 2013. The partners agreed to join forces on Atlantic Ocean Research. The goal is to better understand the Atlantic Ocean and promote the sustainable management of its resources and connect the ocean observation efforts of the three partners. The work will also study the interplay of the Atlantic Ocean with the Arctic Ocean, particularly in relation to climate change.

European Environment -State and Outlook²⁴

The European Environment State and Outlook Report was published in 2010. The report was authored by the European Environment Agency and addressed a number of Arctic issues, including climate change in the Arctic.

Soil Atlas of the Northern Circumpolar Region.²⁵

The JRC, with partners from northern EU countries, as well as Norway, Iceland, Greenland, Canada, the USA and Russia produced the soil atlas in 2010 as part of their contribution to the International Polar Year (2010). The project included science communication to a broad group of stakeholders on the characteristics of northern soil, its environmental importance and global significance.

EU supported infrastructures of significance to the Arctic

The EU contributes substantially to infrastructure that supports research and monitoring of the Arctic region, on different scales, including from space. These include infrastructures such as:

21. http://ec.europa.eu/dgs/jrc/index.cfm?id=1410&obj_id=14370&dt_code=NWS&lang=en#iabcto

22. http://www.unep.org/dewa/Portals/67/pdf/BlackCarbon_report.pdf

23. http://ec.europa.eu/research/iscp/pdf/galway_statement_atlantic_ocean_cooperation.pdf

24. <http://www.eea.europa.eu/soer>

25. <http://eussoils.jrc.ec.europa.eu/library/maps/Circumpolar/>

Infrastructure for Spatial Information in Europe (INSPIRE) Directive²⁶

The INSPIRE directive aims to create a European Union (EU) spatial data infrastructure. This will enable the sharing of environmental spatial information among public sector organisations and better facilitate public access to spatial information across Europe. A European Spatial Data Infrastructure will assist in policy-making across boundaries, including the Arctic. The directive falls under the Joint Research Commission.

Copernicus²⁷

Copernicus, previously known as GMES (Global Monitoring for Environment and Security), is the European Programme for the establishment of a European capacity for Earth Observation. Copernicus provides reliable and up-to-date information on planetary and climate change to decision makers, businesses and citizens. The Copernicus land monitoring service provides geographical information on land cover and on variables related, for instance, to the vegetation state or the water cycle. It supports applications in a variety of domains such as spatial planning, forest management, water management, agriculture and food security, etc.

Group on Earth Observation System of Systems (GEOSS)²⁸

The EU supports the GEOSS initiative. This 'system of systems' aims to link together existing and planned observing systems around the world and support the development of new systems where gaps currently exist. It seeks to promote common technical standards so that data from the thousands of different instruments can be combined into coherent data sets. This includes the Arctic Observing System.

Galileo²⁹

The Galileo programme is Europe's initiative for a state-of-the-art global satellite navigation system, providing a highly accurate, guaranteed global positioning service under civilian control. The fully deployed system will consist of 30 satellites and the associated ground infrastructure. Galileo will be inter-operable with GPS and GLONASS, the two other global satellite navigation systems. It has Arctic implication in terms of, for example, navigation in the Arctic Ocean.

26. <http://inspire.jrc.ec.europa.eu/index.cfm>

27. <http://www.copernicus.eu/>

28. <http://www.earthobservations.org/geoss.shtml>

29. http://ec.europa.eu/enterprise/policies/satnav/galileo/index_en.htm

Marine Knowledge 2020³⁰

Recently initiated, Marine Knowledge 2020 Marine Knowledge 2020 brings together marine data from different sources with the aim of:

- Helping industry, public authorities and researchers find the data and make more effective use of them to develop new products and services.
- Improving the understanding of how the seas behave.

This includes data on the Arctic basin.

European Environmental Agency initiatives in monitoring and e-infrastructures

Shared Environmental Information System (SEIS)³¹

SEIS was established to improve the collection, exchange and use of environmental data and information across Europe. SEIS aims to create an integrated web-enabled, EU-wide environmental information system, by simplifying and modernizing existing information systems and processes. SEIS includes environmental monitoring data from the Arctic Region.

Eye on Earth Platform³²

Eye on Earth is the result of a public-private partnership bringing together expertise from industry and public organisations. The European Environment Agency (EEA), Esri and Microsoft Corporation collaborated to launch the Eye on Earth Network, the online community for sharing and discovering data about environment. This new cloud computing-based network promotes the principles of public data access and citizen science. It includes Arctic data.

EU Instruments, Institutions and Policy Areas with Arctic applications

Framework Programmes for Research³³

The Arctic was important in the sixth and seventh framework programmes, the major research funding instrument of the EU. The Arctic was especially important in calls focussing on environmental analyses and climate change research. Horizon2020, the framework programme for 2014-2020, focusses on coupling research and innovation to enhance smart, sustainable and inclusive growth and jobs in the EU. It seeks achieve this with its emphasis on excellent science, industrial leadership and tackling societal challenges, and Arctic related research plays a role in this. Key FP 6 and FP 7

30. http://ec.europa.eu/maritimeaffairs/policy/marine_knowledge_2020/

31. <http://www.eea.europa.eu/about-us/what/shared-environmental-information-system-1>

32. <http://www.eyeonearth.org/en-us/Pages/Home.aspx>

33. <http://ec.europa.eu/research/index.cfm>

grants are highlighted in the thematic section of this chapter.

Northern Dimension³⁴

The Northern Dimension is a joint policy between EU, Russia, Norway and Iceland. The ND Policy was initiated in 1999 and renewed in 2006. The policy aims at providing a framework to:

- promote dialogue and concrete cooperation
- strengthen stability, well-being and intensified economic cooperation
- promote economic integration, competitiveness and sustainable development in Northern Europe.

In addition to the four ND Partners namely EU, Russia, Norway and Iceland, also participating are:

- EU Members States in national capacity
- Regional Councils, e.g. the Arctic Council (AC), the Barents Euro-arctic Council (BEAC), the Council of the Baltic Sea States (CBSS) and the Nordic Council of Ministers (NCM)
- International Financial Institutions (IFIs), e.g. European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB), the Nordic Investment Bank (NIB) and the Nordic Environment Finance Corporation (NEFCO) as well as other financial institutions
- universities and research centers and business community
- Canada and the United States as observers
- Belarus participates in practical cooperation.

To facilitate ND project implementation, four Partnerships have been established to deal with the following thematic issues:

- environment (NDEP)
- public health and social well-being (NDPHS)
- transport and logistics (NDPTL)
- culture (NDPC)

An ND Institute (NDI) and ND Business Council (NDBC) have been established to involve academia and business community into ND cooperation.

European Instrument for Democracy and Human Rights³⁵

The European Instrument for Democracy and Human Rights provides direct support to civil society organisations working on indigenous issues. Its largest Arctic and sub-Arctic contribution is capacity building to pursue traditional livelihoods in the Russian Federation.

34. http://eeas.europa.eu/north_dim/index_en.htm

35. <http://www.eidhr.eu/>

European Union Regional Policy: Regional Development Fund (ERDF)³⁶

The ERDF financed the European Territorial Co-operation objective (ETC), which covered three types of programmes in the period 2007 -2013: cross-border programmes³⁷; transnational co-operation programmes³⁸ and interregional co-operation programmes.³⁹ Through these programmes, several projects in the northernmost regions of the European Arctic have been funded. Summaries of the major programmes funded by each type of programme are given here. Additionally, individual projects are highlighted under the thematic section of this chapter

Cross-border programmes

The EC approved the Operational Programme ‘North’⁴⁰ between Finland, Sweden and Norway for the period 2007-2013. The geographical location, cold climate and long distances make heavy demands on infrastructure and communications, while the vast labour market regions result in additional costs in terms of maintaining a good level of service. The overall objective of the Programme was to strengthen the competitiveness and cohesion of the region. For the Sápmi sub-Programme, the aim was to develop Sami cultural life and industry by making use of their resources in an ecological and sustainable way. The Programme strategy addressed the needs and common challenges identified in the cross-border region by developing methods and structures that facilitate cooperation between the regions.

Transnational co-operation programmes

The “Northern Periphery 2007-2013” Programme involved community support for some of the northernmost, sparsely populated regions within the European Territorial Co-operation Objective framework, incorporation regions in Ireland, Finland, Sweden and the United Kingdom, with the participation of the Faeroe Islands, Greenland, Iceland and Norway. The programme aimed to help peripheral and remote communities in the northern margins of Europe to develop their economic, social and environmental potential. This was achieved through transnational collaboration in the fields of innovation, business competitiveness, accessibility, sustainable development, natural resources and cultural heritage. In the 2014-2020 framework, the “Northern

Periphery Programme” is succeeded by the “Northern Periphery and Arctic Programme”⁴¹

Interregional co-operation programmes

INTERREG IVC provides funding for interregional cooperation across Europe. It is implemented under the European Community’s territorial co-operation objective and financed through the European Regional Development Fund (ERDF). The overall objective of the INTERREG IVC Programme was to improve the effectiveness of regional policies and instruments. Projects typically built on the exchange of experiences among partners who are ideally responsible for the development of their local and regional policies. INTERREG IVC funded projects in Northern Sweden and Finland.⁴² The programme is being continued from 2014-2020 as INTERREG EUROPE.⁴³

European Neighbourhood and Partnership Instrument⁴⁴

The European Neighbourhood and Partnership Instrument (ENPI) supports the European Neighbourhood Policy (ENP).⁴⁵ It has been operational since 1 January 2007. Together with the ERDF it co-funds programmes such as Kolarctic,⁴⁶ a development programme in which the northern regions of Finland, Sweden, Norway and the Russian Federation participates. The 2007-2013 budget for Kolarctic has amounted to €70.48 million, of which €28.4 million was EU funding. Some of the Kolarctic projects are incorporated in the thematic section of this chapter.

Arctic Inter-Service Group (AISG)

The Arctic Inter-Service Group is a channel for regular and continuous information exchange between the EC, the European External Action Service (EEAS) and the agencies (EEA and the European Maritime Safety Authority, EMSA).

II.1.3. EU endeavours in addressing Arctic trends

Climate Change in the Arctic

The Arctic is the most rapidly changing climate region on Earth. There is clear evidence of change that has already occurred due to emissions of greenhouse gases and aerosols from human activities. These affect the fundamentals of Arctic ecosystems and the lives of its inhabitants. The Arctic is a particularly fragile region

36. http://ec.europa.eu/regional_policy/cooperate/cooperation/index_en.cfm

37. http://ec.europa.eu/regional_policy/cooperate/cooperation/crossborder/index_en.cfm

38. http://ec.europa.eu/regional_policy/cooperate/cooperation/transnational/index_en.cfm

39. http://ec.europa.eu/regional_policy/cooperate/cooperation/interregional/index_en.cfm

40. http://ec.europa.eu/regional_policy/country/prordn/details_new.cfm?gv_PAY=FI&gv_reg=ALL&gv_PGM=1287&gv_defL=7&LAN=7

41. <http://www.northernperiphery.eu/en/content/show/&tid=237>

42. <http://www.interreg4c.eu/programme/>

43. http://www.interreg4c.eu/fileadmin/User_Upload/PDFs/INTERREG_EUROPE_Cooperation_Programme_summary.pdf

44. http://ec.europa.eu/europeaid/how/finance/enpi_en.htm

45. http://eeas.europa.eu/enp/index_en.htm

46. <http://www.kolarcticenpi.info/en>

where, compared to other regions, there are strong ecosystem feedbacks that accelerate changes. This effect is called “Arctic amplification”. Changes in the Arctic ecosystem dynamics have increasing consequences for Europe and beyond.

There is clear evidence of significant changes in Arctic landscapes and marine environments. Climate change affects the Arctic cryosphere, hydrology, habitats and

species. Changes in temperature, sea -ice cover, snow cover and water regimes are linked to the loss of important habitats for species, as well as shifts in species compositions due to landscape transformations, which in turn impacts on people’s livelihoods.

The following compilation of actions illustrates the EU’s endeavours to better understand and respond to Climate Change in the Arctic.

Clim-ATIC

Climate Change — Adapting to The Impacts, by Communities in Northern Peripheral Regions

<http://www.clim-atic.org/>

Main aim	Supporting rural peripheral communities to adapt to the impacts of climate change.
Geographical scope	Scotland, Finland, Sweden, Norway, Svalbard, Greenland
Disciplines involved	Environmental protection, climate change, pollution (soil, water, air), waste management.
Output	Community climate change vulnerability assessments; community climate change adaptation strategies; climate change impact visualizations and communication tools; real adaptations made by communities; international information, training, and advice service.
Relevance	Clim-ATIC Establishes a sustainable, self-financing service to disseminate, knowledge to support the sustainability of rural communities, enabling them to adapt to socio-economic impacts of climate change with the focus on such areas as risk and response management, transport, tourism and energy.
Period	01/2008 - 02/2011
Total budget / EU funding granted	2 348 139 EUR / 1 317 143 EUR
Funding source	Northern Periphery Programme
Institutions and partners involved	Lead partner: UHI Millennium Institute, Scotland Lycksele Municipality, Sweden Arctic Technology Centre, Greenland Western Norway Research Institute, Norway The Lapland Regional Environment Centre, Finland Umeå University, Sweden Åre municipality, Sweden Finnish Forest Research Institute, Rovaniemi Research Unit, Finland Thule Institute at University of Oulu, Finland Finnish Environment Institute, Finland University of Lapland Arctic Centre, Finland University of Lapland, Finland Sogn og Fjordane County Governor, Norway
Contacts	Clive Bowman clive.bowman@perth.uhi.ac.uk

CryoLand

CryoLand - Copernicus Service Snow and Land Ice

<http://cryoland.eu/>

Main aim	Develop, implement and validate an operational sustainable service for monitoring snow and land ice.
Geographical scope	Pan-European
Disciplines involved	Snow monitoring, land ice monitoring, cross-disciplinary (Earth observation).
Output	Services for snow and land ice monitoring, academic publications.
Relevance	Building up operational snow and glacier services. Operational processing lines and service infrastructure for various product types will be developed on top of existing web service environments supporting the publication, provision and chaining of geospatial data services. Observing and monitoring of glacier growth and shrinkage, and changes in snow cover and sea-ice.
Period	02/2011 - 02/2015
Total budget / EU funding granted	2 829 000 € / n.k.
Funding source	Copernicus, 7th Framework Programme
Institutions and partners involved	Lead partner ENVEO IT GmbH, Austria EOX IT Services, Austria Finnish Environment Institute, Finland Finnish Meteorological Institute, Finland Kongsberg Satellite Services, Norway Northern Research Institute, Norway Norwegian Computing Center, Norway National Meteorological Administration, Romania GAMMA Remote Sensing, Switzerland Swedish Meteorological & Hydrological Institute, Sweden
Contacts	Thomas Nagler thomas.nagler@enveo.at

Polar View

<http://www.polarview.org/>

Main aim	Enabling earth monitoring contributes to both business and society in three main areas: sustainable economic development, safety and environmental stewardship.
Geographical scope	Antarctic, Baltic Sea, European Arctic, North American Arctic
Disciplines involved	Earth Monitoring Services
Output	Integrated monitoring and forecasting services in the Polar Regions and parts of the mid-latitudes with significant snow and ice cover using satellite Earth observation data
Relevance	Polar View snow services serve an important source for the decisions of large group of users, including Northern residents, needing to adapt and respond to climate change, as well as for use in climate research, flood forecasts, and hydrology related research and responses as well as hydropower applications.
Period	2005 -
Total budget / EU funding granted	The Polar View consortium is supported by the European Space Agency (ESA) and the European Commission, with participation by the Canadian Space Agency (CSA).
Funding source	European Space Agency, the European Commission, the Canadian Space Agency
Institutions and partners involved	Lead partner: C-CORE, 30 member-organizations
Contacts	Thomas Puestow thomas.puestow@polarview.org

CoreClimax

Coordinating earth observation data validation for RE-analysis for climate services

<http://www.coreclimax.eu/>

Main aim	Coordination the identification of essential climate change variables and the creation of long term climate data records
Geographical scope	Pan-European
Disciplines involved	Climate system monitoring
Output	Tools and datasets developed for assessing the European capability to provide Global Climate Observing System (GCOS) Essential Climate Variables (ECV), such as air temperature, precipitation, carbon dioxide, sea level, sea surface temperature, snow cover data records.
Relevance	In response to environmental and societal challenges associated with climate changes, the Copernicus Climate Change Service is helping to support climate adaptation and mitigation measures by providing access to several climate indicators (e.g. temperature increase, sea level rise, ice sheet melting and ocean warming) and climate indices (e.g. based on records of temperature, precipitation and drought event) for both the identified climate drivers and the expected climate impacts. In conjunction with its partners CORE-CLIMAX is coordinating the identification of available physical measurements that can be reconciled with previously existing data records to form long-term climate data records.
Period	01/2013 - 06/2015
Total budget / EU funding granted	1 997 635 EUR / n.k.
Funding source	7th Framework Programme
Institutions and partners involved	Lead partner: Faculty of Geo-Information Science and Earth Observation, University of Twente, The Netherlands The European Organisation for the Exploitation of Meteorological Satellites, Germany European Centre for Medium-Range Weather Forecasts, United Kingdom Deutscher Wetterdienst, Germany Flemish institute for technological research, Belgium Finnish Meteorological Institute, Finland MeteoFrance, France Institute of Tibetan Plateau Research, Chinese Academy of Sciences, China Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences, China
Contacts	Professor Bob Su z.su@utwente.nl

ACCESS

Arctic Climate Change, Economy and Society /Climate Change and the Arctic environment WG

<http://www.access-eu.org/>

Main aim	Evaluation of the Arctic climate change scenarios and their impact on specific economic sectors and human activities over the next decades.
Geographical scope	Arctic Region
Disciplines involved	Climate Change, Transport & Tourism, Resource Extraction, Arctic Governance
Output	Reports on: <ul style="list-style-type: none">• Navigation efficiency on NSR and in difficult shipping zones as effected by Climate Change• Noise propagation from commercial fishing and vessel traffic in the Arctic today and in the future• Recent ice conditions in the Arctic + recommended navigation routes• Report presenting results of ICEROUTE calculations of traveling time for different scenarios and routes on NSR and NWSR
Relevance	ACCESS evaluates Arctic climate change scenarios and their impact on specific economic sectors and human activities over the next decades. Particular attention is given to environmental sensitivities and sustainability in the Arctic domain. The Arctic environment in the context of climate change is an overarching activity of the ACCESS project. The other activities of ACCESS, including the economic sectors of fisheries, oil and gas extraction and marine transportation are preempted in the context of Arctic climate changes.
Period	2011-2015
Total budget / EU funding granted	10 978 468 EUR
Funding source	7th Framework Programme, Ocean of Tomorrow



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Institutions and partners involved

Lead partner: University Pierre et Marie Curie, France
LOCEAN, France
LATMOS, France
LOV, France
O.A. Sys-Ocean Atmosphere Systems GmbH, Germany
Natural Environment Research Council, United Kingdom
Institut für Weltwirtschaft, Germany
University of Cambridge, United Kingdom
Alfred-Wegener-Institut, Germany
Dr-Ing. Joachim Schwarz, Independent consulting entity for Polar and Maritime Technology, Germany
Nofima Marin AS, Norway
Hamburgische Schiffbau-Versuchsanstalt, Germany
Norsk Polarinstitutt, Norway
Meteorologisk Institutt, Norway
Fastopt GmbH, Germany
The Scottish Association for Marine Science, United Kingdom
Kungliga Vetenskapsakademien, The Beijer Institute of Ecological Economics, Sweden
P.P. Shirshov Institute of Oceanology of Russian Academy of Sciences, Russia
IMPAC Offshore Engineering GmbH, Germany
Universitat Politecnica de Catalunya, Spain
Deutsches Zentrum für Luft und Raumfahrt EV, Germany
Arctic and Antarctic Research Institute of Roshydromet, Russia
Economic and Social Research Institute, Ireland
Arctic Centre of the University of Lapland, Finland
Sintef Fiskeri og Havbruk AS, Norway
Cicero Senter for Klimaforskning, Norway
Stiftelsen Sintef, Norway
Energiewirtschaftliche Institut an der Universität zu Köln (EWI), Germany
Association Le cercle polaire, France
Nordic Bulk Carriers A/S, Denmark

Contacts

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jean-claude.gascard@locean-ipsl.upmc.fr

Arctic Tipping Points

<http://www.eu-atp.org>

Main aim	Identifying the elements of the Arctic marine ecosystem likely to show abrupt changes in response to climate change, and establish the levels of the corresponding climate drivers inducing regime shift in those tipping elements. In addition, determine the effect of crossing those thresholds for the Arctic marine ecosystems, and the associated risks and opportunities for economic activities dependent on the marine ecosystem of the European Arctic.
Geographical scope	Arctic
Disciplines involved	Climate change, marine ecosystems
Output	Investigating tipping points in the European Arctic: Academic publications. Exhibitions. PhD summer school. Modeled future trajectories, tipping points and regime shifts. Evaluation of expected changes in relationships between a) climate forcing and biological responses and b) ecosystem components and their inter-relationships during regime shifts. Assessments of the implications of changes in the Arctic for socioeconomic activities and governance of arctic resources. White paper evaluating different policy options in avoiding exceeding tipping points for Arctic ecosystems.
Relevance	Enhanced knowledge on Arctic climate change and options for adaptation.
Period	01/02/2009 - 31/01/2012
Total budget / EU funding granted	6 545 776 EUR / 4 998 098 EUR
Funding source	7th Framework Programme
Institutions and partners involved	Lead partner: University of Tromsø, Norway Consejo Superior de Investigaciones Científicas, Spain Akvaplan-niva AS, Norway SINTEF Fiskeri og havbruk AS Aarhus Universitet, Denmark Institute of Oceanology Polish Academy of Sciences, Poland University of Cambridge, United Kingdom Center of Marine Sciences, Portugal Université de Pierre et Marie Curie, France Greenland Institute of Natural Resources, Greenland Shirshov Institute of Oceanology, Russian Academy of Sciences, Russia Max-Planck Gesellschaft zur Förderung der Wissenschaften e.V., Max-Planck-Institut für Meteorologie, Germany The Beijer Institute of Ecological Economics, Sweden
Contacts	Elisabeth Halvorsen elisabeth.halvorsen@uit.no

