



“Values for the future – The Norwegian Petroleum Directorate’s outlook”

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NFES meeting Solagården

October 4th, 2017

The Norwegian Petroleum Directorate (NPD)



Photo: Emile Ashley

- A Governmental agency reporting to the Ministry of Petroleum and Energy
- 45 years: Established in 1972, office in Stavanger an Harstad and approximate 230 employees
- Knowledge driven with strong competence environments in geology, technology, reservoir, economy, data management and more

The Norwegian Petroleum Directorate



Main goal

Contribute to realizing **maximum value for our society from the oil and gas activities** through prudent and efficient resource management which also safeguards consideration for health, safety, the environment and other users of the sea.

“With the law on our side”



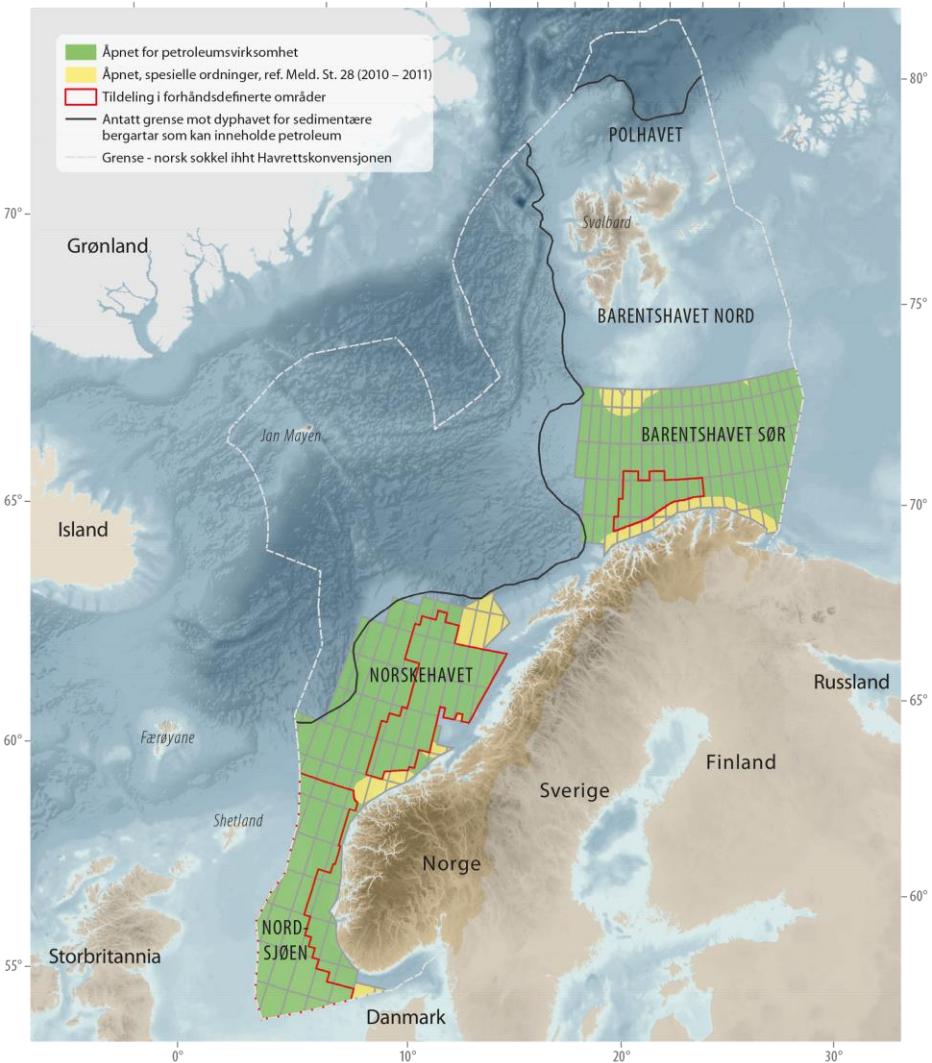
- The petroleum regulations enable State control and oversight
- **Tradition for governance through framework conditions, not orders**
- Regulations form basis for the NPD's tasks and roles

