

Responding to rapid change in the Arctic

The Arctic region is changing rapidly and in so many ways that we can expect dramatic alterations to people's lives and to ecosystems in the region. Climate change is a major concern, but other environmental changes are occurring at the same time, along with rapid economic development and social transformation.

While some changes may be gradual, the interactions among different driving forces may together have large impacts on Arctic peoples and economies, and on global ecosystem services. Such large shifts can be difficult to predict. They may also be irreversible. Understanding potential thresholds and society's capacity to adapt and transform is crucial for preparing effectively for an uncertain future.



What is the Arctic Resilience Report?

The Arctic Resilience Report is a science-based assessment of the integrated impacts of change in the Arctic. The goal is to:

- Identify the potential for shocks and large shifts in ecosystem services that affect human well-being in the Arctic.
- Analyse how different drivers of change interact in ways that affect the ability of ecosystems and human populations to withstand shocks, adapt or transform.
- Evaluate strategies for governments and communities to adapt.

An Arctic Council project

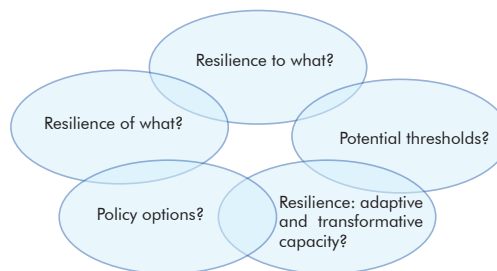
Following scoping activities in 2011, the Arctic Resilience Report was accepted as an Arctic Council Project in November 2011. Sweden has made the Arctic Resilience Report a priority for its chairmanship of the Arctic Council (2011-2013).

The assessment process

The Arctic Resilience Report builds on and further develops a methodology for assessing interactions among social and ecological processes across scales, as described in the Resilience Assessment workbook (see www.resalliance.org). By social-ecological systems we mean people and the environment and the ways they interact. The process includes identifying important aspects of social-ecological systems and the drivers that affect them, followed by an analysis of thresholds for ecosystem services and human well-being.

An integral part of the assessment is to identify policy and management options that may be needed for strengthening resilience, for adaptation, and for transformational change.

Resilience assessment



Activities

The Arctic Resilience Report combines science-based analysis with interactive engagement with user communities. It is built around three types of activities:

Integrated analysis synthesises expert knowledge about thresholds and feedbacks in Arctic social-ecological systems that can affect ecosystem services. It also focuses on how thresholds and other changes can affect the capacity for adaptation and transformation, including analysis of how policy decisions may either help to strengthen or risk eroding these capacities.

Case studies are focussed applications of the resilience assessment methodology carried out in cooperation with relevant partners. They provide opportunities to work in contexts that are directly relevant to user communities and decision-makers in the Arctic.

Capacity-building activities aim to ensure that resilience assessments can be used as a tool for dealing with rapid change after the project is finalised. They include a course on Arctic resilience in cooperation with University of the Arctic.

ARR reports

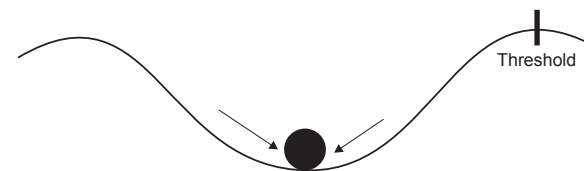
Major planned outputs include an interim report in May 2013, and a final report in May 2015.

What is resilience?

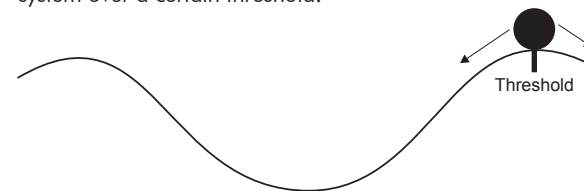
Resilience is the capacity of a system to absorb disturbances and reorganize while undergoing change, so as to still retain essentially the same function, identity and structure, and feedbacks. The purpose of assessing resilience is to prepare for change.

A 'ball-in-basin' illustration of resilience

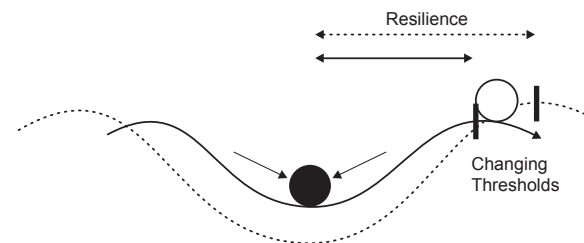
A **stable resilient system** can cope with shocks and disturbances and keep its identity.



In an **unstable system**, a small disturbance can push the system over a certain threshold.

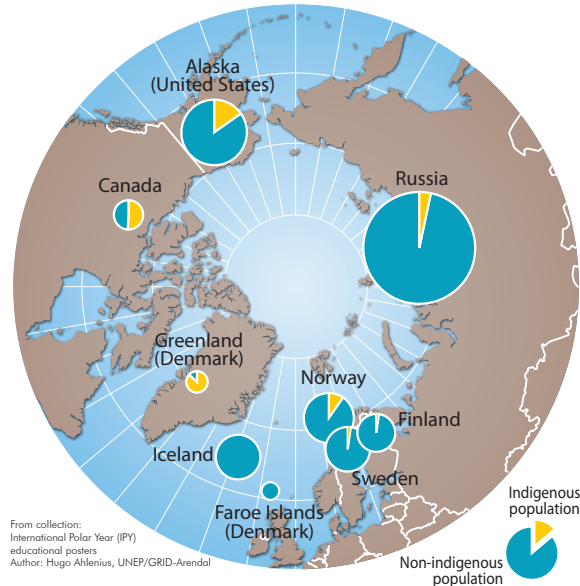


Environmental and social changes can make a system less resilient.



What is the Arctic?

The Arctic region embodies the northernmost area of the world. The work of the Arctic Council includes northern areas of eight member countries: Canada, Denmark/Greenland/Faroe Islands, Finland, Iceland, Norway, Russia, Sweden, and United States. Approximately four million people live in the Arctic, with the share of indigenous and non-indigenous people varying in different parts.



Arctic population distribution by country

Project organisation

The project is led by the Stockholm Environment Institute and the Stockholm Resilience Centre. It builds on collaboration with other Arctic countries and indigenous peoples in the region, as well as several Arctic scientific organisations.

The project is governed by a *Project Steering Committee* with representation from Arctic Council Working Groups, Member States and Permanent Participants, along with representatives of collaborating organizations. Responsibility for developing the scientific content of the project rests with an *Assessment Integration Team*.

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Photos: kaet44/flickr (front), and Ulf Molau

The Arctic Resilience Report is an Arctic Council project led by the Stockholm Environment Institute and the Stockholm Resilience Centre.

Time period: 2012-2015

Main funders: (January 2013): Swedish Ministry of the Environment, Swedish Environmental Protection Agency, Formas and the Nordic Council of Ministers.

Collaborating partners: University of the Arctic; International Arctic Science Committee; International Study of Arctic Change; International Arctic Social Science Association; European Environment Agency; WWF Global Arctic Programme.

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Arctic Resilience Report

An analysis of the thresholds affecting the Arctic ecosystem services and the ability of ecosystems and society to transform or adapt to change in the Arctic.