

## Most Of Arctic Affected By Human Activities By 2050

---

### Rapid Industrialization in Northern Wilderness New Threat to Wildlife, Habitats and Indigenous Peoples

Rovaniemi/Arendal/Nairobi, 11 June 2001

- Up to 80 per cent of the Arctic will be affected by mining, oil and gas exploration, ports, roads and other developments by 2050 if the industrialization of one of the world's last wilderness areas continues at current rates.

Scientists with the United Nations Environment Programme (UNEP) are warning that the Arctic's rich and abundant wildlife will suffer with birds and larger mammals such as reindeer, caribou, polar bears, wolves and brown bears at greatest risk.

The findings, which are based on a pioneering new method of mapping the true extent of environmental impacts, are released today at a meeting marking 10 years of Arctic Environmental Cooperation taking place in Rovaniemi, Finland.

Klaus Toepfer, Executive Director of UNEP, says: "At the turn of this new millennium less than 15 per cent of the Arctic's land was heavily impacted by human activity and infrastructure. However, if exploration for oil, gas and minerals, developments such as hydro-electric schemes and timber extraction continue at current rates, more than half of the Arctic will be seriously threatened in less than 50 years".

"This will lead to increasing pressure on the life-styles of indigenous peoples as well as on precious habitats and ecosystems in an area of the world vital for wildlife and for regulating the Earth's climate," he says.

Svein Tveitdal of GRID-Arendal, UNEP's key Arctic centre which has compiled the new report, said: "In the last part of the 20th century, the Arctic has been increasingly exposed to industrial exploration and exploitation as well as to a growth in tourism. The growth in oil, gas and mineral extraction, transportation networks and non-indigenous settlements are increasingly affecting wildlife and the welfare of indigenous people. Various plans are under way to extend the infrastructure and development into new regions such as the Yamal Peninsula of Russia, the Arctic National Wildlife Refuge in Alaska and the Barents Sea region".

Plans are also well advanced to open up a vast new seaway around the roof of the world. The Northern Sea Route, a 5,600 km stretch of water running from the Barents Sea in the west to the Bering Strait in the east, could significantly reduce the sailing time from Europe, Scandinavia and Russia to the Far East.

However, experts are concerned that the development of the route is primarily intended to exploit the rich oil, gas and mineral resources of Siberia. The start of just part of the route will result in a previously unknown level of industrialization of Siberia. This will add to pressures on the Arctic generally as a result of a sharp rise in the number of ships operating in the region, port and road developments and improved access to new oil, gas and mineral fields.

"Infrastructure brings primary industrial development but also secondary, more uncontrolled development, in terms of increased human immigration and settlements. These in turn increase the risks of deforestation, overgrazing, social conflicts, pollution of water, land degradation and fragmentation of habitats. Our findings show that even with stable rates of industrial growth, mirroring those that have occurred in the latter part of the last century, an estimated 50 per cent to 80 per cent of the Arctic will reach critical levels of human-induced disturbance by 2050," said Mr Tveitdal.

The report estimates significant human disturbance even at lower growth rates of infrastructure. It concludes that 40 per cent of the region's wildlife and ecosystems will be critically disturbed by 2050 if growth occurs at half or 50 per cent of levels seen since the period 1940 to 1990.

If infrastructure growth accelerates, doubling or increasing by 200 per cent over the same period, 90 per cent of the Arctic will suffer significant human-induced disturbance by 2050.

Mark Collins of UNEP's World Conservation Monitoring Centre in Cambridge, England, said that vast tracts of the Arctic are designated as protected areas.

"However, many key ecosystems are poorly protected, particularly in the southern part of the Arctic, where most of the development is happening," he said.

The findings have come from a pilot of study of UNEP's Global methodology for mapping human impacts on the Biosphere (GLOBIO) which for the first time looks at the cumulative impacts of human activities on the environment.

Previous work in this area has detailed the impact on habitats, ecosystems and wildlife close to a development. But this new study draws on the conclusions of some 200 scientific studies from around the globe.

