Climate Change and the Arctic Environment

Understanding the science of climate change, helping to develop strategies to mitigate and adapt to climate change, and safeguarding the Arctic environment are part of the EU’s wider efforts in relation to the Arctic.

The importance of the relationship between climate change and the Arctic has become very prominent in recent decades. Industrial activities in lower latitudes have led to major increases in greenhouse gas emissions, contributing to the Arctic warming up. In fact, the Arctic is warming at almost twice the global average rate of temperature increase. Furthermore, feedback loops are now turning the Arctic into a net contributor to climate change through rising sea levels due to melting ice and changing weather patterns, and the thawing of permafrost is starting to release endemic Arctic greenhouse gases. The impacts of climate change will affect the EU and the rest of the world.

The Arctic environment has traditionally played an important role as a regulator for the climate of the planet and as a sink for long-range air pollution. The Arctic remains the home of several sensitive ecosystems which sustain many highly cold-adapted endemic species of flora and fauna that must be safeguarded to protect Arctic and global biodiversity as well as the livelihoods of Arctic inhabitants.

Understanding climate dynamics in the context of the fragile Arctic environment, helping to develop specific strategies to mitigate and adapt to climate change in the Arctic, and safeguarding the Arctic environment are part of the EU’s wider efforts in relation to the Arctic. These efforts are directed at activities at lower latitudes and in the Arctic. Science, research and innovation will play a key role in deepening our knowledge base and informing EU policy about the complex relationship between climate change and the Arctic.

Climate Change, Mitigation and Adaptation Strategies

The Commission Directorate-General for Climate Action (DG Clima) is leading EU work on climate change. The EU is a leading participant in the work of the United Nations Framework Convention on Climate Change (UNFCCC). Mitigation and adaptation strategies are needed to help Arctic inhabitants respond to the serious challenges posed by climate change. The EU is addressing these challenges through a variety of activities.

Greenhouse gas emissions
The EU is setting targets for progressively reducing its greenhouse gas emissions by 2050 and is taking international action on climate change, including committing to reducing greenhouse gas emissions and limiting global average temperature increases as per the Paris COP21 Agreement.

**Black carbon, methane, and other short-lived climate pollutants (SLCPs)**

The EU is contributing to efforts to limit emissions of short-lived climate pollutants (SLCPs) such as black carbon and methane through (non-exhaustive list):

- the ratification of the UNECE Convention on Long-Range Transboundary Air Pollution (CLRTAP)
- EU action on SLCPs through the Air Quality Policy Strategy and as a partner of the Climate and Clean Air Coalition
- engaging with Arctic Council initiatives, such as the Expert Group on Black Carbon and Methane (EGBCM)
- a project to contribute to the development of collective responses to reduce black carbon emissions in the Arctic

**Adaptation and mitigation**

The EU is working with Arctic states, indigenous peoples and relevant Arctic regional and multilateral fora to develop an Arctic adaptation, resilience and mitigation agenda.

**Research**

The EU is funding research to increase understanding of the causes and consequences of climate change.

**Data sharing**

Through the European Climate Adaptation Platform (Climate-ADAPT), the EU is supporting Europe in adapting to climate change by sharing data and information. Further transnational cooperation is being encouraged through the Northern Periphery and Arctic (NPA) programme.

**Structural and investment funds**

The EU is mainstreaming climate action via European Structural and Investment Funds. Furthermore, the EU is funding the Disasters, Climate Change and Displacement: Evidence for Action project which aims to address a legal gap regarding cross-border displacement in the context of disasters and climate change.

**Safeguarding the Environment**

The Commission Directorate-General for Environment (DG Env) together with the European Environment Agency (EEA) leads EU work on environmental matters. The EU aims to protect, preserve and improve the environment for present and future generations. This work includes strengthening ecosystem resilience so that ecosystems are better able to adapt to changes in the Arctic environment and climate. The EU is addressing the challenges of safeguarding the Arctic environment through a variety of activities.

The EU is engaged in a wide range of multilateral environmental agreements (MEAs) as well as other instruments that are relevant to the Arctic (non-exhaustive list):
Multilateral forums

- United Nations Framework Convention on Climate Change (UNFCCC)
- Convention on Biological Diversity (CBD)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on Migratory Species (CMS)
- Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)
- International Maritime Organisation (IMO) instruments
  - Guidelines for the Control and Management of Ships' Biofouling
- Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention)
- Minamata Convention on Mercury (Minamata Convention)
- Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention)
- Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention)

Regional forums

- Arctic Council initiatives
  - Arctic Offshore Oil and Gas Guidelines

Some EU environmental legislation and instruments are also of relevance to the Arctic (non-exhaustive list):

- Safety of Offshore Oil and Gas Directive (2013/30/EU)
- 7th Environment Action Programme which will guide EU environment policy until 2020

Environment Action Programme

Under the Environment Action Programme to 2020, the EU is committed to 'Living well, within the limits of our planet', which includes engaging in processes in the Arctic region.

