

Suggest how melting ice in the Arctic might bring advantages and create problems for people there and elsewhere.

The Arctic currently shows the greatest effects of climate change. These changes could affect the global climate, and especially that of Northern Europe.

The Arctic region consists of ice sheets surrounding the North Pole and has an incredibly cold climate; January temperatures average -35 degree celsius, and July temperatures -1.5 degree celsius. The increasing average temperatures are melting the Arctic ice and in 2006, NASA reported that the amount of permanent sea ice decreased by 14% between 2004 and 2005. As the amount of ice is decreasing, the amount of solar radiation being reflected is also decreasing, and more is being absorbed by the ocean. This speeds up the warming effect, which melts more ice and creates a vicious cycle, called the positive ice albedo feedback.

The melting of ice in the Arctic has caused many impacts on the environment. These include the tree line moving north and to higher altitudes. The tundra ecosystems are being lost as the climate warms and other plants take over. The permafrost is thawing out. The spread of species such as the spruce bark beetle in Alaska and the rest of the above all have an impact on the native species and are changing the food chains. Increasing temperatures have also increased the number of boreal forest fires in Arctic Russia. 10 million hectares burn each year, losing 0.8% of the world's coniferous forests. Boreal ecosystems account for 37% of the world's carbon pool on land, and are effective carbon sinks.

The marine ecosystem has altered considerably as a result of Arctic warming. It is difficult to assess the true impact of warming because so much commercial fishing of species such as cod has taken place. But the shrinking of the ice sheets has certainly affected marine species. The warmer water has reduced the quantity of marine plants on which many smaller fish feed. In turn, the reduction in smaller fish species has affected those higher up the food chain, such as cod and halibut, which in turn affects larger marine species such as seals. This has a negative multiplier effect and smaller seal stocks reduce the available food supply for polar bears.

The melting Arctic ice has had a devastating impact on polar bears. As they hunt seals on the ice, the reduced surface ice and faster annual ice melt has reduced their spring hunting season. Hudson Bay is now ice-free for three weeks longer than it was in 1985. Also the reducing number of seals is affecting their ability to fatten up for winter, and also look after their cubs sufficiently, and are now facing the danger of complete extinction.

The melting of the ice imposes many problems both socially and economically for the local Inuits living in the Arctic. Global warming is disrupting their lifestyles, which are adapted to the cold but predictable climate in the Arctic. The Inuits now face many problems caused by the unpredictable melting ice. The ice has become weakened and thinner which makes it dangerous and

unpredictable for walking, travelling and storing equipment on. The ice is used to protect Inuit villages along the coast, but now the coasts are now exposed to more ocean waves and storms, causing destruction of entire villages and forcing people to move further inland. Also, now 24 Inuit villages are now threatened by flooding. But one the main problems is that 80% of Inuit still hunt caribou, fish and marine mammals, all of which are declining in numbers. As the stocks decrease, the Inuit rely more on hunting caribou for income, which in turn places greater pressure on caribou stocks.

As 70% of Inuit income is from paid employment or hunting, the declining stocks hit Inuit incomes hard. Another factor is that caribou and marine mammals provide vital nutrition for the Inuit, and as marine animals provide 90% of their food, their reduction in numbers are dangerous for the Inuit lifestyles. But importing food is expensive. Clyde River settlement on Baffin Island has 450 residents, who eat 100 tonnes of seal meat annually. To import replacement food would cost US\$1 million, and provide less iron, magnesium and calcium than the natural diet.

The melting Artic ice has created some commercial advantages for the Artic region. The Northern Sea Route, north of Canada, is the quickest way of travelling for Europe to the Pacific and Asia, but, until now, the ice has only allowed ships to use it for about 6 weeks between August and October. Now, tourist ships are able to visit northern Canada, and 30% of Inuit now earn income from sculpture or print-making for tourists. In 2007, the North-West Passage between Canada and the Artic melted sufficiently to allow shipping through for the first time.

However, this brings problems too has oil tankers have also negotiated Artic waters for nearly 40 years, bringing oil for the shores of Northern Alaska. Greater frequency and use of the passage increasing the risk of pollution and oil spills which would greatly affect the marine life even more. Now, Russia has started to allow nuclear waste disposal in its Artic waters off the coast of its North Western territories, posing a further threat to the marine ecosystem. The benefits to people elsewhere are that the ferry journey times are shortened and tourists are able to reach places not originally able, also they get to see and experience the Inuit and benefit from their skills of ice sculpturing and gifts made.

Overall, the benefits do certainly not outway the problems and, indeed, do actually cause their own problems anyway, only causing the impacts to worsen. The Inuit people suffer the consequences of the melting ice in many ways socially and economically. The benefits to others do cut their own costs and, for some, socially fulfil their needs but in a way this is selfish as they are benefiting themselves but only worsening the problems for the animals, and thus the people of the Artic.