

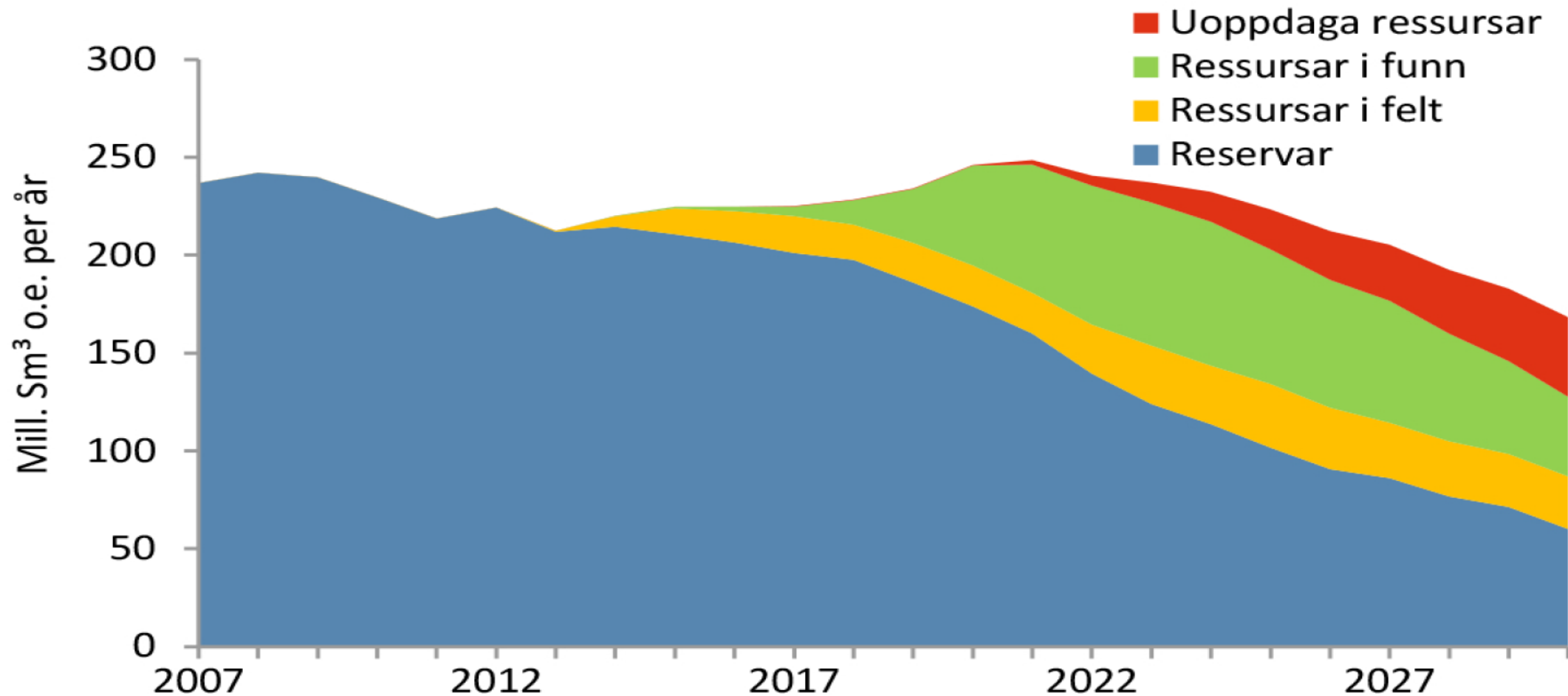
# The drilling challenge

Session: Drilling & Wells Task Area Challenge

Roy Ruså, Vice President Technology, Petoro AS

IEA GOTIA, 8.4.2014, Florence

# Large remaining reserves on the NCS – Realization largely dependant on wells



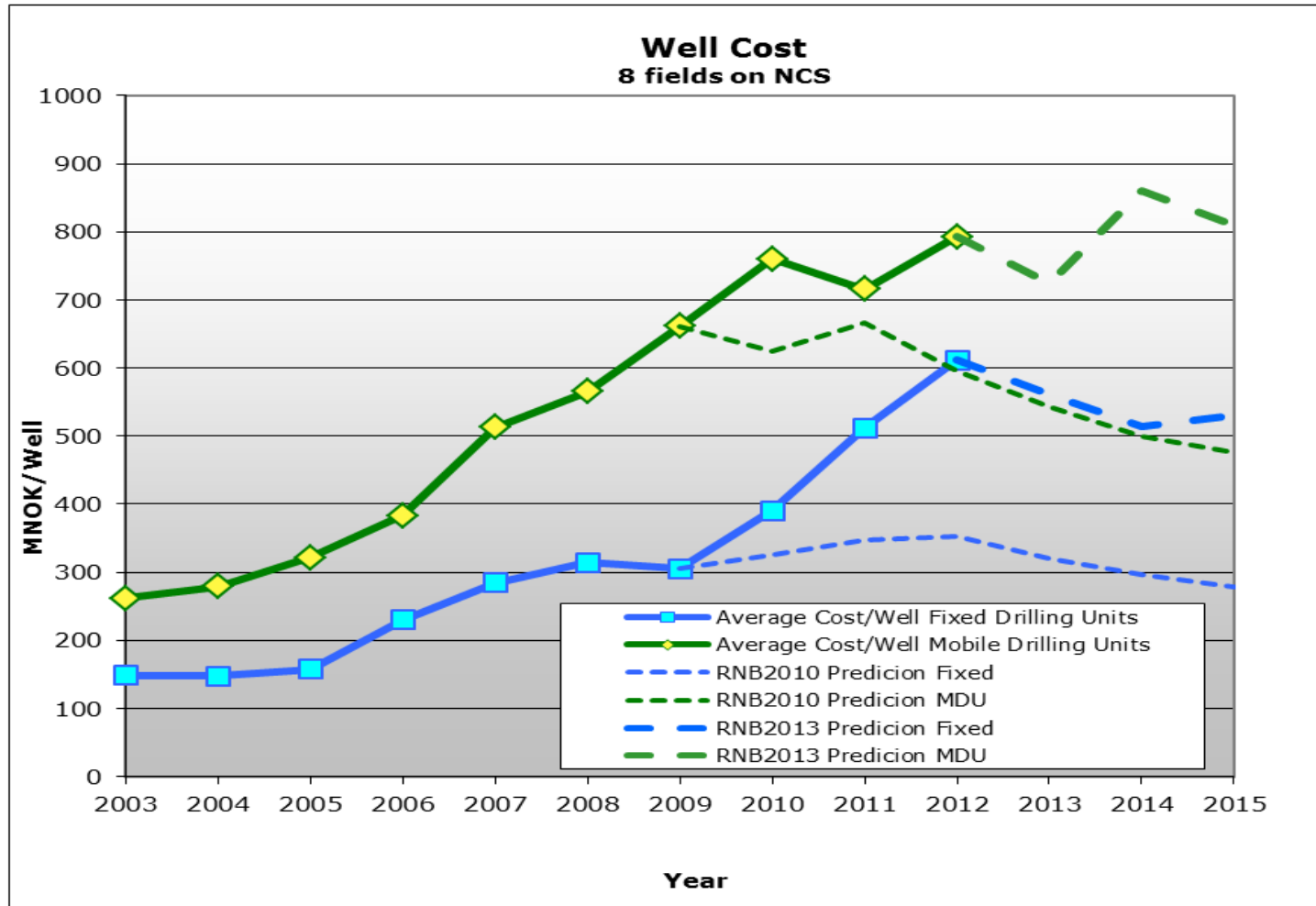
Kilde: Oljedirektoratet

# Business Challenges related to drilling and wells

1. Increasing the annual number of development wells drilled
2. Development of small prospects and fields
3. Completion and intervention technology to improve field recovery
4. Safer drilling operations