Fundamental principles for the petroleum management



Illustrasjon: Statoil

- State governance and management in all phases of the activity
- Values shall benefit the entire Norwegian society
- Activity requires a licence / concession
- The oil companies are responsible for the operational activity
- Instruments:
 - Taxes and fees
 - The Petroleum Act
 - Follow-up of the activity -> **ensure that as many resources as possible are recovered – in the most profitable manner**



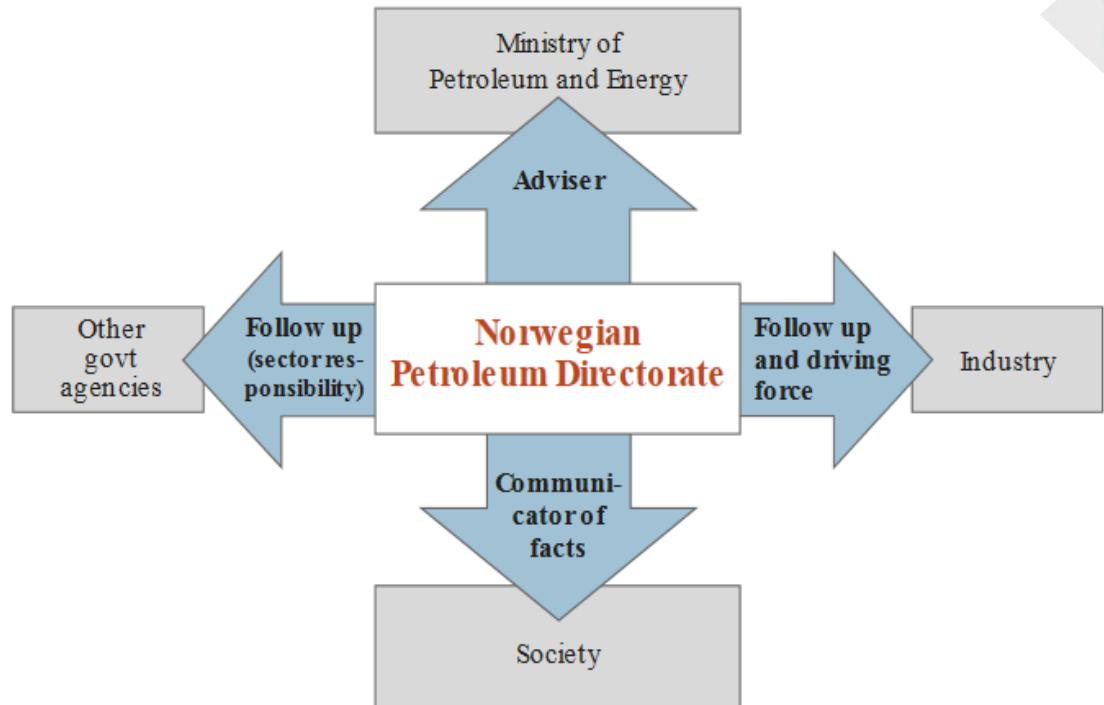
Our “playground” is NCS



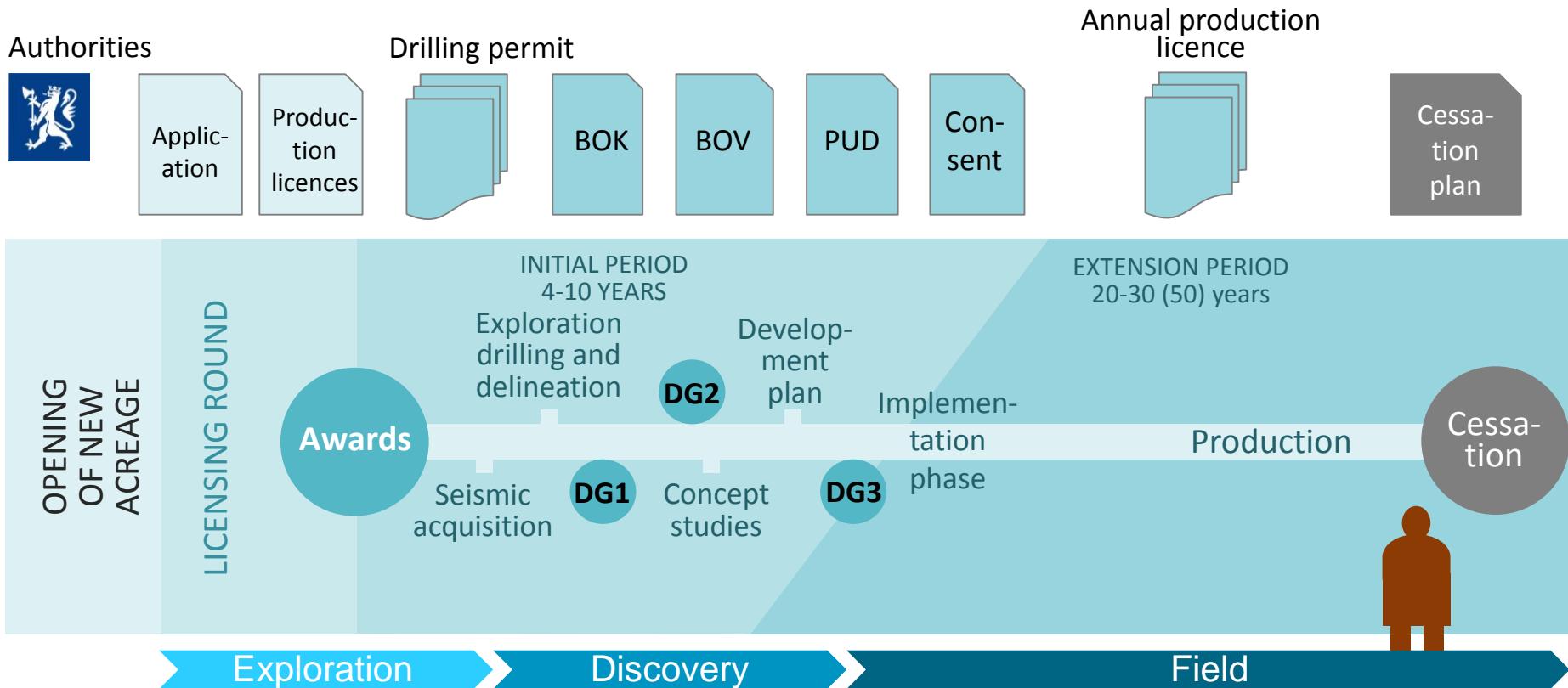
- Access to exploration acreage through awards in licensing rounds:
 - Numbered rounds
 - Frontier areas
 - Every other year
 - Awards in Pre-defined Areas (APA):
 - Annual awards
 - Mature areas with infrastructure and exploration history

The Norwegian Petroleum Directorate (NPD)

Various roles



Involvement of the authorities in every stage of activities



National Shelf Library



Core sample storage with viewing room and laboratory



- ◆ 132 895 meters of cores
- ◆ 639 631+ bags of samples
- ◆ Oil from 634 exploration wells stored at -24 °C



Fact's about Norwegian Continental Shelf





NORWEGIAN PETROLEUM DIRECTORATE

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Bergen havområder
Bergen havområder
for borerker
Avgrøping
Undersøkelse

Aktive feltområder
2222/1-1
30/1-1
30/1-14
31/1-1
1/5-5
Oversikt - Breit
Oppdatert
21.06.2016

ONGOING SEISMIC
List Map

EXPLORATION DRILLING RESULTS
09.06.2016 30/11-13
30.05.2016 30/11-13 S and
27.05.2016 16/1-26 S and
16/1-26 A

Production figures May 2016
17.06.2016 Preliminary production figures for May 2016 show an average daily production of about 1 944 000 barrels of oil, NGL and condensate.

