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Industry, employment and technology development



Petroleum-related industry

One of the policy objectives formulated after the discovery of oil and gas in the Norwegian North Sea was that these resources should form the basis for developing petroleum-related industry in Norway. Transfer of expertise from abroad and the build-up of domestic operations were important elements in this development.

A competent and competitive Norwegian supplies industry for oil operations has been gradually developed.

The country now has a large number of companies in this sector, covering most stages in the petroleum value chain from exploration via development to production and operation.

In certain areas, Norwegian suppliers to the oil and gas industry are among the world leaders. This applies particularly to seismic surveying, subsea installations and floating production solutions.

Activity in Norway's offshore supplies industry has so far largely related to new investment, maintenance and operational assignments on the NCS.

The likelihood that future activity in these waters will be lower, combined with a high level of expertise, means that the industry is focusing to a greater extent on international market opportunities.

The global market for deliveries to the oil and gas sector is substantial. According to Intsok, the offshore market should total USD 80-100 bn annually over the next four years. Deepwater technology is the biggest growth area, while the most important growth markets are expected to lie in west Africa, the Gulf of Mexico and Brazil.

In cooperation with the domestic petroleum industry, the government established the Intsok – Norwegian Oil and Gas Partners foundation in 1997 to promote deliveries to the international market. Currently embracing 90 companies, Intsok aims to boost revenues from abroad to NOK 50 bn by 2005, compared with the current level of just under NOK 30 bn.

Such growth will require a substantial and purposeful commitment. The MPE has appropriated NOK 10 million for this purpose in the state budget for 2003.

As part of its internationalisation efforts, the MPE provides support for the Petrad foundation – an arm of Norway's development cooperation which provides courses in petroleum-related management and expertise for developing countries.

A new forum for top executives was established in September 2000. Chaired by the Minister of Petroleum and Energy, this body embraces more than 20 leaders from oil companies, suppliers, unions and the authorities. It represents a joint initiative to revitalise the Norwegian petroleum sector.

The mandate for the forum is to identify and initiate projects to strengthen the competitiveness of the oil and gas sector.

Its actions have included the launch of projects and work processes relating to conflict resolution, marginal fields and rig market improvements.

In addition, the forum will monitor established processes such as OG₂₁, Intsok and the Environmental Forum.

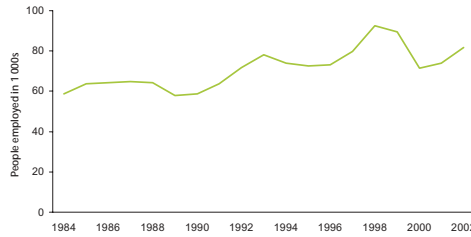


Figure 11.1 Employment in Norway's petroleum sector 1984–2002. (Source: Directorate of Labour)

Employment in the petroleum sector

The Directorate of Labour has compiled annual statistics for petroleum-related employment since 1973. Its latest survey was conducted in August 2002. Figure 11.1 shows developments in such employment from 1984 to 2002.

A total of 81 707 people were employed by the Norwegian petroleum sector in August 2002, an increase of 5 379 or about seven per cent from 2001 and corresponding to roughly four per cent of total employment in Norway. The number of people employed declined by no less than 21 186, or roughly 23 per cent, from August 1998 to August 2000 – the largest contraction since records began in 1973. So the decline in jobs appears to have halted, although the level of employment still falls well short of the peak recorded in 1998 when a number of major development projects coincided.

Table 11.1 shows employment over the past seven years, grouped by four functional areas. After the dramatic contraction in jobs from 1998–2000, a slight improvement has been registered in all these categories.

Employment in the petroleum sector can also be broken down by company type. The oil companies account for 18 255 of the 81 707 people employed in Norway's petroleum industry, with the rest working for the supplies sector. Of the latter, the largest group – 24 209 people – worked in manufacturing and construction. Engineering firms had 8 658 employees, the service sector 7 713, and transport and shipping 7 261.

Manufacturing and construction recorded the biggest expansion in jobs during 2002, up by 2 881 from the year before. Employment rose by 1 281 in the oil companies, 922 in transport and shipping operations and 399 in the service sector. Engineering companies registered an increase of 229 jobs.