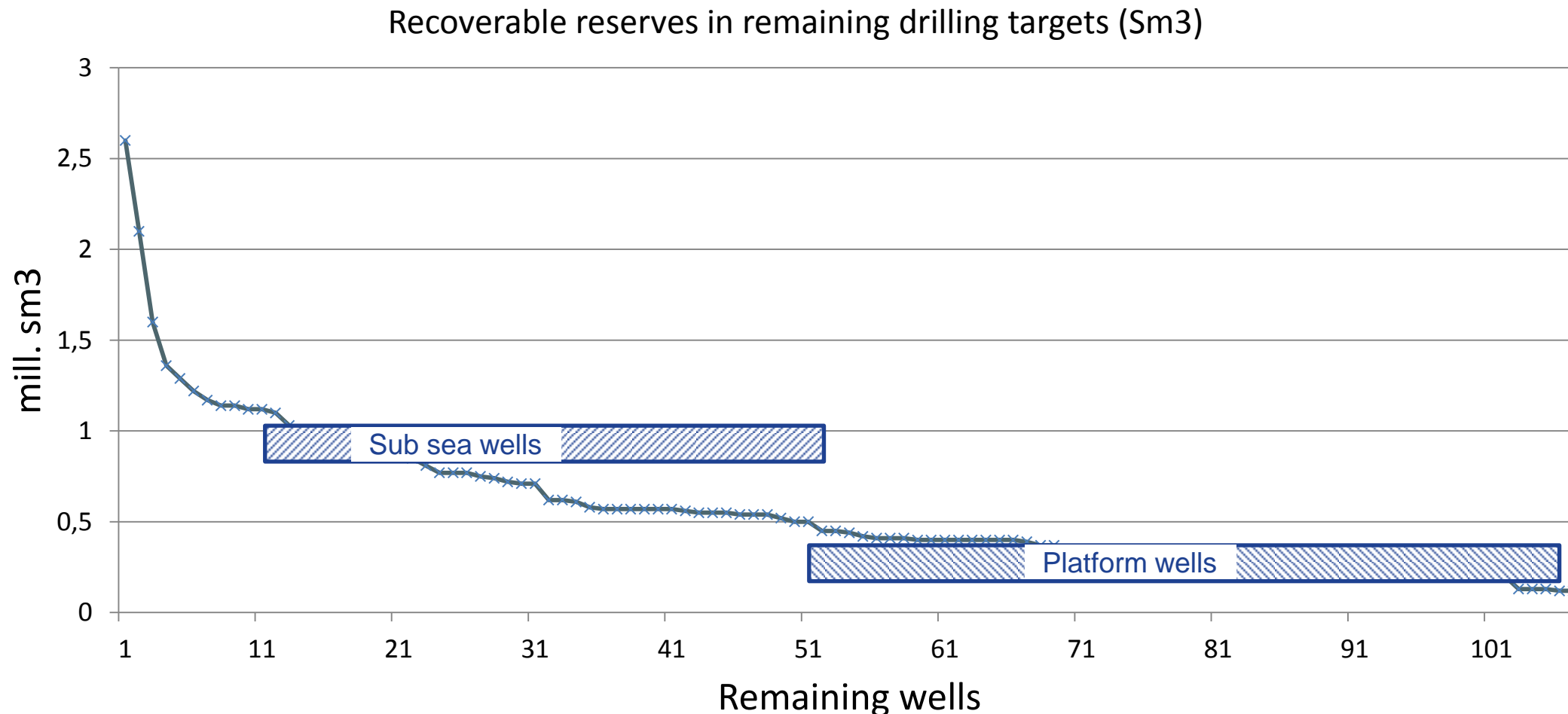
- The E&P industry is technologically one of the most advanced
- New technologies have created significant value in the industry
- Struggling to capture the full potential from technology
- New challenges requires revisiting solutions, work processes and organizational issues

