



FACTSHEET

Increasing Land-Use Pressures in the European Arctic

Overview

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 the peace, quiet and pristine nature of the Arctic as a year-round leisure destination. Today, the Arctic region faces conflicts between various human activities that influence one another and compete for space.

This factsheet addresses issues related to various land uses in the European Arctic. It provides a generalised overview of economic, environmental and political impacts of the selected land-use changes and their main drivers (Table 1).

What is Putting Pressure on the European Arctic Landscape?

Main Driver: Globalisation

Economic factors are putting significant pressure on Arctic land use. Global demand for resources is increasing the presence of multi-national business and bringing investment, trade and technological innovation.

“Economic factors are putting significant pressure on Arctic land use. Global demand for resources is increasing the presence of multi-national business and bringing investment, trade and technological innovation.”

Svalbard Reindeer Grazing on an Icy Ground in Longyearbyen.



Photo: Peter Prokosch, Grid.



Website: www.arcticinfo.eu

Strategic Environmental Impact Assessment of Development of the Arctic

This factsheet is to stimulate dialogue between stakeholders, Arctic experts and EU policymakers. Stakeholder input informs the analysis of trends and the role of the European Union in shaping Arctic developments. It will lead to recommendations to EU policymakers and be published as the Strategic Assessment of Development of the Arctic Report in spring 2014. The European Commission-funded project is implemented by a network of 19 institutions lead by the Arctic Centre in Rovaniemi and is linked to the EU Arctic Information Centre initiative.

Table 1: Land-Use Pressures, Drivers and Impacts in European Arctic

Land-Use Pressure	Main Drivers	Environmental Impacts	Social Impacts	Economic Impacts
Forestry: A major land-use activity in the north.	Demand for timber. Northern regions of Finland, Sweden and Norway = 20 million hectares of forest, about 14% of total EU forest area.	Decreased biodiversity, habitat destruction and fragmentation. Reduced nature values. Increased monocultures.	Less reindeer pasture and potential effects on reindeer herding culture. Fewer ecotourism areas.	More employment opportunities. Increased tax revenues.
Nature Conservation: Expansion of protected areas. Species protection.	Increased environmental awareness and NGO actions. Local, national and international policies and agreements.	Sustain biodiversity and habitats. Increase populations of big predators.	Human well-being via ecosystem services and nature-based tourism.	Loss of reindeer from predators. Less forestry area. Increase in ecosystem services.
Renewable Energy: Development of wind and hydro power sites and power lines.	Environmental regulations. Local, national and international policies. Demand for sustainable energy.	Decreased biodiversity, habitat destruction and fragmentation. Reduced nature values. Disruption of migration paths.	Potential negative effects on reindeer herder culture and ecotourism.	Public costs of infrastructure. More employment opportunities. Increased tax revenues.
Tourism: Expansion of tourism: more people, more places, more infrastructure.	Demand particularly for winter and ecotourism. Local economies dependent on tourism.	Increased noise, land erosion, wastes, pollution. Disturbance of reindeer and wildlife.	Demographic change: seasonal workers; shifts in social structure in rural communities. Job opportunities, increased services. Potential social problems.	Local employment. Increased spending for public services. Investments by government and private sector. Increased tax revenues.
Mining: Expansion of mining activities.	Demand for minerals. Economic development policies.	Changes in landscape, water and ecosystem. Potential pollution. Biodiversity, habitat, migratory route changes. Reduced nature values.	Potential negative effects on reindeer herder culture and tourism. Demographic change: influx of foreign workers; shifts in social structure in rural communities. Job opportunities, skills transfer, increased services.	Local employment and increased spending. Investments by government and private sector. Increased tax revenues. Boom and bust cycles. Decreased tourism.
Reindeer Herding and Traditional Livelihoods	Sustaining culture and traditional livelihoods in herding, fishing, gathering and agriculture.	Changes in grazing, habitat and fragmentation. Increased land erosion. Loss of species.	Traditional livelihoods support local, cultural and ethnic identity and keep remote communities alive. Threat of loss of traditional lifestyles affecting cultural identity and peoples' well-being.	Household dependence on traditional livelihoods. Subsistence costs of predator losses.
Transport: Development of transport and community infrastructure	Demand for new transport infrastructure for mining, tourism and other activities.	Biodiversity losses and habitat fragmentation. Increased noise. Increased accessibility to remote places. Reduced nature values.	Supports new settlements and migration which affects needs for schools, housing, jobs, social life and well-being.	Economic stimulation. Public costs of infrastructure. More employment opportunities. Increased tax revenues.