New development concept on Oseberg
15.06.2016 When Oseberg Vestflanken 2 starts producing in 2018, it will represent a new concept on the Norwegian shelf. Unmanned wellhead

FactPages FactMaps

Map Layers
 Facilities, road
 Pipelines
 Wellbores
 Surveys
 Public and Discretes
 Licensing
 Geology
 Borders and areas
 Area status layers
 Basemap/Ocean
 Basemap/SimplerYellow

Search...
Zoom in Zoom out

FAC
NORWE
Wellbore

Show Legend
Print

The screenshot shows the Oil Facts mobile application. The top navigation bar includes 'Oil Facts', 'Logout', 'Help', 'Feedback', and 'Norwegian'. Below the navigation is a large 'Syncronized' watermark. The main screen features a 'News' section with a red banner for 'Preliminary figures January 2014' and a black banner for '14 feb 2014'. Other sections include 'Statistics', 'Calculator', 'Maps', and 'Search'. A sidebar on the left lists 'PAGES', 'NPD', 'Licence', 'BAA', 'Field', 'Discovery', 'Company', 'FactPages', 'Oil facts', 'Feedback', 'Use of content', 'Facts for mobile devices', and 'Read more >>'. A footer at the bottom links to 'Norwegian Petroleum Directorate', 'Oil facts', 'Feedback', 'Use of content', 'Facts for mobile devices', and 'Read more >'.

The image is a composite of several photographs and maps. At the top left is a search bar with the text 'N & PETROLEUM' and a magnifying glass icon. Next to it is a small map of Norway with the word 'NORSK'. Below these are two sections: one titled 'need to know about petroleum activities' with a search icon, and another titled 'NORWEGIAN PETROLEUM HISTORY' with a timeline icon. In the center is a large map of the Norwegian continental shelf showing numerous oil and gas fields. To the left of the map is a 'Resource report 2016' cover featuring a yellow and green grid pattern and a large industrial oil rig. To the right is a dark, atmospheric photograph of an oil rig at sea under a heavy, cloudy sky. The bottom right corner contains the text 'NORWEGIAN CONTINENTAL SHELF' in large, bold letters, with 'A JOURNAL FROM THE NORWEGIAN PETROLEUM DIRECTORATE' and 'NO 1 - 2010' below it.

Status for NCS 2017



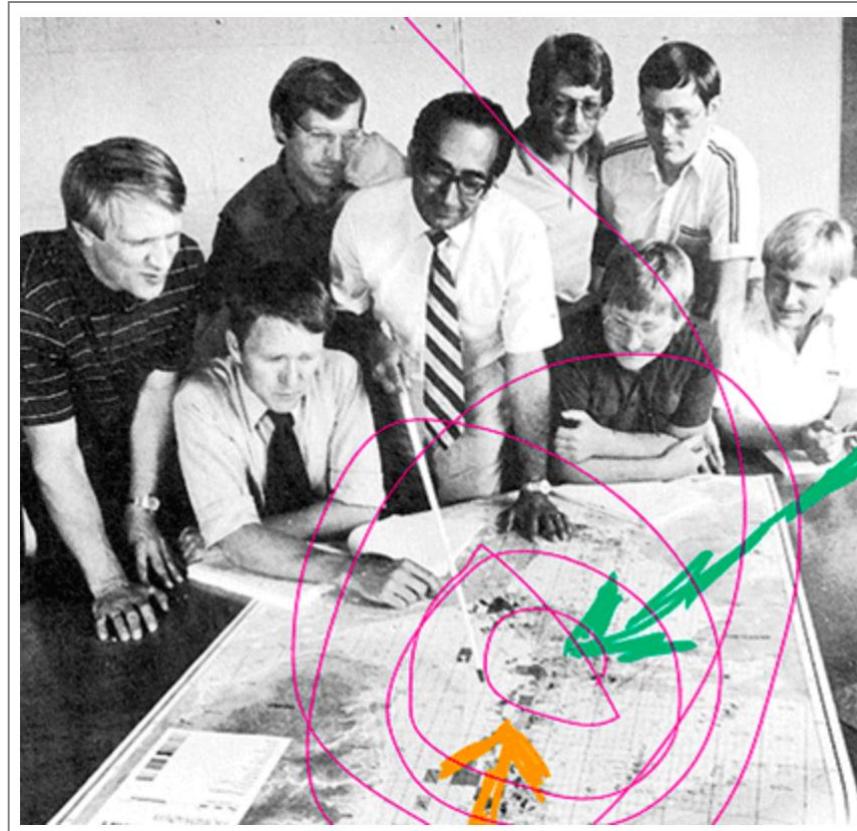
Her kommer Aasta Hansteen på verdas største tunglasteskip på vei til Høylandsbygd i Kvinnherad.

