



OLJE- OG ENERGIDEPARTEMENTET

*Ministry of Petroleum and Energy*

# LNG technologies - Norway as a frontrunner

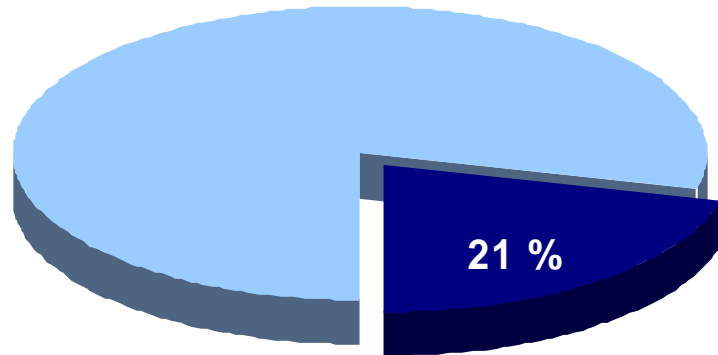
Oluf Ulseth

Deputy Minister of Petroleum and Energy

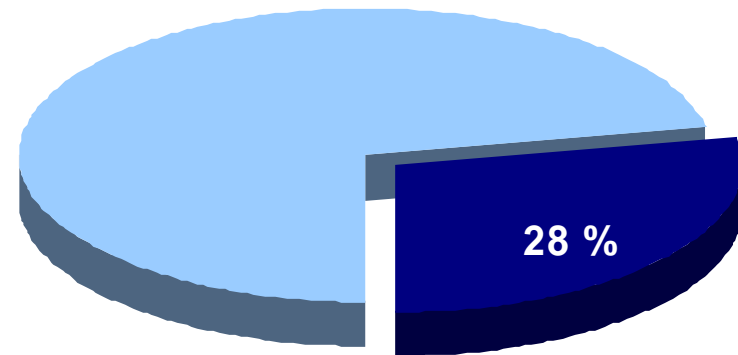
OTC, Houston, May 3 - 2005



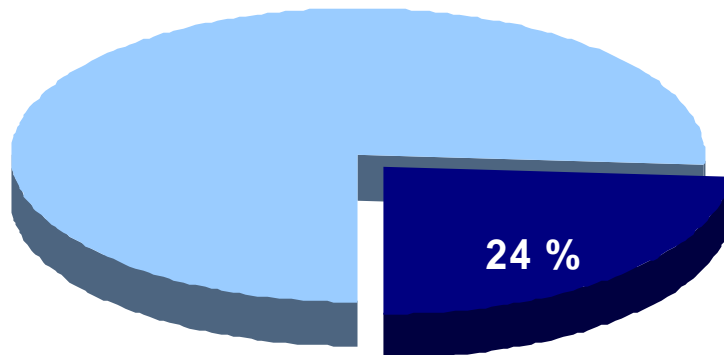
# The Petroleum sector in Norway (2004)