Figure 1: Protected Areas and Mining Threats in Barents Region



Source: Barents Protected Area Network, www.bpan.fi.

For example, new Arctic mining developments or the reopening of old mines are stimulated by attractive world prices for minerals and metals.

While on the other hand, some primary production, such as pulp mills in Finland, have relocated from the north to other regions with lower production costs. Global mobility is increasing and with it a rise in tourism in northern areas.

Other Drivers

Climate change, including its multiple social/political/economic drivers. Melting sea-ice has increased interest in the seasonal use of the Northern Sea Route (and other Arctic sea lanes) by which cargo would be transported to world markets.

This may create demand for transportation infrastructure in the neighbouring regions, putting pressure on existing land uses such as reindeer herding. (See also factsheets on *Climate Change in the Arctic* and *Changes in Arctic Maritime Transport*.)

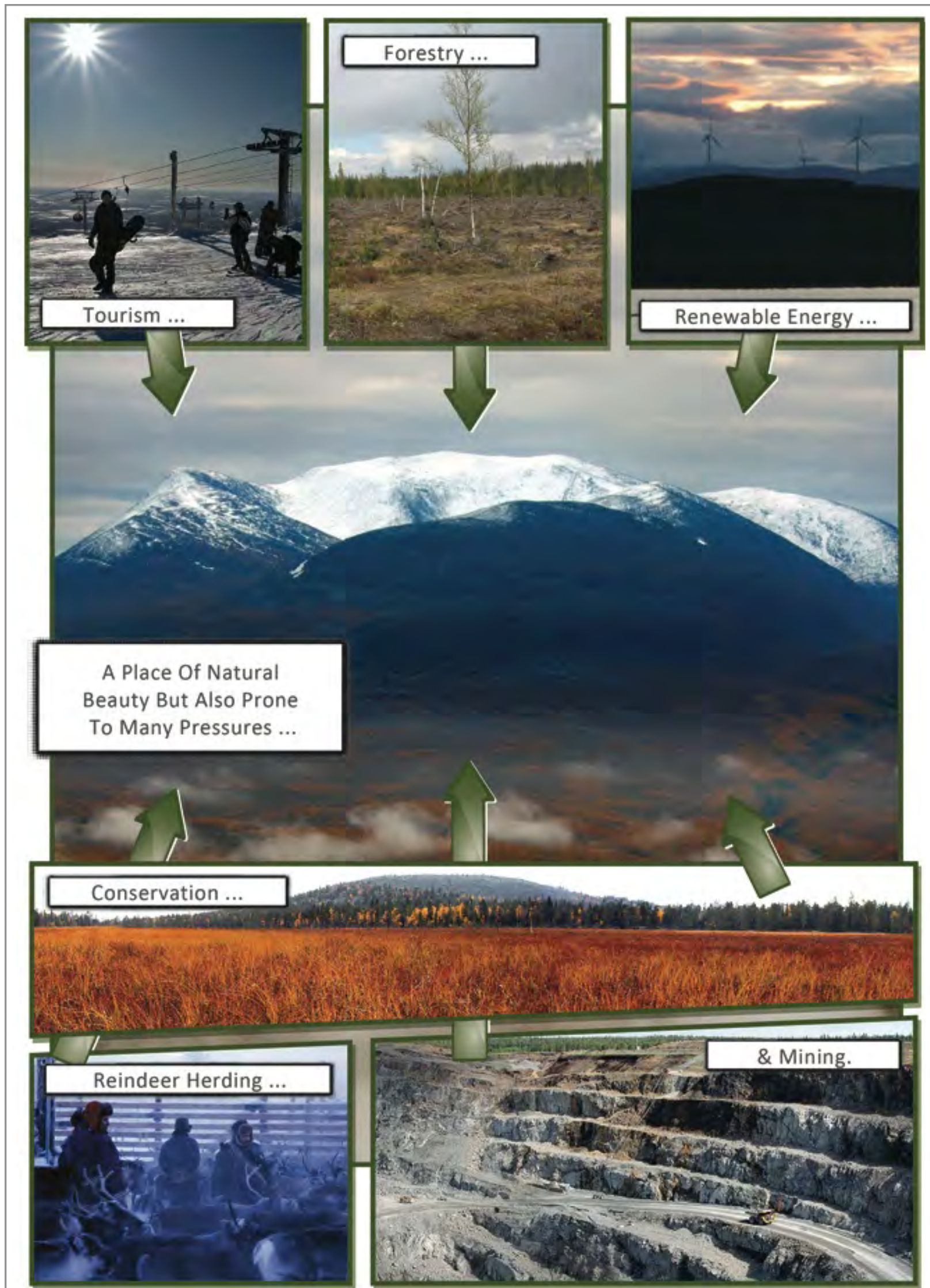
Complex web and interplay of socio-economic pressures. The interplay of more demand for resources, transport to move them and international business involvement and investment with social factors such as migration, urbanisation and expanding opportunities, along with political elements such as regional development policies and transfer payments makes for a complex and at times competing situation (see also factsheet on *Social and Cultural Changes in the European Arctic*).