- 84 fields in production
- 4 new fields started production
- High oil & gas production as of 2016
- 11 fields under development
- 6 plans for development (PDO)
- 23 exploration wells
- 10 discoveries
- 56 new licenses in TFO 2016



Resource estimates
More than half remains

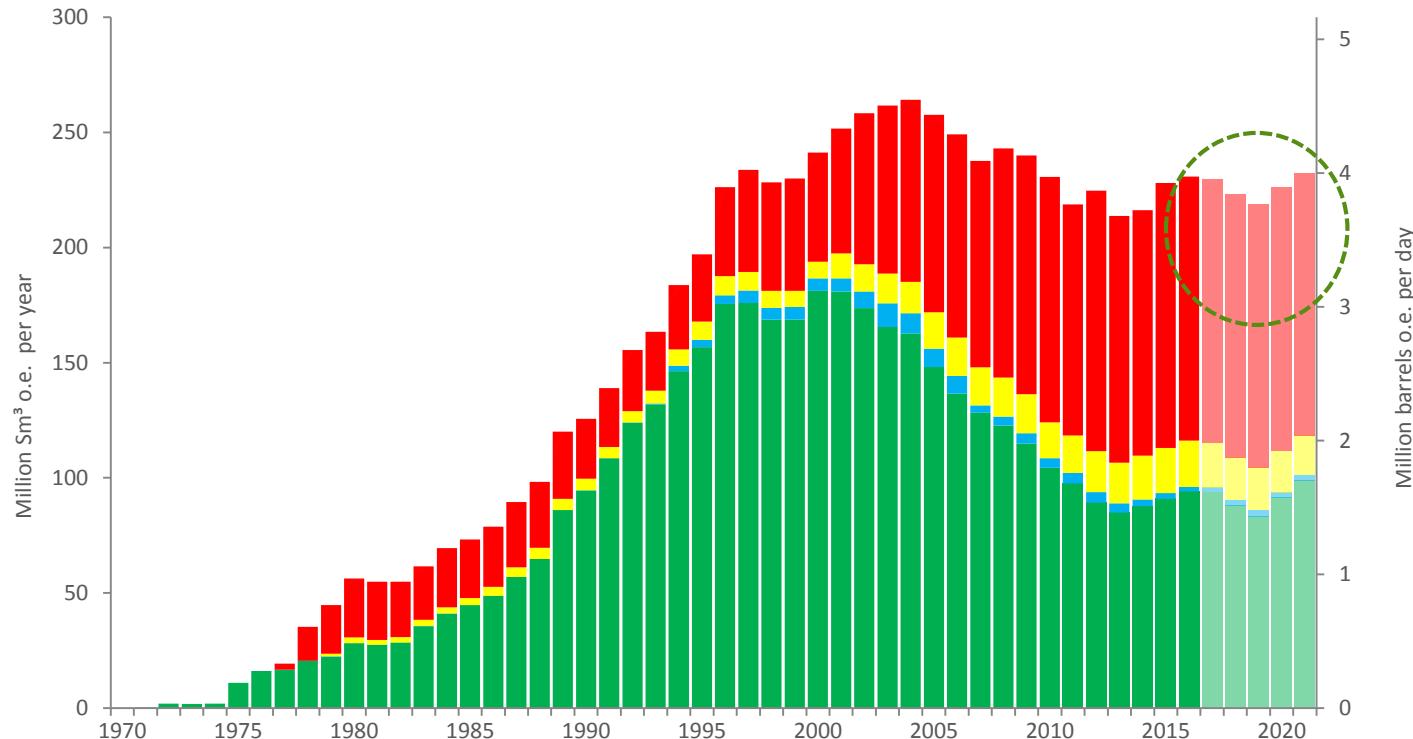
«Oljekontor» in the 1978 first resource outlook on NCS