Table 11.1 Employment by functional area. (Source: Directorate of Labour)

Group	1995	1996	1997	1998	1999	2000	2001	2002
Exploration, drilling and production, etc	25 678	25 469	27 861	30 270	30 130	26 372	29 642	30 316
Bases, logistics, catering, administration, etc	10 635	11 522	12 480	13 652	13 285	13 469	14 204	15 857
Construction and maintenance of platforms and vessels	29 693	30 160	34 200	43 535	41 032	27 633	28 892	31 917
Construction and operation of processing and landing facilities	6 522	6 020	5 161	5 164	5 072	3 961	3 590	3 617
Total	72 528	73 171	79 702	92 621	89 519	71 435	76 328	81 707



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

OG₂₁

A broad collaboration by the Norwegian oil and gas industry was launched in 2001, on the basis of a preliminary project the year before, with the aim of establishing a national strategy for research and development.

This OG₂₁ – oil and gas in the 21st century – partnership seeks to meet the wider value creation and environmental challenges relating to continued development of the NCS and strengthening Norway’s industrial competitiveness.

An important goal of the initiative was to create a more integrated and effective collaboration in the oil and gas cluster on short- and long-term research, as well as the demonstration and commercialisation of technology.

Attention was to be focused on generating synergies along the whole research chain, from basic work to short-term projects, by strengthening R&D

relationships between oil companies, suppliers and researchers. See the figure below.

OG₂₁ is organised today through a board with representatives from oil companies, the supplies industry and research institutes. This body presented a strategy document in June 2002 for comment by the oil and industry, with specific proposals for priorities and overall technological targets for these.

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

- the environment
- improved recovery
- deep water
- industrial utilisation of gas
- small fields.

In addition, a broad dialogue has been initiated with key oil industry players in order to achieve good support for implementing the strategy and collaboration over this among oil companies. That includes laying the basis for a more dynamic R&D relationship between these companies and their suppliers.

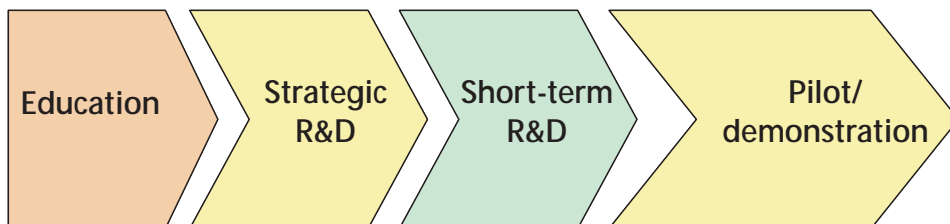


Figure 11.2 OG₂₁ R&D value chain

As part of the implementation of OG₂₁, a “lead party” has been appointed for nine of the key technology areas identified in the strategy. Each of these is an affected oil company, and has a special responsibility for initiating project activities in its area.

Figure 11.3 shows which technological sectors have been given a lead party in the oil and gas industry, and how these relate to the main OG₂₁ priorities.

Dialogue between OG₂₁ and the oil and gas cluster is also based on an annual forum, which will act as an advisory body between the partnership’s board and the industry.

The Demo 2000 collaboration over project-focused technology development has helped to reduce the break-even cost of new NCS developments by USD 2-3 per barrel.

Devising the next generation of development and production solutions offers a substantial value creation potential. According to the discussion of the Demo 2000 collaboration in Report no 38 (2001-2002) on oil and gas activities (in Norwegian only), future technological leaps are essential for achieving the long-term scenario.

Lead party areas:	Environment	Improved recovery	Deep water	Small fields	Gas value chain
1. Zero discharges to the sea	o				
2. Halving emissions to the air	o				
3. Improved recovery	+	o			+
4. Cost-effective drilling		o			+
5. Real-time reservoir management		o			
6. Floating production		+	o	+	
7. Wellstream transport		+	o	o	+
8. Subsea/downhole processing		+	o	+	+
9. Value creation in the gas chain	+			+	o

Figure 11.3 OG₂₁ main priorities.

