THE MINERAL INDUSTRY OF

DENMARK, FAROE ISLANDS, AND GREENLAND

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Denmark's mineral resources were concentrated mainly in natural gas and petroleum fields in the North Sea that have, together with renewable energy, made Denmark a net exporter of energy since 1996. Employment in the nonfuels minerals industry (mining and quarrying, basic metal industry, etc.) accounted for about 2% of total employment.

Private ownership and exploitation of minerals are allowed under Danish law. A tax of \$0.91 per cubic meter was levied against all extracted minerals, regardless of type or ownership. However, this tax is exempted if the mineral is exported. The permitting procedure for mineral production is executed by individual counties, and the environmental regulations are at a level comparable to the other European Union (EU) member countries.

The mining and metal industry works closely with the Ministry of Environment and Energy, the Danish Environmental Protection Agency, local and community governments, and citizen groups to minimize any adverse effects to the environment. Environmental protection is the main focus of the Danish Environmental Protection Agency. A common goal of the steelworks and other industrial concerns was to make use of as much raw material taken into the plant as possible and to maximize the use of any byproducts, such as flue dusts.

The Danish Environmental Protection Agency proposed a ban on the import, sale, and production of compounds of lead and products that contain compounds of lead. Almost every major and minor use of lead in Denmark could be hit by this proposed ban with the exception of batteries, which were not included in the ban. A time limit would be applied for the elimination of the applications (Metal Bulletin, 1997).

Continued close cooperation with the other member countries of the EU was very important for Denmark because these countries remain the major export markets. Most of the mineral commodities produced in Denmark were exported with a majority shipped to EU countries.

Denmark's steel industry was small compared with the majority of other EU countries and, as a result of its size, was not affected by the proposed cuts being studied by the European Commission in its efforts to make the EU steel industry more competitive with those of other countries. (See table 1.)

Denmark has no known economically exploitable reserves of metallic ores; but it does have large reserves of nonmetallic materials, such as chalk, diatomaceous earth, limestone, and sand and gravel. Denmark's industrial minerals sector was based on easily accessible materials, such as chalk and limestone, and is well developed. Cement, chalk for paper filler, ground limestone,

and lime, including agricultural and burnt, were produced. The structure of the Danish mineral industry, listing its major components, is shown in table 2.

Denmark was the only commercial producer of moler, which consists of a natural mixture of diatomite and from 20% to 25% smectite clay. Moler has a variety of applications and is an important ingredient of insulation bricks.

Petroleum production continued to exceed consumption, allowing Denmark to stay self-sufficient in petroleum. An increase in natural gas production allowed the continued exporting of about 20% of Denmark's production. Danish Underground Consortium (DUC) was responsible for virtually the entire production from Denmark's North Sea petroleum and natural gasfields. Denmark is the third largest producer in western Europe after Norway and the United Kingdom. A.P. Moeller Group owned 39% of DUC. Its two partners, Shell Corp. and Texaco Corp., owned 46% and 15% respectively. DUC's production from 12 fields exceeded the total Danish oil and gas consumption.

Faroe Islands

The Faroe Islands, a self-governing overseas administrative division of Denmark, has no known mineral reserves. The economy remained dependent on fisheries, which collapsed in the early 1990's, causing an economic crisis. However, this could change if a dispute with the United Kingdom over a wide strip of sea between the Faroe Islands and the Shetland Islands, which has continued for the past few years, is eventually settled in favor of the Faroes. The dispute concerned the boundary of the economic zone of the Faroe Islands and the Shetland Islands and intensified as a result of oil having been discovered in the Shetland zone less than 20 kilometers (km) from the present boundary and in the disputed zone. Commercially viable findings of oil or natural gas have not been found on the Faroe Islands.

The principal involvement of the Faroe Islands in the international minerals industry has been as a market for imported materials to support the local fishing-based economy. The imports were principally fuels, fertilizer materials, and building products such as cement.

Greenland

Since the cessation of mining activities in 1990, Greenland, a self-governing overseas administrative division of Denmark, has been looking for a means of diversifying its economy, which was based almost entirely on fishing and hunting. Recent legislation created favorable licensing terms and investment rules. This, together with diverse rock types in its geology, has resulted in increased mineral exploration in Greenland.

In 1997, several companies conducted exploration over more than 28,000 square kilometers (km²). Exploration has been directed toward base metals, diamonds, gold, industrial minerals, iron, nickel, and platinum-group metals. The Danish and the Greenland Governments were actively encouraging mineral exploration activities, and the Geological Survey of Denmark and Greenland provided support where possible.

Platinova A/S reported the recovery of a microdiamond from a sample of kimberlite boulders on a lake shore in central west Greenland. The 0.01-carat diamond was recovered from a sample taken from Platinova's 4,332-km² exploration concession. Since the discovery, Platinova has also found a number of kimberlite boulders and dykes and was planning on conducting a detailed airborne geophysical survey of the area (Mining Journal, 1997).

The joint-venture exploration project of Dia Met Minerals Ltd., Canadian Mountain Minerals Ltd., and Quadrant Resources reported that it had discovered 200 kimberlite float occurrences and 4 outcropping kimberlite dykes. One of the dykes tested positive for diamonds. The joint venture reportedly would spend \$3.8 million in 1997-98 to complete helicopter-supported geophysics and to continue the exploration program, including followup heavy-mineral sampling (Dia Met Minerals, 1997, Greenland joint venture for diamonds, August 11, 1997, accessed April 20, 1998, at URL http:// www.diamet.com/ 110897.html).

Denmark and Greenland awarded an international consortium a license for offshore petroleum and natural gas exploration and exploitation off Nuuk in West Greenland. The consortium was headed by Statoil of Norway and Philips Petroleum of the United States; each held 38.25% of shares. The consortium also included the Danish-Greenland group Nunoil, which held 15%, and Denmark's Dopas, which owned 8.5%. Preliminary seismic surveys indicated that the offshore area known as Fylla Banke, located in the Baffin Sea some 50 to 150 km west of Nuuk, appeared to contain large quantities of natural gas and some

petroleum.

The subsea continental shelf along Greenland's western coast appeared to contain natural gas and petroleum reserves similar to those in the North Sea. However, the waters are more than 1,000 meters deep, and special technology would be required to exploit the deposits. Statoil was carrying out seismic surveys in 1997, and the first exploratory well was expected to be drilled in 1998 at the earliest. The concession covers an area of 9,487 km² and has been awarded for two 4-year periods until December 31, 2004 (Alexander's Gas & Oil Connections, 1996, NK-US Consortium wins oil and gas license off Greenland, December 1996, accessed April 21, 1998, at URL at http://www.gasandoil.com/goc/company/cne65102.htm).

Denmark had a well-developed modern transportation system. There are standard gauge rail lines totaling 2,770 km in length. Highways consisted of 66,482 km, of which 64,551 km was paved. Inland waterways totaled 417 km. Principal ports were Ålborg, Århus, Copenhagen, Esbjerg, and Frederica. There were numerous secondary and minor ports.

Denmark and Greenland have a political and administrative relationship. The Danish Government is actively seeking to develop both area's nonfuel mineral resources, particularly in Greenland. The hopes are that mining can once again become an important sector of the country's economy.

References Cited

Metal Bulletin, 1997, Denmark tries to ban most lead: Metal Bulletin, no. 8229, p. 27.

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Major Source of Information

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