These are shedding new light on how human activities not only affect the environment close by but trigger significant changes and disturbances considerable distances away from a road, settlement, mine or other infrastructure development. Some of the impacts are immediate whereas others are cumulative, gradually undermining the ecosystems upon which humans and wildlife depend for food, water and shelter. The pilot study has focused on the Arctic. UNEP plans to extend GLOBIO to cover human impacts across the globe. Preliminary assessments have already been made of the Himalayas and the Amazon.

### **Wildlife**

Studies of more than 100 species show that some Arctic animals will suffer more than others as the region becomes more industrialized.

"Animals avoid areas near infrastructure, breeding success decreases in developed areas and habitats become fragmented. The ecological impacts of losses of habitats and redistribution of animals away from development may also substantially affect foraging success or survival in areas beyond these initial zones of disturbance and hence result in overgrazing, erosion and reduced breeding success," the GLOBIO report says.

It shows that Arctic roads quickly reduce the abundance of reindeer and caribou five kilometres from the highway; the populations of large predators such as wolves and bears are affected two kilometres from the development and birds one kilometre from the infrastructure.

"Sensitivity is particularly high in the Arctic. Reindeer and caribou are among the most sensitive species in the Arctic to human activity, often reducing the use of grazing grounds by 50 per cent to 90 per cent within four to 10km of roads, power lines or resorts. Large Arctic carnivores abandon areas when road densities reach typically around 0.5 to 0.6 km/km squared," says the report.

The report says Arctic birds suffer when development leads to drainage of wetlands. They also suffer from traffic noise as a result of the building of new roads. Studies indicate that a variety of bird populations can fall by as much as 44 per cent up to 1.5km from a new road.

The cumulative impacts of the kind of piecemeal development now taking place in the Arctic is having even wider impacts on the region's ecosystems as result of longer term changes in features such as hydrology, pollution levels and the condition of the permafrost and tundra, the report concludes.

A new road may affect the abundance of wildlife up to five kilometres away, but the cumulative impacts on their ecosystems can be detected up to 20km away, the UNEP scientists estimate.

The cumulative impacts of power lines and pipelines can spread up to 16km away from where they are physically located. The ecological "footprint" of human settlements, including cities, towns and mining or oil exploration camps, can disturb ecosystems up to 40km away.

Dr. Christian Nellemann from the Norwegian Institute of Nature Research, who coordinated this UNEP project together with Lars Kullerud from GRID-Arendal, said there were likely to be winners as well as losers among the Arctic's wildlife with animals adapted to scavenge benefiting at the expense of those with more specialized life styles.

"By 2050 we can foresee less migratory birds and mammals like Arctic foxes and reindeer but more gulls, red foxes, and crows. Basically human kind's interference in the delicate, ecological, balance of the Arctic will allow the scavengers and marauders to take over the scene at the expense of more specialized birds and mammals, which will decline and even, in some cases, disappear. When you develop new infrastructure such as a road you trigger a whole chain reaction," he said.

### **Vegetation and Plant Life**

Powerlines and pipelines have relatively little short term impact on Arctic vegetation. Changes in snow cover and minor disturbances in soils normally only occur up to 500 metres from such structures.

Cumulative, longer term, impacts are likely to be felt further afield. Disturbance to vegetation from power line and pipelines may affect ecosystems up to two kilometers from such infrastructures as a result of changes in the permafrost and damage from off-road vehicles used to service and maintain such structures.

The cumulative impacts on vegetation of a road can be detected up to 10km away by changes to the sensitive permafrost and water discharge, by bringing in hunters or logging companies in forested areas.. Human settlements can impact the vegetation of local ecosystems up to 30km away, the report says.

### **Indigenous People**

Many different groups of indigenous people, including the Saami, Nenets, Komi and Chukchi of Eurasia and the Dogrib, Cree, Innu and Yupiit of North America, rely on hunting and herding of reindeer and caribou.

Such peoples have, over thousands of years, developed social networks, traditions and cultural life-styles based on the movements of these animals.

But the GLOBIO report warns that the industrialization of the Arctic threatens the traditional existence of many indigenous peoples.

"Northern Scandinavia and parts of Russia are example of areas where the current growth of infrastructure related to transportation, oil, gas and mineral extraction is increasingly incompatible with land requirements for reindeer husbandry. In these areas infrastructure growth is associated with the loss of traditional lands and conditions forcing indigenous people to abandon nomadic herding patterns for more sedentary life styles," it states. Future industrialization is likely to affect the lives and cultures of indigenous peoples in Alaska, Canada and Greenland as many of their traditional foods and activities gradually disappear.