EPOCA

European Project on Ocean Acidification

<http://www.epoca-project.eu/index.php/who-are-we.html>

Main aim	Advancing the understanding of the biological, ecological, biogeochemical, and societal implications of ocean acidification.
Geographical scope	Arctic, North Atlantic, North Pacific
Disciplines involved	Ocean acidification
Output	EPOCA improved our understanding of past and present spatio-temporal changes of ocean acidification; of the impacts of ocean acidification on marine biota; and of future changes in ocean chemistry and biogeochemical feedbacks in terms of hotspots, uncertainties, thresholds. It shed light on tipping points.
Relevance	Enhancing knowledge and understanding of ocean acidification
Period	01/05/2008 – 30/+04/2012
Total budget / EU funding granted	9 766 950 EUR/ 6 548 995 EUR
Funding source	7th Framework Programme
Institutions and partners involved	Lead Partner: Centre National De La Recherche Scientifique, France Leibniz-Institut Fuer Meereswissenschaften An Der Universitaet Kiel, Germany Max Planck Gesellschaft Zur Foerderung Der Wissenschaften E.v., Germany Natural Environment Research Council, United Kingdom Universitaet Bern, Switzerland Eidgenössische Technische Hochschule Zürich, Switzerland University Of Cambridge, United Kingdom Universiteit Utrecht, The Netherlands Universitetet I Bergen, Norway Universite Libre De Bruxelles, Belgium University Of Bristol, United Kingdom Sir Alister Hardy Foundation For Ocean Science, United Kingdom Philippe Saugier International Educational Projects, France University Of Southampton. United Kingdom Plymouth Marine Laboratory, United Kingdom Marine Biological Association Of The United Kingdom, United Kingdom The Scottish Association For Marine Science, United Kingdom Alfred-Wegener-Institut Fuer Polar- Und Meeresforschung, Germany Goeteborgs Universitet, Sweden Hafranssoknastofnunin, Iceland Koninklijke Nederlandse Akademie Van Wetenschappen - Knav, The Netherlands Vereniging Voor Christelijk Hoger Onderwijs Wetenschappelijk Onderzoek En Patientenzorg, The Netherlands University Of Plymouth - Higher Education Corporation, United Kingdom Helmholtz Zentrum Fur Ozeanforschung Kiel, Germany Commissariat A L Energie Atomique Et Aux Energies Alternatives, France United Nations Educational, Scientific And Cultural Organization –Unesco, France Stichting Koninklijk Nederlands Instituut Voor Zeeonderzoek (Nioz), The Netherlands Helmholtz-Zentrum Geesthacht Zentrum Fur Material- Und Kustenforschung Gmbh, Germany
Contacts	Lina Hansson hansson@obs-vlfr.fr

DAMOCLES

Developing Arctic Modelling and Observing Capabilities for Long-term Environmental Studies

http://www.damocles-eu.org/about_damocles/index.shtml

Main aim	The project was an integrated ice-atmosphere-ocean monitoring and forecasting system designed for observing, understanding and quantifying climate changes in the Arctic.
Geographical scope	Arctic Region
Disciplines involved	Sea-ice, atmosphere and ocean
Output	Publications, contribution to International Polar Year 2007 – 2008.
Relevance	DAMOCLES shed light on the changes in sea-ice, atmosphere and ocean of the Arctic and sub-Arctic domain. It improved modelling and identified appropriate adaptation strategies.
Period	12/2005 - 05/2008
Total budget / EU funding granted	24 817 021 EUR / 16 099 700 EUR
Funding source	6th framework Programme
Institutions and partners involved	Lead partner: Université Pierre et Marie Curie, France 48 institutions in 11 European countries + the Russian Federation and Belarus.
Contacts	Jean-Claude Gascard jga@locean-ipsl.upmc.fr

MONARCH-A

MONitoring and Assessing Regional Climate change in High latitudes and the Arctic

<http://monarch-a.nersc.no/>

Main aim	Generating a dedicated information package tailored to a subset of multidisciplinary Essential Climate Variables and their mutual forcing and feedback mechanisms associated with changes in terrestrial carbon and water fluxes, sea level and ocean circulation and the marine carbon cycle
Geographical scope	Arctic Region, high-latitude regions
Disciplines involved	Space & satellite research, Arctic and Marine Remote Sensing Studies
Output	Reports
Relevance	Enhancing Observing and Understanding of Arctic Climate Change
Period	03/2010 - 05/2013
Total budget / EU funding granted	3 942 504 EUR / 2 884 484 EUR
Funding source	7th Framework Programme
Institutions and partners involved	Lead partner: Nansen Environmental and Remote Sensing Center, Norway The University of Sheffield, United Kingdom Universitat Hamburg, Germany Centre National de la Recherche Scientifique, France Universitetet i Bergen, Norway Danmarks Tekniske Universitet, Denmark Institut Francais de Recherche pour l'Exploitation de la Mer, France
Contacts	Johnny A. Johannessen johnny.johannessen@nersc.no

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Changing Permafrost in the Arctic and its Global Effects in the 21st Century

<http://page21.org/>

Main aim	Understand and quantify the vulnerability of permafrost environments to a changing global climate, and to investigate the feedback mechanisms associated with increasing greenhouse gas emissions from permafrost zones
Geographical scope	Arctic Region
Disciplines involved	Permafrost, arctic, climate change, carbon
Output	Field sites, academic publications
Relevance	Enhancing Observing and Understanding of Arctic Climate Change
Period	11/2011 - 11/2015
Total budget / EU funding granted	9 269 927 EUR / 6 951 895 EUR
Funding source	7th Framework Programme
Institutions and partners involved	Lead partner: Alfred Wegener Institute for Polar and Marine Research, Germany The University Centre in Svalbard Norway, Norway Stockholms Universitet, Sweden Vrije Universiteit Amsterdam, the Netherlands Technische Universität Wien, Austria Université Joseph Fourier, France University of Exeter, United Kingdom Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Germany Lund University, Sweden University of Copenhagen, Denmark University of Hamburg, Germany Commissariat à l'Énergie Atomique et aux Énergies alternatives, France Met Office, for and on behalf of the Secretary of State for the Defence of the United Kingdom, Great Britain and Northern Ireland, United Kingdom Finnish Meteorological Institute, Finland University of Eastern Finland, Finland Institute for Biological Problems of Cryolithozone Russian Federation, Russia Arctic Portal, Iceland Moscow State University Russian Federation, Russia
Contacts	Leena - Kaisa Viitanen http://page21.org/component/contact/contact/60-coordination-team/4-leena-viitanen

INTERACT

International Network for Terrestrial Research and Monitoring in the Arctic

<http://www.eu-interact.org/transnational-access/>

Main aim	To build capacity for identifying, understanding, predicting and responding to diverse environmental changes throughout the wide environmental and land-use
Geographical scope	Arctic and adjacent northern territories
Disciplines involved	Terrestrial research
Output	Station Managers forum (platform for exchange of information between research station managers and between managers and other partners and stakeholders); Joint Research Activities; Transnational Access (access to 20 research stations in Northernmost Europe and Russia); Outreach (inform and interact with the public, stakeholders and primary, secondary and tertiary students)
Relevance	Research facilitation and capacity building to conduct research on Arctic climate change
Period	01/2011-12/2014
Total budget / EU funding granted	9 362 620 EUR / 7 300 000 EUR
Funding source	7th Framework Programme



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Institutions and partners involved

Coordinating body:

The Royal Swedish Academy of Sciences (KVA), Sweden

Partners:

Agricultural University of Iceland (AUI), Iceland

Alfred Wegener Institute for Polar and Marine Research (AWI), Germany

Arctic Institute of North America (AINA), Canada

Arctic Monitoring and Assessment Programme Secretariat, (AMAP)

ATHENA research and Innovation Centre in Information Communication & knowledge Technologies (ATHENA RC), Greece

Barrow Arctic Science Consortium (BASC), United States

Centre for Northern Studies (CEN) Canada

CLU srl (CLU), Italy

Faroe Islands Nature Investigation (FINI), Faroe Islands

Finnish Forest Research Institute (METLA), Finland

Greenland Institute of Natural Resources (GINR), Greenland

IT University of Copenhagen (ITU), Denmark

The Institute for Biological Problems of Cryolithozone (IBPC), Russia

Lund University (ULUN), Sweden

National Environmental Research Institute (NERI), Denmark

Natural Environmental Research Council (NERC), Great Britain

Norwegian Institute for Agricultural and Environmental Research (BIOFORSK), Norway

Norwegian Polar Institute (NPI), Norway

The Royal Swedish Academy of Sciences (KVA), Sweden

State Education and Scientific Institution Faculty of Geography of M.V. Lomonosov Moscow State University (MSU), Russia

Stockholm University (SU), Sweden

Swedish Polar Research Secretariat (SPRS), Sweden

Swedish University of Agricultural Sciences (SLU), Sweden

University of Alaska Fairbanks, (UAF), United States

University of Copenhagen (UCPH), Denmark

University of Helsinki (UH), Finland

University of Oslo (UO), Norway

University of Oulu (UOULU), Finland

University of Turku (UTURKU), Finland

Uppsala University (UU), Sweden

World Wide Fund for Nature (WWF)

Yugra State University (YSU), Russia

Contacts

Terry V. Callaghan

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Main aim	Creation of an optimized observational infrastructure which can match advanced Earth System models with observational evidence and provide near-real-time information on Arctic change to relevant stakeholders
Geographical scope	Svalbard
Disciplines involved	Infrastructure
Output	Scientific coordination and integration strategy Concept paper for the Knowledge Centre, Knowledge Centre implementation plan SIOS interactive web-portal SIOS Educational programme
Relevance	Enhancing Observing and Understanding of Arctic Climate Change. Coordination and Facilitation of Research.
Period	2010 -2013
Total budget / EU funding granted	6 688 418 EUR / 4 455 627 EUR
Funding source	7th Framework Programme



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Institutions and partners involved

Lead partner: The Research Council of Norway, Norway

Partners:

The Norwegian Polar Institute, Norway

The University Centre in Svalbard, Norway

Alfred Wegener Institute for Polar and Marine Research, Germany

Institute of Geophysics - Polish Academy of Sciences, Poland

National Research Council of Italy, Italy

Natural Environment Research Council, United Kingdom

Norwegian Ministry of Trade and Industry - Norwegian Space Centre, Norway

National Environmental Research Institute - Aarhus University, Denmark

Finnish Meteorological Institute, Finland

University of Groningen, The Netherlands

Polar Research Institute of China, China

French Polar Research Institute, France

Korea Ocean Research & Development Institute - Korea Polar Research Institute, Korea

Polar Geophysical Institute - Russian Academy of Sciences, Russia

Institute of Oceanology - Polish Academy of Sciences, Poland

Stockholm University, Sweden

University of Bergen, Norway

University of Tromsø, Norway

Norwegian Meteorological Institute, Norway

Nansen Environmental and Remote Sensing Center, Norway

Institute of Marine Research, Norway

Norwegian Institute for Air Research, Norway

Andøya Rocket Range, Norway

Research Organization of Information and Systems - National Institute for Polar Research, Japan

Associated partners:

National Centre for Antarctic and Ocean Research, India

Spanish Ministry of Science and Innovation, Spain

Institute of Botany - Czech Academy of Sciences, Czech Republic

Scottish Association for Marine Science, United Kingdom

University of Leicester, United Kingdom

EISCAT Scientific Association, Sweden

Kola Science Centre - Russian Academy of Sciences, Russia

Geophysical Survey - Russian Academy of Sciences, Russia

Arctic Centre - University of Lapland, Finland

National Science Foundation, USA

Norwegian Institute of Water Research, Norway

University of Oslo, Norway

Kings Bay AS, Norway

NORSAR, Norway

Akvaplan-niva AS., Norway

Norwegian Institute of Nature Research, Norway

Norwegian University of Science and Technology, Norway

Kongsberg Satellite Services AS, Norway

Northern Research Institute Tromsø AS, Norway

Norwegian Directorate of Energy and Water Resources, Norway

Norwegian Ministry of Education and Research, Norway

The Governor of Svalbard, Norway

Contacts

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Changes in Arctic Maritime Transport

Maritime transport in the Arctic is set to increase. The growing traffic is closely linked to development of economic activities within the Arctic and the export of raw materials such as petroleum and minerals. Arctic cruise tourism is also growing. A few ships made transit voyages between Europe and Asia. Destinalional shipping in the Arctic is expected to expand, as will transit traffic in the longer run. However, there is considerable uncertainty regarding the timing and magnitude of future traffic levels.

Many factors determine the outlook for expanded maritime transport. Melting summer sea-ice expands the area of navigable waters and extends the sailing season. Deficits in critical infrastructure ranging from ports to navigational maps, communication means and search and rescue capabilities present significant challenges that must be overcome. Safety of navigation is a serious concern for ships operating in harsh conditions and remote areas far from salvage.

There are concerns about environmental damage to areas that so far have been effectively protect from human influence by sea-ice. On the other hand, Arctic voyages may lead to lower costs, growing trade and economic benefits to ships owners, ports and maritime industries delivering ships and equipment.

The following compilation highlights the EU's actions in and of relevance to Arctic Maritime Transport.

SMACS

Small Craft Emergency Response and Survival Training for Arctic Conditions

<http://smacs-project.eu/>

Main aim	Development of a safety and survival training programme specifically focused on the needs of small-craft Arctic mariners
Geographical scope	Ireland, Iceland, Sweden, Norway
Disciplines involved	Search and rescue, maritime training
Output	E-learning technologies, desktop and full-scale virtual simulators, practical simulators
Relevance	The primary objective of the SMACS project is the development of a safety and survival training programme specifically focused on the needs of small-craft Arctic mariners. It is currently difficult to access Arctic-specific small-craft training. The project responds to the lack and/or remoteness of SAR capacities in the Arctic. It promotes competency in Arctic seafaring.
Period	10/ 2012 - 09/2014
Total budget / EU funding granted	954 167 EUR / 519 270 EUR
Funding source	Northern Periphery Programme
Institutions and partners involved	Lead partner: Cork Institute of Technology, Ireland Swedish Sea Rescue Society, Sweden Chalmers University of Technology, Sweden ICE-SAR, Iceland Norwegian Society for Sea Rescue (NSSR), Norway
Contacts	John Barrett john.barrett@cit.ie

The Barents Freeway

Main aim	<p>Integration of the current transport strategies, plans and projects of each country</p> <p>Elimination of border constraints in order to add fluency of transport flows</p> <p>To improve accessibility of regional, national and international markets for the producers</p> <p>Acceleration of the integration of local economies of the Region into the global economy</p>
Geographical scope	Barents Region
Disciplines involved	Transport flows
Output	Common Barents Region Transport Strategy
Relevance	<p>The project will put forth a package of proposals to improve road, flight, rail and waterway connections, port systems and to create a joint concept of the Barents multi-modal transport and logistics platform. This will be relevant to understanding and planning for multi-modal competition in transport, as well as in working towards the efficient utilization of existing infrastructure. The economic and social development of local communities in the Kolarctic area advanced through optimization of transport infrastructure development on a base of the common Barents Region Transport Strategy responding to new challengers arising in the Arctic and Northern periphery thanks to Integration of the current transport strategies, plans and projects of each country into the common Barents Region transport strategy, in order to create a platform to apply system approach when decision making and launch synergy effect in transport infrastructure developing.</p>
Period	09/2012 - 12/2014
Total budget / EU funding granted	1 400 000 EUR / 621 419 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	<p>Lead partner: Lapland Centre for Economic Development, Transport and the Environment, Finland</p> <p>County Administrative Board of Norrbotten, Sweden</p> <p>Troms Fylkeskommune, Norway</p> <p>Finnmark Fylkeskommune, Norway</p> <p>Nordland Fylkeskommune, Norway</p> <p>Regional Council of Lapland, Finland</p> <p>The Ministry of Industry, Transport and Communication of the Arkhangelsk region, Russia</p> <p>State Public Institution of the Arkhangelsk Region “The Road Agency “Arkhangelskavtodor””, Russia</p> <p>Murmansk Regional Ministry of Transport and Communications, Russia</p> <p>State Organization - Murmansk Regional Road Administration “Murmanskavtodor” , Russia</p>
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SAFEICE

Increasing the Safety of Icebound Shipping

<http://www.tkk.fi/Units/Ship/Research/SafeIce/Public/>

Main aim	Increasing Road, Rail and Waterborne Safety and Avoiding Traffic Congestion
Geographical scope	Baltic Sea, Okhostk Sea, Canadian waters
Disciplines involved	Water transport (sea & inland), Security and Safety, Assessment & decision support methodologies
Output	Database on ice loads and ice pressures
Relevance	The main purposes in the SAFEICE project were to develop semi-empirical methods based on measurements to determine the ice loads on ship hull, to find relationship between operational conditions and ice load, to develop ship-ice interaction models to assess the design ice loads on ship hull, to develop methods to estimate ultimate strength of shell plating and frames and to develop methods to analyze ice damages. The target was to decrease the risk involved in winter navigation. Baltic Sea, Okhostk Sea and Canadian waters were used as validation for ice load predictions.
Period	09/2004 - 09/2007
Total budget / EU funding granted	2 175 226 EUR/ 1 050 000 EUR
Funding source	6th RTD Framework Programme
Institutions and partners involved	Chalmers University of Technology, Sweden Finnish Maritime Administration, Finland Germanischer Lloyd AG, Germany Hamburgische Schiffbau-Versuchsanstalt GmbH, Germany National Maritime Research Institute, Japan National Research Council Canada, Canada Swedish Maritime Administration, Sweden Tallinn Technical University, Estonia Arctic and Antarctic Research Institute, Russia
Contacts	Prof. Kujala Pentti pentti.kujala@tkk.fi

Arctic Transform / Shipping Working Group

<http://arctic-transform.org/>

Main aim	Developing transatlantic policy options for supporting adaptation in the marine Arctic environment
Geographical scope	Arctic Region
Disciplines involved	Environmental Governance, Fisheries, Indigenous Peoples, Offshore Hydrocarbon, Shipping
Output	Expert policy paper "Arctic Shipping"
Relevance	ARCTIC TRANSFORM developed policy options for Arctic shipping, focusing on protection and preservation of the marine environment and marine biodiversity in the Arctic marine area.
Period	01/2008 - 06/2009
Total budget / EU funding granted	535 752 EUR/ 482 177 EUR
Funding source	European Commission Directorate General for External Relations
Institutions and partners involved	Lead partner: Ecologic, Germany Ecologic - Institute for International and European Environmental Policy, Germany Arctic Centre, University of Lapland, Finland Netherlands Institute for the Law of the Sea (NILOS) Utrecht University, The Netherlands The Heinz Center, United States of America
Contacts	Sandra Cavalieri sandra.cavalieri@ecologic.eu

ACCESS

Arctic Climate Change, Economy and Society /Transport & Tourism WG

<http://www.access-eu.org/>

Main aim	Evaluation of the Arctic climate change scenarios and their impact on specific economic sectors and human activities over the next decades.
Geographical scope	Arctic Region
Disciplines involved	Climate Change, Transport & Tourism, Resource Extraction, Arctic Governance
Output	Reports on: <ul style="list-style-type: none">• Navigation efficiency on NSR and in difficult shipping zones as effected by Climate Change• Noise propagation from commercial fishing and vessel traffic in the Arctic today and in the future• Recent ice conditions in the Arctic + recommended navigation routes• Report presenting results of ICEROUTE calculations of traveling time for different scenarios and routes on NSR and NWSR
Relevance	In its Transport and Tourism work package, ACCESS is investigating Impact of climate change on Arctic shipping. ACCESS is researching rules and regulations for marine Arctic transport in view of changing ice conditions. Infrastructure needs for increased shipping are assessed and pollution in the Arctic Ocean by increased shipping are analysed. Recommendations are made to improve the safety and economy of Arctic shipping. Furthermore, research is conducted into the socio-economic aspects of Arctic transport and tourism, and arctic shipping governance under climate change conditions.
Period	2011-2015
Total budget / EU funding granted	10 978 468 EUR
Funding source	7th Framework Programme, Ocean of Tomorrow



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Institutions and partners involved

Lead partner: University Pierre et Marie Curie, France
LOCEAN, France
LATMOS, France
LOV, France
O.A. Sys-Ocean Atmosphere Systems GmbH, Germany
Natural Environment Research Council, United Kingdom
Institut für Weltwirtschaft, Germany
University of Cambridge, United Kingdom
Alfred-Wegener-Institut, Germany
Dr-Ing. Joachim Schwarz, Independent consulting entity for Polar and Maritime Technology, Germany
Nofima Marin AS, Norway
Hamburgische Schiffbau-Versuchsanstalt, Germany
Norsk Polarinstitut, Norway
Meteorologisk Institutt, Norway
Fastopt GmbH, Germany
The Scottish Association for Marine Science, United Kingdom
Kungliga Vetenskapsakademien, The Beijer Institute of Ecological Economics, Sweden
P.P. Shirshov Institute of Oceanology of Russian Academy of Sciences, Russia
IMPAC Offshore Engineering GmbH, Germany
Universitat Politecnica de Catalunya, Spain
Deutsches Zentrum für Luft und Raumfahrt EV, Germany
Arctic and Antarctic Research Institute of Roshydromet, Russia
Economic and Social Research Institute, Ireland
Arctic Centre of the University of Lapland, Finland
Sintef Fiskeri og Havbruk AS, Norway
Cicero Senter for Klimaforskning, Norway
Stiftelsen Sintef, Norway
Energiewirtschaftliche Institut an der Universität zu Köln (EWI), Germany
Association Le cercle polaire, France
Nordic Bulk Carriers A/S, Denmark

Contacts

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JOULES

Joint Operation for Ultra Low Emission Shipping

<http://www.joules-project.eu/Joules/index.xhtml>

Main aim	Significantly reducing the gas emissions of European built ships
Scope of application	European built ships
Disciplines involved	shipping, gas emissions
Period	05/2013 - 05/2017
Total budget / EU funding granted	14 250 109 EUR/ 8 500 000 EUR
Funding source	7th Framework Programme
Institutions and partners involved	<p>Lead partner: Flensburger Schiffbau-Gesellschaft mbH & Co. KG, Germany</p> <p>Damen Shipyards Group, Denmark</p> <p>MEYER WERFT GmbH, Germany</p> <p>Navantia S.A., Spain</p> <p>STX France SA, France</p> <p>STX Finland OY, Finland</p> <p>Fincantieri Cantieri Navali Italiani SpA, Italy</p> <p>MAN Diesel & Turbo, Germany</p> <p>WAERTSILA NETHERLANDS B.V., The Netherlands</p> <p>Center of Maritime Technologies e. V., Germany</p> <p>BALANCE Technology Consulting GmbH, Germany</p> <p>Universite de Liege, Belgium</p> <p>Det Norske Veritas AS, Norway</p> <p>SSPA Sweden AB, Sweden</p> <p>VTT Technical Research Center of Finland, Finland</p> <p>Institut fuer Energie- und Umweltforschung, Germany</p> <p>Imtech Marine Netherlands, The Netherlands</p> <p>TECHNISCHE UNIVERSITAET HAMBURG-HARBURG, Germany</p> <p>Technical University of Delft, The Netherlands</p> <p>Netherlands Organisation for Applied Scientific Research, The Netherlands</p> <p>BUREAU VERITAS, France</p> <p>Caledonian Maritime Assets Ltd, United Kingdom</p> <p>HyGear Fuel Cell Systems B.V., The Netherlands</p> <p>Stichting Maritiem Research Instituut Nederland, The Netherlands</p> <p>Couple Systems GmbH, Germany</p> <p>CETENA, Italy</p> <p>Centre for Concepts in Mechatronic, The Netherlands</p> <p>SAFT S.A., France</p> <p>AKER ARCTIC TECHNOLOGY OY, Finland</p> <p>Balearia Eurolineas Maritimas SA, Spain</p> <p>AALTO-KORKEAKOULUSÄÄTIÖ, Finland</p> <p>Compagnia Generale Trattori SpA, Italy</p> <p>Yachtglass GmbH & Co. KG, Germany</p> <p>NEXANS France, France</p> <p>University of Strathclyde, United Kingdom</p> <p>UNIVERSIDAD POLITECNICA DE MADRID, Spain</p> <p>MTI Holland B.V., The Netherlands</p> <p>Rolls-Royce plc, United Kingdom</p> <p>WARTSILA FINLAND OY, Finland</p>
Contacts	http://www.joules-project.eu/Joules/contact.xhtml

NETMAR

Open service network for Marine Environmental Data

<http://www.nersc.no/project/netmar>

Main aim	Developing a pilot European Marine Information System (EUMIS) for searching, downloading and integrating satellite, in situ and model data from ocean and coastal areas.
Geographical scope	Europe
Disciplines involved	Arctic and Marine Remote Sensing Studies
Output	Academic publications, NETMAR Semantic Framework
Relevance	The use cases include monitoring and forecasting of oil spills, plankton blooms and Arctic sea ice. Furthermore, the use cases will validate an ecosystem model, study the relation between physical and biological variables and data exchange with coastal web atlases.
Period	02/2010 - 2013/01
Total budget / EU funding granted	3 892 852 EUR / 2 970 950 EUR
Funding source	7th Framework Programme
Institutions and partners involved	Lead partner: Nansen Environmental and Remote Sensing Center, Norway PLYMOUTH MARINE LABORATORY, UNITED KINGDOM INSTITUT FRANCAIS DE RECHERCHE POUR L'EXPLOITATION DE LA MER, FRANCE UNIVERSITY COLLEGE CORK, NATIONAL UNIVERSITY OF IRELAND, CORKÉIRE/IRELAND CEDRE, FRANCE NATURAL ENVIRONMENT RESEARCH COUNCIL, UNITED KINGDOM METEOROLOGISK INSTITUTT, NORGE
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Galileo

European Global Satellite-Based Navigation System

<http://www.gsa.europa.eu/galileo-0>

Main aim	As satellites have become necessary tools for the monitoring of the environment, meteorology, communication and navigation, amongst other applications. Global Navigation Satellite Systems (GNSS) allow users worldwide to pinpoint their locations or the locations of objects, other people and goods at any given moment. The system will be applicable in public and private sectors i.e. in transport and logistics, communication applications, land surveying, agriculture, fisheries, environmental protection, scientific research, tourism and leisure, and others.
Geographical scope	Global
Disciplines involved	Aerodynamics, remote sensing, engineering, physics, propulsion, materials science, IT.
Output	EU own Global Navigation Satellite Systems (GNSS) programme applicable in open access navigation, commercial navigation, search and rescue.
Relevance	Search and rescue for maritime transport
Period	1999-2020
Budget	<p>The EU contribution to the Galileo and EGNOS programmes for 2007-2013 amounts to € 3.4 billion, in addition to which there is, inter alia, a contribution from Norway.</p> <p>This budget has been split across the three main activities, namely completion of the Galileo development phase (accounting for around € 600 million), the Galileo deployment phase (€ 2.4 billion), and the operation of EGNOS (around € 400 million). The estimates made to date point to a requirement for around € 1 900 million in funding over the period 2014-2019 to complete the infrastructure associated with the Galileo programme. Added to this will be the operating costs of the system once it has become operational, i.e. as from 2014-2015 € 590 millions</p>
Funding source	European Commission , European Space Agency

Changing Nature of Arctic Fisheries

Fisheries and aquaculture make crucial contributions to the world's well-being and prosperity. In addition to an important food source, the fisheries sector provides livelihoods and income, both directly and indirectly. Fish and fishery products are among the most traded food commodities worldwide. While capture fisheries production remains stable, aquaculture production continues expanding.

