

continued from page 8... reduced in the southern portions of their range and may even become locally extinct" (Dr. Ian Stirling, Polar bear scientist).

The local and indigenous peoples of the Arctic are dependent upon a healthy and well-functioning ecosystem for survival – both physically, as much of their nutrition is derived locally from harvesting of natural resources; and culturally, as the traditions tied to living in a land that is frozen most of the year define their way of life. Any development that is to be culturally and ecologically sustainable in the Arctic is dependent upon maintaining a healthy ecosystem.

Large carnivores are sensitive indicators of ecosystem health and can be used to define the minimum area necessary to preserve intact ecosystems. WWF has identified the polar bear as a unique symbol of the complexities and inter-dependencies of the arctic marine ecosystem as it works toward its goal of preserving biodiversity for future generations.

Stefan Norris
WWF Arctic Programme
www.ngo.grida.no/wwfap

UNEP/GEO-3: THE WORLD'S FUTURE WATER POND

The sources of global freshwater are steadily declining and with increasing demands from the south the Arctic could become the world's future supplier of freshwater to countries in the south. Freshwater as a saleable commodity might be the future, though so far this idea has been met with strong opposition.

This is what the recently released United Nations Environment programme (UNEP)'s Global Environment Outlook report, the GEO-3, states about Arctic freshwater.

Ice dominates parts of the Arctic and holds much of the world's freshwater in frozen state. For example, the ice pack of the Arctic Ocean is 8 million square kilometres and the Greenland Ice Pack covers 1.7 million square kilometres and stores 10 per cent of global freshwater only second in size to the Antarctic ice cap.

Fresh water is also stored in icebergs, which break off from glaciers and are released into open water, and in the Arctic permafrost. Permafrost is permanently frozen ground that extends throughout most of the Arctic.

The Arctic's major river systems are equally important sources of freshwater. The Arctic has several of the world's largest rivers; seven

of these are in Russia with the Lena, the Yenisey and the Ob being the largest. They pour 4,200 cubic kilometres of freshwater into the Arctic Ocean annually.

Since for most of the year the Arctic is in its frozen state, the massive spring outpouring of melting freshwater occurs in a short spurt of a few weeks. Melting snow also contributes to spring run-off. An increase in the flow of freshwater to the surface layer of the Arctic Ocean affects its salinity, and the currents, which in turn will affect the northern hemispheres and global climate. Changes in climate may interfere with the formation of the North Atlantic Deep Water (NADW) and the northward-flowing Gulf Stream. Some scientists believe that this may potentially stop altogether with subsequent dire consequences for Europe's climate.

Arctic countries have partially responded to threats to their freshwater systems by establishing protected areas. Nearly half the protected area in the Arctic is the Greenland ice cap and glaciers, which store freshwater.

For further reading:
GEO-3: <http://www.grida.no/geo3>
PAME (2001) <http://pame.arctic-council.org>

Climate change adaptation in the Lena Basin

The Lena is one of the world's 10 largest rivers. Due to climate change, floods have become very severe in the Lena and its tributaries. In the last five years, there have been two floods of extreme severity, surpassing all floods of this river since records began. Sixty-two towns and villages were badly affected by flooding in 2001 and Lensk town was completely flooded. The direct economic loss was 250 million US dollar.

In order to raise awareness of climate change considerations in water management and policy decision-making, the Arctic Monitoring and Assessment Programme of the Arctic Council has initiated, within the framework of the Global Dialogue of Water and Climate, the project "Dialogue on Climate Change Adaptation Strategy in Water Management and Flood Preparedness at the Lena Basin". The Lena Basin Dialogue aims to establish a background to sustainable and climate change sound water management in the Lena basin.

Vitaly Kimstach
AMAP Secretariat
www.amap.no

SHELF PROCESSES INVOLVES TRANSPORT OF CONTAMINANTS AND SEA ICE