The ecosystems, social systems and land uses in the Arctic are facing multiple stressors at the same time.

Increased environmental awareness. Focus on preservation of nature and ecological values, such as ensuring biodiversity and avoiding habitat fragmentation is an important driver.

“Tourism is one of the biggest sources of income in many northern areas. Protected areas, such as national parks, attract tourists and contribute significantly to local economies.”

Figure 2: Multiple Land-Use Pressures



Photos: Mikko Jokinen, Kolari Finnish Forest Research Institute, METLA; Hannu Heikkinen, University of Oulu; Thule Institute, University of Oulu.

Environment is taken into account for its intrinsic values and its importance to human well-being. A term often used in this context is “environmental services”, which can be understood as benefits that the natural environment provides expressed in economic terms. A good example is wetlands that provide flood protection.

Conservation efforts are demonstrated through means such as the global UN Convention on Biological Diversity and the European Union (EU)’s Natura 2000 protected area network and its biodiversity strategy for 2020.

The Barents Protected Area Network is a regional initiative to support establishment of protected areas to safeguard biodiversity and for adaptation and mitigation of climate change (Figure 1).

“Tourism can have significant environmental impacts: landscape and trampling effects and erosion at ski resorts, greater demand for water purification and waste service.”

What Are the Key Land-Use Issues?

Economy

Conservation and tourism: Tourism is one of the biggest sources of income in many northern areas. Protected areas, such as national parks, attract tourists and contribute significantly to local economies.

In some cases, parks have obtained protected area - sustainable tourism certifications, e.g. Pan Parks Certification at Oulanka National Park. Such recognition can help to attract more visitors and to ensure environmental sustainability of tourism-related practices.

The EU’s Natura2000 network has increased the number of protected areas in the Swedish and Finnish Arctic.

Mines and tourism: Mining development and operation is among the biggest threats for eco-tourism and has far reaching impacts on

Can Mining Co-exist with Skiing and Hiking?

Studies are underway for the proposed Hannukainen project in northern Finland to exploit iron ore deposits which contain copper, gold and cobalt by Northland Resources, Ltd. An open pit mine is proposed, using truck and shovel operations with conventional mineral processing techniques for ore treatment.

