Norwegian Gas Developments - Key Success Factors
The Norwegian Continental Shelf (NCS)
Norwegian Geological Institute in 1959:

“It is completely unrealistic that oil can be found on the Norwegian continental shelf”.

The Groningen gas field discovery in the Netherlands started the North Sea oil and gas adventure
NCS transportation system
(gas in red, liquids blue)
Petroleum sector and macro economics

- **Share of GDP**: 23%
- **Share of state revenue**: 30%
- **Share of investments**: 29%
- **Share of exports**: 52%

**Surplus used to build a pension fund**

*NPD Facts 2012*
Norwegian Petroleum Production - gas growing in importance

NPD Facts 2012

Mill. Sm³ oil equivalents per year

- Gas (40 MJ)
- Condensate
- NGL
- Oil
State has key role in petroleum sector

Stortinget (Parliament)

The Government

Ministry of Petroleum and Energy
- The Norwegian Petroleum Directorate
- Petoro AS
- Gassco AS
- Statoil ASA

Ministry of the Environment
- Climate and Pollution Agency

Ministry of Labour
- The Petroleum Safety Authority Norway

Ministry of Fisheries and Coastal Affairs
- The Norwegian Coastal Administration
- Government Pension Fund - Global
- The Petroleum Tax Office

Ministry of Finance
Risk factors – gas infrastructure investments

- Technical risk – offshore development
- Supply risk – reserves & reservoir management
- Market risk - demand next 20-30 years
- Price risk - competitive fuels (oil price, hubs)
- Transit risk – taxes, tariffs
- Political risk – taxes & regulations

Risk management is a key success factor
Upstream Value Chain of Gas

Piped Gas Chain

UPSTREAM | PROCESSING | TRANSPORT | TERMINAL | SALES

LNG Chain

UPSTREAM | LIQUEFACTION | SHIPPING | REGASIFICATION | SALES

Long value chain, capital intensive, asset life time 20 yrs +

Proper risk management required!
Managing technical risk

- Partnership model NOCs+IOCs
- National companies: Statoil & Norsk Hydro
- IOCs: Phillips, Shell, BP, ExxonMobil, Total, others
- Field operatorships based on competence
- Sharing global competence and experience

- Building national competence
  - IOCs play major role
Managing market risk

- 1970/1980 European market for NCS gas:
  - UK, Germany, France, Netherlands, Belgium

- National gas champions:
  - British Gas, Ruhrgas, GdF, Gasunie, Distrigaz

- Long term agreements along value chain
  - Producer- wholesale- local distribution

Market dominated by the gas champions
Managing transportation risk

• Dedicated field pipelines to landing terminals
  • part of field development

• Gradual expansion of pipeline system increased flexibility and reliability

• Balanced ownership gas flow/pipeline share

• Regulated tariffs

Tariff model to encourage gas exports
Ekofisk fields – first European continental gas sales

![Graph showing production of gas and oil from Ekofisk fields over time from 1975 to 2010. The graph indicates a peak production in the early 1990s and a decline in later years.]

NPD Facts 2012
Long term contracts
- cementing partnership

• First contracts:
  • 20 year contracts with wholesale companies
  • Field depletion contracts
  • Take or pay – minimum volumes
  • Delivery point at landing terminals

• Price linked to oil products
  • Price review clauses

- Initially joint sales by field owners
- Later individual company sales
Financial framework making project bankable

- Initial investments – higher risk
- Strong partners upstream
  - Field development
  - Offshore pipelines
  - Terminals
- Robust partners in market
- Government support across borders

Similar model downstream landing point
Troll field – the cornerstone of NCS gas sales

The start of supply contracts

NPD Facts 2012
Liquid spot markets - changing the business model

- Access to liquid market could replace LTC
  - NBP, Zeebrugge, TTF – trading hubs
  - Producers moving downstream (&reverse)
    - Trading and marketing
    - Power & gas business
  - Review of pricing and T&P flexibility

Major shift in business environment for gas industry
The Ormen Lange Gas Field
- partly developed w/o LTC

Ormen Lange on the Atlantic Margin

Iceland

Norway

Scotland

Ormen Lange

Graph showing production from 2006 to 2012:
- Gas
- Oil, condensate, NGL
Government policy and regulation - key for success

- Government - industry collaboration
- Taxes high, but stable
- High exploration success rate
- Low political and regulatory risk

- EU - the only market for NCS pipeline gas
- EU energy policies impacting NCS gas
NCS exports 2012 – 114 bcm - cover 20% of EU gas demand

- Belgium - Zeebrugge Terminal 12.0%
- Denmark - Nybro 0.5%
- Germany - Norsea Gas Terminal 6.7%
- Germany - Europipe 2 Terminal 18.9%
- Germany - Europipe 1 Terminal 18.3%
- LNG 4.1%
- France - Dunkerque Terminal 14.5%
- United Kingdom - Easington Terminal 15.7%
- United Kingdom - Other Terminals 9.2%
Thank you for your attention!

Norway – a reliable gas partner!