

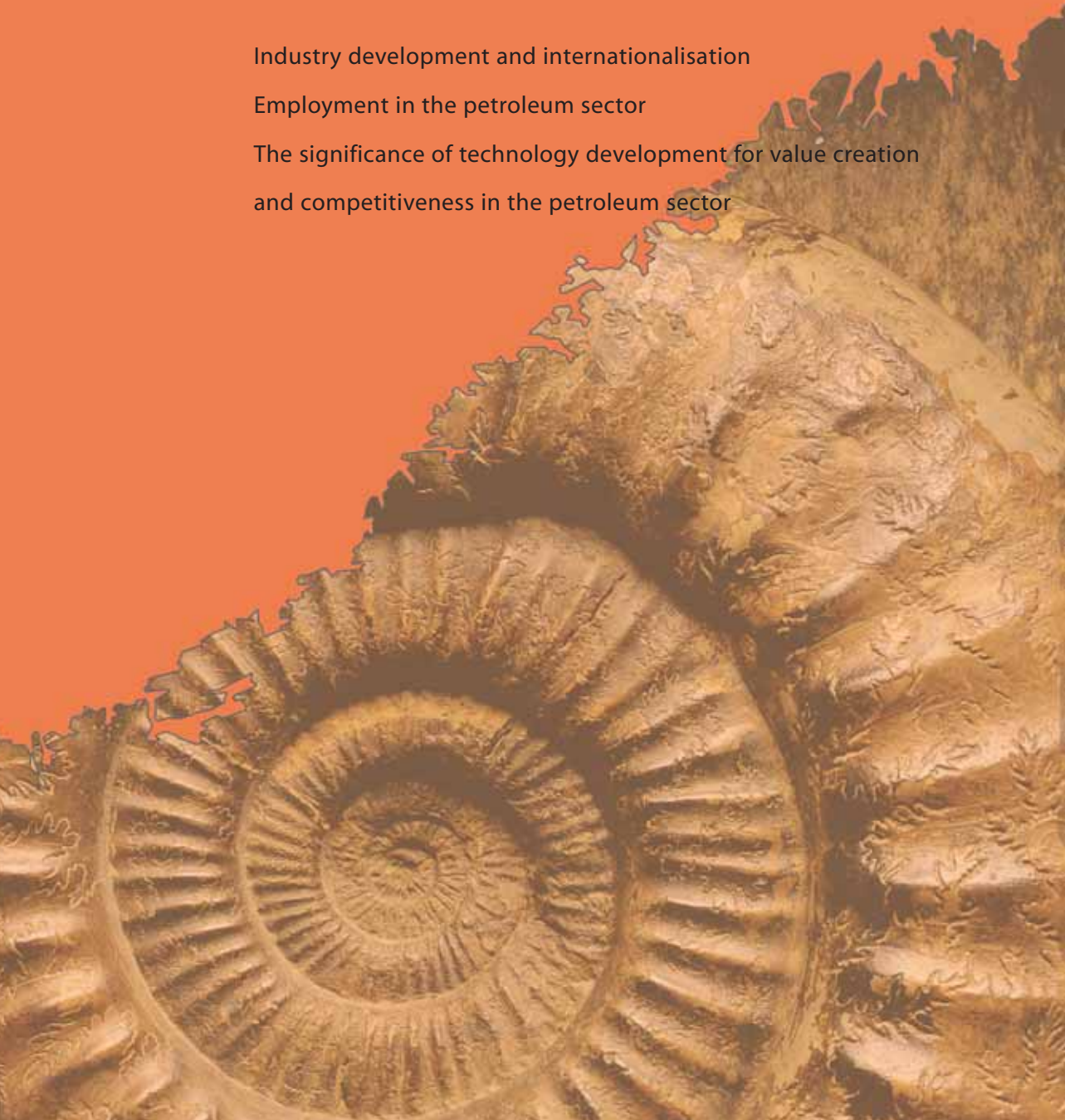
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The petroleum industry, internationalisation, employment and technology development

Industry development and internationalisation

Employment in the petroleum sector

The significance of technology development for value creation and competitiveness in the petroleum sector



Industry development and internationalisation

An important objective for the Norwegian authorities with production of oil and gas resources on the NCS is to lay the basis for developing a competent and viable petroleum-related industry in Norway. Earlier, the transfer of expertise from abroad and the build-up of domestic operations were important elements in Norwegian petroleum policy.