Dr. Nellemann said. "This first report is on the Arctic but our work is proceeding to map and assess human impacts on a global level. All the environmental problems we are grappling with today - health, pollution, resource conflicts and land and water degradation - is the result of heavy impacts on less than 20 per cent of the Earth's land area. Imagine the scale of environmental problems globally when we reach a 50 to 80 per cent level of impact in less than 100 years".

He added:" GLOBIO is not science fiction or doomsday predictions. It allows us to chronicle with far greater accuracy land and water degradation processes that have resulted from the human expansions of the last 50 years. We hope GLOBIO will open the eyes of public and the state leaders around the world, alerting them to the consequences of the choices that we are making today"

### **Notes To Editors:**

The meeting, "Ten Years of Arctic Environmental Cooperation", opens at Rovaniemi City Hall, Finland, on 11 June, 2001. It will be attended by Ministers from the Arctic Council member countries, indigenous leaders and international agencies and NGOs. The council was founded in 1996. Its member governments are Canada, Denmark/Greenland, Finland, Iceland, Norway, the Russian Federation, Sweden and the United States.

A message, concerning sustainable development in the Arctic, is expected to be issued from the meeting as part of the world-wide preparations for the World Summit on Sustainable Development (Rio + Ten) taking place in Johannesburg, South Africa, next year.

The Global methodology for mapping human impacts on the Biosphere (GLOBIO) gives a scientific overview of the cumulative impacts of human activities on the environment.

The pilot GLOBIO report on the Arctic has mapped the impacts of current human disturbance on the region. The impact, by 2050, as a result of three growth scenarios have also been mapped. These are a stable or 100 per cent infrastructure growth rate reflecting the growth seen between 1940 and 1990 extrapolated out to 2050; a reduced growth rate of 50 per cent and an accelerated growth rate of 200 per cent. The methodology and conclusions have been subject to scientific peer review. The reviews are attached to the report

The impacts are presented as colour graphics. The graphics and report, embargoed for publication Tuesday 12 June, will be available on the <http://www.globio.info/> web-site over the weekend.

A photograph by Bryan and Cherry Alexander of a young Nenets woman herding reindeer past an industrial complex on the Yamal peninsula, Russia, can also be viewed. Newspapers and magazines can buy the picture through web site [www.arcticphoto.co.uk](http://www.arcticphoto.co.uk)

For More Information Please Contact: Nick Nuttall, UNEP Media Officer, on tel: 254 2 623084, mobile:

254 733 632755, fax: 254 2 623927, e-mail: [nick.nuttall@unep.org](mailto:nick.nuttall@unep.org) (Between 10 June and 12 June please telephone The Tyholmen Hotel in Arendal, Norway, on: 47 370 26800 or UNEP/GRID-Arendal, 47 370 35711 or mobile 920 47 626) or Tore Brevik, UNEP Spokesman/Director of Communications and Public Information, on tel: 254 2 623292, e-mail: [tore.brevik@unep.org](mailto:tore.brevik@unep.org) or Svein Tveitdal, Managing Director UNEP/GRID-Arendal, on tel: +47 37 03 57 30, mobile +47 90 58 90 32, e-mail [Tveitdal@grida.no](mailto:Tveitdal@grida.no) , or Dr. Christian Nellemann, (project leader), Norwegian Institute for Nature Research, Tel: + 47 61 28 79 00, mobile+ 47 93 46 67 13, e-mail: [christian.nellemann@ninalil.ninaniku.no](mailto:christian.nellemann@ninalil.ninaniku.no) or Lars Kullerud ,Polar Program Manager UNEP/GRID-Arendal, mobile: + 47 90 87 00 99, e-mail: [kullerud@grida.no](mailto:kullerud@grida.no)

Executive Director Klaus Töpfer,(UNEP) director Svein Tveitdal, (GRID-Arendal) dr.Christian Nellemann, (NINA) and Polar Program Manager Lars Kullerud (GRID-Arendal) will be available in Rovaniemi

UNEP News Release 01/80