Sub-Arctic fisheries represent about 5% of the global catch. Historically fisheries are a key industry and employer across the Arctic, with some communities almost wholly reliant on fish and fish processing for their economic survival. Commercialization and aquaculture impacts on local and traditional fishing and processing activities and spatial conflicts may arise.

An increase in fishing, as well as the changing nature of fisheries also impacts biodiversity, it affects fish biomass as well as ocean climate, chemistry and, for example, sea-bed disturbance due to bottom trawling.

The EU is involved in many initiatives addressing the changing nature of Arctic fisheries, as presented here.

EcoFish

Environment friendly fish farming and use of cleaner fish

<http://www.eco-fish.org>

Main aim	Developing methods and technology required to rear cleaner fish for use by the cod and salmon farming industry
Geographical scope	Norway, Scotland and Ireland
Disciplines involved	Aquaculture, fish farming
Output	Manual on hatchery production of Ballan wrasse, protocol for use of Ballan wrasse in salmon cages.
Relevance	The project responds to the need in environment friendly fish farming and use of cleaner fish in aquaculture. The project is anchored firmly to the salmon aquaculture industry which is making a significant contribution to the culture and economy of many North European societies particularly marginal coastal communities. However, the rapid expansion of salmon farming has focused attention on problems caused by sea lice which is the major health is issue limiting the further expansion of the industry in all countries of the Northern Periphery area.
Period	01/2008 - 12/2011
Total budget / EU funding granted	1 594 678 EUR/ 884 079 EUR
Funding source	Northern Periphery Programme
Institutions and partners involved	Lead partner: Bodø University College, AFN, Norway Norwegian Institute for Agricultural and Environmental Research –Bioforsk, Norway Viking Fish Farm Ltd,, Scotland Marine Ryan Institute, Ireland Indigo Rock Marine Research Centre, Ireland
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Northcharr

Sustainable Aquaculture of Arctic charr

<http://www.northcharr.eu>

Main aim	Developing farming of Arctic charr
Geographical scope	Iceland, Norway, Sweden
Disciplines involved	Aquaculture
Output	Secured and expanded national breeding programs; coordination of the farming industry in all participating countries initiated; input to the governmental inquest "Sweden, an Aquaculture nation in the making"; advice services and help to farmers.; establishment of the Aquaculture Centre North.
Relevance	Farming this species requires access to cold fresh or brackish water. For this reason, the possibility to farm this species in Europe is largely restricted to rural areas in the northern periphery. Northern periphery fish farms therefore have the opportunity to provide EU markets with a unique, high quality product while creating important job opportunities in rural areas. The project took a holistic approach to using expertise and provided stakeholders in the Northern periphery with tools to strongly improve the development of Arctic charr production. The project focussed on using sustainable ingredients in the fish feed for Arctic charr and developing welfare criteria for faring conditions and slaughter. The project was thus relevant to environmental sustainability in aquaculture.
Period	06/2008 -09/2011
Total budget / EU funding granted	1 132 792 EUR / 478 683 EUR
Funding source	Northern Periphery Programme
Institutions and partners involved	Lead partner: SLU, Wildlife, Fish and Environmental Studies, Sweden Nofima Marine, Norway Holar University Collage, Iceland
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Kolarctic Salmon

<http://www2.fylkesmannen.no/hoved.aspx?m=67246>

Main aim	Merging modern science with traditional knowledge to improve the future management of the Atlantic salmon
Geographical scope	Barents Region
Disciplines involved	Fisheries management
Output	Genetic map of the wild salmon stocks on the region, knowledge on the development and migration patterns of the different stocks
Relevance	Kolarctic Salmon will generate recommendations on how to provide a more sustainable, knowledge-based management of salmon stocks in the Barents region. It also leaves a legacy of active cooperation and dialogue among management, various research disciplines, sea salmon fishing organizations and local fishermen.
Period	01/2011-12/2013
Total budget / EU funding granted	3 100 000 EUR/ 1 500 000 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	Lead partner: Finnmark County Governor's office, Norway Game and Fisheries Research Institute, Finland Turku University, Finland Knipovitch Polar Research Institute of Marine Fisheries and Oceanography, Russia Norwegian Institute of Nature Research, Norway Institute of Marine Research, Norway
Contacts	Bente Christiansen fmfibch@fylkesmannen.no

Arctic Transform / Fisheries Working Group

<http://arctic-transform.org/>

Main aim	Developing transatlantic policy options for supporting adaptation in the marine Arctic environment
Geographical scope	Arctic Region
Disciplines involved	Environmental Governance, Fisheries, Indigenous Peoples, Offshore Hydrocarbon, Shipping
Output	Expert policy paper " Arctic Fisheries"
Relevance	Policy recommendations for the regulation of fisheries based on international instruments and intergovernmental and other relevant international bodies that relate to, or pursue, conservation as well as management. Relevant in terms of analyzing regulatory frameworks.
Period	01/2008 - 06/2009
Total budget / EU funding granted	535 752 EUR/ 482 177 EUR
Funding source	European Commission Directorate General for External Relations
Institutions and partners involved	Lead partner: Ecologic, Germany Ecologic - Institute for International and European Environmental Policy, Germany Arctic Centre, University of Lapland, Finland Netherlands Institute for the Law of the Sea (NILOS) Utrecht University, The Netherlands The Heinz Center, United States of America
Contacts	Sandra Cavalieri sandra.cavalieri@ecologic.eu

ACCESS

Arctic Climate Change, Economy and Society / Fisheries WG

<http://www.access-eu.org/>

Main aim	Evaluation of the Arctic climate change scenarios and their impact on specific economic sectors and human activities over the next decades.
Geographical scope	Arctic Region
Disciplines involved	Climate Change, Transport & Tourism, Resource Extraction, Arctic Governance
Output	Reports on: <ul style="list-style-type: none">• Economic settings, societal and cultural priorities in the fishery and aquaculture sectors• Past and present impact of biophysical changes on fisheries• Economic impacts of global warming on fisheries• Climate change and Arctic aquaculture• Climate change impacts, and human responses, affecting traditional whaling• Indicators for sustainable development in the Arctic fisheries sector• Market responses to climate change• International and national fishery management, adaptation practices and strategies to climate-related changes in fisheries• Results from field experiments in the Arctic
Relevance	ACCESS is of relevance to fisheries questions in that it looks more broadly into the sensitivity of the ecosystems and their response to essential climate variables. Another major task is the analysis of how Arctic climate changes affect socio-economic aspects of the fisheries and aquaculture industry, and its effect on marine mammals.
Period	2011-2015
Total budget / EU funding granted	10 978 468 EUR
Funding source	7th Framework Programme, Ocean of Tomorrow



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Institutions and partners involved

Lead partner: University Pierre et Marie Curie, France

LOCEAN, France

LATMOS, France

LOV, France

O.A. Sys-Ocean Atmosphere Systems GmbH, Germany

Natural Environment Research Council, United Kingdom

Institut für Weltwirtschaft, Germany

University of Cambridge, United Kingdom

Alfred-Wegener-Institut, Germany

Dr-Ing. Joachim Schwarz, Independent consulting entity for Polar and Maritime Technology, Germany

Nofima Marin AS, Norway

Hamburgische Schiffbau-Versuchsanstalt, Germany

Norsk Polarinstitutt, Norway

Meteorologisk Institutt, Norway

Fastopt GmbH, Germany

The Scottish Association for Marine Science, United Kingdom

Kungliga Vetenskapsakademien, The Beijer Institute of Ecological Economics, Sweden

P.P. Shirshov Institute of Oceanology of Russian Academy of Sciences, Russia

IMPAC Offshore Engineering GmbH, Germany

Universitat Politecnica de Catalunya, Spain

Deutsches Zentrum für Luft und Raumfahrt EV, Germany

Arctic and Antarctic Research Institute of Roshydromet, Russia

Economic and Social Research Institute, Ireland

Arctic Centre of the University of Lapland, Finland

Sintef Fiskeri og Havbruk AS, Norway

Cicero Senter for Klimaforskning, Norway

Stiftelsen Sintef, Norway

Energiewirtschaftliche Institut an der Universität zu Köln (EWI), Germany

Association Le cercle polaire, France

Nordic Bulk Carriers A/S, Denmark

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Developing Oil and Gas Resources in the Arctic

Exploitation of hydrocarbons in the Arctic region has many faces: Alaska holds most of the region's oil reserves, while reserves in Russia are dominated by natural gas; onshore resources have been producing for decades while offshore is largely a frontier region. What is common is that the development of the Arctic's offshore hydrocarbon resources faces an uncertain future.

Many parts of the Arctic Ocean are becoming more accessible due to improved technologies, as well as diminished sea ice due to climate change. Concurrently, interest in exploiting offshore oil and gas in the Arctic has grown in recent years, while progress continues in development of onshore resources. Largely untapped to date, the resource base is significant yet the technical and environmental aspects and high costs of operating in extreme conditions present particular challenges to developing the Arctic's offshore oil and gas resources.

Investment in exploration and development are influenced by global markets, energy demand and policies concerned with economic development, energy security and climate change, among other dynamic variables. So the extent and timing of oil and gas exploitation in the Arctic is difficult to predict. Yet it is clear that those resources may have important impacts on the Arctic environment, economies and societies.

The prospect of oil and gas exploitation also has implications for the EU's economic, political and environmental landscape. Much of the discussion about the factors motivating oil and gas developments, impacts and role of the EU are also applicable to onshore hydrocarbon resources. The EU has been undertaking several activities to engage the opportunities and challenges in this regard.

Arctic Transform / Offshore Hydrocarbon Working Group

<http://arctic-transform.org/>

Main aim	Developing transatlantic policy options for supporting adaptation in the marine Arctic environment
Geographical scope	Arctic Region
Disciplines involved	Environmental Governance, Fisheries, Indigenous Peoples, Offshore Hydrocarbon, Shipping
Output	Expert policy paper "Offshore Hydrocarbon: Current Policy Context in the Marine Arctic"
Relevance	Policy recommendations regarding governance of Arctic offshore hydrocarbon exploration and exploitation, as well as policy recommendations to enhance technical standards.
Period	01/2008 - 06/2009
Total budget / EU funding granted	535 752 EUR/ 482 177 EUR
Funding source	European Commission Directorate General for External Relations
Institutions and partners involved	Lead partner: Ecologic, Germany Ecologic - Institute for International and European Environmental Policy, Germany Arctic Centre, University of Lapland, Finland Netherlands Institute for the Law of the Sea (NILOS) Utrecht University, The Netherlands The Heinz Center, United States of America
Contacts	Sandra Cavalieri sandra.cavalieri@ecologic.eu

ACCESS

Arctic Climate Change, Economy and Society / Resource Extraction WG

<http://www.access-eu.org/>

Main aim	Evaluation of the Arctic climate change scenarios and their impact on specific economic sectors and human activities over the next decades.
Geographical scope	Arctic Region
Disciplines involved	Climate Change, Transport & Tourism, Resource Extraction, Arctic Governance
Output	Reports on: <ul style="list-style-type: none">• Oil spill response capabilities and technologies in ice-free and ice-covered water• Interactive noise maps of exploration/ exploitation sites• Simulator of the effects of noise from oil industry operations on marine mammals• Emissions of a large set of atmospheric compounds in gas/oil extraction facilities
Relevance	Identification of technological gaps that hinder Arctic development, and provide pathways for future technological developments. Assessing existing rescue and evacuation crafts or vessels and identifying Arctic requirements for these vessels. Assessing the risks of resource exploration, extraction and transportation in Arctic waters regarding (a) oil spill response capabilities and technologies in ice-covered waters including contingency planning, (b) the behaviour of different types of oil and gas products in cold environment, (c) the impact of present and future oil spill scenarios for different climate change predictions and extreme event scenarios, (d) providing recommendations for the design of an observing system tailored to a safe resource extraction, (e) accuracy of iceberg remote detection, trajectory forecasting, and tracking. Assessing potential environmental pressures with respect to (a) the impact of gas and oil drilling on air quality, (b) health of the environment, (c) noise pollution, (d) identification of ecologically vulnerable areas and existing conservation plans.
Period	2011-2015
Total budget / EU funding granted	10 978 468 EUR
Funding source	7th Framework Programme, Ocean of Tomorrow



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Institutions and partners involved

Lead partner: University Pierre et Marie Curie, France

LOCEAN, France

LATMOS, France

LOV, France

O.A. Sys-Ocean Atmosphere Systems GmbH, Germany

Natural Environment Research Council, United Kingdom

Institut für Weltwirtschaft, Germany

University of Cambridge, United Kingdom

Alfred-Wegener-Institut, Germany

Dr-Ing. Joachim Schwarz, Independent consulting entity for Polar and Maritime Technology, Germany

Nofima Marin AS, Norway

Hamburgische Schiffbau-Versuchsanstalt, Germany

Norsk Polarinstitut, Norway

Meteorologisk Institutt, Norway

Fastopt GmbH, Germany

The Scottish Association for Marine Science, United Kingdom

Kungliga Vetenskapsakademien, The Beijer Institute of Ecological Economics, Sweden

P.P. Shirshov Institute of Oceanology of Russian Academy of Sciences, Russia

IMPAC Offshore Engineering GmbH, Germany

Universitat Politecnica de Catalunya, Spain

Deutsches Zentrum für Luft und Raumfahrt EV, Germany

Arctic and Antarctic Research Institute of Roshydromet, Russia

Economic and Social Research Institute, Ireland

Arctic Centre of the University of Lapland, Finland

Sintef Fiskeri og Havbruk AS, Norway

Cicero Senter for Klimaforskning, Norway

Stiftelsen Sintef, Norway

Energiewirtschaftliche Institut an der Universität zu Köln (EWI), Germany

Association Le cercle polaire, France

Nordic Bulk Carriers A/S, Denmark

Contacts

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MARIES

Monitoring Arctic land and sea ice using Russian and European satellites

<http://maires.nersc.no/>

Main aim	Development of methodologies for satellite monitoring of Arctic glaciers, sea ice and icebergs.
Geographical scope	Barents and Kara Sea region
Disciplines involved	Arctic and Marine Remote Sensing Studies, Climate Processes, Variability and Change
Output	Data, models, maps and reports on Arctic glaciers, sea ice and icebergs
Relevance	Projects help to develop research capabilities which support Arctic offshore economic activities. Improved monitoring of sea ice and icebergs in the Barents and Kara Seas is of importance for shipping, offshore operations and other human activities in the Arctic. MARIES strengthens knowledge about processes taking place in the Arctic relevant for the oil and gas exploration and exploitation.
Period	06/2011 - 06/2014
Total budget / EU funding granted	500 000 EUR
Funding source	Copernicus, 7th Framework Programme
Institutions and partners involved	Lead partner: Nansen Environmental and Remote Sensing Center, Norway Institute of Information and Communication Technology, Austria Scientific foundation Nansen International Environmental and Remote Sensing Centre, Russia Research Center for Earth Operative Monitoring, Russia State Educational Institution of Higher Professional Education Moscow State University of Geodesy and Cartography, Russia
Contacts	Stein Sandven stein.sandven@nersc.no

MarCoast / MarCoast 2

Marine & Coastal Environmental Information Service

<http://www.marcoast.eu/>

Main aim	Delivers downstream services for the operational monitoring of marine water quality
Geographical scope	Norwegian Sea, North Sea, Baltic Sea, Bay of Biscay, Mediterranean sea, Black sea
Disciplines involved	Oil Spill and Water Quality monitoring
Output	Oil spill surveillance and customized information,
Relevance	Knowledge gained in this monitoring initiative can later be applied in oil and gas exploration in Arctic seas.
Period	11/2005 - 11/2008, 2010 - 03/2013
Total budget / EU funding granted	11.5 M€ in total (over 6 years)
Funding source	European space agency ESA-ESRIN
Institutions and partners involved	Lead partner THALES ALENIA SPACE - France The MarCoast consortium is composed of 32 partners from 10 European countries
Contacts	contact@marcoast.eu

MyOcean / My Ocean 2

<http://www.myocean.eu/>

Main aim	Setting up an integrated pan-European capability for ocean monitoring and forecasting
Geographical scope	Atlantic, Arctic Ocean and the Mediterranean Sea
Disciplines involved	Ocean monitoring
Output	Information service providing observations, analysis, reanalysis and forecasts describing the physical state of the ocean and its primary biogeochemical parameters
Relevance	The main objective of the MyOcean2 project is to deliver and operate a rigorous, robust and sustainable Ocean Monitoring and Forecasting system of the GMES Marine Service (OMF/GMS) to users for all marine applications : maritime safety, marine resources, marine and coastal environment and climate, seasonal and weather forecasting. Amongst its activities, My Ocean2 is running numerical ocean models in near real time to assimilate thematic data and generate analyses and forecasts to an agreed and generally perpetually repeating cycle. The monitoring and Forecasting Centres operate regional (Arctic, Baltic, North West shelf, Irish-Bay of Biscay and Iberian Coast, Mediterranean Sea and Black Sea) and global models.
Special Features	My Ocean 2 was launched to ensure a controlled continuation and extension of the services and systems already implemented with the budget of 41 M€.
Period	04/2009 – 03/2012; 04/2012 - 09/2014
Total budget / EU funding granted	55 M€ / 33.8 M€
Funding source	7th Framework Programme
Institutions and partners involved	Consortium of 59 partners from across Europe structured around a core team of Marine Core Service operators.
Contacts	Pierre Bahurel servicedesk@myocean.eu.org

SIDARUS

Sea Ice Downstream Services for Arctic and Antarctic Users and Stakeholders

<http://sidarus.nersc.no>

Main aim	Development and implementation of a set of sea ice downstream services in the area of climate research, marine safety and environmental monitoring
Geographical scope	Arctic Region, Antarctic
Disciplines involved	Sea ice monitoring, Marine safety
Output	Sea ice forecasting in the Barents and Kara Seas; Animal ARGOS tracking - Polar Bears, Sea ice thickness from satellite radar altimeter , Sea ice drift on regional scale
Relevance	Positive effects on strengthening knowledge about processes taking place in the Arctic which are relevant for the oil and gas exploration and exploitation. It is also relevant for navigation in the Arctic Ocean.
Period	01/2011- 01/2014
Total budget / EU funding granted	3 475 000 EUR / 2 498 507 EUR
Funding source	European Earth Observation Programme Copernicus, 7th Framework Programme
Institutions and partners involved	Nansen Environmental and Remote Sensing Center, Norway Alfred Wegener Institute for Polar and Marine Research, Germany Collecte Localisation Satellites SA (CLS), France University of Bremen, Institute of Environmental Physics, Germany University of Cambridge, Department of Applied Mathematics and Theoretical Physics, United Kingdom Norwegian Meteorological Institute, Norway Nansen International Environmental and Remote Sensing Center, Russia B.I. Stepanov Institute of Physics, Belarus
Contacts	Stein Sandven stein.sandven@nersc.no

In Horizon 2020 framework, a number of calls potentially of relevance to trends in the development of oil and gas resources in Arctic waters and elsewhere. This is illustrated by the following table:

Project's name	Programme	Main scope	Duration and coverage	Relevance (Which trend, issue, driver, impact?)	Assessment of the impact (qualitative)
Blue Growth: Unlocking the potential of Seas and Oceans: New offshore challenges: BG-5-2014: Preparing for the future innovative offshore economy	HORIZON 2020 – WORK PROGRAMME 2014 - 2015 Societal Challenge 2: Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bio-economy	Analyse and identify the social and economic developments in the offshore economy and the most promising, environmentally sustainable and economically feasible business models.	From 2014 Legal entities established in the countries which are eligible to receive funding in Horizon 2020	Providing basis for sustainable and innovative developments, especially for feasible business models in the offshore economy, both in social and economic dimension will strengthen EU position and expertise in this area	Positive impact on development of offshore activities, including oil and gas exploitation
Blue Growth: Unlocking the potential of Seas and Oceans: New offshore challenges: BG-06-2014 Delivering the sub-sea technologies for new services at sea	HORIZON 2020 – WORK PROGRAMME 2014 - 2015 Societal Challenge 2: Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bio-economy	Research focused on innovative design and prototypes of new underwater vehicles and robots and/or their main components required to work undersea	From 2014 Legal entities established in the countries which are eligible to receive funding in Horizon 2020	Supporting innovative technologies offers EU companies advantages in development of the exploitation in the Arctic offshore	Positive effects for development of safety and effective technologies based on European standards which could be helpful in harsh Arctic conditions. Additionally, it can improve the scientific capacity to observe and understand the water column, the deep sea environment and their resources. Enable sustainable and safe offshore operations by European industries in extreme and Arctic conditions Increase cost-effectiveness and competitiveness of the existing and new European offshore economy.
Blue Growth: Unlocking the potential of Seas and Oceans: New offshore challenges: BG-7-2015: Response capacities to oil spills and marine pollutions	HORIZON 2020 – WORK PROGRAMME 2014 - 2015 Societal Challenge 2: Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bio-economy	Providing development of an integrated operational response capacity to major offshore and/or coastal pollution events (particularly oil & gas), including in extreme oceanic conditions.	From 2015 Legal entities established in the countries which are eligible to receive funding in Horizon 2020	Improvement of the European operational response capacity to oil spills and marine pollutions, within particular integrated models and tools that can be tested for a better preparedness and support decision making in the management of such events. Setting recommendations for infrastructure works to help protect sensitive ecosystems in high risk areas.	Positive effect on: - development an integrated capacity to optimally respond to major marine pollution events (particularly oil & gas); - mitigation of negative impacts of marine pollution on marine environment, coastal economies and communities; - improvement the integration between the scientific community and relevant government agencies charged with dealing with pollution, including cross-border and trans-boundary co-operation; - contributing to the implementation of the Directive 2013/30/EU on safety of offshore oil and gas prospecting, exploration and production activities and to the Offshore Protocol of the Barcelona Convention in the Mediterranean; - effectiveness of EMSA's operational capacity to respond to pollution from oil and gas installations - for societal acceptance of offshore activities; - growth of competitiveness of European industry including SMEs within the marine industrial sector; - development international cooperation in research and innovation, in particular the US and Canada, given their high potential for knowledge sharing in this field.
Blue Growth: Unlocking the potential of Seas and Oceans: New offshore challenges: BG-15-2014: European polar research cooperation	HORIZON 2020 – WORK PROGRAMME 2014 - 2015 Societal Challenge 2: Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bio-economy	Project aims at coordination of polar research in Europe and development a comprehensive European Polar Research Programme. By setting up a continuous stakeholder dialogue the action should communicate user needs to the appropriate scientific community and/or research programme managers.	Since 2014 Legal entities established in the countries which are eligible to receive funding in Horizon 2020	Project will substantially increase the scale and ambition of polar research cooperation in Europe and increase the coherent and efficient use of European resources. It may also improve global cooperation and induce a step change in the domain of open data access, quality control and interoperability. Project will additionally contribute to policy advice at national and EU level and support to the EU's international commitments with respect to the Arctic Council, the Montreal protocol, and UNFCCC and others related to polar sciences.	Positive effect on significance of the European polar research and development of objectives of the EU strategy for international cooperation in research and innovation, especially with partners from the US and Canada, Russia, Japan, China, India.
European Commission Joint Research Centre Institute for Energy and Transport	Safety of offshore oil and gas operations: Lessons from past accident analysis Ensuring EU hydrocarbon supply through better control of major hazards	The JRC, through a Memorandum - of -Understanding with DG ENERGY and through its institutional work programme supports the development and implementation of the offshore safety legislation. One activity contributing to this support is the analysis of past accidents in the sector in order to identify the existing conditions related to sharing of information, transparency and lessons learning. It is also useful to get statistical information on the frequency and severity of accidents	2012 Joint Research Centre Institute for Energy and Transport	This project support growth of expertise of the EU institutions and member states about safety of offshore oil and gas operations	Positive effect on expertise of the EU institutions and member states about safety of offshore oil and gas operations, including the Arctic areas.

