

## **Climate change in the Arctic; impacts on world energy situation**

### **Summary:**

Estimates prepared by US Geological Survey indicate that about 30 % of the world's undiscovered conventional natural gas resources and about 13 % of the world's undiscovered oil are found north of the Arctic Circle- that is to say, in Arctic and sub – arctic areas.

This amount of undiscovered resources equals nearly 300 years of production from the Norwegian shelf.

Nearly 85 % of these huge resources are to be found offshore in the Arctic's shallow and biological productive shelf in water depth of 450 meters or less.

The majority of the untapped natural gas lies probably within Russian territory, while most of the oil is most likely located offshore Alaska.

The Arctic area is an enormous area of which 1/3 is land, 1/3 is deep ocean with water depth of more than 500 metres and the rest 1/3 is the huge Arctic continental shelf, the largest geographical area on the earth.

This shelf it expected to contain enormous oil and gas resources and it is virtually unexplored. The Arctic deep waters are unexplored, but the Arctic land area has been explored to a certain degree and many discoveries have been made.

The first onshore well was drilled in Norman Wells in Canada in 1920 and the first offshore well was drilled in the Cook Inlet in Alaska in 1963.

Russia made the first huge discovery, the Tazovskoye field in 1962 and the US Alaskan Prudoe Bay Field was discovered in 1967.

Approximately 61 large oil and natural gas field have been discovered within the Arctic Circle of which 43 are in Russia, 11 in Canada, 6 in Alaska and 2 in Norway.

As the sea ice in the Arctic diminish, the area is becoming more accessible and the focus on these untapped resources will increase.

The question is shall we produce all these remaining resources, although it may have some negative effects on the global climate.

As the world population is still expected to increase and growing wealth will continue, IEA has predicted that the energy demand in 2050 will twice of today.

The way forward in the Arctic will be most likely be more controlled by the market situation than by climate changes.

European countries will have to make decisions that will have large consequences for the future energy mix.

Significant new power capacity must be built to replace existing old capacity and to fulfil new environmental requirements. Gas is obvious energy choice for the power sector and it is competitive in terms of price and supplies security and has lower greenhouse emissions.

Energy security- essential to sustain economic growth in the coming years- will depend on maintaining diverse energy supplies. New supplies will come from alternative resources and from new energy frontiers, such as Arctic.

Production from North America, Norway and Russian Arctic mainly on land, is therefore expected to increase substantially in the next two decades.

It will of course be many technical, political and operational challenges.

Changes in climate may alter energy demand as well as energy demand patterns.