# Dramatic increase in well costs over the last few years



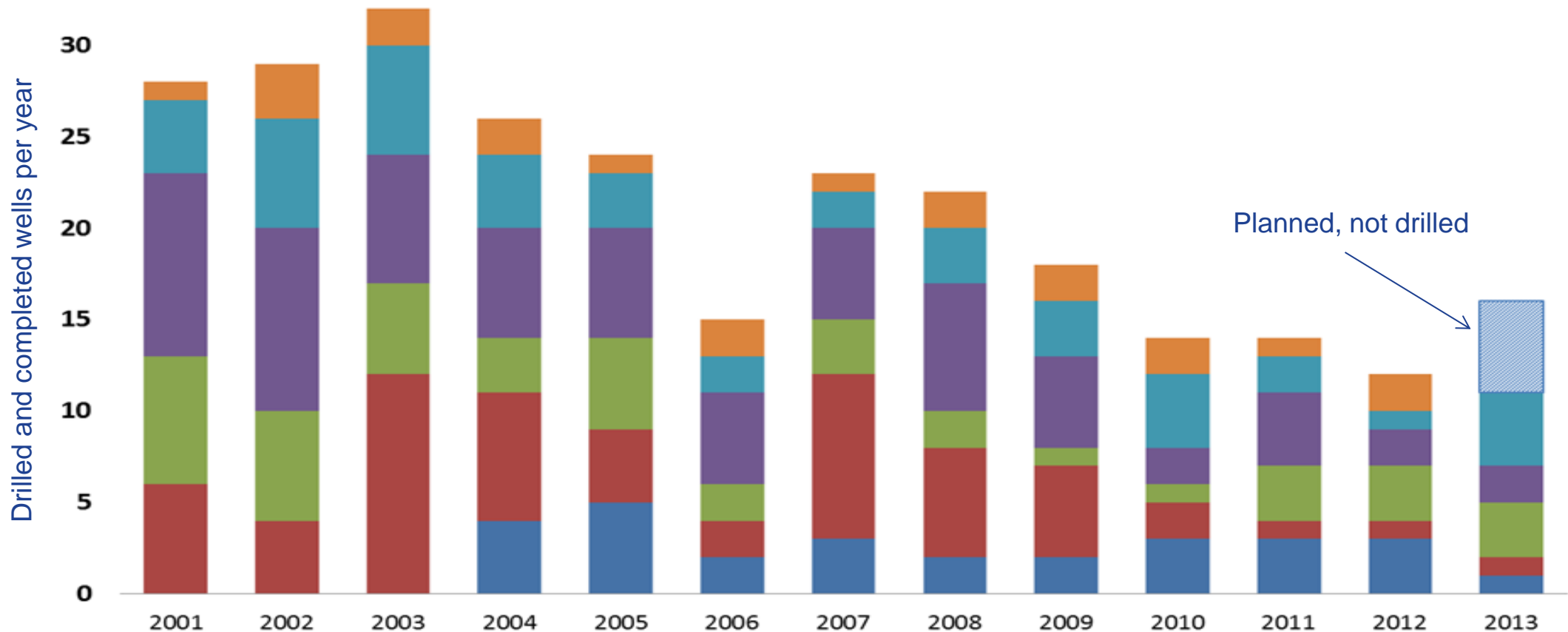
- Well costs on fixed installations doubled since 2009
- Well costs on floating units doubled since 2006, levelling off?
- Cost prognosis does not reflect history