Increasing Land Use Pressures in the European Arctic

Globalisation processes such as greater mobility and economic integration fuel human activities which are putting pressure on land use in the European Arctic including forestry, hydrocarbon and mineral extraction energy and transport developments, urbanisation, tourism and nature conservation. Land-use changes may bring positive economic and negative environmental impacts as well as challenges to social structures and traditional livelihoods such as reindeer herding, hunting and fishing. People are also drawn to what is perceived as the pristine nature of the Arctic as a leisure destination. Today, the Arctic region faces conflicts between various human activities that influence one another and compete for space.

Collated here are the major EU inputs attending to increasing land-use pressures in the European Arctic.

North Calotte Network for Sustainable Tourism Development

<http://www.tunturilappi.fi/>

Main aim	Increasing cooperation between those involved in tourism in the Arctic area.
Geographical scope	Raising awareness of sustainable tourism in the Arctic.
Disciplines involved	North Calotte Area
Output	Interaction network-platform, community development
Relevance	Tourism has become a significant form of co-operative place-making in the northern borderlands of Europe and is capable of transforming the spatial organization of the border regions. The project mitigated land use pressure of tourist activities by contributing to sustainable industry operation
Period	11/2011 - 06/2014
Total budget / EU funding granted	650 373 EUR /223 274 EUR/
Funding source	Interreg IV A North
Institutions and partners involved	Lead partner: Tunturilapin kehitys Ry, Finland Heart of Lapland ek förening, Sweden Vågan kommune, Norway Lyngen region vid Storfjord kommune, Norway
Contacts	Liisa Mäenpää liisa.maenpaa@tunturilappi.fi

DILACOMI

Different Land Use Activities and Local Communities in Mining Projects

<http://www.ulapland.fi/InEnglish/Units/Faculty-of-Law/Research/Research-Projects/DILACOMI>

Main aim	The subject of research is mining and mines, and how they affect and are able to function in the local communities.
Geographical scope	Finnish Lapland
Disciplines involved	mining, social and cultural sustainability
Output	Handbook - best practices guidebook for mining in North Master's thesis, articles and reports
Relevance	Analysis of environmental law regarding land use, evaluation of changes caused by mining project to the local communities, contribution towards participation for the stake-holders in the mining projects in relation to land use planning, EIA and SEA processes and interrelationship between ecological, economic and social aspects of community life. The processes and practices of land use planning concerning mining activities. Integration of nature-based economies and mining projects located close to tourist destinations in Lapland.
Period	2011 - 2013
Total budget	
Funding source	European Regional Development Fund
Institutions and partners involved	Lead partner: The Finnish Forest Research Institute, Finland University of Lapland, Finland University of Oulu, Finland
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LSP Reconstruction of the road “Kandalaksha - Alakurtti – Checkpoint Salla”

<http://lsp.act4region.ru/>

Main aim	Contributing to the development of the transport infrastructure and social-economic development of the Barents region. Project purpose is to reconstruct the section 100-130km of the road Salla-Alakurtti.
Geographical scope	Murmansk Region, Russia
Disciplines involved	
Output	Reconstruction of the road sectors, reducing the barriers for development of the cross-border and international business and mobility of residents, increasing the cargo and passenger traffics across the border.
Relevance	The project contributes to increasingly barrier-free and mutually beneficial crossing of the border between Northern Russia and the Finland
Period	06/2012 - 12/2014
Total budget / EU funding granted	2 230 000 EUR / 2 000 000 EUR
Funding source	Kolarctic ENPI CBC, Large Scale Project
Institutions and partners involved	Lead partner: Murmansk Road Administration, Russia Municipality of Salla, Finland Lapland development Centre for Economic, Transport and Environment, Finland
Contacts	Olga Buch olgabuch@yandex.ru

LSP Polar Wind

<http://www.polarwind.ru/>

Main aim	Creating stable and environmentally clean energy supply for the villages
Geographical scope	Nenets Autonomous Okrug, Russia
Disciplines involved	Engineering works and surveys
Output	Modernization of the municipal power systems Development of environmentally friendly wind-diesel power installations
Relevance	The project facilitates renewable energy development and research in the Arctic, which can benefit the Arctic communities economically, given that changes in land-use can put pressures on local economies.
Period	08/2012 – 11/2014
Total budget / EU funding granted	2 300 000 EUR / 2 000 000 EUR
Funding source	Kolarctic ENPI CBC, Large Scale Project
Institutions and partners involved	Lead partner: Construction, Housing and Communal Services Department, Russia OOO North West United Generating Company, Russia The Finnish Meteorological Institute, Finland Not-for-profit Partnership North-West Funding Service Centre, Russia MUE Severzhilkomservice, Russia
Contacts	Andrey Reznichok e-mail: reznichok@mail.ru

ABCG Heritage

Arctic Biological, Cultural and Geological Heritage

<http://www.metsa.fi/sivustot/metsa/en/Projects/NeighbourhoodProjects/ABCgheritage/Sivut/default.aspx>

Main aim	<p>To increase regional knowledge, particularly where schoolchildren are concerned, but also for tourists, local residents and nature tourism operators</p> <p>To increase the sustainable use of protected and recreational areas create new, innovative co-operative networks along the Green Belt of Fennoscandia, which do long-term nature conservation work and establish sustainable nature tourism.</p>
Geographical scope	East-Lapland, Kola Peninsula and Northern Norway
Disciplines involved	Education, tourism, nature conservation
Output	Nature guiding (incl. mobile applications) and services for cultural and geological sights in Urho Kekkonen and Pyhä-Luosto National Parks. Travelling exhibition of Green Belt of Fennoscandia. Educational material for schools, teachers, personnel working in nature protection and environmental education and tourism operators. Nature trails and information boards. Development plan for the Green Belt of Fennoscandia. "Lapland Tour for Geotourists" guidebook.
Relevance	The project is contributing to conservation and tourism. Development of plans and specific services address issues of land use planning and management and provide the genuine opportunity for the local and regional participation. Educational materials create positive knowledge impact and contribute to sustainable ecotourism and nature conservation.
Period	03/2011-12/2014
Total budget / EU funding granted	1 800 000 EUR / approx. 700 000 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	Lead partner : Metsähallitus, Natural Heritage Services, Finland Geological Survey of Finland, Finland Lapland Centre for Economic Development, Transport and the Environment, Finland Bioforsk Svanhovd, Norway County Governor of Finnmark, Norway Finnmark County Authority Norway Nordland Research Institute, Norway Geological Institute of the Kola Science Centre, Russia Lapland State Natural Biosphere Reserve and Pasvik State Nature Reserve, Russia
Contacts	Riina Tervo riina.tervo@metsa.fi

Cross-Border Co-operation of National Parks of Bothnian Bay

<http://www.metsa.fi/SIVUSTOT/METSA/EN/PROJECTS/STRUCTURALFUNDPROJECTS/CBCNATIONALPARKSOFBOTHIANBAY/Sivut/default.aspx>

Main aim	Cross-border co-operation between the only marine national parks in Bothnian Bay.
Geographical scope	Bothnian Bay
Disciplines involved	Land use planning, protection of natural and cultural heritage, visitor services
Output	Exchange of information and best practices in various fields of work (e.g. protection of natural and cultural heritage, inventory methods and management practices of natural and cultural heritage in protected areas, visitor services). Feasibility study for joint visitor services. Joint vision for the future co-operation actions.
Relevance	Exchange of information and best practices in land use management of natural and cultural heritage in protected areas is relevant for sustainable tourism and contributing to local economies. Feasibility study for joint services address issues of land use planning and management and provide the genuine opportunity for the local and regional cooperation.
Period	06/2013 - 05/2014
Total budget / EU funding granted	64 500 EUR / 38 700 EUR
Funding source	Interreg IVA Nord
Institutions and partners involved	Lead partner: city of Haparanda, Sweden Metsähallitus, Natural Heritage Services Ostrobothnia, Finland County Administrative Board of Norrbotten, Sweden City of Tornio, Finland
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Mining in the European Arctic

The European Arctic contains vast amounts of mineral resources. Mining activity in the Arctic is intensifying in response to growing global demand. Mining contributes to economic development, but not without consequences: mining can have considerable impacts on the physical environment, land use and society. While mining is often significant for national economies, it is in local Arctic communities that the environmental, economic, and socio-cultural impacts are mostly felt. In these communities, extractive resource industries may be viewed both as an opportunity for wealth creation on as well as a threat to people's livelihoods. Extracting minerals in the Arctic is both challenging and expensive. It is complicated by the extreme environment, remoteness, lack of roads and limited availability of skilled labour. Yet there is a boom underway as high market prices and improved technology has triggered action by mining.

Here, we focus on EU initiatives that have a bearing on mining in the European Arctic.

MineHealth

<http://minehealth.eu/>

Main aim	Providing long-term sustainability of well-being, health and work ability among workers in the mining industry by increased knowledge on how to cope with the environment and to adopt preventive measures for working in the mining industry within the Barents region.
Geographical scope	Barents Region
Disciplines involved	Environmental sciences, education and training.
Output	Learning material and education plans/programs as well as technical and administrative actions. Optimization of arctic miner's clothing and personal protective equipment. Promote well-being, work ability and health.
Relevance	The project is relevant also outside the Barents region; as in other mining communities in the circumpolar region. The outcome can lead to lower costs for the enterprises and society, and increase productivity and profitability in the mining industry in the Barents region.
Period	03/2012 - 12/2014
Total budget / EU funding granted	2 979 670 EUR / 955 075 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	Lead partner: Umeå University Department of Public Health & Clinical Medicine Occupational and Environmental Medicine, Sweden Finnish Institute of Occupational Health, Finland Lapland University of Applied Sciences, Finland Northwest Public Health Research Center, Russia University Hospital North Norway, Norway Norut Alta As, Norway SINTEF, Norway
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SUMILCERE

Sustainable Mining, local communities and environmental regulation in Kolarctic area

<http://www.ulapland.fi/InEnglish/Units/Faculty-of-Law/Research/Research-Projects/SUMILCERE>

Main aim	Support public-private collaboration for achieving the sustainable development; enhance the using of developed practices and recommendations for sustainable social licensing, environmental regulation; contribute to the diminishing risks in global mining investments; sustain research network collaboration.
Geographical scope	Barents Region
Disciplines involved	Mining, sustainable development
Output	Recommendations to improve the socio-economic development of territories and local communities. Indicators of socio-economic development in the target area. Suggested procedures and methodology for management of social and environmental impacts of the planned mining enterprises.
Relevance	The project contributes to management of social and environmental impacts of the planned mining enterprises.
Period	1/2013-12/2014
Total budget / EU funding granted	1 093 704 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	Lead partner: University of Lapland, Finland Luleå University of Technology, Norrbotten, Sweden, Northern Research Institute, Tromsø, Norway Institute of the Industrial Ecology Problems of the North of the Kola, Russia Science Center, Murmansk, Russia
Contacts	Kai Kokko kai.kokko@ulapland.fi

Fennoscandia Exploration and Mining

Main aim	To create or find an organisation/association which can continue with the FEM conferences in the future without considerable public finance.
Geographical scope	Sweden: Norrbotten county and the municipalities of Skellefteå, Sorsele, Malå and Norsjö in Västerbotten county. Finland: Lapland, North Österbotten and Central Österbotten Norway: Finnmark, Troms and Nordland counties
Disciplines involved	Trade and industry development
Output	FEM conference
Relevance	The project reflects the increasing interest in mining in the Barents Region and via organizing the FEM conference to policy making and business cooperation in the region
Period	05/2008 - 05/2010
Total budget / EU funding granted	105 164 EUR / 63 064 EUR
Funding source	Interreg IV A North
Institutions and partners involved	Lead partner: Regional Council of Lapland, Finland County administrative Board of Norrbotten, Sweden Geological Survey of Sweden, Sweden
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ENVIMINE

Developing environmental and geodynamical safety related to mine closure in the Barents region

<http://projects.gtk.fi/envimine/news/>

Main aim	Developing innovative and environmentally safe methods for mine closure in the Barents region, and cooperation in mining environmental studies between the participating countries will be developed as well.
Geographical scope	Barents Region
Disciplines involved	Mining, environmental impact assessment
Output	Data and information on environmental impacts of mines Coordination practices of mine closure between mineral industry and environmental administration Updated database from Finland, Sweden and Russia in selected study areas
Period	04/2012 - 02/2014
Total budget / EU funding granted	635 318 EUR / 314 292 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	Lead partner: Geological Survey of Finland, Finland Luleå University of Technology, Sweden Kola Mining Institute of the Academy of Science, Russia
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Social and Cultural Changes in the European Arctic

Arctic societies – both indigenous and non-indigenous inhabitants – are considered to be highly resilient and adaptive, yet today's rate and magnitude of change challenges adaptive capacity. Change is driven by increased accessibility, government policies, global cultural change and recognition of indigenous peoples' rights. Globalization and world markets are also important drivers in Arctic social transformation.

Climate change influences societies and cultures in some locations, and its impacts are predicted to grow in coming decades. These changes create both opportunities and challenges and occur along local, regional and global lines.

The following compilation features the EU's actions of relevance to social and cultural changes in the European Arctic.

ARCTIC NGO FORUM

<http://arcticngoforum.org>

Main aim	The Arctic NGO Forum is an initiative that aims to provide a consistent way for non-governmental organisations (NGOs) concerned with Arctic environmental issues to get together, exchange ideas and perspectives and provide advice to the global Arctic community.
Geographical scope	Circumpolar
Disciplines involved	Environmental protection, sustainable development, community development
Output	Policy advice, dialogue
Relevance	Promoting cooperation and influencing policy-making. The Forum contributes to the elaboration of policies that support the sustainable development of the Arctic. These policies may be national, regional or circumpolar. The Forum has a role to play in directing attention to areas of common interest, raising awareness, and providing expert opinion on emerging issues.
Period	2011 - 2013
Total budget / EU funding granted	
Funding source	European Commission Directorate General for the Environment
Institutions and partners involved	Lead partners: GRID- Arendal (Norway) and ECORYS (Netherlands) Alaska Wilderness League Alternatives North Arctic Portal Bellona Foundation Circumpolar Conservation Union Earthjustice Friends of the Earth / Norges Naturvernforbund Greenpeace Indigenous Peoples Secretariat International Polar Foundation Northern Forum Oceana
Contacts	John Crump: john.crump@grida.no

HUNT

Hunting for sustainability

<http://fp7hunt.net/>

Main aim	Assessing the social, cultural, economic and ecological functions and impacts of hunting
Geographical scope	Europe (including Sweden and Finland), Africa
Disciplines involved	Environmental protection, sustainable development
Output	Academic publications, Insights for policy and practice
Relevance	The project included research on hunting as an activity connected with social, cultural, economic and environmental values, conflicts over hunting practices, issues of land use and institutional framework of hunting practices. As hunting is one of the activities very visible in Arctic societies, the research was highly relevant in the Arctic context, both regarding social and cultural changes as well as interactions with other land users, including mining. As institutions from Norway and Sweden were involved in the project, practices specific to Scandinavia have been included in the research.
Period	11/2008 - 04/2012
Total budget / EU funding granted	3 841 106 EUR / 2 929 300 EUR
Funding source	7th Framework Programme
Institutions and partners involved	Lead partner: The James Hutton Institute, United Kingdom Frankfurt Zoological Society – Africa, Germany Tanzania Wildlife Research Institute, Tanzania Institute of Environmental Science and Technology, University of Barcelona, Spain Instituto de Investigación en Recursos Cinegéticos, Spain The University of Ljubljana, Slovenia The Faculty of Veterinary Medicine, University of Zagreb, Croatia The Norwegian Institute for Nature Research, Norway The Department of Political Science, Umeå University, Sweden The Imperial College Conservation Science group, United Kingdom The Environmental Economics Research Group, University of Stirling, United Kingdom The School of Biological Sciences at Aberdeen University, Scotland The Ethiopian Wildlife Conservation Department, Ethiopia
Contacts	Justin Irvine Justin.Irvine@hutton.ac.uk

Barents Mediasphere

Improving Cross-Border Communications

<http://www.barentsinfo.org/mediasphere#.UwBtSfmSySp>

Main aim	To improve cross-border communication and information flow within the Barents region. The Barents Mediasphere project aims to create flexible cooperation mechanisms for media in the Barents region, and increases its visibility in media both inside and outside the region.
Geographical scope	Barents Region
Disciplines involved	Journalism, communication
Output	Increased Barents region visibility (needs of information on Barents region identifies, Barents guide for European media, Barents information and Circumpolar Arctic information integrated, Barents information briefings, region visibility in Nordic countries monitored); Barents editors forum establishing training programs and professional courses on Barents related expertise for journalists working in the region; news and human interest material available; existing websites such as Barentsinfo.org with Barents-related content developed. The “Mixed marriages” documentary; practical help for journalists by offering exchange of desks and assistance for media in cooperation.
Relevance	The project contributes to supporting cross-border cooperation by improving communication and information flow within the Barents region, thus development and strengthening of information channels. The project also contributes as a general support for the media in the North. Therefore, the project addresses need for cross-border cooperation, especially with Russia and creation of regional networks for exchanging knowledge, practices and information. The project also supports local media, which is a vital component in governance of social changes.
Period	08/2012 – 12/2014
Total budget / EU funding granted	899 730 EUR / 344 096 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	Lead partner: Arctic Centre at the University of Lapland, Finland GTRK Murman, Russia BarentsObserver, Norway Barents Press International
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Salla Gate - Business and Tourism Partnership

<http://italappi.lappi.fi/salla-gate-business-and-tourism-partnership>

Main aim	Aims at creating a functioning network of entrepreneurs and companies in two key industries; tourism and supporting services for mining
Geographical scope	Finnish East Lapland, Murmansk Region, Happaranda
Disciplines involved	Tourism, mining
Output	Enterprise services in the Russian partnership area. Principles of strategic planning for economic development in connection with cross border cooperation used. Practical knowhow of CBC. Increased cooperation in tourism. Improved visibility and knowledge of the area in the travel markets. Training for mining support service sector.
Relevance	The project addresses the trend of economic dependence on primary sector and the pressure towards resource extraction through tourism development, complementing resource extraction through diversification of economic activities as well as supporting locally-based expertise. By supporting cross-border cooperation of entrepreneurs the project is reducing the economic vulnerability of local communities. The project contributes to stronger cross-border networks between businesses.
Period	04/2012 - 01/2015
Total budget / EU funding granted	1 993 251 EUR / 388 000 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	Lead partner: Local Federation of East Lapland, Finland Kirovsk City Administration, Russia Administration of the Kandalaksha District Municipality, Russia Administration of Kovdor District, Russia Administration of the Town Apatity, Russia Administration of Terskiy District, Russia Kemijärvi Development Ltd, Finland
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A School for all - Development of inclusive Education

<http://www.ulapland.fi/Suomeksi/Yksikot/Kasvatustieteiden-tiedekunta/Tutkimus/Projektit-ja-tutkimushankkeet/A-School-For-All>

Main aim	Promoting educational opportunities of persons considered as vulnerable by increasing their access to and participation in society
Geographical scope	North Calotte, North-West of Russia
Disciplines involved	Education, inclusive education
Output	Exchange of knowledge of and experiences in inclusive education. Increased CBC in inclusive education research. Jointly developed educational packages. Promotion of inclusive education. A Resource Centre for Inclusive Education in Arkhangelsk region.
Relevance	The project addresses the issue of rising role of education and research – a foundation for enhancing Arctic human capital and empowerment of Arctic communities. The project addresses the needs of those vulnerable members of Arctic societies, attention to which is called for in the EUAIA report.
Period	08/2012 -12/2014
Total budget / EU funding granted	1 097 063 EUR / 548 531 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	Lead partner: University of Lapland, Finland Northern (Arctic) Federal University, Russia Murmansk State Humanities University, Russia Ministry of Education, Science and Culture of Arkhangelsk region, Russia State Educational Institution of Additional Vocational Education ‘Murmansk Regional In-Service Training Institute for Education and Culture’, Russia
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Barents Studies