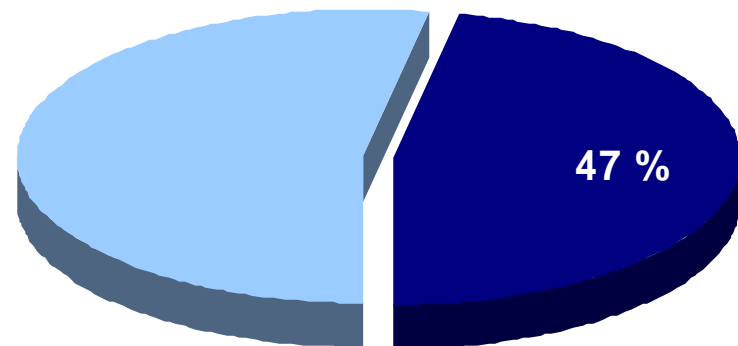
The petroleum sector's share of GDP



The petroleum sector's share of State revenues



The petroleum sector's share of total investment



The petroleum sector's share of total exports

Sources: Statistics Norway, White Paper no. 31 (2004-2005), Ministry of Finance

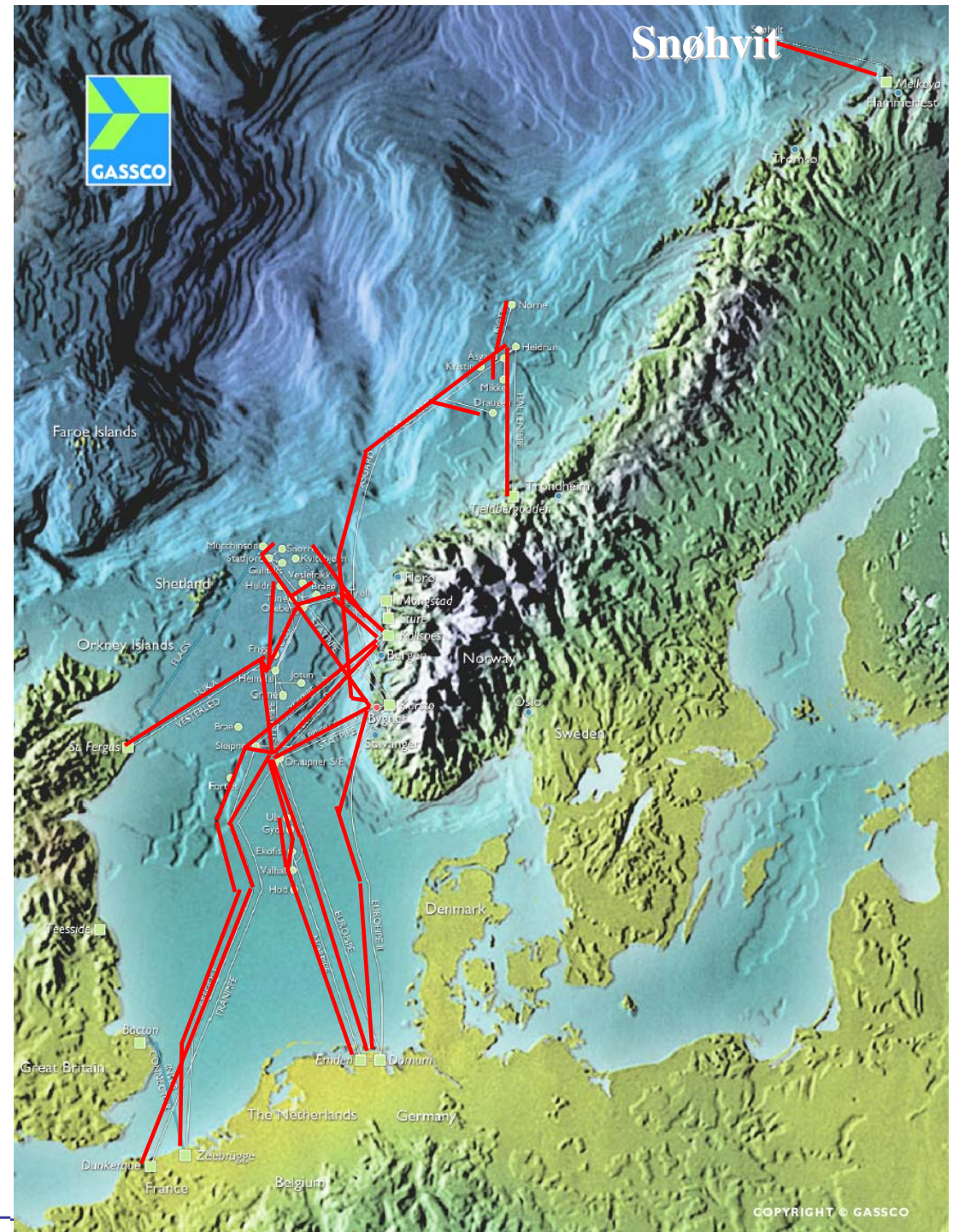
# Gas investment requirements 2003-2030

- Cumulative investment in the natural gas supply chain over the projection period will be **\$ 2.7 trillion**.
- North America alone will account for over **a quarter** of total investment in natural gas.
- By 2030, **half** of inter-regional gas trade is projected to be in the form of LNG.