Two small pits operated in the Hannukainen deposit in the 1980s. The site is in the Kolari district of northern Finland some 110 km north of the Arctic Circle, across the Muonio River that marks the boundary between Sweden and Finland. It is an area of developed infrastructure with paved roads, rail and high voltage power lines. The mining site is located only 10 kilometres from Ylläs ski resort and the Pallas-Ylläs National Park, Finland’s most popular.

There are concerns that the Hannukainen mine development may impair the image of the area as attractive for nature-based recreation. For example, the plan is to pipe treated process water from the mine to the Muonio River, one of the last free salmon rivers in Finland and also a Natura 2000 protected area.

The municipality of Kolari relies on tourism for 48% of its revenue. Most employment in the area is related to recreation and tourism. Reindeer herders are concerned about disruption from mining noise and activities, and loss/fragmentation of grazing areas. Local people do hunt and fish in the area but they mainly see that compensatory areas can be found.

Hannukainen Old Mining Site and near-by Ylläs Tourist Destination. Planned Mine is Going to be Several Times Larger.



Photo: Northland Mine Ltd.
Sources: Northland Mine Ltd., and Mikko Jokinen, Finnish Forest Research Institute.

Critical to Assess Cumulative Impacts

While each activity shaping land use has specific effects, it is also important to consider cumulative impacts. Mining, transport infrastructure, energy developments, forestry, agriculture and urbanisation, while individually may seem manageable, intermixed may bring substantial environmental, social and economic change or disruption – some positive, some negative.

One needs to take into account cumulative impacts from historical, ongoing and planned developments, as well as global influences such as climate change. It is particularly important in the case of the fragile and slow to recover nature of the Arctic environment.

Similarly, social impacts are often cumulative. For example, reindeer herding uses traditional summer and winter pastures that the family/village has used for generations, thus land-use changes can affect pasture availability by cutting off usual migration routes.

Pastures tend to become fragmented, reindeer migration, calving and culling areas are disturbed and the overall adaptive capacity of herding is decreased. Cumulative impacts should be assessed for each new project, especially within environmental impact assessment, but also at a more general level in spatial and land-use planning. Strategic environmental or integrated (including social and economic aspects) assessments serve this purpose.

the landscape. For instance, open pit mines adjacent to recreational areas such as national parks and skiing resorts will likely decrease the number of visitors. A survey conducted in Finnish Lapland indicated that visitors come to Lapland for pristine nature, landscape and silence.

Environment

Habitat fragmentation: Challenges for biodiversity, disturbance, and degradation are major issues. Building new roads, pipelines, drilling and mine sites, hydropower dams, railroads (e.g. proposed new railroad through northern Finland to the harbour in Kirkenes, Norway) cause habitat fragmentation.

They also can have major effects on biodiversity and hydrology. Reindeer grazing areas may shrink thereby stressing available pasture. Habitat fragmentation can adversely impact species distribution and abundance.

New activities, invasive species and pollution: New sea routes, roads and railways provide new pathways for invasive species. In association with climate change effects, this could seriously affect species diversity and distribution. Mining and industrial activities carry risks of pollution.

Tourism and environment: Tourism can have significant environmental impacts: landscape and trampling effects and erosion at ski resorts, greater demand for water purification and waste service. Winter recreational vehicle noise and fumes can disturb people and animals.

Socio-Political Issues

Broader participation: The role of stakeholders in environmental planning has increased in recent years, expanding opportunities to influence land-use decisions. For instance, participatory planning has been initiated in the case of management planning for national parks wherein local tourist enterprises and reindeer herders have an increased role.

Yet, critics question whether the participatory process provides genuine possibilities to influence decision-making. Non-Arctic actors also take part. Large non-governmental organisation (NGOs) often advocate to make decisions about the environment from the point of view of global public good, whereas locals may be more supportive of community economic development.

Not surprisingly, there have been disputes between NGOs and locals, yet there have also been coalitions, for instance between Greenpeace and some reindeer herders.

Land-Use conflicts: Social conflicts between various users of land and resources have implications for local governance, community viability and resilience.

