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## Mainland operations, technology and petroleum research

Offshore supplies industry

Employment effects

Petroleum research

## OFFSHORE SUPPLIES INDUSTRY

The oil and gas business generates a substantial demand for goods and services related to exploration, drilling, development and petroleum production. This demand has direct effects on petroleum-related industry, and also creates substantial spin-offs for other Norwegian industrial sectors.

When oil and gas were discovered on Norway's continental shelf, petroleum policy was directed at creating a Norwegian oil industry. In addition to oil companies, it was important to build up a domestic offshore supplies sector.

Maritime traditions in Norwegian industry could be extended and enhanced with the aid of expertise transferred from international oil companies and suppliers to domestic companies. In line with the development of its continental shelf, Norway has built up competent suppliers in all phases of the petroleum business. During recent years, Norwegian companies have accounted for well over half the overall deliveries to the country's operations in this sector.

Building a competitive Norwegian petroleum industry means that a growing number of companies from Norway are winning contracts in the

international market. The country's oil companies and suppliers work today in every part of the world.

In order to create a stronger base for international operations by Norwegian suppliers, the MPE has joined forces with the oil sector to establish the Intsok foundation. This body aims to strengthen the international position and competitiveness of Norway's petroleum industry through a binding network-based collaboration between its members. These total about 60, and include both oil companies and suppliers. Human rights and the responsibilities and requirements of companies in relation to such issues are also on the Intsok agenda.

## EMPLOYMENT EFFECTS

In cooperation with the county employment offices, the Directorate of Labour compiles annual statistics for employment in the petroleum sector. These surveys have been conducted annually since 1973, and the latest was carried out in August 1999. Results from the past six years, grouped by four functional areas, are presented in table 6.1.

Petroleum-related operations account for roughly four per cent of total employment in Norway. The number of people employed rose substantially

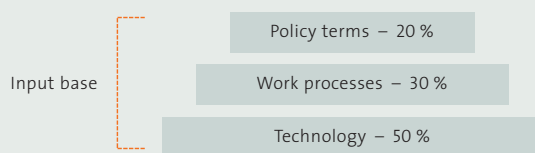
Table 6.1 Employment by functional areas

Group	1994	1995	1996	1997	1998	1999
Exploration, drilling and production, etc	26 170	25 678	25 469	27 861	30 280	30 050
Bases, logistics, catering, administration, etc	10 635	10 635	11 522	12 590	13 485	14 195
Construction and maintenance of platforms and vessels	32 953	29 693	30 160	34 005	42 585	41 017
Construction and operation of processing and landing facilities	4 277	6 522	6 020	5 161	5 164	5 072
<b>Total</b>	<b>74 035</b>	<b>72 528</b>	<b>73 171</b>	<b>79 617</b>	<b>91 514</b>	<b>90 334</b>

(Source: Directorate of Labour)

## Competitive position of Norway's offshore sector

Meeting the USD 8-10 challenge



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in recent years, but the decline in oil prices during 1998 and early 1999 reduced the number of development projects and employment in the industry. A total of 90 334 people were employed in Norway's petroleum-related industry in August 1999, a contraction of 2.5 per cent from the record figure set in 1998. The worst-hit sector was construction and maintenance of fixed and mobile units, where the decline in jobs came to six per cent. This category covers the bulk of the supplies industry, including fabrication yards and engineering companies. The drop in employment was particularly large in the engineering companies, which saw their overall workforce contract by 1 520 people – 15 per cent – to 8 700.

Of the 90 334 people employed in Norway's petroleum sector, 18 900 or 21 per cent work in oil companies while the rest are employed by the supplies industry. Among suppliers, manufacturing and construction companies account for the largest number of jobs at 33 900, followed by engineering at 8 700 and service firms at 7 100.

### TECHNOLOGY AND PETROLEUM RESEARCH

#### The Demo 2000 commitment to project-related technology development

The government reviewed possible measures for improving the competitiveness of Norway's offshore sector in Report no 37 of 1998-99. In that context, the Norwegian petroleum sector identified technology as the most important single factor for, and the most purposeful approach to, reducing costs and thereby enhancing the industry's profitability and competitiveness. The significance of technology as the fundamental input for strengthening the international competitiveness of Norway's

offshore sector is shown by the figure below.

As a consequence, the Demo 2000 project-oriented technology development programme was established as a broad-based collaboration between international and Norwegian oil companies, the supplies industry and research institutions. The focus is on maturing effective technologies and field developments more rapidly on the NCS, and on developing technology and products suitable for international markets. See the figure below.

This programme was initiated through an appropriation of NOK 100 million in the revised national budget for 1999. A further NOK 100 million has been appropriated over the central government budget for 2000.

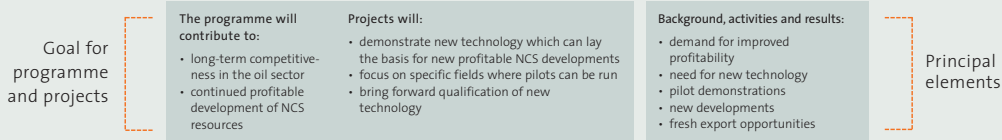
With the wide interest aroused by the Demo 2000 collaboration, the contours of a far-reaching boost to Norwegian offshore technology can now be perceived. The NOK 100 million appropriated in 1999 as phase I has prompted the submission of 211 applications totalling almost NOK 1 billion. These are spread across roughly 20 pilot projects in which oil companies and the supplies industry are heavily involved together with the research institutions concerned in financing and testing.

All told, the 1999 appropriation is set to generate almost NOK 400 million in funds for qualifying more cost-effective technologies when the commitment of resources by government and industry is viewed as a whole. With the additional NOK 100 million appropriated for 2000 as phase II, Demo 2000 could prompt pilot projects worth NOK 600-800 million.

The timetable for implementing phases I and II, together with pilot projects in phase I, is shown in the figure below.

## Principal elements in Demo 2000

### Collaboration on project-related technology development



### Petroleum research

Partly as a result of lasting cuts in government funding for petroleum research, the user-administered part of this R&D effort has been concentrated more selectively within the framework of the Offshore 2010 programme established by the Research Council of Norway.

Replacing the earlier Reserve and Utbygg programmes, this programme aims to stimulate high-risk research into technology for processing and separating emissions near their source (the reservoir).

Much of the innovative technological progress by the petroleum sector takes place in small and medium-sized centres of expertise.

Effective R&D in these centres will accordingly be important for technological advances in the sector and for preserving Norwegian teams with leading-edge expertise.

Offshore 2010 provides a potential for demonstration projects relating to Demo 2000, and co-operation within project-related technology development could prove an important driving force in commercialising technology and ideas among the sub-contractors which support the oil and gas industry.

Closer links are accordingly being forged between Offshore 2000 and Demo 2000 to realise these synergies.

The Petropol programme is more oriented towards the social sciences and focuses on the following areas:

1. Internationalisation and international challenges
2. Petroleum and politics – adjusting political institutions and processes
3. Change and innovation in the petroleum sector and the petro-industrial complex
4. Norway as a gas nation – natural gas, gas-fired power and gas as an industrial raw material.

This programme seeks in particular to identify the interaction between social, historical, technological and industrial factors and interests.

One aim is to offer relevant knowledge of key issues to the Norwegian authorities, oil companies, industry organisations and unions.

In addition, environmental research relevant to the oil and gas

business receives public funds through the Research Council of Norway.

The Klimatek programme finances R&D – including the implementation of demonstration projects – related to reducing greenhouse gas emissions.

And the Forurensning programme aims to provide new knowledge on and maintain national expertise about various types of polluting emission.