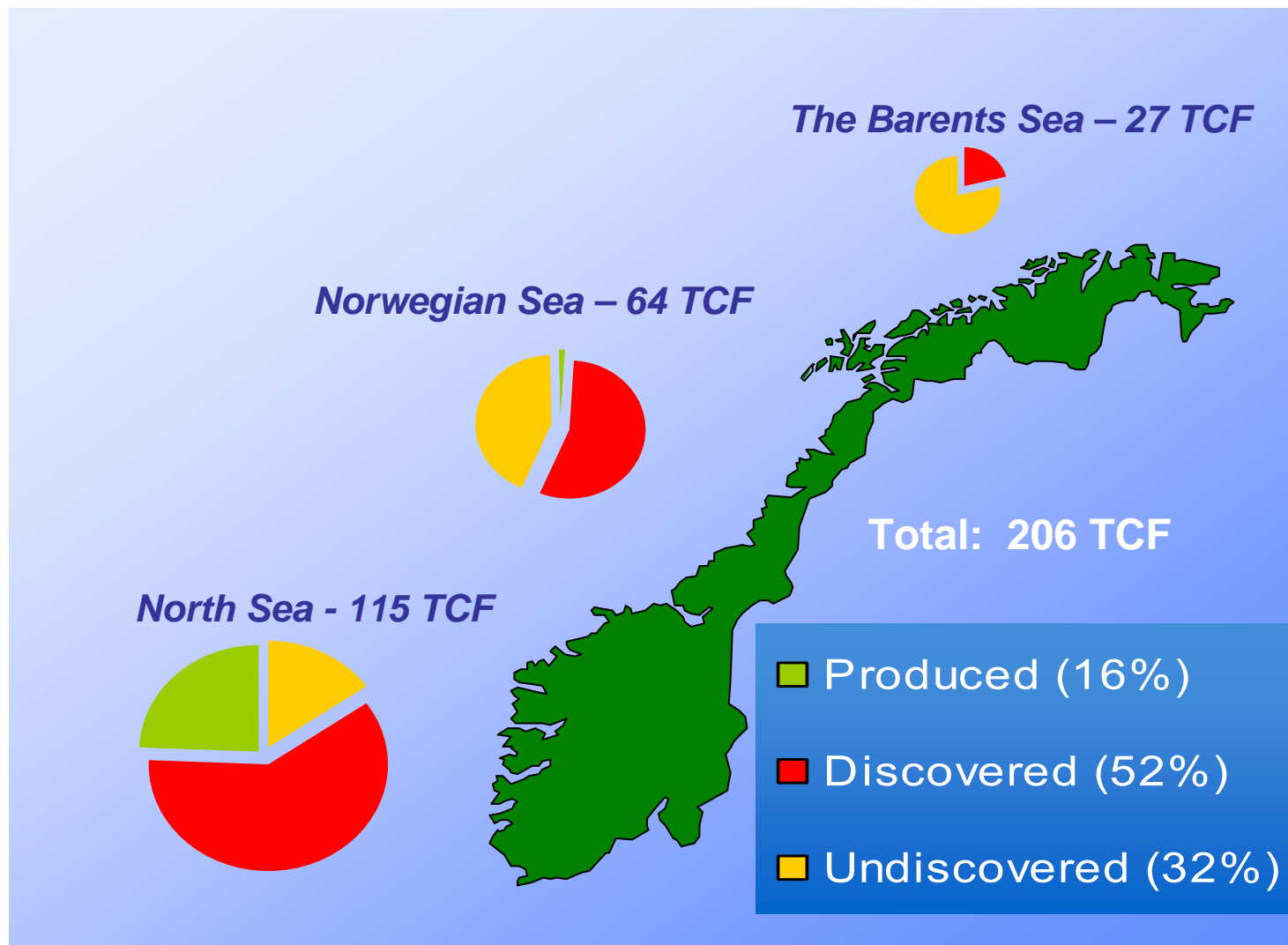


# The Norwegian Gas Sector

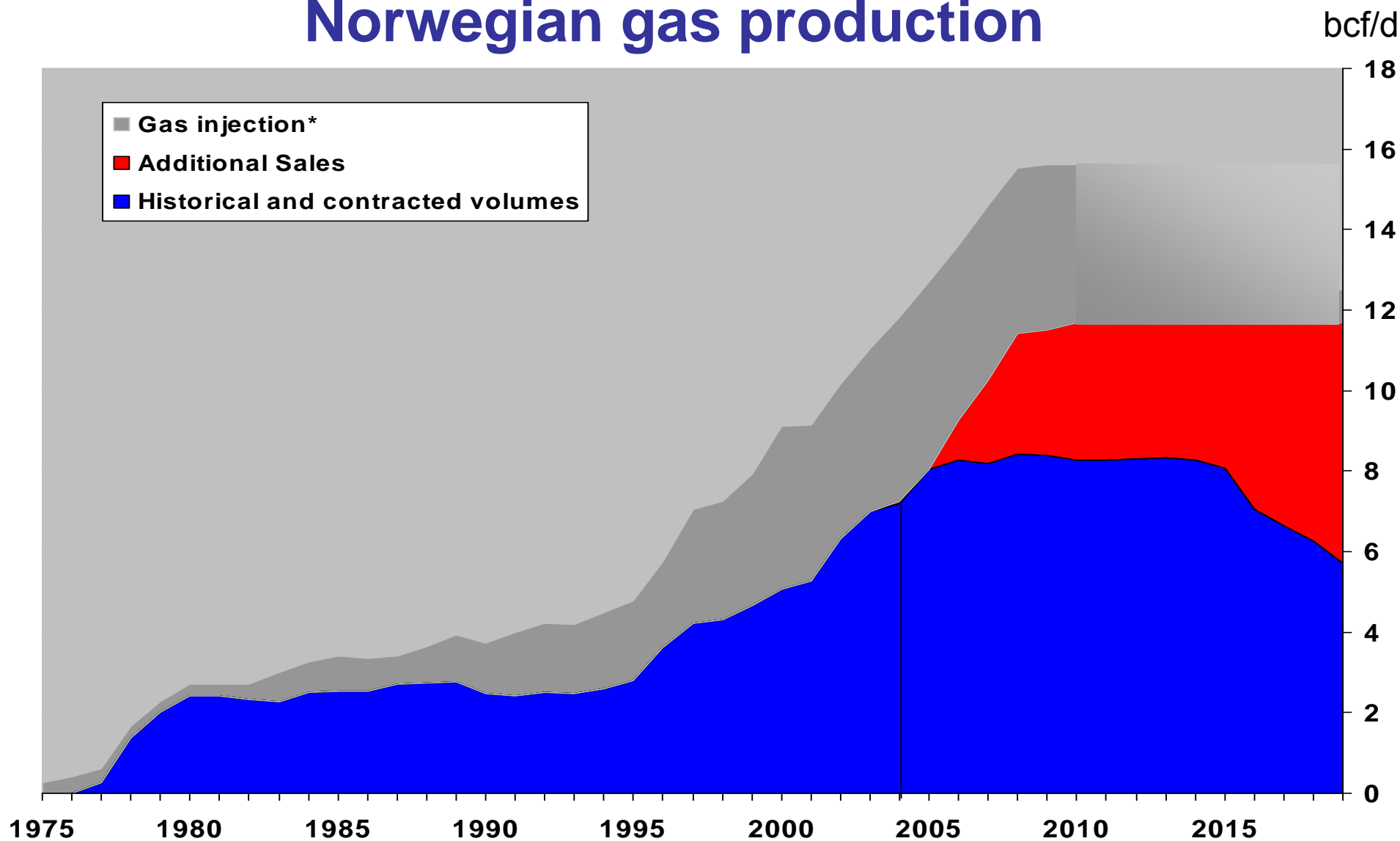
- 50 fields producing gas
- About 4000 miles of large offshore pipelines
- Two of the larger gas processing plants in the world
- Supplies about 14% of European gas consumption



# Norwegian Gas Resources



# Norwegian gas production



\*Including fuel and flaring

# Snøhvit LNG

- Recoverable reserves:
  - 6,7 TCF gas
  - 133 MMbbls condensate
- Production start: 2006
- Investment costs: 6 bill. USD
- Gas production 0,55 bcf/d
  - Destinations: USA and Europe
- Import capacity acquired at Cove Point
- Statoil – main gas marketer