For example, reindeer herding faces multiple stressors that threaten its profitability and cultural persistence: loss of usual grazing areas to mining, road and associated developments; disruption to herds from wind power farms and industrial level endeavours; calving losses from big predators that are protected for biodiversity, but for which government subsidies do not compensate for the loss of income from a reindeer killed by a predator.

Ruka Ski Resort in Summer, Finland



Source: The Thule Institute, University of Oulu.

Arctic Landscape – Empty at First Sight, but Full of Human Activities



Photo: Paula Kankaanpää, Arctic Centre.

Governance

There are various ways in which Arctic land use is governed and regulated:

- **Municipal land-use planning** and zoning in and near towns and villages.
 - **Environmental impact assessments** for developments.
 - **Participatory natural resource planning** to set limits for forestry on state lands as practiced in Finland.
 - **Management planning of protected areas** that gives local people the genuine opportunity to discuss and comment on the issues such as restrictions within protected area.
 - **Corporate social responsibility standards** may guide companies that want to exceed national legislation in their performance to be environmentally and socially responsible. It may include “social licensing mechanisms”, such as in mining where investments in the community bolster local support and help to avoid local opposition which can influence the willingness of investors.
 - **Compensation** paid by government to offset economic loss or foregone opportunities related to regulations. Examples include payments for reindeer killed by protected predators and companies shut out of protected areas for hydropower.
- "Social conflicts between various users of land and resources have implications for local governance, community viability and resilience."
- **Certifications** to endorse sustainable practices in forestry, ecotourism or other activities. Forest certifications can be controversial. In Finland, for example, the forestry lobby halted adoption of the Forest Stewardship Council (FSC) certification and instead adopted the more industry-friendly Finnish Forest Certification System. Nevertheless, international FSC certification has provided a reference point for environmental NGOs and the Sámi Council in forest disputes to justify claims for more environmentally and socially sensitive logging methods.
 - **Social mobilisation** by local communities, environmental NGOs and Sámi organisations. This happens often outside "official" planning processes and may be a result of dissatisfaction with the public planning process. An example is the use of media-based pressure strategies with a "name and shame" logic.
 - **Rising acknowledgement of indigenous land rights.**
 - **EU policies.**

How Does the European Union Influence Arctic Land Use?

The EU has no direct authority in land-use planning in the Arctic. However, owing to having a major influence on the European economy, the EU is an influential force behind developments that affect Arctic land use, for example its climate change mitigation and renewable energy policies. Moreover, EU environmental regulations affect the scope and potential impacts of various activities.

Promoting renewable energy: The EU has a target to obtain 20% of its energy from renewable sources by 2020 (Directive 2009/28/EC). This aim facilitates renewable energy development and research. The European Arctic has substantial wind and hydropower potential.

“The Vuotos case in Finland, where Natura2000 site protection prevented a major water reservoir project is a good example of how EU environmental regulation affect land use in the European Arctic.”

Transport policy: By supporting development of trans-European connections and interconnectedness of remote regions with economic centres (trans-European networks), the EU may influence infrastructure developments that affect land use in terms of direct impacts of specific projects and long-term land-use change trends due to increased accessibility.

EU transport policy promotes inter-modality and accessibility. Environmental regulations relevant to transport (such as a Directive 2012/33/EU on sulphur content of marine fuels) may influence modes and patterns of transport in the North.

Shaping demand for resources and services: The EU influences developments via its demand for energy, wood/pulp, tourism, minerals. For instance, the EU Raw Minerals Strategy encourages less dependence on imports of minerals from less stable suppliers, inter alia, via increase in domestic (EU/EEA) production.

The existence of the Schengen area and European provisions to ease transport connections, particularly for air transport, are positive for prospects of more tourism in the European Arctic.

Regional and territorial co-operation policies: The EU regional development programmes aim to enhance diversification of northern economies and support commercial activities such as tourism. Examples include the 2007-2013 Northern Periphery Programme, Kolarctic; 2014-2020 Northern Periphery and Arctic Programme.