International science journal for the Barents Region

<http://www.barentsinfo.org/barentsstudies/English>

Main aim	To promote research co-operation and popularization of research results in the Barents Region by sharing topical scientific news through the new journal. At the same time the purpose is to expand the understanding of the Barents Region in global, social, political and economic context.
Geographical scope	Barents Region
Disciplines involved	Research, science communication, regional cooperation
Output	Issue #1 - Winter 2013/2014 Theme: Political sustainability in the Barents Region Issue #2 - Summer 2014 Theme: Social sustainability in the Barents Region Issue #3 - Autumn 2014 Theme: Economic sustainability in the Barents Region Issue #4 - Popularized.
Relevance	The project utilizes and facilitates the trend of increasing the role of education and research - a foundation for enhancing Arctic human capital and empowerment of Arctic communities. By providing and disseminating scientific knowledge and latest topical information on the Barents region the project supports cross-border cooperation and development of region-focus academic information channels.
Period	12/2012 - 12/2014
Total budget / EU funding granted	393 733 EUR / 146 912 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	Lead partner: Arctic Centre at the University of Lapland, Finland Luzin Institute for Economic Studies of the Kola Science Centre of the Russian Academy of Sciences, Russia Barents Institute at the University of Tromsø, Norway
Contacts	Monica Tennberg monica.tennberg@ulapland.fi

Main aim	The project's main objective is to enhance the appeal of the Sámi, Nenets and Komi regions, consolidate their identity and expand local investment opportunities. The concrete objective is to develop culture and tourism products that have arisen from the needs of local indigenous people and to educate entrepreneurs and trainees as well as administrative personnel involved in tourism.
Geographical scope	Finnish Sámi Area, Nenets Autonomous Okrug, Komi Republic.
Disciplines involved	Culture, tourism, business
Output	Create, develop and market culture and package tour services on ethnically, ethically and ecologically sustainable basis from the regions' indigenous peoples' own perspective and starting points by means of networking, product development and training.
Relevance	The project corresponds with supporting cross-border cooperation and combining traditional culture and business, including support for Sámi entrepreneurs and hence contributes to fostering economic diversification in the area.
Period	11/2010 – 07/2013
Total budget / EU funding granted	1 000 000 EUR / 682 503 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	Lead partner: Sámi Education Institute, Finland Association of Nenets People Yasavey and Research and Information Centre Yasavey Manzara, Naryan-Mar, Nenets Autonomous Okrug, Russia Naryan-Mar Socio-Humanitarian College, Naryan-Mar, Nenets Autonomous Okrug, Russia Ethnocultural Centre of the Nenets Autonomous Okrug, Naryan-Mar, Nenets Autonomous Okrug, Russia Department of Indigenous People of the Nenets District Administration; Naryan-Mar, Nenets Autonomous Okrug, Russia Hotelli Korpikartano, Inari, Finland, Russia
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Reindeer Hide - Quality High

Main aim	Improve methods and know-how in raw reindeer hide processing among reindeer owners and slaughterhouses in North-West Russia.
Geographical scope	North-West Russia
Disciplines involved	
Output	The project includes training and micro investments in reindeer hide processing equipment.
Relevance	The project contributes to community resilience and livelihood identity through strengthening local entrepreneurship based on traditional economic activities and enhancing sustainable development of traditional activities.
Period	1/2013 – 12/2014
Total budget / EU funding granted	n.k. / 387 520 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	Lead partner: Lapin Nahka Oy, Finland Alex Ltd. Arkhangelsk, Russia Autonomous Non-Profit Organisation “Information-Research Centre, Yasavey Manzara, Naryan-Mar, Russia
Contacts	

BOREAS

<http://www.esf.org/coordinating-research/eurocores/completed-programmes/boreas.html>

Main aim	BOREAS as a coordinated programme of research on the North enabled the humanities to collaborate more effectively and offers synergies between social, natural and medical sciences through innovative collaboration between Europe, the US, Canada and Russia.
Geographical scope	Circumpolar North
Disciplines involved	Social, natural and medical sciences.
Output	Report "Histories from the North – Environments, Movements, Narratives (BOREAS)," publications 7 Collaborative Research Projects: <ul style="list-style-type: none"> • CEE - Colony, Empire, Environment: A Comparative International History of Twentieth Century Arctic Science • HHH - Home, Hearth, and Household in the Circumpolar North • MOVE - Moved by the State: Perspectives on Relocation and Resettlement in the Circumpolar North • NEWREL - New Religious Movements in the Russian North: Competing Uses of Religiosity after Socialism • NORSAGA - Northern Narratives: Social and Geographical Accounts from Norway, Iceland, and Canada • SCENOP - Change and the environment in Nordic prehistory: Evidence from Finland and northern Canada • UMCN - Understanding Migration in the Circumpolar North
Relevance	The project supports scientific cross-border cooperation, addressing issues crucial for Arctic social change: state policies, migration, changes in family structures, and enhances understanding of Northern history.
Period	2006 - 2009
Total budget / EU funding granted	5 000 000 EUR
Funding source	European Science Foundation Social Sciences and Humanities Research Council of Canada (SSHRC), Canada Danish Agency for Science, Technology and Innovation, Denmark Estonian Science Foundation, Estonia Academy of Finland, Finland The Icelandic Centre for Research, Iceland Research Council of Norway, Norway Polish Academy of Science, Poland Royal Academy of Letters, History and Antiquities, Sweden National Science Foundation, United States
Institutions and partners involved	Lead partner: Lapin Nahka Oy, Finland Alex Ltd. Arkhangelsk, Russia Autonomous Non-Profit Organisation "Information-Research Centre, Yasavey Manzara, Naryan-Mar, Russia
Contacts	Dr. Rüdiger Klein boreas@esf.org

Young Innovative Entrepreneurs

http://yie.act4region.ru/index.php?option=com_content&view=article&id=3&Itemid=3&lang=en

Main aim	Creation of a region wide support system that will enhance the development and implementation of innovative business ideas across the borders by young entrepreneurs
Geographical scope	Barents Region
Disciplines involved	Entrepreneurship, education and training.
Output	Mentoring programme, matchmaking conferences
Relevance	The project provides support for young entrepreneurship, and thus, encourages young people to work and live in the North, tackling the key challenges faced by rural societies in peripheral Northern regions.
Period	03/2012 - 12/014
Total budget / EU funding granted	1 365 940 EUR / 485 523 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	Lead partner: Kemi-Tornionlaakso Municipal Education and Training Consortium Lappia, Finland Barentssekretariatet, Norway Non-commercial partnership "Education, Innovation, and Scientific-Research Union Socium+", Russia Rovaniemi Municipal Federation of Education/RUAS, Finland Murmansk State Humanities University, Russia Murmansk State Technical University, Russia The North Chamber of Commerce and Industry, Murmansk, Russia Länsipohjan yrittäjät, Finland Association of Higher Education in Eastern Norrbotten, Haparanda, Sweden
Contacts	Saila Vaara saila.vaara@tokem.fi

Main aim	To contribute to the development of the Barents Region by promoting Cross-Border academic cooperation
Geographical scope	Barents Region
Disciplines involved	Education, academic exchange
Output	Master Degree programmes in four fields (social work, health and well-being, environmental engineering and information systems)
Relevance	The project enhances the role of education and research and strengthens education, research and development initiatives through academic partnership across the borders.
Period	04/2011- 4/2013
Total budget / EU funding granted	944 576 EUR/ 366 324 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	Lead partner: University of Lapland, Finland Pomor State University, Arkhangelsk. Russia Arkhangelsk State Technical University, Russia Karelian State Pedagogical Academy, Republic of Karelia, Russia Murmansk State Technical University, Russia Murmansk State Pedagogical University, Russia Northern State Medical University, Russia Petrozavodsk State University, Russia Narvik University College, Russia Luleå University of Technology, Sweden
Contacts	Tarja Orjasniemi tarja.orjasniemi@ulapland.fi

AgroPark Alakurtti

Main aim	Promotion of sustainable social and economic development
Geographical scope	Alakurtti, Russia
Disciplines involved	Tourism, agriculture, entrepreneurship, sport and leisure, waste management, municipal cooperation
Output	Increased attractiveness of the project areas for visitors, investors, inhabitants
Relevance	The project contributes to community resilience by developing SME business area, diversifying local economy via development of non-extractive sector and supporting entrepreneurship culture.
Period	12/2013-12/2014
Total budget / EU funding granted	2 798 928 EUR / 343 660 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	Lead Partner: Autonomous non-commercial organisation "Murmansk Regional Small & Medium Business Support Agency", Russia Hushållningsällskapet Rådgivning Nord AB, Sweden Municipality of Salla, Finland Proagria Lappi ry, Finland Village settlement Alakurtti of Kandalaksha district, Russia Administration of Kandalaksha district municipality, Russia Committee of agribusiness and food market in the Murmansk region, Russia State regional unitary enterprise "Tuloma", Russia Murmansk Regional Employment Agency, Russia Department of Agribusiness and Veterinary of Nenets Autonomous District, Russia
Contacts	Svetlana Ivanova sivanova@murbiz.ru

North Calotte transports

Main aim	Improving accessibility for sustainable transport facilities in the North Calotte area
Geographical scope	North Calotte Area, Norway, Sweden, Finland
Disciplines involved	Transport, Environment
Output	Establishing a network of industry, regional authorities and railway administration in order to identify basic needs for better transport possibilities. Conducting activities that develop possibilities for sustainable transport facilities in the North Calotte area. Supporting intra-North Calotte connections.
Relevance	The project is to contribute to creating administrative/network environment for improvement of accessibility in North Calotte region, especially on much under-developed East-West axis.
Period	08/2008-06/2011
Total budget / EU funding granted	253800 / 108600
Funding source	Interreg IV / A / North
Institutions and partners involved	Lead Partner/Applicant: County Administrative Board of Norrbotten Participats: Regional Council of Lapland, Regional Council of Northern Ostbothnia, The National Rail Administration, Port of Narvik, Futurum
Contacts	Bo-Erik Ekblom Bo-Erik.Ekblom@lansstyrelsen.se

Indigenous entrepreneurship

<http://indigee.org/>

Main aim	The main aim of the project is to include indigenous peoples in the development of the region, creating strong business relationships between indigenous entrepreneurs in the Barents region, creating jobs for people belonging to indigenous peoples in their communities, strengthen cooperation between indigenous peoples in the Barents region, and promote indigenous culture and traditions inside and outside the Barents region for indigenous peoples' own conditions
Geographical scope	Barents Region
Disciplines involved	Entrepreneurship
Output	Three development conferences and three seminars have been arranged. Participants also offered ongoing business advice throughout the project.
Relevance	The project contributes to building of entrepreneurship culture in the North, supports indigenous identities and Sami cultural developments. Focusing on young people and encouraging them to build businesses based on indigenous industries tackles the problem of youth out-migration. Project supports also Sami cross-border cooperation, contributing to strengthening of pan-Sami identity among young people.
Period	06/2010 - 12/2011
Total budget / EU funding granted	953 298 EUR/ 228 055 EUR
Funding source	InterregIVANorth/Sapmi
Institutions and partners involved	Lead partner: Swedish Sami National Association (SSR) Suoma Sámi Guovddassearvi SSG Norwegian Sami National Association International Barents secretariat
Contacts	Anders Blom anders@sapmi.se

Indigee 2

<http://indigee.org/>

Main aim	The project aims to encourage successful business based on indigenous values. Follow-up to Indigenous entrepreneurship.
Geographical scope	Barents Region
Disciplines involved	Entrepreneurship
Output	Conferences Group work in workshops Participants also are offered ongoing business advice throughout the project
Relevance	The project contributes to building of entrepreneurship culture in the North, supports indigenous identities and Sami cultural developments. Focusing on young people and encouraging them to build businesses based on indigenous industries tackles the problem of youth out-migration. Project supports also Sami cross-border cooperation, contributing to strengthening of pan-Sami identity among young people
Period	10/2012 - 06/2014
Total budget / EU funding granted	1 770 849 EUR/ 379 597 EUR
Funding source	InterregIVANorth/Sapmi
Institutions and partners involved	Lead partner: Swedish Sami National Association (SSR) SOGSAKK Norske samers Rikförbund International Barents Secretariat Public Association of Nenets people in Nenets Autonomous Okrug, Yasavey
Contacts	Lars Miguel Utsi lmu@indigee.org

Before and over the borders – long-term changes in the Sami society

Main aim	The aim of the project is to study how cultural changes in the society are reflected in the use of the cultural landscape, from prehistoric till modern times.
Geographical scope	Nothern Norway, Northern Sweden
Disciplines involved	Cultural heritage and arts, education
Relevance	The project takes up the issues of cultural change within Sami society interconnected with the use of landscape. The understanding of the interaction between culture and landscape is one of key challenges in understanding the implications of current cultural changes and land use changes and conflicts in the North.
Period	01/2012 - 06/2014
Total budget / EU funding granted	411 917 EUR/ 137 747
Funding source	InterregIVANorth/Sapmi
Institutions and partners involved	Lead partner: Àjtte, svenskt fjäll- och samemuseum Àrran – lulesamiskt centrum Centrum för samisk forskning Umeå universitet Luleå tekniska universitet Universitetet i Nordland, Bodø
Contacts	Elisabeth Pirak-Kuoljok elisabeth.pirak-kuoljok@ajtte.com

Craft International

<http://www.economusee.eu>

Main aim	To use integrated visitor/local sales/e-sales activities to improve chances of survival for selected and badged artisan businesses
Geographical scope	Northern Periphery Area
Disciplines involved	Tourism, recreation, cultural heritage, languages
Output	8 new Economusee, 3 regional tourism strategies
Relevance	The project promotes innovation in remote areas, supporting creative industries, tourism and recreation, and therefore, economic diversification and smart specialization. Important part of the project is support for cultural heritage and innovative ways of its development.
Period	07/2011 - 03/2014
Total budget / EU funding granted	1 715 641 EUR/ 888 249,80 EUR
Funding source	Northern Periphery Programme
Institutions and partners involved	Lead partner: Hordaland County Council, Norway The Economusee Society Network, Canada Innovation Center Iceland, Iceland The Research Center for Social Development, Faroe Islands Causeway Coast and Glens Heritage Trust, Northern Ireland Greenland Tourism and Business Council, Greenland Jämtland County, Sweden Teagasc (Agriculture and Food Development Authority), Ireland
Contacts	Mr. Terje Inderhaug terje.inderhaug@post.hfk.no

DARRA

Digital Age in Rural and Remote Areas

<http://www.darraproject.eu>

Main aim	Closing the digital divide between sparsely populated / rural areas and urban areas
Geographical scope	Northern Periphery Area
Disciplines involved	Information and communications technology
Output	Electronic Invoicing and e-Invoicing Calculator Level of ICT maturity have been indicated with an e-ladder (measurement tool developed in DARRA-project) tool to bring up the real development needs of each company.
Relevance	The project supported ICT connectivity in the sparsely populated and rural areas, developing effective solutions for public sector and for small and medium enterprises contributing to local entrepreneurship and local interconnectedness
Period	01/2008 - 12/2010
Total budget / EU funding granted	1 423 789 EUR/ 833 024 EUR
Funding source	Northern Periphery Programme
Institutions and partners involved	Lead partner: Kemi-Tornio University of Applied Sciences, Finland Joint Authority of Kainuu Region, Finland Kainuun Etu Oy, Finland The Association of Local Authorities in Västernorrland, Sweden Mid Sweden University, Sweden Federation of Private Enterprises Västernorrland, Sweden European Regions Network for the Application of Communications Technology, ERNACT, Ireland Shannon Development, Ireland Sogn og Fjordane County Governor, Norway Western Norway Research Institute, Norway Rovaniemi Regional Development Agency, Finland University of Limerick, Ireland
Contacts	Janne Hirvonen janne.hirvonen@tokem.fi

NoCry

Northern Creative Youth

<http://www.creativeyouth.eu>

Main aim	Improving and supporting the entrepreneurial competence among young artists in the NPP area and to provide better understanding of the business potential that lies in the creative industry
Geographical scope	Northern Periphery Area
Disciplines involved	Creative industries, visual and performing arts, design, media
Output	The first version of the www.incubiz.eu online platform An experimental international cultural management education programme, the Road Tour, as well as the experimental film training with co-production over distances have been finalised and the results and experiences are being assessed Regional creative incubator pilots
Relevance	Support for creative industries, economic diversification, combating social problems, especially of the young people. Supporting youth entrepreneurship and activism, this way encouraging youth to live and be active in the North
Period	01/2008 - 06/2010
Total budget / EU funding granted	1 807 643 EUR/ 1 035 107 EUR
Funding source	Northern Periphery Programme
Institutions and partners involved	Lead partner: Kemi-Tornio University of Applied Sciences, Finland Entrepreneurship Training Centre Intotalo, Finland Faroe Islands Enterprise (Samvit), Faroe Islands Luleå University of Technology, Department for Music and Media, Sweden MediaEnter - Study Centre, Municipality of Kramfors, Sweden Moray College, Scotland Norut Tromsø AS, Norway PowerHouse, Municipality of Kramfors, Sweden Rovaniemi University of Applied Sciences, Finland The Nerve Centre, Northern Ireland
Contacts	Mr. Kaj Kostander kaj.kostiander@tokem.fi

NoCry2

NorthernCreative Youth2

<http://www.creativeyouth.eu>

<http://www.facebook.com/northernCREATIVEyouth2>

Main aim	Encouraging and promoting youth entrepreneurship, entrepreneurial approach and multidisciplinary collaboration, with the overall objective to increase the potential for growth and employment in rural and remote areas of the northern periphery, using the creative industry as a catalyst to create better conditions and business opportunities for young creative entrepreneurs and SMEs
Geographical scope	Northern Periphery Area
Disciplines involved	Creative industries, visual and performing arts, design, media
Output	<p>A prototype for the business support service; an interactive multi web-shop</p> <p>The Cloud Creative Community established as a closed Facebook community for on-line collaboration between existing youth clusters /community members, partly connected and integrated with the projects other social media channels</p> <p>Two International Seminar/Gatherings, Various workshops/ tutorials/ coaching session</p> <p>The NPP Annual Conference site developed by a NoCry2 entrepreneur and the animation created by an entrepreneur at the Nerve Centre, Northern Ireland.</p> <p>StudioNoCry-Norway: A regional multi arena for/with creative youth was officially opened in Harstad, Norway in February 2013. As the start of a new experimental cross-collaboration project between Troms yrkesopplæringskontor, the Youth House-Plastelina, NoCry2 partners and the young creatives involved in the project. The new project is supported by e.g. the municipality of Harstad, Norway.</p> <p>A business hub for/with young entrepreneur was started</p>
Relevance	Support for creative industries, economic diversification, combating social problems, especially of the young people. Supporting youth entrepreneurship and activism, this way encouraging youth to live and be active in the North.
Period	01/2011 - 12/2013
Total budget / EU funding granted	992 907.93 EUR/ 575 480.39 EUR
Funding source	Northern Periphery Programme
Institutions and partners involved	Lead Partner: PowerHouse, Municipality of Kramfors, Sweden Kemi-Tornio University of Applied Science, Finland Troms County (Troms fylkeskommune), Norway The Nerve Centre, Northern Ireland
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OLE 2

Our Life as Elderly – implementation

<http://www.ourfuture.eu>

Main aim	Defining and implementing actual changes the four different project areas. Developing a product format for easy use by other municipalities
Geographical scope	Northern Periphery Area
Disciplines involved	Demographics (youth, senior, women, indigenous), social inclusion
Output	<p>A concept of “ambassadors” for a better long-term general marketing of existing careers in professions for care.</p> <p>Solutions for integrated and permanent staff development.</p> <p>A functional system for a better-coordinated health care between respective providers in the care chain.</p> <p>A system for Safe Medication.</p> <p>A web based meeting platform for senior citizen with focus on transnational solutions, likewww.lulesenior.se and www.eldri.fo</p> <p>A comprehensive model for physical and informal meeting places for elderly in society</p> <p>A property solution type “vintage housing” for +55</p> <p>A system for property bank concerning adapted housing for senior citizen</p> <p>A function for proactive communication with long-term prospects in our school and employment system.</p>
Relevance	The follow-up project tackles demographic challenges of Northern regions by attempting to develop innovative solutions. The project also strongly supports exchange of Arctic-specific experience
Period	06/2008 - 05/2011
Total budget / EU funding granted	2 003 371 EUR/ 1 074 704 EUR
Funding source	Northern Periphery Programme
Institutions and partners involved	<p>Lead partner: City of Luleå , Sweden</p> <p>Municipality of Bodø, Dep. Of Health and Social Care, Norway</p> <p>Association of Faroese Municipalities, Faroe Islands</p> <p>The City of Oulu, Finland</p> <p>The Nursing Homes in Akureyri, Iceland</p> <p>Municipality of Hafnarfjörður, Department of Social Services, Iceland</p> <p>Health Care Center and Community Hospital of Southeast Iceland</p> <p>Institution of Primary Care Services, Naerverkid, Faroe Islands</p>
Contacts	<p>Ms. Anna-Lena Svensson</p> <p>anna-lena.x.svensson@soc.lulea.se</p>

Recruit and Retain

Recruitment and Retention of Health Care Providers and Public Sector Workers in Remote Rural Areas

<http://www.recruitandretain.eu>

Main aim	To put in place mechanisms whereby front line health care providers can be identified, encouraged, trained and supported to work in a remote rural community
Geographical scope	Northern Periphery Area
Disciplines involved	Human resources, education, employment, capacity building
Relevance	The project supports service-delivery in remote areas, one of the key challenges connected with quality of life, demographics and social development in the rural northern peripheries
Period	06/2011 - 06/2014
Total budget / EU funding granted	2 997 271.68 EUR/ 1 976 409.23 EUR
Funding source	Northern Periphery Programme
Institutions and partners involved	Lead partner: NHS Western Isles, Scotland The Agency of Health and Protection, Greenland FSA University Hospital, Iceland Helse Finnmark Health Trust, Norway County council of Västerbotten, Emergency & Disaster Medical Centre + Storuman Health Care Center, Sweden The University Court of the University of Aberdeen, Centre for Rural Health, Scotland Northern Ontario School of Medicine, Canada Cooperation and Working Together (CAWT), Northern Ireland
Contacts	Deanne Gilbert deannegilbert@nhs.net

ROADEX IV

ROADEX Network Implementing Accessibility

<http://www.roadex.org>

Main aim	To encourage the everyday use of ROADEX techniques and innovations on Northern Periphery low volume public roads, forest roads and private roads within the framework of climate change and increasing environmental awareness
Geographical scope	Northern Periphery Area
Disciplines involved	Transport, logistics, infrastructure
Output	The ROADEX Consultancy The Demonstration Projects: D1 "Drainage Maintenance Guidelines" D2 "Road friendly vehicles and TPC" D2 "Road friendly vehicles and TPC" D4 "Rutting, from theory to practice" D5 "Roads on Peat" D6 "Health and Vibration" The Research Projects: RE1 "Climate change and its consequences on the maintenance of low volume roads". RE2 "Widening of roads". RE3 "Vibration in vehicles and humans due to road condition". ROADEX E-learning – Four ROADEX e-learning lessons are being written:
Relevance	The project addresses the issue of accessibility in remote regions and tackles challenges typical for Northern regions problem of development of infrastructure which is necessary for the region but is characterised by few users. The project supports exchange of Arctic-specific experiences.
Period	07/2009 - 06/2012
Total budget / EU funding granted	2 163 473.36 EUR/ 1 194 205.20 EUR
Funding source	Northern Periphery Programme
Institutions and partners involved	Lead partner: Swedish Transport Administration, Sweden Finnish Road Administration, Finland Highland Council, Scotland Western Isles Council, Scotland Forestry Commission Scotland, Scotland Department of Transport, Ireland National Roads Authority, Ireland Swedish Forest Agency, Luleå, Sweden Icelandic Public Road Administration, Iceland Property and Emergency Agency, Greenland Norwegian Public Roads Administration, Norway
Contacts	Krister Palo krister.palo@trafikverket.se