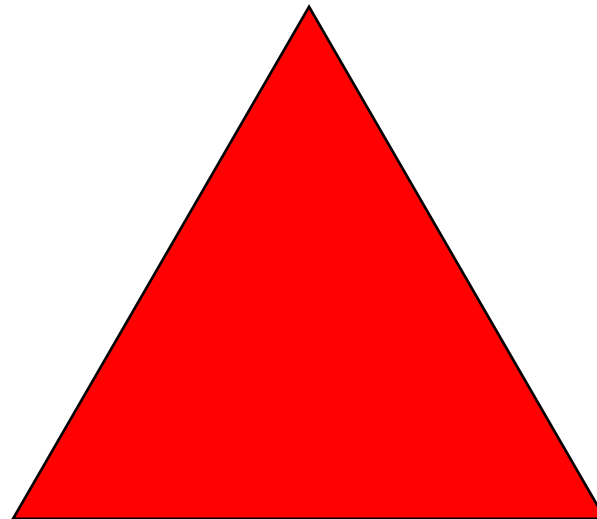
# Government Principles for R&D

- Forging links
- Developing networks
- Creating synergies
- Co-funding

Research Institutions

Oil Companies

Supply Industry





# Onshore LNG regasification terminals

AkerKvaerner:

Exclusive partnership with IHI on 50/50 basis for U.S.A and Canada



# Norwegian LNG Technology

Aker Kværner Offshore LNG terminals

→ Northern Baja California.

**ChevronTexaco**

→ North Adriatic Sea.