# NCS/ field X: Future drilling targets are many and recoverable reserves are decreasing – costs decides profitability



# Numbers of wells per year from fixed installations continue to drop

Number of wells per year, important mature fields in the SDFI portyfolio

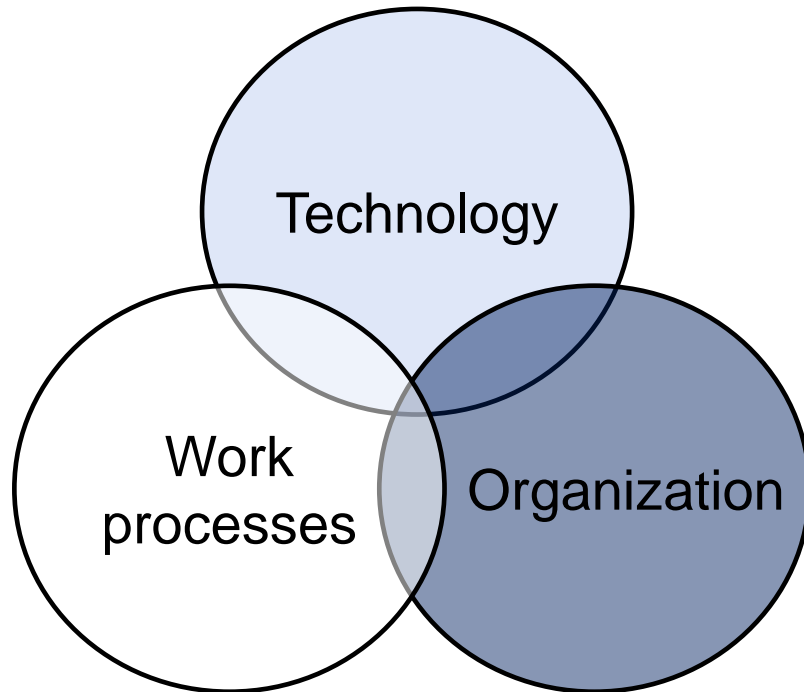


Eleven wells in 2013 from 11 drilling rigs in 6 fields – 16 wells planned

Kilde: RNB, Petoro

# Radical change required – Need to target a doubling of wells per year

- New concepts
- Business analytics and automatization

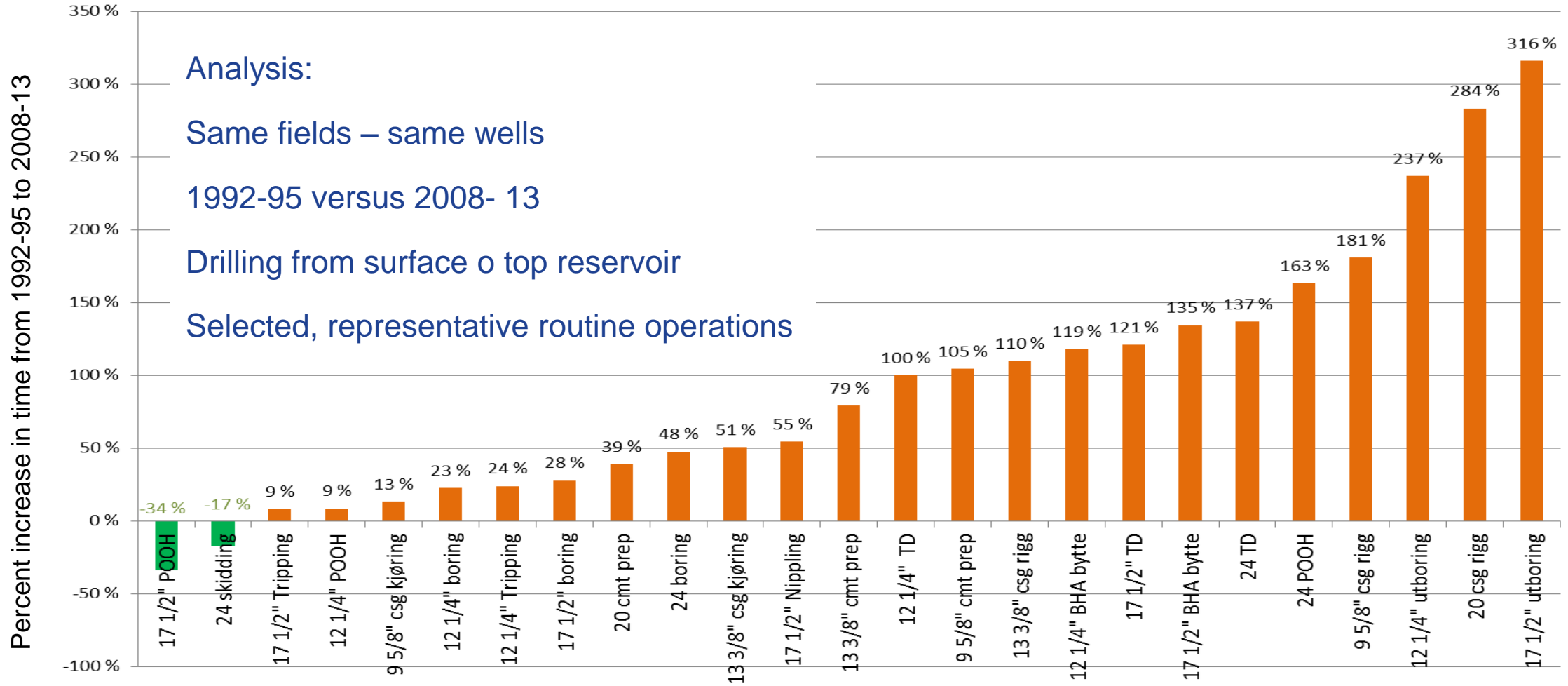


- Increased drilling efficiency on existing facilities