MyHealth@Age

MyHealth@Age - Improved Health, Safety and Well-being for Elderly People living in Northern Periphery regions

<http://www.ltu.se/centres/eic/Avslutade-projekt/MyHealth-Age-1.90415?l=en>

Main aim	Creating a new modular product platform that makes it possible to provide safety-, prescribed self treatment- and social network applications to elderly people based on each individuals specific needs and circumstances
Geographical scope	Northern Periphery Area
Disciplines involved	Emergency, natural disasters, risk prevention, health
Output	<p>The project has so far specified the requirements and developed a prototype in close co-operation between elderly people, healthcare and welfare staff, ICT companies and researchers.</p> <p>The products have been developed. Education/training has started as well as field trial usage. At the Swedish trial site, daily life usage has started with Prescribed Healthcare. The Mobile Safety Alarm functionality has been released and the end-users evaluate the product at the moment. As soon as the end-users are comfortable with these products, the Social Network product can be introduced.</p> <p>The Northern Ireland trial site begin instead with Social Network. When the end-users feel confident using that, the other products and services are released.</p>
Relevance	The project addresses challenges of one of region's vulnerable groups, the elderly, who, especially in rural areas troubled by out-migration are faced with possible difficulties of accessing services, including health services. In the same time the project supports innovation and ICT developments
Period	01/2008 - 12/2010
Total budget / EU funding granted	1 527 678 EUR /891 993 EUR
Funding source	Northern Periphery Programme
Institutions and partners involved	Municipality of Boden, Sweden The Norwegian Centre for Integrated Care and Telemedicine, University Hospital of North Norway HF, Norway Social Welfare Department of Tromsø, Norway Southern Health and Social Care Trust Ulster , Northern Ireland Luleå University of Technology, Sweden University of Ulster, Londonderry, Northern Ireland
Contacts	Lennart Isaksson lennart.isaksson@intelliwork.se

RYE

Rural Youth Entrepreneurship

<http://www.ryeproject.eu>

Main aim	To contribute to local, regional, national and transnational rural economic development by stimulating latent entrepreneurial abilities among young people
Geographical scope	Northern Ireland, Faroe Islands, Finland and Greenland
Disciplines involved	Business development, trade, marketing
Output	Initial context analysis undertaken & gap analysis currently being compiled
Relevance	The project is to contribute to facilitating entrepreneurship in remote rural areas, and thus, building a critical mass necessary for rural development. By focusing on young people, the project addresses demographic challenges in the North.
Period	09/2011 - 03/2014
Total budget / EU funding granted	904 563 EUR - 517 546 EUR
Funding source	Northern Periphery Programme
Institutions and partners involved	Lead partner: Northern Ireland Rural Development Council, Northern Ireland Qeqqata Business Council, Greenland The Research Center for Social Development, Faroe Islands Kajaani University of Applied Sciences, Finland The Advantage Foundation, Northern Ireland
Contacts	Eamon McMullan emcmullan@rdc.org.uk

TG4NP

Tourist Guide for Northern Periphery

<http://www.tg4np.eu/>

Main aim	To support tourism industry of peripheral regions by enhancing the visitors' experiences in cultural and natural heritage destinations with the help of multimodal mobile information services.
Geographical scope	Northern Periphery Area
Disciplines involved	Northern Periphery Programme
Output	Tourist guide applications
Relevance	The project supports economic diversification in the North (focusing on tourism) and the development of cultural and natural heritage. The project addresses problems of accessibility and connectivity.
Period	06/2010 - 09/2013
Total budget / EU funding granted	2 455 798 EUR/ 1 448 461 EUR
Funding source	Northern Periphery Programme
Institutions and partners involved	Lead partner: Skellefteå Municipality, Sweden Icelandic Centre for Retail Studies, Iceland University of Ulster, Londonderry, Northern Ireland West Regional Authority (WRA), Ireland Regional Council of North Karelia, Finland North Karelian University of Applied Sciences, Finland Kemi-Tornio University of Applied Science, Finland European Regions Network for the Application of Communications Technology, ERNACT, Ireland Luleå University of Technology, Sweden Greenland Tourism and Business Council, Greenland Western Norway Research Institute, Norway
Contacts	Ellinor Berglund ellinor.berglund@skelleftea.se

Barents Low Volume Road Management

<http://ador.ru/innovations/kolarctic/>

Main aim	Testing and establishing new solutions and innovations adapted to local conditions
Geographical scope	Lapland, Murmansk, Arkhangelsk, Karelia
Disciplines involved	Road maintenance
Output	<p>1.The problems of Russian low volume roads are identified</p> <p>2. The recommendations on tried-and-true practices from ROADEX database with its adaptation to Russian conditions are developed.</p> <p>3. There is a strong need to be ready to address challenges of near future: Challenge №1 – heavier transport loads on roads – Challenge №2 – all year round road usage Challenge №3 – climate change</p> <p>Increase of informational resource of Russian engineers through access to the translated into Russian database of ROADEX</p> <p>1998-2012 Projects, significant amount of reports and materials were translated into Russian to be accessible for the Russian engineers.</p> <p>Increase professionalism of engineers through know-how transfer and thus contribute to elimination of “border effect” for social and economic development of the Barents Region territories.</p> <p>Disseminate Project results via mass media, professional seminars, lectures in N(A)FU to increase professionalism of the Russian road engineers</p> <p>Shifting from reactive management (elimination of existing problems) to proactive one (problem prevention) by:</p> <ol style="list-style-type: none"> 1. developing skills of visual diagnostics of road maintenance defects among road engineers (relationship between the reason and the sequence/problem) 2. Road drainage improvement as one of the priority actions and essential condition of good road structure health within the Northern conditions 3. Shifting from general (too costly road maintenance approach to addressed and accurate solutions (based on better diagnostics) 4. Improving road sector client-orientation, developing dialogue with the users to increase outputs of the road sector.
Relevance	The project addresses the issue of accessibility in remote regions and tackles a challenge typical for these areas, i.e. management of infrastructure which is necessary for the region but is characterised by few users. The project is to develop innovative solutions and supports cross-border cooperation with Russia
Period	01/2011 - 7/2013
Total budget / EU funding granted	399 567 EUR/ 199 784 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	<p>Lead partner: ADC Ltd. (OOO AvtoDor Consulting), Russia</p> <p>The State Organization of the Arkhangelsk Region “Road Agency Arkhangelskavtodor” (Russia)</p> <p>Lapland Centre for Economic Development, Transport and the Environment (Finland)</p> <p>The State Organization of the Murmansk Regional Road Administration “Murmanskavtodor” (Russia)</p>
Contacts	Svatkova Elena svatkova@mail.ru

Barents Logistics 2

Main aim	To develop logistics competencies and deepen educational co-operation between the universities and educational institutions together with public and business organizations
Geographical scope	Barents Region
Disciplines involved	Logistics, research and training
Output	Publications, Master thesis, Practice-related courses for expertise in logistics. Vocational education, seminars
Relevance	The project is to develop local competence in the area of logistics, which is expected to become increasingly important due to the growth in industries and activities requiring management of logistics, thereby allowing the Northern regions to benefit more from the developments, especially in the case of extractive industries, where lack of local expertise creates a risk that region will not benefit as expected from resource developments
Period	2011-2013
Total budget / EU funding granted	1.7 M€
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	University of Oulu, Oulu Business School, Finland (lead partner) Luleå University of Technology, Industrial Logistics, Sweden Association of Suppliers for Oil and Gas Industry "Murmanshelf", Russia Non-commercial organization "Arctic Centre for Training of Oil and Gas Specialists", Russia Non-commercial partnership "Education, Innovation, and Scientific-Research Union Socium+", Russia Port of Oulu, Finland Port of Kemi, Finland The Ministry of Economic Development of the Murmansk region, Russia
Contacts	Ulla Lehtinen ulla.lehtinen@oulu.fi

ArctiChildren InNet - Empowering School e-Health Model in the Barents Region

Main aim	To improve the common challenges of the schoolchildren's physical, psychological, emotional, social and spiritual health and well-being, security and cultural identity through Information and Communication
Geographical scope	Barents Region
Disciplines involved	Technologies (ICT) applications, Child and Adolescent Health, Development of Health Systems and Social Services
Output	<p>A cross-border frame of reference created about the project cooperation for achieving an empowering school e-Health / e-Learning model</p> <p>Action study to assess the actual ICT use, attitudes and needs and benchmarking process to develop school e-Health and e-Learning applications</p> <p>Build up an ICT environment (i.e website, virtual environment) where the dialogue with new interventions and practices will be implemented at the three levels described in activity 4.</p> <p>New interventions/practices created at three levels</p> <p>Empowering school e-Health Model developed</p>
Relevance	The project addresses so far still underdeveloped opportunities arising for remote regions from ICT, addressing the youngest users. In the long term, similar projects may create a critical mass significantly improving the quality of life via better access to services throughout the European Arctics
Period	03/2012 - 12/2014
Total budget / EU funding granted	1 325 503 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	<p>Lead partner: Rovaniemi University of Applied Sciences</p> <p>Luleå University of Technology</p> <p>Finnmark University College</p> <p>Murmansk State Humanities University</p> <p>Northern Arctic Federal University</p> <p>Kemi-Tornio University of Applied Sciences</p> <p>University of Lapland</p>
Contacts	<p>Eiri Sohlman</p> <p>eiri.sohlman@ramk.fi</p>

The Barents Freeway

Main aim	Integrating current transport strategies, plans and projects of each participating country into a common Barents Region Transport Strategy
Geographical scope	Barents Region
Disciplines involved	Transport logistics
Output	Introduction of the Barents Region Transport Strategy to be a multi-component synthesis of national, local and modal interests and implementation of a model of equipment procurement
Relevance	The projects addressed the challenge of accessibility and connectivity in the Barents region via a series of targeted proposals for improvements. Development of regional transport strategy is key in enhancing North-North connectivity.
Period	09/2012 - 12/2014
Total budget / EU funding granted	1,4 M€
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	Lapland ELY Centre Regional Council of Lapland Norbotten County Administration Nordland Fylkeskommune Troms Fylkeskommune Finnmark Fylkeskommune Murmansk Regional Ministry of T&C Murmansk Avtodor Transport Agency of the Arkhangelsk Arkhangelsk Avtodor
Contacts	Ulla Alapeteri ulla.alapeteri@ely-keskus.fi

The Northern Beauty

Main aim	Enhancing co-operation in arts and culture, especially concerning visual arts and art history
Geographical scope	Barents Region
Disciplines involved	Visual Arts
Output	<ol style="list-style-type: none">1. Network of art researchers, art and cultural institutions of the Barents region is in place.2. Transferable Barents Art and Culture exhibition and joint art research symposiums and workshops organised and performed.3. Future cooperation master plan developed.4. Project results (publication, reviews, DVD, articles and promotional materials) developed and disseminated.5. Project management performed and evaluation done.
Relevance	Support Northern visual arts and cooperation across borders, especially with Russia, contributing to development of regional identity and protecting and developing regional cultural heritage.
Period	04/2012 – 12/2014
Total budget / EU funding granted	617 498 EUR
Funding source	Kolarctic ENPI CBC
Institutions and partners involved	Lead Partner University of Lapland , Rovaniemi, Lapland, Finland Kemi Art Museum , Kemi, Lapland, Finland Arts Promotion Centre Finland, Regional Office of Lapland, Rovaniemi, Finland Konsthallen, Luleå, Norrbotten, Sweden Murmansk regional art museum, Murmansk Oblast, Murmansk, Russia Sámi Center for Contemporary Art, Finnmark, Norway
Contacts	Tuija Hautala-Hirvioja tuija.hautala-hirvioja@ulapland.fi







Chapter cover image: Sperm whale diving into water.
Photo: GettyImages

III. STRUCTURAL INITIATIVES OF EUROPEAN UNION COUNTRIES

III.1 PROCESSES: EU AND EEA ARCTIC COUNTRIES' POLICIES

Country	Authority releasing document	Title of latest document	Date of release
Kingdom of Denmark	Ministry of Foreign Affairs	Denmark, Greenland and the Faroe Islands: Kingdom of Denmark Strategy for the Arctic 2011 -2020	2011
Finland	Prime Minister's Office	Finland's Arctic Strategy	2013
Sweden	Ministry of Foreign Affairs	Sweden's Strategy for the Arctic Region	2011
France	The National Center for Scientific Research*	Prospective recherches polaires	2012
Germany	Federal Foreign Office	Germany's Arctic policy guidelines: Assume responsibility, seize opportunities	2013
The Netherlands	Ministry of Foreign Affairs	Policy Framework: The Netherlands and the Polar Regions, 2011-2015 (Summary of Dutch document)	2012
Poland	Ministry of Foreign Affairs	Statement of Minister M. Sypniewski to Swedish Presidency of the Arctic Council	2012
United Kingdom	Foreign and Commonwealth Office	UK Policy Towards the Arctic	2013
Norway ¹	Ministry of Foreign Affairs	The High North: Visions and strategies	2011
Iceland ²	Parliament	A Parliamentary Resolution on Iceland's Arctic Policy	2011

* Government agency and not ministry.

1. EEA state

2. EEA state

III.2 INSTITUTIONS: EUROPEAN UNION ARCTIC COUNTRIES¹

KINGDOM OF DENMARK

Greenland is not an EU member but is one of the so-called Overseas Countries and Territories with association arrangements with the EU. Greenland is part of the Danish Realm, and recently (August 2013) regained its place at the negotiating table of the Arctic Council.

The Faroe Islands have negligible Arctic infrastructural or institutional initiatives, but has an active Arctic strategy, especially in the context of fisheries and climate change.² The Faroes are not part of the European Union.

Research and Education

The Greenland Institute of Natural Resources, is a major research institution, owned by the government of Greenland.³ Located in Nuuk, the institute is also responsible for the field station at Kobbefjord and the research vessels R/V Sanna and R/V Pâmiut. Initiatives undertaken by and through the institute are intended to provide the scientific basis for an assessment of sustainable use of the living resources in and around Greenland as well as to protect the environment and secure biological diversity. The Kangerlussuaq International Science Support (KISS) facility, a subsidiary of Mittarfæqarfiit/Greenland Airports,⁴ at Kangerlussuaq, western Greenland, serves as an important logistical hub to the inland ice cap.

Research infrastructures operated from Denmark are mostly maintained by universities. The University of Copenhagen maintains the year-round Arctic Station⁵ located on the south coast of the Disko Island in central west Greenland. The University of Copenhagen also maintains the Sermilik⁶ summer station in South East Greenland. Aarhus University operates Zackenberg Research Station,⁷ located in North-East Greenland and owned by the government of Greenland. In early 2013, Aarhus University received a grant for the substantial extension of Station North in northernmost Greenland.⁸

Aarhus University also hosts the Arctic Research Centre (ARC),⁹ an institutional initiative launched in 2012. The

ARC has a partnership agreement with the Greenland Institute of Natural Resources and the University of Manitoba (Canada) in an Arctic Science Partnership and the Centre focusses on joint, interdisciplinary research campaigns. Although funding for the institution is currently time-limited, the possibility has been articulated that the Centre may turn into a department in the long run.

State

Danish state-run institutions which include the Arctic as a distinct focus area include the Danish Meteorological Institute,¹⁰ the Geological Survey of Denmark and Greenland¹¹ and the Danish Geodata Agency.¹²

Industry

Founded in 1992, the Royal Arctic Line A/S¹³ is an example of a non-research specific infrastructure. It has an exclusive concession for the transportation of all sea cargo to and from Greenland and between Greenlandic settlements. As such it provides essential infrastructural support to oil and mineral exploration, one of the key industries that also generate knowledge affecting – and effecting – development in the Arctic.

FINLAND

Research and Education

Several Finnish universities have focus areas on research and development related to the Arctic. At Aalto University's School of Engineering, Arctic technology is a priority. Arctic maritime technology and winter navigation, key research areas, are both important to Finland as it offers major business opportunities for companies engaged in international trade. Aalto University also operates the Aalto Ice Tank, a multipurpose ice testing tank, which enables the study of a wide range of hydrodynamic phenomena in ice-free conditions.¹⁴ The universities of Helsinki,¹⁵ Lapland,¹⁶ Oulu¹⁷ and Turku¹⁸ operate research units in northern Finland. The University of Helsinki accounts for a considerable percentage of Finnish Arctic research, for example in the fields of geology, geography and physics.

The University of Lapland is the northernmost university in the European Union. It conducts research on Arctic populations, communities, the environment, and art and design and their interaction. Additionally, it is assigned

1. Information has been updated to end of March 2014

2. www.mfa.fo/Files/Filer/fragreidingar/kunningarfaldari-eng8.pdf

3. www.natur.gl/en/

4. [www.mit.gl/ \(sciencesupport@ghv.gl\)](mailto:sciencesupport@ghv.gl)

5. arktiskstation.ku.dk/english/about/

6. geo.ku.dk/english/research/field_station/

7. www.zackenberg.dk/

8. scitech.au.dk/en/current-affairs/news/show/artikel/aarhus-universitet-bygger-forskningsstation-i-nordgroenland/

9. arctic.au.dk/

10. www.dmi.dk/en/about-the-dmi/profile/introduction-to-dmi/

11. www.geus.dk/

12. www.gst.dk/English/

13. www.royalarcticline.com/

14. appmech.aalto.fi/en/department/facilities_and_equipment/infras/

15. www.helsinki.fi/university/

16. www.ulapland.fi/InEnglish

17. www oulu.fi/english/

18. www.utu.fi/en/Pages/home.aspx

nationwide responsibility for social and legal research related to the Saami nation. The Arctic Centre,¹⁹ based at the University of Lapland, is concerned with global change, sustainable development and environmental and minority law in the region. Its nationwide role includes the dissemination of scientific information, exhibition activities and expert duties related to the Arctic and Barents Euro-Arctic Council.²⁰ The Arctic Centre is seeking to establish itself as the EU Centre for Arctic Information. The University of Lapland also houses the University of the Arctic International Secretariat,²¹ which is responsible for the administration of the cooperation network between the universities, polytechnics and other educational institutions of the Arctic countries. The universities belonging to the network promote the exchange of researchers, students and teachers in the northern regions. The Rovaniemi University of Applied Sciences²² is also specialises in the research, training and development of sustainable forest use; the coordination of the use of natural resources; and the management of low-temperature conditions. The University of Lapland, the Rovaniemi University of Applied Sciences and the Lapland tourism college jointly runs the Multidimensional Tourism Institute²³, an expert in the Arctic tourism and hospitality industry.

The University of Oulu is an international science university engaged in research into northern and Arctic issues in several fields of science. The university's Giellagas Institute²⁴ has the mandate to provide education in the Saami language and culture. The Thule Institute²⁵, based at the university, is engaged in research into the environment, natural resources and northern fields of activity. For this purpose, it operates a Centre for Arctic Medicine and the NorNet network coordinating environmental and natural resources research. The Oulu Mining School²⁶ and the Nordic Mining School²⁷, established in collaboration with the Luleå University of Technology²⁸ in Sweden respond to the growing needs of the mining industry. The Sodankylä Geophysical Observatory is a national institute subordinated to the University of Oulu.

The Saami Education Institute (Sámioahpahusguovddáš),²⁹

19. www.arcticcentre.org/InEnglish

20. www.beac.st/in-English/Barents-Euro-Arctic-Council

21. www.uarctic.org/organizations2.aspx?group=AdmUArcticDirectorAndInternationalSecretariat&title=UArctic%20President%20and%20International%20Secretariat

22. www.ramk.fi/en

23. matkailu.luc.fi/In-English/Institute

24. www.oulu.fi/giellagasinstitute/

25. www.oulu.fi/thuleinstitute/

26. www.oulumining.fi/

27. nordicminingschool.eu/

28. www.ltu.se/

29. www.sogsakk.fi/index.php?option=com_content&view=article&id=56&Itemid=1&lang=en

is a multi-disciplinary institute of education providing instruction in the Saami language and culture as well as offering a wide range of vocational training.

Arctic research is one of the Finnish Meteorological Institute's³⁰ strategic priorities. The FMI Arctic Research Division studies the various layers of the polar atmosphere, biosphere and the surface of the earth, generating accurate data on the atmosphere, climate and the environment. FMI also operates the Arctic Research Centre located in Sodankylä, Lapland.³¹ In addition to its expertise in the fields of marine ecology, ice research, shipping and the northern environments, the Finnish Environment Institute (SYKE)³² is involved in a range of Arctic Council projects to gather data on environmental toxins, climate change and short-lived climate forcers (SLCF).

The Finnish Institute of Occupational Health Oulu unit³³ initiated research into the evaluation and management of the detrimental impacts of low temperatures. The Technical Research Centre of Finland (VTT), a not-for-profit organisation, carries out low-temperature research, low-temperature technology.³⁴

Tekes - the Finnish Funding Agency for Innovation has launched 100 million Euro Arctic sea program.³⁵ The Academy of Finland, which represents Finland at international polar science bodies, has an Arctic specific funding call.³⁶

State

Agrifood Research Finland,³⁷ the Finnish Forest Research Institute³⁸ and the Finnish Game and Fisheries Research Institute³⁹ operate in their respective fields in the north. The three institutes will amalgamated in 2015 to form a Natural Resources Institute.⁴⁰ Another state agency with a northern regions mandate is the Geological Survey of Finland⁴¹ which carries out geological, geochemical and geophysical research and natural resources exploration in northern regions. The institute's expertise ranges from the preparation of control schemes and the evaluation of effectiveness and risks to the assessment of the

30. en.ilmatieteenlaitos.fi/

31. en.ilmatieteenlaitos.fi/arctic-research

32. www.syke.fi/en-US

33. www.ttl.fi/en/contact/oulu/Pages/default.aspx

34. www.vtt.fi/?lang=en

35. www.tekes.fi/en/whats-going-on/news/finland-sets-its-sights-on-growth-in-arctic-seas/

36. www.aka.fi/en-GB/A/Academy-of-Finland/Media-services/Releases/1/April-2014-call-Academy-funding-for-Arctic-research-energy-research-social-security-ICT-and-research-infrastructures/

37. portal.mtt.fi/portal/page/portal/mtt_en

38. www.metla.fi/index-en.html

39. www.rktl.fi/english/

40. portal.mtt.fi/portal/page/portal/mtt_en/mtt/news/pressreleases/2013/DF9420920A6413CBE0430392D0C1757C

41. en.gtk.fi/

lifecycle impacts of consumption and production. The governmental Radiation and Nuclear Safety Authority (STUK)'s⁴² regional laboratory in northern Finland is the northernmost laboratory in the European Union to monitor radioactivity. It is also part of the environmental monitoring and assessment network for Arctic areas.

Industry

The Lapland Chamber of Commerce⁴³ has created the Arctic Business Forum⁴⁴, with the view of bringing together leading international companies with business interests in the European High North. The Chamber is also working towards a Circumpolar Chamber of Commerce. Arctech Helsinki Shipyard⁴⁵ is a joint venture owned with equal shares by STX Finland and Russian United Shipbuilding Corporation (USC). They specialized in Arctic shipbuilding technology and innovation. Apart from the infrastructural importance of Arctic shipbuilding, a company like Arctech also fosters cooperation between the marine industry clusters of Russia and Finland. In addition to model and full scale testing services, Aker Arctic⁴⁶, for example, offers sundry types of consulting, design and engineering services, field expeditions, training and other technology services associated with technologies and operations in icy or severely cold conditions. Arctia Shipping Oy⁴⁷ owns and operates the Finnish icebreaker fleet. During the cold seasons they ensure that maritime traffic to and from Finnish ports runs smoothly. During the summer season, their multipurpose icebreakers work in the Arctic waters to ensure safe operations in the offshore oil- and gas fields.

