Petroleum and knowledge – The Norwegian experience

Øystein Noreng
BI Norwegian School of Management
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The issues

- Developing human resources for the petroleum industry
- Managing continuity of knowledge in a cyclical industry
- Training for managing practical problems
- Training for strategic management
Historical overview

- When the international oil industry approached Norway in the 1960s, there was little insight into petroleum matters, but a record of controlling natural resources (hydropower and fish).
- Within a generation Norway built one of the world’s larger petroleum industries.
- Norway is also a major exporter of petroleum-related technology and goods and services.
- Norway emerges as a relatively successful case of cooperation between private and public interests.
Situation in Norway in 1970

• Industrialised economy:
  – Heavy industry based on hydro-electricity
  – Shipping
  – Shipbuilding
  – Mechanical industry

• High level of education
  – Skilled workforce
  – Entrepreneurial culture
  – Scientific competence
National strategy and objectives

• To control all phases of the activity
• To gain insight into technology, markets and operations
• To favour national interests over foreign investors
• To draw on foreign investors’ insight (IOCs)
• To gain value added in the entire value chain, including the supply industry
• To invest in specialised education
The technology and industry cooperation

- A more comprehensive programme of technology and industry cooperation was introduced in 1979, embodying:

1. Projects between Norwegian industry and foreign oil companies "Industry cooperation"
2. Projects between Norwegian research institutions, universities and foreign oil companies "Technology cooperation"
3. Bilateral cooperation with foreign governments
Technology cooperation

• Agreements between Norwegian research institutions and foreign oil companies, contributing funding, personnel and competence, directly related to petroleum.

• Three types:
  1. 50%-agreements
  2. Effort agreements
  3. Good will agreements
The procedure

- Targets on sums and shares, no specification of contents or suppliers
- Protective frame, but flexibility and competition without central planning
- Inter-ministry coordination poor
- Even if the outcome was arbitrary and many projects were of limited value, the total effect was a quick and comprehensive build-up of Norwegian petroleum-related competence
The significance of Norway’s experience

• A strong oil producer state with clear industrial objectives can benefit from the presence of IOCs
• Norway had a far better point of departure than most other oil exporters
• Norway shows the salience of developing knowledge as a basis for value added as well as control of activity
A critical view

• The protection of the supply industry was carried too far for too long time; by the early 1990s, the Norwegian share of supplies was above 90 per cent; now it is around 50 per cent.

• The research and development effort was essentially applied; it has not been matched by a corresponding effort in basic research that is required for an industrial cluster with a long-term competitiveness; funding has been fragmented and institutions are insufficient.
The present

- Relatively good supply of petroleum engineers, geologists etc., but recruitment cyclical, dependent on oil prices
- Some ideological version to petroleum careers
- Need to include renewable energy
- Poorer supply of economists, lawyers, etc., with insight into petroleum matters
- Managerial crunch as leading personnel that has been in the industry for decades, ages and leaves
- Newcomers have fresh views, but limited experience
The challenges

- Secure managerial competence
- Educate personnel with relevant economic and financial insight, as well as petroleum lawyers
- Secure recruitment
- Secure continuity of employment and prevent loss of competence as the industry consolidates
The efforts

- Relevant technical and scientific education at major universities
- Relevant economic education at major business schools
- Government and industry sponsored research programmes
- Cooperation with foreign institutions
BI Norwegian School of Management

- Graduate programme in energy economics
- Executive energy management programme with IFP and ESCP (France)
- From 2010 EMBA in energy with IFP and Nanyang University (Singapore)
- Further plans include Azerbaijan, Russia and Latin America