**ExxonMobil**

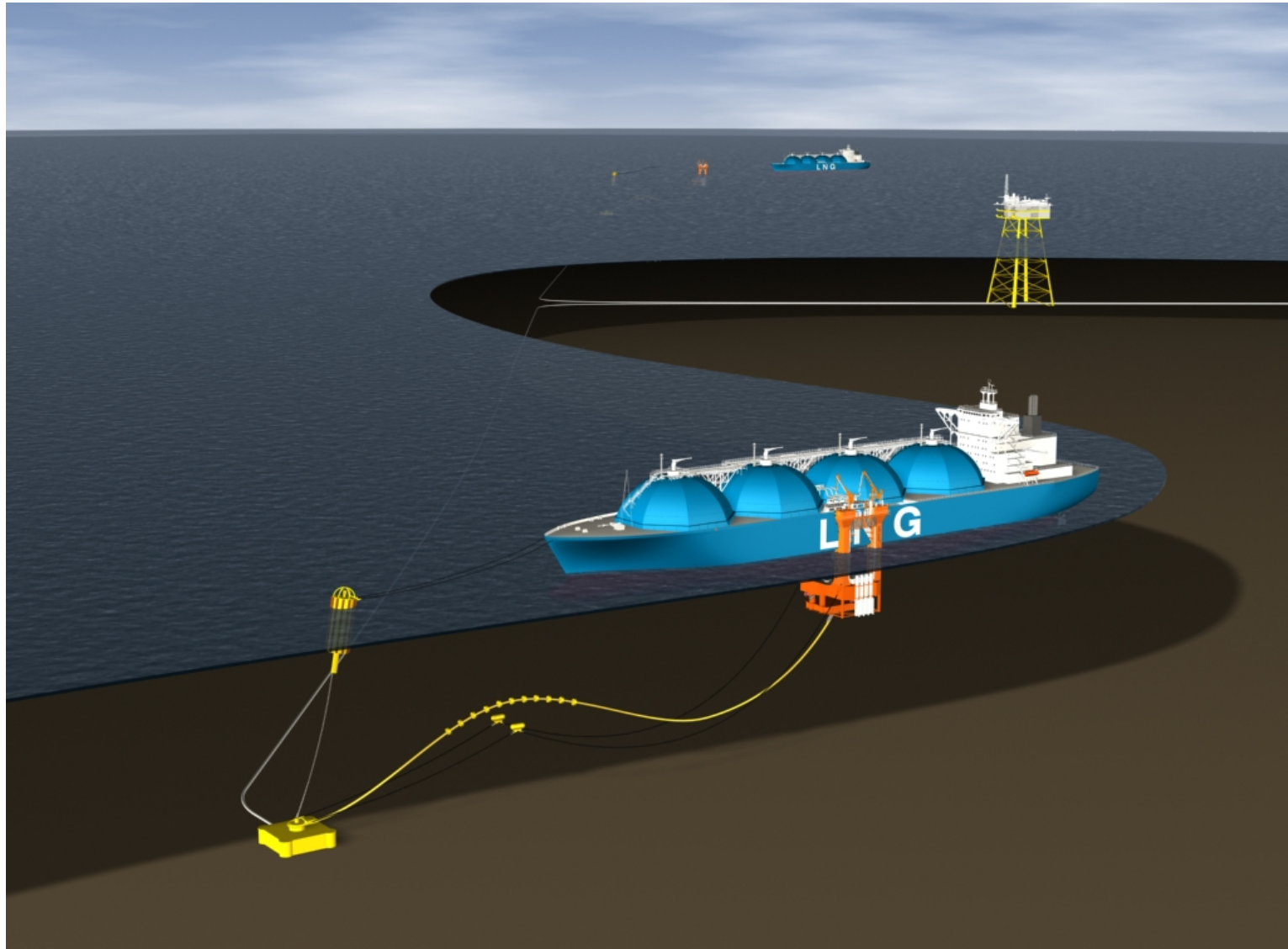


The Kværner group developed LNG carriers with spherical tanks in the early 1970s.

This design now dominates the market, accounting for about 50 percent of the world fleet.

*Source: Statoil/AkerKværner*

# HiLoad LNG Regas



Source: Remora Technology AS

# Conclusion

- The NCS is a stable long-term source of supply for both oil and gas.
- LNG receives increasing focus.
- Strong R&D clusters - a key to unlock further values in the LNG chain.
- Co-operation with international partners is paramount.

# Internet address



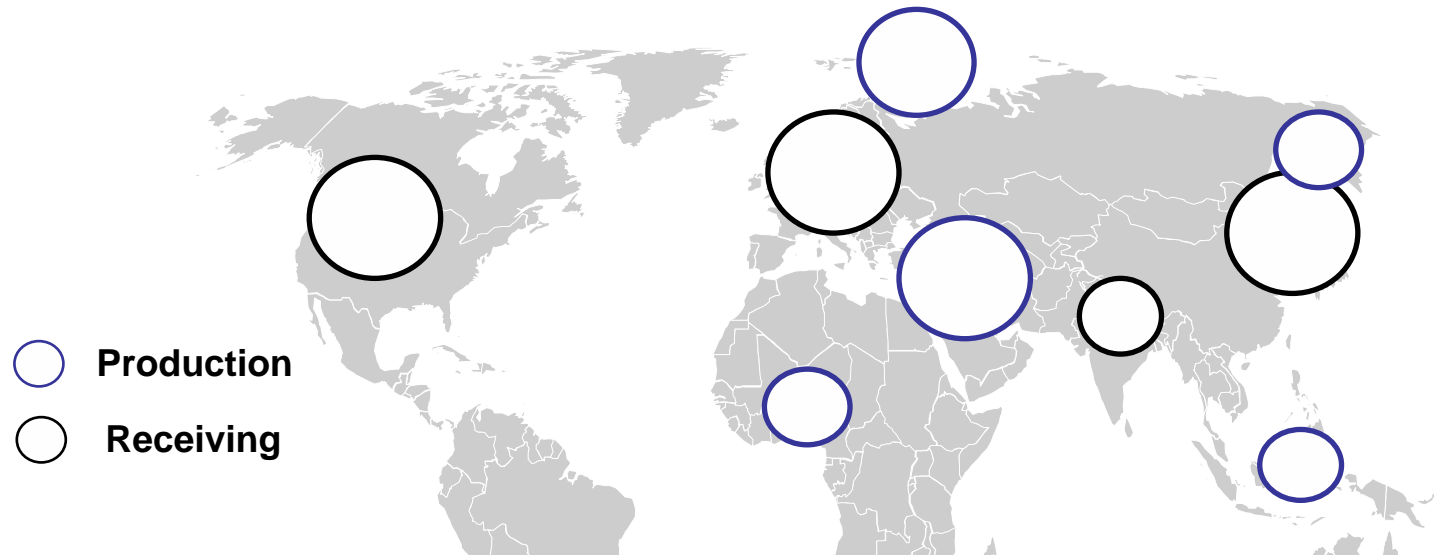
[www.oed.dep.no](http://www.oed.dep.no)



[www.mpe.dep.no](http://www.mpe.dep.no)



# The global LNG market



## Gas value chain