SWEDEN

Research and Education

The Tarfala Research Station, another INTERACT member and operated by Stockholm University, is situated in the highalpine Kebnekaise Mountains, northern Sweden and close to Storglaciären, one of the best studied glaciers in the world.⁴⁸ Polar research in Sweden runs the gamut of disciplines and both basic and applied research is done. The Stockholm,⁴⁹ Lund,⁵⁰ Umeå⁵¹ and Uppsala⁵² Universities are amongst the universities who provide institutional support for Arctic research, as does the Royal Institute of

Technology, KTH⁵³ the Swedish University of Agricultural Sciences⁵⁴ and the University of Gothenburg.⁵⁵ Research institutions like the Stockholm Environmental Institute,⁵⁶ the Stockholm Resilience Centre⁵⁷ and the Stockholm Peace Research Institute⁵⁸ also have long-term Arctic programmes. Similarly, the FOI,⁵⁹ which conducts security and defence research mainly – but not exclusively – for the Swedish Defence Force, is also conducting research into Arctic security issues.

A recent institutional initiative with a very specific Arctic focus is the establishment of the Arctic Research Centre at Umeå University (Arcum).⁶⁰ Arcum is rooted in the Northern Studies research focus of the University of Umeå more generally. Research within the framework of Arcum is of relevance for the society and is a response to the demand for research-based knowledge. It provides a multi-disciplinary response to present and future demands of research-based knowledge for a sustainable development in the north.

The Swedish Institute of Space Physics (IRF)⁶¹ is a governmental research institute which runs the Polar Atmospheric Research Programme, comprising of studies of the dynamics, electrodynamics, chemistry and aeronomy of the troposphere, stratosphere and mesosphere. The Swedish National Space Board⁶² in cooperation with the European Space Agency and specifically Canada, Finland, and France also operates the Odin satellite, which has an Arctic specific mission in its study of ozone depletion. Launched in 2001, the Odin was designed to combine two scientific disciplines on a single spacecraft in studies of star formation/early solar system (astronomy) and of the mechanisms behind the depletion of the ozone layer in the earth's atmosphere and the effects of global warming (aeronomy).

The European Incoherent Scatter Scientific Association (EISCAT) ⁶³ has its headquarters in Kiruna, Sweden. The experimental sites of EISCAT are located in the Scandinavian sector north of the Arctic Circle. Investments and operational costs are shared between the China Research Institute of Radiowave Propagation, People's Republic of China, National Institute of Polar Research, Japan, the Research Council of Norway, Science and Technology Facilities Council, United Kingdom, Solar-Terrestrial Environment Laboratory,

42. www.stuk.fi/en_GB/

43. www.lapland.chamber.fi/index.php/in-english

44. www.arcticbusinessforum.com/

45. arctech.fi/

46. www.akerarctic.fi/company.htm

47. www.arctia.fi/services

48. www.ink.su.se/english/tarfala-research-station

49. www.su.se/english/

50. www.lunduniversity.lu.se/

51. www.umu.se/english

52. www.uu.se/en/

53. www.kth.se/

54. www.slu.se/en/

55. <http://www.gu.se/english>

56. www.sei-international.org/

57. www.stockholmresilience.org/

58. www.sipri.org/

59. foi.se/en/

60. www.arcum.umu.se/english/

61. www.irf.se/

62. www.snsb.se/en/Home/Space-Activities-in-Sweden/Satellites/Odin/

63. www.eiscat.se/

Nagoya University, Japan, the Finish Academy, Finland and the Swedish Research Council. It was established to conduct research on the lower, middle and upper atmosphere and ionosphere using the incoherent scatter radar technique.

State

The Swedish Polar Research Secretariat⁶⁴ is a government agency under the Ministry of Education and Research that promotes and co-ordinates Swedish polar research and development, as well as monitor, promote and assist in international negotiations, collaborations and cooperation with the EU. The Secretariat follows and plans research and development, as well as to organise and lead research expeditions to the Arctic and Antarctic regions. The Secretariat actively works to improve environmental protection in the polar regions. The Swedish Polar Research Secretariat has a long time agreement with the Swedish Maritime Authority to use the research vessel and icebreaker Oden for research purposes.⁶⁵ The Secretariat also operates Abisko Scientific Research Station, an INTERACT member about 200 km north of the Arctic Circle in Sweden.⁶⁶

Other state institutions with Arctic or Northern specific tasks include the Swedish Maritime Administration,⁶⁷ which apart from Oden, is also responsible for Sweden's icebreaker fleet, providing crucial infrastructural support in the Baltic and the Gulf of Bothnia. The Swedish Agency for Marine and Water Management⁶⁸ is responsible for fishing and environmental monitoring and research activities and their international unit is also responsible for the relevant international agreements that concerns the Arctic. The Swedish Environmental Protection Agency⁶⁹ provides the institutional base for Swedish initiatives relating to environmental protection of the Arctic and the Swedish Forest Agency. It also has a section focussing specifically on Northern forestry.⁷⁰

Environment Climate Data Sweden (ECDS) is an infrastructural initiative facilitating the searching, publication and long-term storage of data for research in the fields of environment and climate. The ECDS consists of a clearinghouse mechanism, allowing for the searching and publication of relevant data; and a service infrastructure, providing additional support to scientists throughout the whole research process. It contains Sweden's IPY data and is a repository of past and current data from Swedish polar research expeditions.⁷¹ ECDS is

hosted by the Swedish Meteorological and Hydrological Institute (SMHI), a government agency that manages and develops information on weather, water and climate that provides knowledge and advanced decision-making data for public services, the private sector and the general public. SMHI also conducts Arctic Research.⁷²

Industry

The Swedish state-owned mining company, Luossavaara-Kiirunavaara AB (LKAB)⁷³ has subsidiaries and operations in a number of countries around the world. Their major assets are the iron ore mines in Sweden's far north, including Kiruna. Other than building and maintaining rail and port infrastructures, the company is undertaking the major task of moving a sector of Kiruna itself – including most of the town centre – in order to facilitate the expansion of mining operations.

III.3 EUROPEAN UNION OBSERVERS AT THE ARCTIC COUNCIL

FRANCE

The French Polar Institute Paul Emile Victor (IPEV) is a public interest group formed by nine public and parastatal bodies. IPEV is an agency of resources and expertise to support scientific research in the Arctic.⁷⁴ IPEV is a partner of the French Arctic Initiative⁷⁵ and was launched in 2013 and is a consortium of leading French research bodies and agencies. It runs highly interdisciplinary programmes for research on key scientific issues in the Arctic. It also runs a national database of Arctic researchers. Together with the German Alfred Wegner Institute: Helmholtz Centre for Polar and Marine Research (AWI)⁷⁶, IPEV runs the AWIPEV Arctic Research base at Ny-Ålesund on Svalbard.⁷⁷

An important research infrastructure enabling scientific initiatives is the privately run and publically supported Tara Expeditions, which operates the Tara, a sailing research vessel which operates in polar areas.⁷⁸ It has been used in EU-funded projects, such as DAMOCLES

64. www.polar.se/

65. www.sjofartsverket.se/en/Maritime-services/Winter-Navigation/Our-Ice-breakers/Research-VesselIcebreaker-Oden/

66. www.polar.se/en/abisko

67. www.sjofartsverket.se/en/

68. www.havochvatten.se/

69. www.swedishepa.se/

70. www.skogsstyrelsen.se/en/

71. www.smhi.se/ecds

72. www.smhi.se/en/Research/satellite-data-provide-insight-into-melting-arctic-ice-1.29845

73. www.lkab.com/

74. www.institut-polaire.fr/ipev/l_institut

75. www.chantier-arctique.fr/en/index.php

76. www.awi.de/en/institute/

77. www.awi.de/en/infrastructure/stations/awipev_arctic_research_base/

78. oceans.taraexpeditions.org/en/a-2-5-years-marine-and-scientific-expedition.php?id_page=1

GERMANY

The Alfred Wegener Institute: Helmholtz Centre for Polar and Marine Research (AWI) is the central German research facility for the polar regions.⁷⁹ It is the National manager and implementation agency of the National German Arctic and Antarctic Programme. It also has a mandate to advise the German government in all matters concerning the polar regions. It operates the R/V Polarstern, a high class ice breaking research vessel and floating large scale laboratory to support research in the Arctic and Antarctic. Recently, an initiative was launched to create an Arctic Research Icebreaker Consortium for Europe (ARICE), which aims to implement a joint European / International Consortium for the operation of the European heavy icebreakers Oden (Sweden) and Polarstern. This initiative is supported by several European countries, as well as Canada and some international institutions.⁸⁰ AWI also undertook the initiative to host the International Arctic Science Committee, IASC⁸¹, a non-governmental, international scientific organization. The IASC mission is to encourage and facilitate cooperation in all aspects of Arctic research, in all countries engaged in Arctic research and in all areas of the Arctic region. The Helmholtz Centre for Ocean Research in Kiel also conducts marine research in Arctic areas.⁸²

Apart from the research station AWIPEV on Svalbard, which is jointly run with the French, AWI also operates the Research Station Samoylov in the Lena Delta with the Russian Lena Delta Reserve.⁸³ Another German-Russian research infrastructure initiative is the Otto Schmidt Laboratory for Polar and Marine Research (OSL)⁸⁴, located in Saint Petersburg. The OSL provides a basis for coordination and development of the research projects carried out within the framework of the Bilateral Agreement on Cooperation in Polar and Marine Research between the Russian Federation and Germany. The OSL focusses especially on the support of young scientists in Russia and Germany and together with other research institutions jointly runs Arctic specific programmes such as the Master Program for Polar and Marine Research (POMOR).⁸⁵

ITALIAN REPUBLIC

Italy's institutional and infrastructural Arctic initiatives are mainly undertaken by the National Research Council.⁸⁶ It has a dedicated Polar Support Unit, which is also responsible for the Italian Arctic Station Dirigible

79. www.awi.de/en/institute/

80. faro-arctic.org/fileadmin/Resources/DMU/GEM/faro/2013_Nicole_ARICE_for_FARO.pdf

81. www.iasc.info/

82. <http://www.geomar.de/en/research/expeditionen/exp/completed/0/0/>

83. www.awi.de/en/infrastructure/stations/samoylov_station/

84. www.otto-schmidt-laboratory.de/?Home

85. pomor.spbu.ru/

86. www.cnr.it/sitocnr/Englishversion/Englishversion.html

Italia⁸⁷, a multidisciplinary research facility located in Ny-Ålesund, Svalbard. The National Institute of Oceanography and Experimental Geophysics (OGS)⁸⁸, an internationally oriented public research institution, has Polar Areas as a dedicated pillar of research activity and the OGS represents Italy on a number of international polar research management and research infrastructure committees.

THE NETHERLANDS

The Willem Barentz Polar Institute⁸⁹ is a conglomeration of institutes which actively contributes to Dutch polar activities. It includes the major institutions with Arctic research initiatives, including the Royal Netherlands Institute for Sea Research⁹⁰, the Royal Netherlands Meteorological Institute⁹¹, the Free University of Amsterdam⁹², and Wageningen University⁹³. The Arctic Centre⁹⁴, based at the University of Groningen, is also part of the Willem Barentz Polar Institute and its current (2013) host. The Arctic Centre is largely involved in Social Science and Humanities related research in the Arctic. The Netherlands' national research council has a funding instrument for polar research initiatives, the Netherlands Polar Program⁹⁵. The Netherlands Arctic Station is a government supported infrastructural initiative and operates during summer months in Ny-Ålesund, Svalbard⁹⁶. It is an INTERACT observer.

POLAND

The Committee on Polar Research of the Polish Academy of Sciences provides the organizational infrastructure for Polish polar research. The members of PRC represent all scientific disciplines and come from more than 24 scientific institutions in Poland. It is also responsible for the scientific patronage and development of Polish Polar research infrastructures⁹⁷. This includes five research stations on Spitsbergen, Svalbard, namely the Stanisław Siedlecki Polish Polar Station in Hornsund⁹⁸, the Stanisław Baranowski Polar Station of Wrocław University⁹⁹, the Nicolaus Copernicus University Polar Station, Kaffioyra¹⁰⁰,

87. www.polarnet.cnr.it/content/view/162/58/lang,en/

88. www.ogs.trieste.it/en

89. wbpi.webhosting.rug.nl/index.php?nr=89

90. www.nioz.nl/

91. www.knmi.nl/index_en.html

92. www.falw.vu.nl/en/

93. www.wageningenur.nl/en/Research-Results/Projects-and-programmes/Arctic.htm

94. www.rug.nl/research/arctisch-centrum/

95. www.nwo.nl/en/research-and-results/programmes/Netherlands+Polar+Programme

96. www.arcticstation.nl/

97. www.kbp.pan.pl/index.php?lang=en

98. hornsund.igf.edu.pl/index.php

99. polar.geom.uni.wroc.pl/

100. www.home.umk.pl/~geopolar/stacja/STACJA.HTML

the Calypsobyen Polar Station of Maria Curie Skłodowska University¹⁰¹ and the “Skottehytta” - expedition base of Adam Mickiewicz University in Poznań¹⁰². The Polish Polar Station, Hornsund is an observer to INTERACT. The Polish Academy of Sciences also owns the tall ship, RV Oceania. The training and research vessel Horyzont II, which is also used for Arctic research, is owned by the Gdynia Maritime University¹⁰³.

SPAIN

The national polar authority of Spain is the Spanish Polar Committee¹⁰⁴, which includes a technical secretariat. Spain’s Navy administers its polar research vessel, R/V Hesperides and the support vessel Las Palmas. The National Polar Data Centres is an infrastructural initiative that ensures long term archiving of data¹⁰⁵. More than fifteen Spanish research institutes research groups with Arctic projects currently running¹⁰⁶.

UNITED KINGDOM

Arctic research support and coordination in the UK is the task of the NERC Arctic Office¹⁰⁷. The Arctic Office is funded by the Natural Environmental Research Council (NERC)¹⁰⁸ and hosted by the British Antarctic Survey (BAS)¹⁰⁹. BAS manages the UK Arctic Research Station¹¹⁰ at Ny-Ålesund on Svalbard, the station is an INTERACT Observer. NERC also operates the four polar research vessels, the James Clark Ross, Ernest Shackleton, RRS Discovery and RRS James Cook. The James Clark Ross operates primarily in the eastern Arctic Ocean¹¹¹. It also operates several research aircraft¹¹².

Another institution which provides a springboard for Arctic initiatives, and runs several themselves, is the Scott Polar Research Institute, a centre for research into both polar regions at the University of Cambridge¹¹³. A large number of universities in the UK have Arctic research projects, including most in the Russell Group¹¹⁴ and some universities have research themes focussing

on Arctic and sub-Arctic research, such as the University of Aberdeen¹¹⁵ and the University of Southampton, Ocean and Earth Science, National Oceanography Centre Southampton (NOCS)¹¹⁶.

III.4 OTHER EUROPEAN UNION COUNTRIES

EU/EEA and affiliated countries represented on the European Polar Board¹¹⁷ (which covers both the boreal and austral poles), but who are not observers at the Arctic Council, include Belgium, Bulgaria, the Czech Republic, Estonia, Luxembourg, Portugal and Switzerland. Besides time-limited research projects located within the various countries, there are also Arctic and polar specific institutes in some of these countries (the institute are not all necessarily members of the EPB). This includes, for example, the Austrian Polar Research Institute is a research consortium that promotes and coordinates research and education in the area of polar sciences at the participating organisations¹¹⁸. In Belgium, the International Polar Foundation¹¹⁹, recognized by the Belgian Royal Statute as a foundation for public good, provides an interface between polar science and society. The foundation’s Arctic initiatives include promoting polar education and exploration, as well as running the annual Arctic Futures symposium, promoting high-level policymaker – stakeholder interaction.

101. geografia.umcs.lublin.pl/wyprawy/

102. www.staff.amu.edu.pl/~svalbard/

103. www.am.gdynia.pl/en/

104. www.idi.mineco.gob.es/portal/site/MICINN/menuitem.7eac-5cd345b4f34f09dfd1001432ea0/?vgnnextoid=9b6fefb8b7c0f210VgnVCM-1000001d04140aRCRD

105. [//hielo.igme.es/index.php/en/](http://hielo.igme.es/index.php/en/)

106. www.arctic-council.org/index.php/en/document-archive/category/50-information-day-of-the-arctic-council-in-copenhagen-28-may-2010?download=183:spain.

107. www.arctic.ac.uk/

108. www.nerc.ac.uk/index.asp?cookieConsent=A

109. www.antarctica.ac.uk/

110. www.arctic.ac.uk/infrastructure/research-station/

111. www.arctic.ac.uk/infrastructure/research-vessels/

112. www.arctic.ac.uk/infrastructure/aircraft/

113. www.spri.cam.ac.uk/

114. www.russellgroup.ac.uk/our-universities/

115. www.abdn.ac.uk/the-north/

116. www.southampton.ac.uk/oes/index.page?

117. www.esf.org/hosting-experts/expert-boards-and-committees/polar-sciences/about/membership.html

118. www.polarresearch.at/

119. www.polarfoundation.org/





Chapter cover image: Aerial view of iceberg.
Photo: GettyImages

IV. OTHER EUROPEAN INITIATIVES

IV.1 NON-GOVERNMENTAL, INTER-GOVERNMENTAL AND REGIONAL INITIATIVES

Non-Governmental Initiatives

A number of high-profile organisations and networks operating at national or intergovernmental level within European countries have launched initiatives that aim to inform Arctic leadership and management strategies. Many, but not all, of them are observers to the Arctic Council, a list of which is available on its website¹.

On the non-governmental front, the groups involved range from independent conservation foundations to activist groups. For example, the WWF, a conservation foundation with national offices in all the European Arctic countries except Iceland, has been running an Arctic initiative in the form of the WWF Arctic Programme². The WWF programme, founded in 1992, entails a variety of scientific research and advocacy projects and is an observer to the Arctic Council. On the other side of the spectrum the activist group Greenpeace has been running a highly visible 'Save the Arctic'³ campaign. It is not an observer to the Arctic Council.

Intergovernmental

On intergovernmental level, involving all the overwhelming majority of European countries, the United Nations Environment Programme (UNEP)⁴ has also recently initiated a process planning well-coordinated Arctic activities, utilizing its global environmental mandate and convening authority to contribute to sustainable development in the Arctic. The United Nations Development Program (UNDP)⁵ and the United Nations Economic Commission for Europe (UNECE)⁶ also have observer status at the Arctic Council. The International Work Group for Indigenous Affairs (IWGIA)⁷, headquartered in Denmark, is an international, non-governmental human rights organization supporting indigenous peoples' rights with observer status at the Arctic Council

Regional

More regionally focused bodies in Europe include the Saami Council⁸, and NGO and permanent participant to the Arctic Council with Saami member organizations in Finland, Russia, Norway and Sweden. The Council works in collaboration with the UN and EU. The primary aim of the Saami Council is the promotion of Saami rights and interests in the four countries where the Saami are living. Inuit in Greenland are represented by the Inuit Circumpolar Council (ICC)⁹, an NGO that is also a permanent participant in the Arctic Council. The ICC has been participating in several of the Council's working groups.

Nordic

The International Centre for Reindeer Husbandry¹⁰, funded by the Norwegian government, hosts the Secretariat of the Association of World Reindeer Herders – which promotes professional, commercial, and cultural contact between the different reindeer peoples of the world, and disseminates information about reindeer husbandry. WRH has observer status to the Arctic Council.

Other Nordic specific organizations with observer status at the Arctic Council, and running Arctic focused programmes as part of their broader mandate, include the Nordic Council of Ministers (NCM)¹¹, a forum for Nordic governmental co-operation and the Nordic Environment Finance Corporation (NEFCO)¹², an international finance institution. NordForsk¹³, an organisation under the NCM, has launched a major initiative to establish a cross-cutting Nordic co-funding programme, Noria-Net Arctic¹⁴, in response to the multiple societal challenges and new opportunities that the Arctic region currently meets.

Norway, Iceland, Greenland and the Faroe Islands are the founding signatories of the North Atlantic Marine Mammal Commission (NAMMCO), an international body for cooperation on the conservation, management and study of marine mammals in the North Atlantic¹⁵.

The facilitation of cooperation in the Barents Euro-Arctic Region is routed through two cooperative councils, coordinated by the International Barents Secretariat.

1. www.arctic-council.org/index.php/en/about-us/arctic-council/observers

2. wwf.panda.org/what_we_do/where_we_work/arctic/

3. www.greenpeace.org/international/en/campaigns/climate-change/arctic-impacts/

4. www.unep.org/regionalseas/programmes/independent/arctic/

5. www.undp.org/content/undp/en/home.html

6. www.unece.org/#

7. www.iwgia.org/regions/arctic

8. www.saamicouncil.net

9. www.inuit.org/

10. reindeerherding.org/about-us/

11. www.norden.org/en/nordic-council-of-ministers

12. www.nefco.org/

13. www.nordforsk.org/en

14. www.nordforsk.org/en/programs/noria-net-arctic

15. www.nammco.no/Nammco/Mainpage/

The intergovernmental Barents-Euro Arctic Council¹⁶ members include Denmark, Finland, Iceland, Norway, Russia, Sweden and the European Commission. The Interregional Barents Regional Council¹⁷ consists of thirteen counties of sub-national entities. The Working Group of Indigenous Peoples¹⁸, with representatives from the Sámi, Nenets and Vepsians has an advisory role to both the councils.

Country specific initiatives to facilitate international collaboration include, for example the Arctic Society in Finland¹⁹ established in 2012 aims to support and monitor Finland's activities in the Arctic region and to coordination of Finnish policy in relation to its activities. In addition, the Advisory Board is responsible for raising awareness about Arctic issues and for forging connections with corresponding bodies in other countries.

The Norwegian Barents Secretariat is owned by the three northernmost counties of Norway: Nordland, Troms and Finnmark. There are three Russian offices: Murmansk, Archangelsk and Nenets office. The Norwegian Barents Secretariat aims at developing the Norwegian-Russian relations in the north by promoting and funding Norwegian-Russian cooperation projects. The Secretariat is also a centre of competence on Norwegian-Russian relations.

Initiated by the Icelandic president, the Arctic Circle²⁰ is a forum with a mission to facilitate dialogue and strengthen the decision-making process through involving a range of decision-makers across all sectors. Participants include a cross section of funding bodies, universities, companies, NGOs and media partners. The inaugural summit will be held in October 2013. The Arctic Frontiers (AF)²¹, an independent Norwegian network organising an annual summit in Tromsø, Norway, provides a platform for all arctic stakeholders to define priorities for development and research.

Circumpolar

The University of the Arctic²² is a decentralized organization, with offices, programs and other functions hosted at member institutions in the Circumpolar North. It is a cooperative network of more than 130 institutions, including a large contingent of European universities, colleges, and other organisations committed to higher education and research in the North.