Resource outlook still NPDs important task today



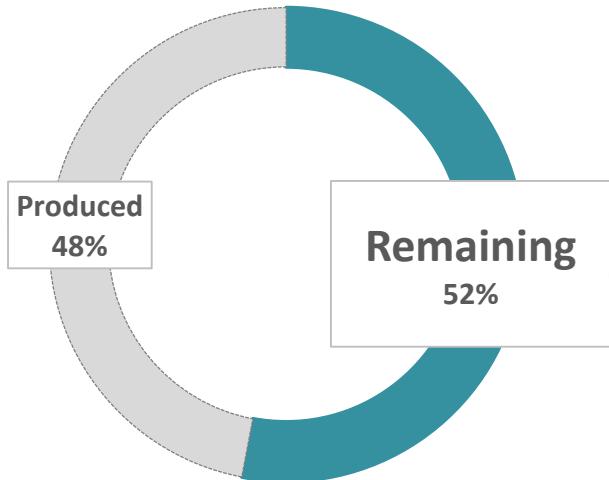
Stable high production over next five years



Resource Accounts 2017

More than half remains to be recovered

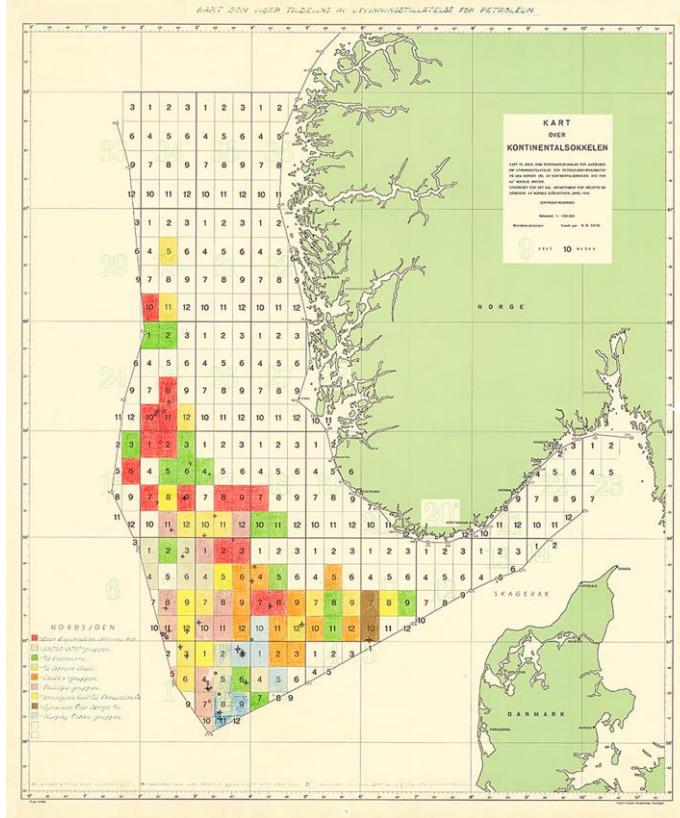
Total 14.2 billion Scm o.e.



Who owns these resources?

- 21% reserves
- 6% resources in fields
- 5% resources in discoveries
- 20% undiscovered resources

