POLAR FACTS

International Polar Year 2007–8 provides us all with an opportunity to learn more about the polar regions, the threats they face and their significance to the global climate and human development.

The polar regions are among the world's last wilderness areas. In comparison with most other places in the world their environment is clean and large areas are relatively unspoiled.

Polar environments are among the most extreme on the planet, with limited sunlight, extreme temperatures, short growing seasons, sea ice, snow cover, glaciers, tundra and permafrost. They are rich in living and non-living natural resources that are important to the rest of the world such as fisheries, oil and gas.

Many polar ecosystems have unique features that are particularly vulnerable to the impacts of human activities. As such they require special precautionary and protective measures.

Polar regions are important indicators of the state of global well-being. They are vital to global processes linked to the atmosphere, sea currents and circulation, the global climate and biodiversity. Changes in the polar environment will drive changes elsewhere on the planet.

Generally, the state of the polar environment remains satisfactory. Human activity has had less impact than elsewhere. However, the polar ecosystems are under pressure from development, growing use of natural resources, and external factors such as long-range pollution and climate change.

Global climate models indicate that global warming induced by the greenhouse effect will be most acute in polar regions, resulting in changes in the extent of sea ice, increased thawing of permafrost, and melting of polar ice masses, with profound world-wide environmental, economic, social, cultural and political implications.

Parts of the polar regions are already warming at a rate of two to three times the global average. Most of these areas are in the Arctic, but one region of Antarctica, the Antarctic Peninsula, is also warming.

The polar regions are a natural 'sink' for toxic chemicals which are produced around the world. In the Arctic, persistent organic pollutants (POPs) are transported by air and ocean currents from more southerly latitudes. They accumulate in organisms at the top of food chains, such as marine mammals and seabirds, presenting a threat to the animals themselves, the ecosystems they inhabit and to humans who use them for food.

The Arctic

There are important geographical and political distinctions between the Arctic and Antarctic. The Arctic is a partially-frozen ocean surrounded by a diversity of landscapes influenced by seasonal snow cover and permafrost, including ice, sparsely-vegetated barren lands, tundra, wetlands and forests.

The Arctic Ice Cap consists of glaciers, ice sheets, icebergs and sea ice (multi-year sea ice, old sea ice, first-year sea ice and recently formed sea ice). Sea ice covers approximately 7.5 to 15

million square kilometres of the Arctic Ocean, with an average thickness of about three metres. During the summer, 10 to 15 per cent of the Arctic Ocean is not covered by ice.

The Greenland Ice Sheet is the largest Arctic glacial mass. It constitutes 10 per cent of the world's total freshwater reserves. Melting of sea ice will not increase sea levels, but if all the Greenland ice were to melt, the sea level in the world's oceans would rise by 7 metres.

There are low numbers of known species in the Arctic compared to mid-latitudes, but large and widespread populations of key species, several of which are of major importance to indigenous and local cultures and economies. The Arctic is highly sensitive to disturbance and pollution and much of its human population and culture is directly dependent on the health of the region's ecosystems.

The Antarctic

Antarctica is a continent surrounded by ocean. It is the coldest, windiest, highest and driest continent on earth. Close to 99 per cent of the continent is covered by an ice-sheet with an average height above sea level of approximately 2,500 metres.

The Antarctic ice sheet has an average depth of around 2,000 metres. The largest depth that has been measured is approximately 4,700 metres. The amount of ice in Antarctica constitutes about 91 per cent of the world's total. If all Antarctic ice were to melt, sea level would rise by more than 60 metres.

Antarctica has no native terrestrial vertebrates, but large populations of marine birds and seals which go there to breed. A large proportion of the world's seals are found in the ocean surrounding Antarctica. In the summer season both toothed whales and baleen whales are present in the Antarctic marine environment.

Around 45 species of nesting birds are found south of the Antarctic Convergence, all of which are connected to the marine ecosystem. Penguins constitute 85 per cent of the biomass of Antarctic seabirds, and the Adelie penguin constitutes in itself half of the penguin stock. The small crustacean, krill, is the basis of the Southern Ocean food web which supports fish, marine mammals and birds.

Antarctica has no indigenous population. However, the number of transient scientists and scientists and staff in permanent all-year research stations is increasing, as well as the number of tourists.

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