The country now has a competitive petroleum industry, embracing a large number of Norwegian suppliers and operations covering most stages of the value chain from exploration via development to production and decommissioning.

In a number of areas, Norwegian suppliers to the oil and gas industry are among the world leaders. That applies particularly to seismic surveying, subsea installations and floating production systems.

Activity in Norway's petroleum supplies industry has so far been related largely to new investment, maintenance and operational assignments on the NCS. The prospect of a lower level of capital spending in these waters means that the industry is increasingly focusing its attention on international market opportunities.

Forum for top executives

To promote efficiency and activity on the NCS, a new forum for top executives in the petroleum sector was established in 2000. Chaired by the Minister of Petroleum and Energy, this body embraces roughly 30 leaders from oil companies,

suppliers, unions and the authorities. Its mandate is to strengthen the competitiveness of the NCS and of the Norwegian supplies industry both at home and abroad.

The forum's initiatives have included projects and work processes relating to the exploitation of marginal fields and improvements in the rig market.

In addition, the forum will monitor established processes such as OG21, Intsok and the Environmental Forum. Reports on the level of costs and the tax regime on the NCS have been prepared on the initiative of this body.

Intsok

In cooperation with the domestic petroleum industry, the government established Intsok – Norwegian Oil and Gas Partners in 1997 to promote the internationalisation of Norway's petroleum-related industry. It currently has more than 100 member companies.

The global market for deliveries to the oil and gas business is substantial. According to the International Energy Agency, an estimated USD 16 000 bn will need to be invested world-wide before 2030 to meet global demand for energy.

Intsok aims to help boost annual international sales for Norway's supplies industry from today's level of about NOK 35 bn to NOK 80 bn by 2010.

Petrad and Petropol

As part of its internationalisation efforts, the MPE provides funding for the Petrad foundation and the Petropol research programme.

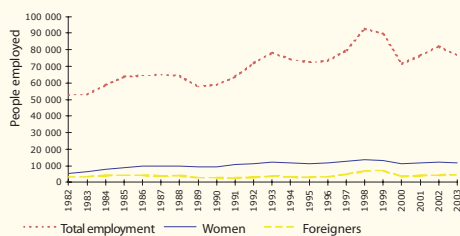


Figure 11.1 Total employment in Norway's petroleum sector 1982–2003
(Source: Directorate of Labour)

As part of Norway's development cooperation efforts, Petrad works to transfer expertise in the petroleum sector. It offers various forms of such transfer to leading personnel from national oil companies and government administrations in developing countries.

Petropol aims to strengthen expertise on and further enhance the quality of Norwegian research into the social science aspects of the petroleum sector. It is coordinated by the Research Council of Norway.

Employment in the petroleum sector

The Norwegian Directorate of Labour compiles annual statistics for petroleum-related employment. Figure 11.1 shows developments in such employment from 1982 to 2003. The latest survey was completed in August 2003.

A total of 76 600 people were then employed by the Norwegian petroleum sector, a decline of roughly 5 500 or seven per cent from the year before. These jobs corresponded to roughly three per cent of total employment in Norway.

Relatively few women work in the petroleum sector. According to the survey, this industry employed 11 700 females in August 2003 or about 15 per cent of total petroleum employment. Of these, 2 200 worked on offshore installations.

The centre for value creation at the Norwegian School of Management has carried out a study into the economic significance of the oil and gas industry for the various regions of Norway, measured by value creation, turnover, number of companies and employment.

This survey shows that petroleum-related suppliers are found in 135 of Norway's 434 local authorities, with oil companies being present in eight. Supplier companies are represented in all the country's 19 counties, with oil companies in four.

Figure 11.2 provides an overview of purchases of goods and services by the supplies industry, while figure 11.3 shows employment in the petroleum industry.

The significance of technology development for value creation and competitiveness in the petroleum sector

A broad collaboration within the Norwegian oil and gas industry was launched in 2001 to establish a national strategy for research and development. This OG21 – oil and gas in the 21st century – partnership seeks to meet the major value creation and environmental challenges relating to continued development of the NCS and to strengthening the international competitiveness of Norwegian industry.