Heavy metals and Persistent Organic Pollutants (POPs)

Heavy metals and Persistent Organic Pollutants (POPs) can have a significant impact on human health and the environment. The EU aims to limit pollution and the use of heavy metals and POPs by supporting Arctic states' implementation of the Stockholm Convention and ratification of the Minamata Convention.

Marine protected areas

The development of areas to protect marine life is important to the EU. The EU is working with Arctic states and international partners to develop an UNCLOS instrument to protect areas beyond national jurisdiction and promoting the establishment of Arctic marine protected areas.

Invasive alien species

Invasive alien species are animals and plants that are introduced accidently or deliberately into a natural environment where they are not normally found, with serious negative consequences for their new environment, including native plants and animals. The CBD is the key convention in this context.
To address threats to native Arctic biodiversity from invasive alien species, the EU supports mandatory and voluntary measures, including IMO Guidelines for the Control and Management of Ships' Biofouling, and builds on EU experience of managing ballast water.

**Waste and the circular economy**

Taking into account its comprehensive waste legislation, the EU will share experiences and best practices on the circular economy with Arctic states.

**Health and safety**

In relation to health and safety in the Arctic, the EU promotes the adoption of the highest major accident prevention and environmental control standards. The EU shares regulatory (e.g. Safety of Offshore Oil and Gas Directive), and technological best practices to support safety and environmental preservation, including through continued support for Arctic Council initiatives such as the Arctic Offshore Oil and Gas Guidelines.

**Science and Research**

Commission Directorate-General for Research & Innovation (DG RTD), the Joint Research Centre (DG JRC), and the Directorate-General for Growth (DG Grow) contribute to EU work in relation to Arctic research. Scientific cooperation and research have a key role to play in helping to understand the complex dynamics of the Arctic climate and environment.

The EU is engaged in a range of multilateral agreements to promote science, research and innovation of relevance to the Arctic (non-exhaustive list):

- the Transatlantic Ocean (and Arctic) Research Alliance (AORA)
- the Belmont Forum

Many EU activities to promote science, research and innovation of relevance to the Arctic are funded through the EU Research and Innovation Framework Programme Horizon 2020.

**EU-PolarNet**

EU-PolarNet is a wide-scale project to coordinate action on Polar research that started in March 2015. EU-PolarNet aims to improve co-ordination between EU Member State polar research institutions, building on existing networks to create a resource-orientated infrastructure access and usage plan.

**Arctic research package**

The Arctic, through its interplay with the Atlantic, is part of AORA. AORA triggered the decision to invest in a broad package of Arctic research activities in the Horizon 2020 Work Programme 2016-17. All projects within this package are based on large transnational consortia, extending beyond the AORA partnership.

Three research projects have already been selected and started at the end of 2016:

- the INTAROS project will extend, improve and unify Arctic observation systems, including community-based ones, contributing to filling critical gaps and creating an integrated data access platform
• the **APPLICATE** and **Blue-Action** projects will explore, through complementary approaches, the predictability of the Arctic climate and its impact at lower latitudes. This research will contribute to the design of appropriate observing systems and better climate services.

A **new call** in 2017 will explore the effect of climate change on Arctic permafrost and its socio-economic impact, with a focus on coastal areas.

**Earth observations**

The EU provides new, powerful observation coverage of the Arctic through the EU's Earth Observation programme **Copernicus**.

**Arctic marine changes**

The current and future changes in the **Arctic sea ice** are being explored, both from changing atmospheric and oceanic conditions through **Ice, Climate, Economics-Arctic Research on Change (ICE-ARC)**. This research will develop a better understanding of, and ability to predict, Arctic marine changes.

The **North Atlantic Climate Collaborative Project (NACLIM)** is improving knowledge of the northern **sea surface temperatures and sea ice distributions**. These factors both have a strong impact on weather and climate in Europe.

**Research and access to data**

In addition to funding scientific cooperation and research into climate change in the Arctic, the EU also promotes access to research infrastructure and open data resources:

- **INTERACT** (DG RTD) is a circum-Arctic network which aims to build capacity to **identify, understand, predict, and respond to Arctic environmental changes**. It also develops new features for enhancing services, improving sensors, and facilitating remote access to data. Hundreds of scientists have access to the network through the **Transnational Access Programme**.
- **GRACE** aims to develop, compare and evaluate the **effectiveness of different oil spill response methods in a cold climate**. The project is also developing a system to observe underwater oil spills in real-time and a tool for choosing oil spill response methods. Results will be made available to international organisations that carry out cross-border oil spill response cooperation in Arctic sea areas.

**Related Resources**

- **The EU Arctic Footprint and Policy Assessment Project**: a research project investigating the EU's impact on the Arctic

European Environment Agency outputs and assessments (non-exhaustive list):

- **Climate change, impacts and vulnerability in Europe** (2016)
- **The Melting Arctic** (2012)
- **Arctic environment: why should Europe care?** (2004)
European Environment Agency – Indicators (non-exhaustive list):

- Arctic and Baltic Sea Ice
- Global and European sea-level rise
- Greenland and Antarctic ice sheets
- Snow cover
- Further indicators on climate change and impacts

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