The State owns the resources on NCS

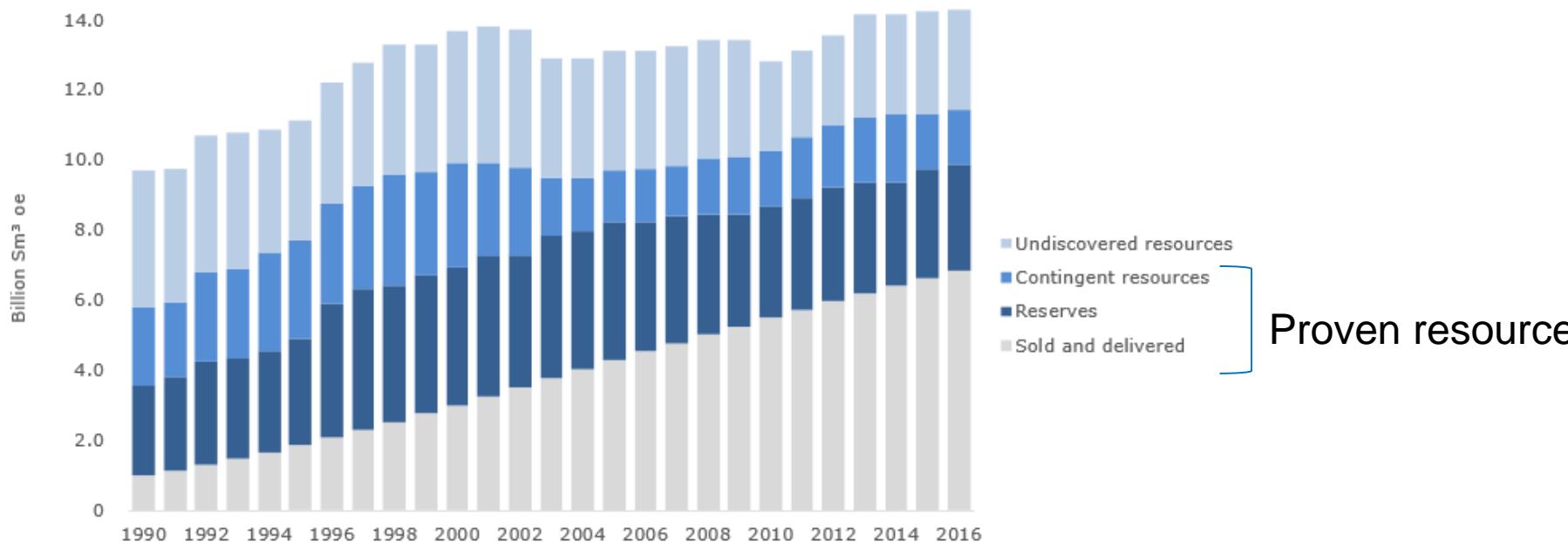


- May 1963:
 - The Government proclaimed Norway's sovereignty over the Norwegian continental shelf – and the petroleum **resources belong to the Norwegian people**

- Continental Shelf Act 1963:
 - The State is the landowner and only the King (Government) can grant licences for exploration and production

NPD's Resource Estimate

Significant increase since 1990



What does it take?