An important goal of this initiative is to ensure more integrated and effective cooperation in the oil and gas cluster for research as well as for the demonstration and commercialisation of technology.

Attention is focused on achieving synergies throughout the whole research chain and on relationships between oil companies, suppliers and research institutes.

Given the most important challenges facing the petroleum sector, five main priorities have been identified within the OG21 partnership:

- the environment
- improving the recovery factor
- deep water
- industrial utilisation of gas
- marginal fields.

Another important instrument for promoting new technological solutions in the petroleum sector is the Demo 2000 collaboration, which focuses on three principal targets:

- securing new field developments on the NCS through innovative and cost-effective technology and execution models

- increasing assurance that projects can be implemented to budget and on schedule
- developing new Norwegian industrial products for sale in a global market.

Innovative and cost-effective technology will be qualified for use through demonstrations (pilot projects). The aim is to ease the work of establishing new development projects, products and jobs. The pilot projects involve close collaboration between suppliers, research institutes and oil companies. Such cooperation will in itself contribute to creating a forward-looking, market-focused exper-

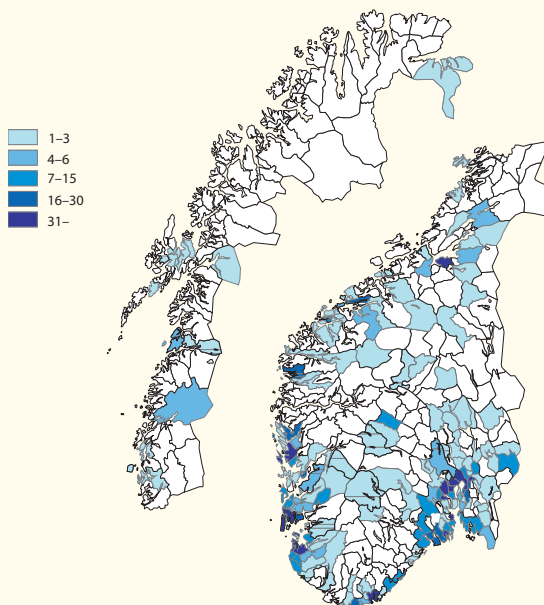


Figure 11.2 Purchases of goods and services.
 (Source: Norwegian School of Management – Centre for value creation)



tise network. Funds for Demo 2000 are channelled through the Research Council of Norway.

A major new petroleum research programme called Petromaks has been launched in 2004, also under the coordination of the Research Council of Norway. On the basis of technology targets defined in OG21, Petromaks will seek to improve the utilisation of producing fields and make new reserves more accessible.

The key research tasks for the first phase of this new programme will be:

- exploration: developing methods for geophysical measurement, exploration and reservoir models and improved understanding of basin modelling
- improved recovery in a broad perspective: developing methods for simulated recovery, reservoir monitoring and management and drilling technology as well as new processes, methods and technology for gas sales.

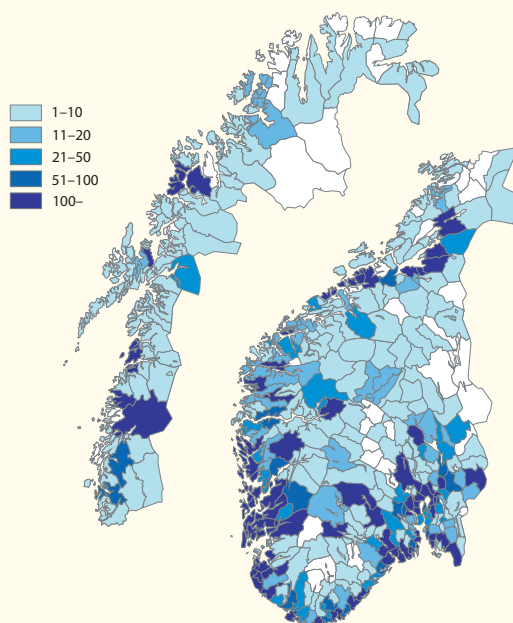


Figure 11.3 Employment in the petroleum sector
(Source: Norwegian School of Management – Centre for value creation)