  - Fixed
  - Mobile
- Increased capacity

- Field installation - onshore support
- Interface operator - supplier

- Standards and procedures
- Contracts and incentives
- Competence

# Better before - Drilling tasks takes twice as long

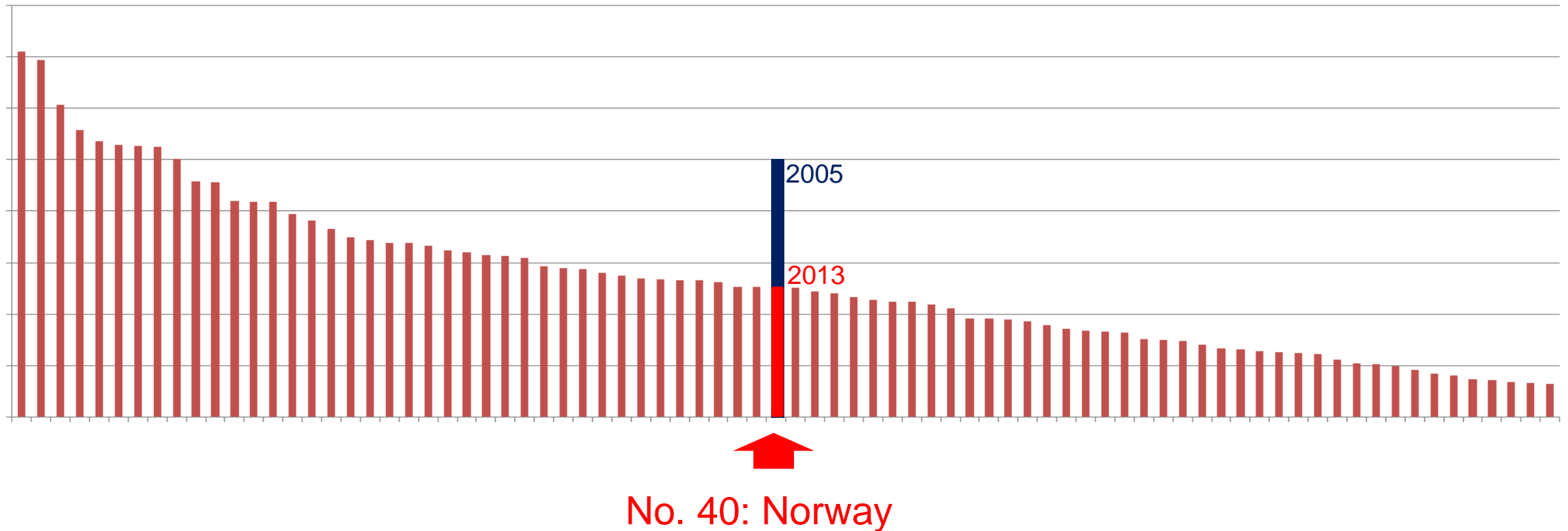


Kilde: Petoro



# NCS quick to try new technology, but surprisingly slow in broad implementation\*

Supplier X: Revenue of products less than 5 year on the market in % of total revenue



\* : Field use of new technology after pilot projects or first field application

# It is possible to increase efficiency without reducing risks – but challenging