Environmental regulations: The most important EU environmental regulations affecting Arctic land use are the Natura2000 network and associated Bird and Habitat Directives. Directives on wastes, water and the biodiversity strategy have direct implications for land use and relations between various users.

The Vuotos case in Finland, where Natura2000 site protection prevented a major water reservoir project is a good example. Recently, in line with a greater focus on climate change adaptation, issues such as flood risk (Directive 2007/60/EC) have gained prominence in the EU policy-making. A variety of regulations apply specifically to environmental impacts of mining.

Common Agricultural Policy and rural development: European legislation allows for increased support to environmentally disadvantaged regions and aid for rural development in less-favoured regions. Their objectives address economic and social cohesion by safeguarding farmers' income, sustaining land use, maintaining activities and jobs in declining rural areas, protecting natural resources and maintaining traditional landscapes.

Spatial planning: The EU does not have specific authority in spatial planning. However, various initiatives such as the 1999 European Spatial Development Perspective and a focus on territorial cohesion encourage thinking of spatial planning in a pan-European perspective and promote exchange of experience between European regions.

What is the Role of the European Union in the Arctic?

The European Union is a complex international actor. It has acquired a number of decision-making powers from its Member States and hence influences the content of their national legislation. Based on the European Economic Area Agreement, the EU also influences relevant legislation in Iceland and Norway. The EU also influences outcomes of international negotiations – including those of importance for the Arctic.

Only a small part of the territory of EU Member States - in northern Sweden and Finland – is located in the Arctic and the EU has no Arctic coastline. Nevertheless, EU regulations and actions, including research funding and regional policies, influence Arctic developments. Moreover, the EU is a major environmental and economic actor in the Arctic and has established a special relationship with Greenland.

Since 2008, relevant EU activities have been brought under a common umbrella of “Arctic policy”. A communication in 2012 stresses three key aspects: knowledge – support for scientific research; responsibility – promoting the sustainable use of natural resources; and engagement – enhancing co-operation with Arctic partners.

Key Questions to Stakeholders Regarding Land Use

- 1 Which activities affecting land use (tourism, mining, forestry, traditional livelihoods, energy) can be considered sustainable and provide long-term development for the Arctic and its people?
- 2 What are the best ways to avoid or resolve conflicts between competing land uses? How should the balance between economic, environmental, social and cultural values be weighed?
- 3 What are your suggestions for how to enhance accessibility while minimising the impacts of transport infrastructure?
- 4 Does the EU have a role in supporting traditional livelihoods?
- 5 Can the Arctic region benefit from an exchange of best practices in land-use management and conflict mitigation with other European regions?

Selected References

Arctic Environmental Protection Strategy (1997), Guidelines for Environmental Impact Assessment in the Arctic, Finnish Ministry of the Environment; Arctic Human Development Report (2004) www.svs.is/AHDR/AHDR%20chapters/English%20version/Chapters%20PDF.htm; Arctic Climate Impact Assessment (2004), www.acia.uaf.edu; EU Biodiversity Strategy to 2020 (2012), www.ec.europa.eu/environment/nature/biodiversity/comm2006/2020.htm; Arctic Biodiversity Assessment (2013), www.arcticbiodiversity.is/.

The content of this factsheet does not reflect the official opinion of the European Union. Responsibility for the information and views expressed herein lies entirely with the authors.

Reproduction is authorized provided the source is acknowledged.

The chapter "Activities Affecting Land Use in the European Arctic" in the final assessment report (see www.arcticinfo.eu) builds on this factsheet and on the stakeholder consultations conducted between October 2013 and February 2014.

Published in September 2013, Revised in May 2014.

Recommended citation: Strategic Assessment of Development of the Arctic (2014), 'Increasing Land Use Pressures in the European Arctic' [factsheet], - URL: www.arcticinfo.eu.

Image on page 1 by Lawrence Hislop, Grid Arendal.

Contact: astepien@ulapland.fi