IV.2 MONITORING AND ASSESSMENT INITIATIVES

The Sustaining Arctic Observing Networks (SAON) process was initiated by the Arctic Council (AC) and has been underway since early 2007²³. Its purpose is to support and strengthen the development of multinational engagement for sustained and coordinated pan-Arctic observing and data sharing systems that serve societal needs, particularly related to environmental, social, economic and cultural issues. SAON promotes the vision of well-defined observing networks that enable users to have access to free, open and high quality data that will realize pan-Arctic and global value-added services and provide societal benefits. Its goal is to enhance Arctic-wide observing activities by facilitating partnerships and synergies among existing observing and data networks ("building blocks"), and promoting sharing and synthesis of data and information. SAON also is committed to facilitating the inclusion of Arctic indigenous people in observing activities, in particular by promoting community-based monitoring (CBM) efforts. Reports on country and organisation specific observing activities can be found on the SAON website²⁴.

BarentsWatch (BW)²⁵ is an initiative by 27 central Norwegian state agencies and research institutes. The aim is to expand the number of recognised partners in the future as part of the continuous development of BarentsWatch. It is a comprehensive monitoring and information system for sea and coastal areas from Denmark in the south, to Greenland in the west, the North Pole in the north and Novaja Semlja in the east. The ambition is to be able to share information internationally in the future.

Polar View (PV)²⁶ was initiated by the European Space Agency (ESA) and the European Commission, with participation from the Canadian Space Agency, under the Copernicus programme. PV has participants and team members from Australia, Belgium, Canada, Denmark, Estonia, Finland, France, Germany, Italy, Norway, Sweden, and the UK. It aims to build a cohesive international network that meets the following objectives: engages a wide spectrum of end users who are convinced of the value of the services and products; provides a suite of desirable Environmental Observation (EO)-related services and products to public users; provides additional EO-related services and products to private users; and interfaces in a mutually beneficial way with the cryospheric science and climate change community. Current PV service lines include: Sea Ice Monitoring and Forecasting; Iceberg Monitoring; Ice Edge Monitoring; Ice Drift Trajectories; River Ice Monitoring; Lake Ice Monitoring; Glacier Monitoring; Snow Monitoring.

23. www.arcticobserving.org/

24. www.arcticobserving.org/index.php?option=com_content&view=article&id=66&Itemid=100017

25. www.barentswatch.no/

26. www.polarview.org/

16. www.beac.st/in-English/Barents-Euro-Arctic-Council/Introduction

17. www.beac.st/in-English/Barents-Euro-Arctic-Council/Barents-Regional-Council

18. www.beac.st/in-English/Barents-Euro-Arctic-Council/Working-Groups/Working-Group-of-Indigenous-Peoples

19. arctineseura.yhdistysavain.fi/

20. www.arcticcircle.org/

21. www.arctic-frontiers.com

22. www.uarctic.org/Frontpage.aspx?m=3

ANISTIAMO: Addressing New Challenges in Satellite Based Maritime Surveillance and Arctic Monitoring²⁷ is an initiative of Kongsberg Satellite Services in Norway with participation by organisations in Ireland and Finland. ANISTIAMO builds on previous research that focused on satellite derived information for maritime surveillance, and seeks to continue working with maritime agencies (e.g. naval organisations, coast guards) that are potential users of satellite-based products and services. With this in mind, the primary objectives of the initiative are to: validate the capability to provide products and services responding to requirements for information expressed by end users in the maritime security and Arctic Environmental Monitoring community; demonstrate benefits and utility for a defined set of products and services to a representative group of end users under operational conditions; obtain clear, credible statements from participating end users on the utility of the products and services delivered; compile convincing evidence on the viability of a future operational case for the products and services considered within the target demand sectors.

International Arctic Systems for Observing the Atmosphere (IASOA)²⁸ is an on-going initiative to advance coordinated research objectives from independent pan-Arctic atmospheric observatories through (1) strategically developing comprehensive observational capacity, (2) facilitating data access and usability through a single gateway, and (3) mobilizing contributions to synergistic science and socially-relevant services derived from IASOA assets and expertise. Partner observatories are located in the USA (Barrow, AK), Canada (Alert and Eureka), Kingdom of Denmark (Summit in Greenland), Norway (Ny-Ålesund on Svalbard), Sweden (Abisko), Finland (Sodankylä) and Russia (Tiksi and Cherskii).

The European Space Agency or ESA²⁹, (with 20 member states in Europe and cooperation agreements with other countries and agencies), manages two major research infrastructure initiatives. Copernicus, the new name for the Global Monitoring for Environment and Security programme, previously known as GMES, is one of the most ambitious Earth observation programmes to date. This initiative is headed by the European Commission (EC) in partnership with the European Space Agency (ESA) and the European Environment Agency (EEA) (also see table 2.2). The ESA is developing five families of Sentinel missions specifically for Copernicus, the first of which has been scheduled to launch in 2013. The Sentinels will provide a unique set of observations, starting with the all-weather, day and night radar images from Sentinel-1 to be used for land and ocean services. Sentinel-2 will deliver high-resolution optical images for land services and Sentinel-3 will provide data for services relevant to the ocean and land. Sentinel-4 and Sentinel-5 will provide data for atmospheric composition monitoring from geostationary and polar orbits, respectively.

27. www.cmrc.ie/projects/addressing-new-challenges-in-satellite-based-maritime-surveillance-and-arctic-monitoring-%28anistiAMO%29.html

28. iasoa.org/iasoa/index.php?option=com_frontpage&Itemid=1

29. www.esa.int/ESA

Sentinels 1-3 will contribute to environment, economic development and sovereignty and security policy priorities in the Arctic, providing data for monitoring changes in land cover, pollution monitoring, northern shipping and disaster response.

The Cryosat-2³⁰ infrastructure initiative also falls under the ESA. CryoSat-2's mission is to study the Earth's polar ice caps, and is dedicated to precise monitoring of the changes in the thickness of marine ice floating in the polar oceans and variations in the thickness of the vast ice sheets that overlie Greenland and Antarctica. CryoSat-2 will primarily: determine regional trends in Arctic perennial sea-ice thickness and mass; and determine the contribution that the Antarctic and Greenland ice sheets are making to mean global rise in sea level.

26 European states participate in the European Organization for the Exploitation of Meteorological Satellites or EUMETSAT Polar System (EPS) Metop³¹. This organisation's prime objective is to provide continuous, long-term data sets, in support of operational meteorological and environmental forecasting and global climate monitoring, in which the Arctic plays an important role.

Arktika, an initiative by Russian Federal Space Agency (ROSCOSMOS), indications of interest from Italy among others. The Arktika system, estimated to be worth around 70 billion roubles (\$2.5 billion US), will monitor climatic changes, survey energy resources in the Arctic region as well as provide high-speed communications services. The system has been recently approved by the Russian Economic Development Agency and according to ROSCOSMOS has also received support from the World Meteorological Organization. The new Arctic Satellite cluster will be based on already operational remote-sensing weather and telecommunication satellites and will also receive radio signals from the COSPAS-SARSAT international search and rescue (SAR) system.

Nuuk Basic is an extensive cross-disciplinary ecological monitoring programme in low Arctic West Greenland. Its partners include the Department of Bioscience, Aarhus University³², the Greenland Institute of Natural Resources³³, the Greenland Climate Research Centre³⁴, the University of Copenhagen³⁵ and Asiaq - Greenland Survey³⁶ and receives both private and public funding.

30. www.esa.int/Our_Activities/Observing_the_Earth/CryoSat

31. www.eumetsat.int/website/home/Satellites/index.html

32. bios.au.dk/en/

33. www.natur.gl/en/

34. www.natur.gl/index.php?id=663&L=3

35. www.ku.dk/english/

36. www.asiaq.gl/

IV.3 COMMERCIAL DEVELOPMENT IN THE EUROPEAN ARCTIC

Commercial development

Commercial development initiatives not only co-produce knowledge, but have a tangible effect on the Arctic environment. Given the European Free Trade Area and other trade agreements, tax revenue companies create for nations, and the potential importance of Arctic resources for the European economy, a perusal of commercial initiatives is included in this compendium. Some companies are majority-owned by nation states, others are headquartered or closely associated with specific nation states and yet others are regional or multinational. *Samples* of initiatives are given based for each of the four areas covered by the EU 2012 inventory: Hydrocarbons and minerals, fisheries, transport and tourism.

Initiatives to exploit **hydrocarbons and minerals** in the Arctic are often in the media spotlight. Several Europe based oil and gas companies have initiated the process of exploiting Arctic resources, for example the Arctic Liquefied Natural Gas (LNG) activities of the French oil and gas company, Total, for example³⁷, or the investments in Arctic drilling by the Italian-based multinational Eni³⁸. Royal Dutch Shell, an Anglo-Dutch company, has several projects and exploration initiatives in arctic conditions, including in the European Arctic³⁹. Danish Maersk Oil⁴⁰ has licenses off the Greenland coast in Baffin Bay. Statoil (oil and gas, Norway) and LKAB (mining, Sweden) has already been discussed elsewhere in this compendium.

Hydrocarbons and mineral extraction initiatives is not the restricted to major oil, gas and mining companies and several other initiatives are linked to it. Nunaoil⁴¹, for example, is fully owned by the Greenland government and represents all public interests in all exploration licenses in Greenland. Finnish industries with initiatives with an Arctic edge include companies researching and developing oil spill recovery equipment adapted to Arctic, such as Lamor (Larsen Marine Oil Recovery)⁴² which has its headquarters in Finland and works closely with several Arctic countries, including Finland, Canada and the United States on oil spill response and recovery in the Arctic. Tekes⁴³, the Finnish Funding Agency for Technology and Innovation, launched a Green Mining Programme⁴⁴ initiative (2011-2016), the main objective of which is to make Finland a global leader of the

sustainable mineral industry.

The two countries with the largest **Arctic fisheries** in Europe are not members of the EU, namely Norway and Iceland. Nevertheless, the EU the major export market for Arctic fish (especially from the North Atlantic) and fisheries has played an important role in EU environmental politics.

The Iceland Responsible Fisheries Foundation⁴⁵ is an initiative funded by the Icelandic government and operates the Iceland Responsible Fisheries logo. This logo indicates the Icelandic origin of fish catches in Icelandic waters and responsible fisheries management. Major Icelandic fisheries companies such as HB Grandi⁴⁶, ISI Seafood⁴⁷ and Samherji⁴⁸ uses the logo. The Norwegian Seafood Council⁴⁹ is an initiative with another angle – it markets Norwegian Seafood and does reputational risk management and communication for the Norwegian Seafood industry. Havfisk⁵⁰ (previously Aker Seafoods) is Norway's largest white fish company, trawls along the Norwegian coast ; the Barents Sea and around Svalbard. It is endorsed by, amongst others, the Marine Stewardship Council⁵¹, a council which sets standards for sustainable fisheries, is running an assessment of fisheries in the Arctic Ocean⁵². Most fisheries do not necessarily self-identify as Arctic, but rather as North Atlantic or North-east Atlantic.

Major European **transport** initiatives in the Arctic are usually related to rail transport and shipping. Discussions are on-going (September 2013) within the Barents region to initiate public-corporate partnerships to expand the railway transport system in the Barents-Arctic region, especially for the export of ore mined in the far North. Several infrastructural initiatives, especially taken by companies in Finland have been discussed in the previous section. In terms of governance processes at least two major initiatives are underway. The International Maritime Organisation⁵³, to which all EU and Arctic countries are members, is busy developing a polar for shipping operations in polar waters. This dovetails several other agreements already in place under the IMO umbrella that affects shipping in some Arctic regions, for example mandatory ship reporting in the Barents Area. Another, voluntary industry-led initiative is the Arctic Marine Best Practice Declaration document, which is supported by international bodies such as the International Union of Marine Insurance⁵⁴

37. total.com/en/energies-expertise/oil-gas/exploration-production/strategic-sectors/lng/innovations/lng-arctic

38. www.eni.com/en_IT/attachments/investor-relations/presentation/2012/eni-in-the-arctic/Eni-in-the-Arctic.pdf

39. www.shell.com/global/future-energy/arctic.html

40. www.maerskoil.com/pages/default.aspx

41. nunaoil.gl/en/about-nunaoil/nunaoil.html

42. www.lamor.com/

43. www.tekes.fi/en/community/Home/351/Home/473

44. www.tekes.fi/programmes/GreenMining

45. www.responsiblefisheries.is/

46. www.hbgrandi.com/Home

47. www.is.is/

48. www.samherji.is/en

49. en.seafood.no/

50. www.havfisk.no/en

51. www.msc.org/

52. www.msc.org/track-a-fishery/fisheries-in-the-program/in-assessment/arctic-ocean/

53. www.imo.org/MediaCentre/HotTopics/polar/Pages/default.aspx

54. www.iumi.com/images/gillian/Clippings/IUMI%20Arctic%20

and the Nordic Association of Marine Insurers⁵⁵. The initiative was partly driven by Arctic Marine Solutions, a Swedish company that specializes in quantification and operation of ice management for Arctic operations⁵⁶.

The Norwegian based Association of Arctic Expedition Cruise Operators (AECO)⁵⁷, to which many major European tour operators belong, is a major initiative in **tourism** industry to regulate and represent the views of Arctic expedition cruise operators and related industries. It has mandatory guidelines for tour operators that are part of AECO, as well as visitor guidelines for tourists. Tourism in the Arctic areas of European countries is usually regulated regionally by counties and municipalities.

IV.4 Other European States

NORWAY

One of the major institutional Arctic initiatives in Norway is FRAM, the High North Research Centre for Climate and the Environment⁵⁸, a constellation of institutions contributing to maintaining Norway's prominent status in the management of environment and natural resources in the North. The Norwegian Polar Institute⁵⁹, a member of FRAM, represents Norway on several international forums. The Norwegian Polar Institute is active within the fields of scientific research, mapping and environmental monitoring in the Arctic and Antarctica. The Institute advises Norwegian authorities in strategic and thematic matters relating to the polar regions, represents Norway internationally on various occasions and is Norway's competent environmental authority in Antarctica. The Institute equips and organises major expeditions and owns the research vessel *Lance* as well as the Sverdrup Research Station in Ny-Ålesund. The FRAM centre also hosts the Arctic Council Secretariat⁶⁰.

UiT The Arctic University of Norway⁶¹ located in Tromsø, is another prominent FRAM member. UiT's key research focuses on the polar environment, climate research, indigenous people, peace and conflict transformation, telemedicine, medical biology, space physics, fishery science, marine bio-prospecting, linguistics and computational chemistry. The university also has several other Arctic related initiatives, including the establishment of national research groups. It is a majority owner of the Northern Research Institute (Norut)⁶², which carries out public sector and industry research commissions, with special expertise in the Northern regions, and UiT is an initiating partner of the National

Centre for Petroleum Activities in the Arctic. The latter centre, to be seated in Tromsø, received seed money from the Norwegian state in 2012 and brings several institutions together to focus on petroleum extraction-related research in an Arctic context.

The Institute of Marine Research⁶³, also a member of FRAM, is Norway's largest centre of marine science. Their main task is to provide advice to Norwegian authorities on aquaculture and the ecosystems of the Barents Sea, the Norwegian Sea, the North Sea and the Norwegian coastal zone. About 50% of their activities are financed by the Ministry of Fisheries and Coastal Affairs. The institute owns several research vessels to this end⁶⁴.

The Norwegian Polar Institute, the Institute for Marine Research, and UiT The Arctic University of Norway has commissioned the construction of research vessel "Kronprins Haakon", an ice-class Polar 10 Icebreaker which should be ready for delivery in 2015.

The University Centre in Svalbard (UNIS), also a member of FRAM, is a share-holding company, owned by the Norwegian Ministry of Education and Research. UNIS's goals are to provide university level education in Arctic studies, to carry out high quality research, and to contribute to the development of Svalbard as an international research platform. It is an important clearing house for research on Svalbard. UNIS is also in charge of the Svalbard Integrated Arctic Earth Observing System (SIOS)⁶⁵ (see table 2.2). The overall goal of SIOS is to establish an Arctic Earth Observing System in and around Svalbard that integrates the studies of geophysical, chemical and biological processes from all research and monitoring platforms.

In terms of research stations, two Norwegian stations are part of the EU-INTERACT initiative. Finse Alpine Research Centre⁶⁶ is located in the northwestern part of the Hardangervidda mountain plateau. Even though the University of Oslo is the official owner, state funding for building the station was provided on the condition that the Universities of Bergen and Oslo have equal rights to the use of the station for research and education. Bioforsk Svanhovd⁶⁷ belongs to the Norwegian Institute for Agricultural and Environmental Research (Bioforsk). It is located in the Pasvik area in North-East Norway.

The Centre for High North Logistics (CHNL)⁶⁸ was established as an international knowledge hub for

[Declaration%20Release%2023%204%2013.pdf](#)

55. www.cefor.no/Industry-Policy/News/Arctic-Best-Practice-Declaration/

56. arcticmarinesolutions.se/index.php

57. www.aeco.no/about-aeco/

58. www.framsenteret.no/

59. www.npolar.no/en/about-us/

60. www.arctic-council.org/index.php/en/contact

61. uit.no/startside

62. www.norut.no/en/Norut/About-us

63. www.imr.no/en

64. www.imr.no/filarkiv/2003/12/Our_Ships_And_The_Men_Whose_Names_They_Bear.pdf/en

65. www.sios-svalbard.org/servlet/Satellite?c=Page&pagename=sios/Hovedsidemal&cid=1234130481072

66. www.finse.uio.no/

67. www.bioforsk.no/ikbViewer/page/prosjekt/hovedtema?p_dimension_id=19512&p_menu_id=19528%20%20%20&p_sub_id=19513&p_dim2=19514

68. www.chnl.no/

businesses, research institutions and authorities so that they can develop effective and sustainable logistics solutions for northern sea areas. One of their initiatives is the creation of an online database, Arctic Resources and Transportation Information System (ARCTIS), a knowledge hub to provide the best available information on non-living resources, shipping and logistics in the Arctic⁶⁹.

Since much of its activities take place in the Arctic, Statoil⁷⁰, the Norwegian oil and gas extraction company in which the Norwegian government holds a majority share, has a dedicated Arctic unit and a specific focus on the far north of the Norwegian continental shelf. Besides infrastructural development in the north, Statoil has taken an institutional corporate initiative in conducting research and development programs tailored to meet the challenges of oil and gas extraction in the north.

ICELAND

The Icelandic Centre for Research (RANNIS)⁷¹ coordinates and promotes Icelandic participation in collaborative international projects in science and technology.

The Icelandic Joint Committee on Arctic Affairs (Samvinnunefnd um málefni norðurslóða), operates under the auspices of the Icelandic Ministry for the Environment and Natural Resource. The Committee is a legally bound committee with the mission to strengthen and enforce cooperation between partners in Arctic research and the matters of the Stefansson Arctic Institute. The Stefansson Arctic Institute⁷², located in Akureyri, is an independent institute of the Icelandic Ministry for the Environment with a focus on the human dimension of sustainable development in the Arctic region.

The secretariat for the Northern Research Forum (NRF)⁷³ is shared by the Stefansson Arctic Institute in Akureyri and the University of Akureyri. The purpose of the Northern Research Forum is to promote intensive dialogue between members of the research community and a wide range of other arctic stakeholder; it facilitates research on issues and problems relevant to the contemporary Northern agenda and believed to have global significance. They are located in the same building as two Arctic Council secretariats hosted by Iceland, Conservation of Arctic Fauna and Flora (CAFF)⁷⁴ and Protection of the Arctic Marine Environment (PAME)⁷⁵.

Also located in Akureyri is the Arctic Portal⁷⁶ initiative,

69. www.arctis-search.com/ARCTIS+Database+%28Arctic+Resources+and+Transportation+Information+System%29

70. www.statoil.com/en/OurOperations/FarNorth/Pages/default.aspx

71. <http://www.rannis.is/>

72. <http://www.svs.is/english/>

73. <http://www.rha.is/nrf>

74. <http://www.caff.is/>

75. <http://www.pame.is/>

76. <http://www.arcticportal.org/>

which provides the institutional infrastructure for a comprehensive gateway to Arctic information and data on the internet. It hosts a number of Arctic-- related websites, and participates in many projects relevant for the cooperation between the EU and the Arctic.

The Icelandic Arctic Cooperation Network⁷⁷ is an infrastructure to facilitate cooperation amongst Icelandic public and private organizations, institutions, businesses and bodies involved in Arctic issues – among other things in research, education, innovation and monitoring, or other activities relevant to the Arctic region.

The Polar Law Institute is a non-profit research and education institution and operates within the University of Akureyri, primarily focused on organizing the annual Polar Law Symposiums and enhance cooperation of academics, the public sector and the private sector within the field of Polar Law⁷⁸. The Polar Law Institute also supports the Polar Law programme held every other year of the University of Akureyri.

In terms of other research infrastructures, Litla--Skard, an Icelandic INTERACT member is not a typical research station but a bio--monitoring site. The site is operated jointly by the Agricultural University of Iceland⁷⁹, the Icelandic Institute of Natural History⁸⁰, the Icelandic Meteorological Office⁸¹, the Environmental and Food Agency of Iceland⁸², and the Iceland Forest Service.

President Ólafur Ragnar Grímsson launched the Arctic Circle⁸³ in 2013, a nonprofit and nonpartisan initiative, designed to increase participation in Arctic dialogue and strengthen the international focus on the future of the Arctic.

77. <http://nordurslodanetid.is/en/>

78. <http://www.polarlaw.is/en>

79. <http://www.lbhi.is/?q=en/english>

80. <http://en.ni.is/>

81. <http://en.vedur.is/>

82. <http://www.ust.is/the-environment-agency-of-iceland/>

83. <http://www.arcticcircle.org/>





Chapter cover image: Musk oxen in snow.
Photo: GettyImages

V. CONCLUSION

The Arctic Initiatives Compendium set out to present some of the flagship initiatives undertaken in the Arctic regions by member states and actors operating within states belonging to the EU and/or the EEA. Even when just skimming the surface, it is clear that a large number of initiatives are being undertaken, and that capacity is being built to launch these initiatives. It is also clear that Arctic initiatives do not necessarily operate exclusively in the Arctic, and that not all initiatives undertaken in the Arctic self-identify as *Arctic*. What is clear though is that not all knowledge about the Arctic is produced by research projects. Although scientific remains a central tenet in understanding the Arctic, there are many other, sometimes nebulous, sometimes targeted, initiatives that affect how the Arctic is known.

Besides research and other knowledge production initiatives, the EU is contributing substantial resources to sustainable arctic communities through a variety of instruments, contributions that are easy to overlook since they do not appear in CORDIS and very often do not contain the keyword Arctic.

Whilst the primary goal of the compendium has been providing information about the Arctic, much can also be learnt from the process of compiling the compendium.

Categorising initiatives has not been a formulaic task, as the drivers behind initiatives often make them incommensurable. Every nation state, for example, has different constellations of institutions tasked with managing and conducting polar research, and even more complex are commercial initiatives as the ways in which they are associated with countries differ vastly. This can lead to questions to what extent a commercial initiative can really be tied to a country. The Norwegian government, for example, is a majority shareholder of Statoil, whereas the French government has very few shares in Total – even though it is known as a French multinational. Therefore a narrative style is more suited to a compendium in booklet form. A continuously updated searchable electronic database with proper meta-data would be much more serviceable. The tractability and longevity of recently started initiatives are hard to judge, and a volume such as this will be quickly outdated. It is extremely important that entities supplying information about their Arctic initiatives understand how the information is to be used and what value it may have for them. Furthermore, due to the sheer heterogeneity of EU and EEA members, it would be difficult to capture a birds-eye view of initiatives in the Arctic without access to information being facilitated by network partners.