1

Exploration

2

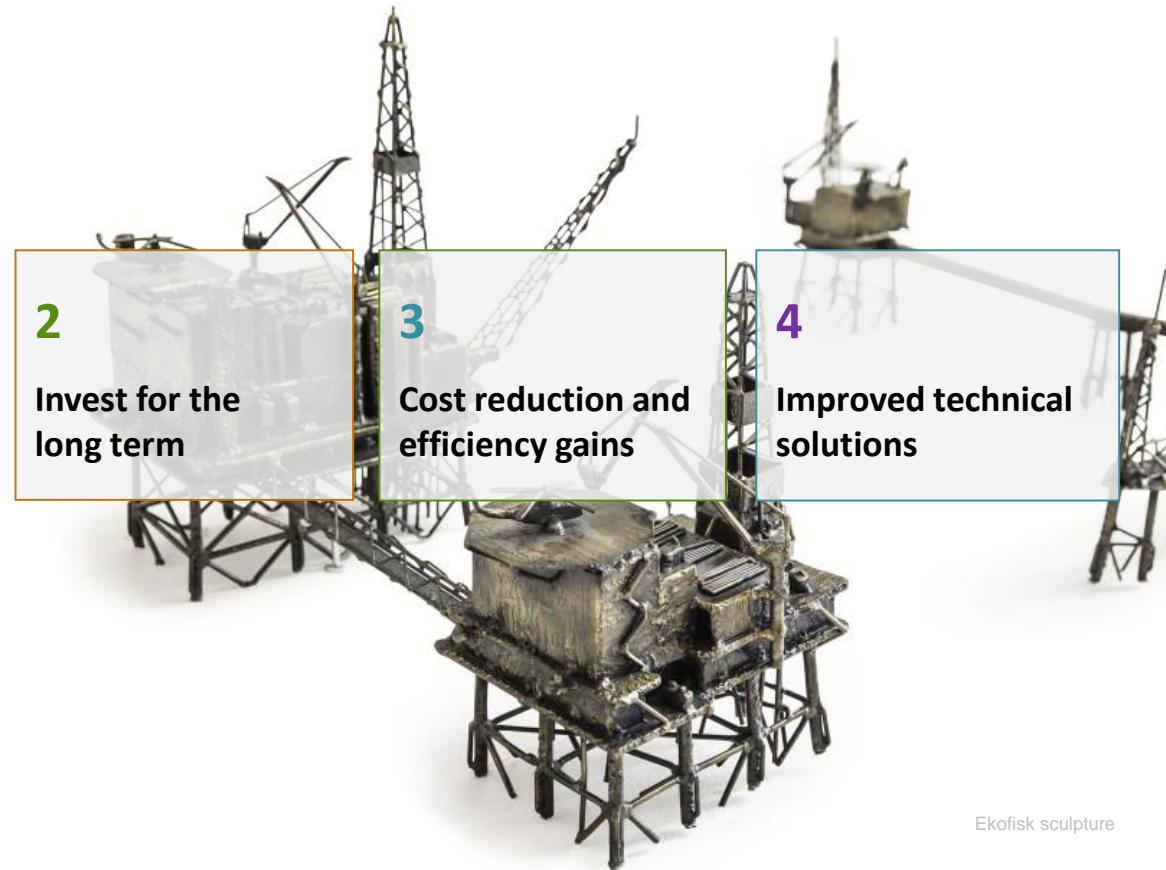
Invest for the
long term

3

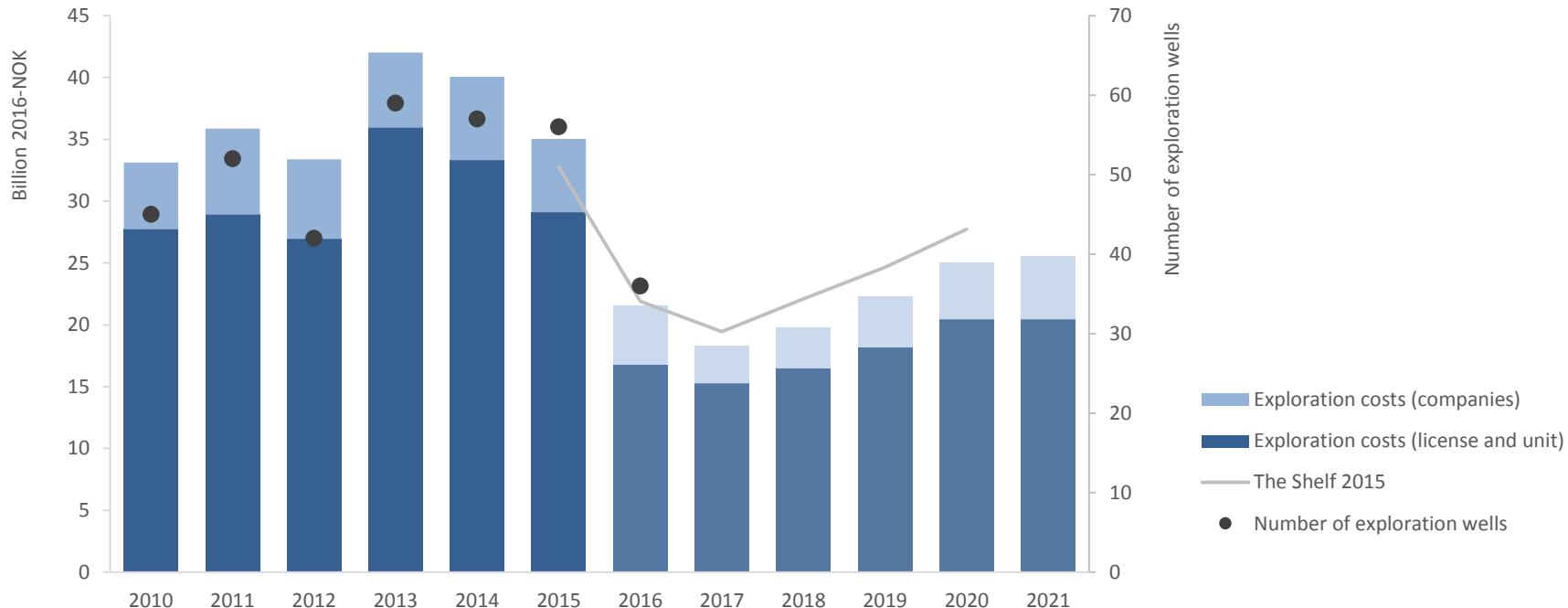
Cost reduction and
efficiency gains

4

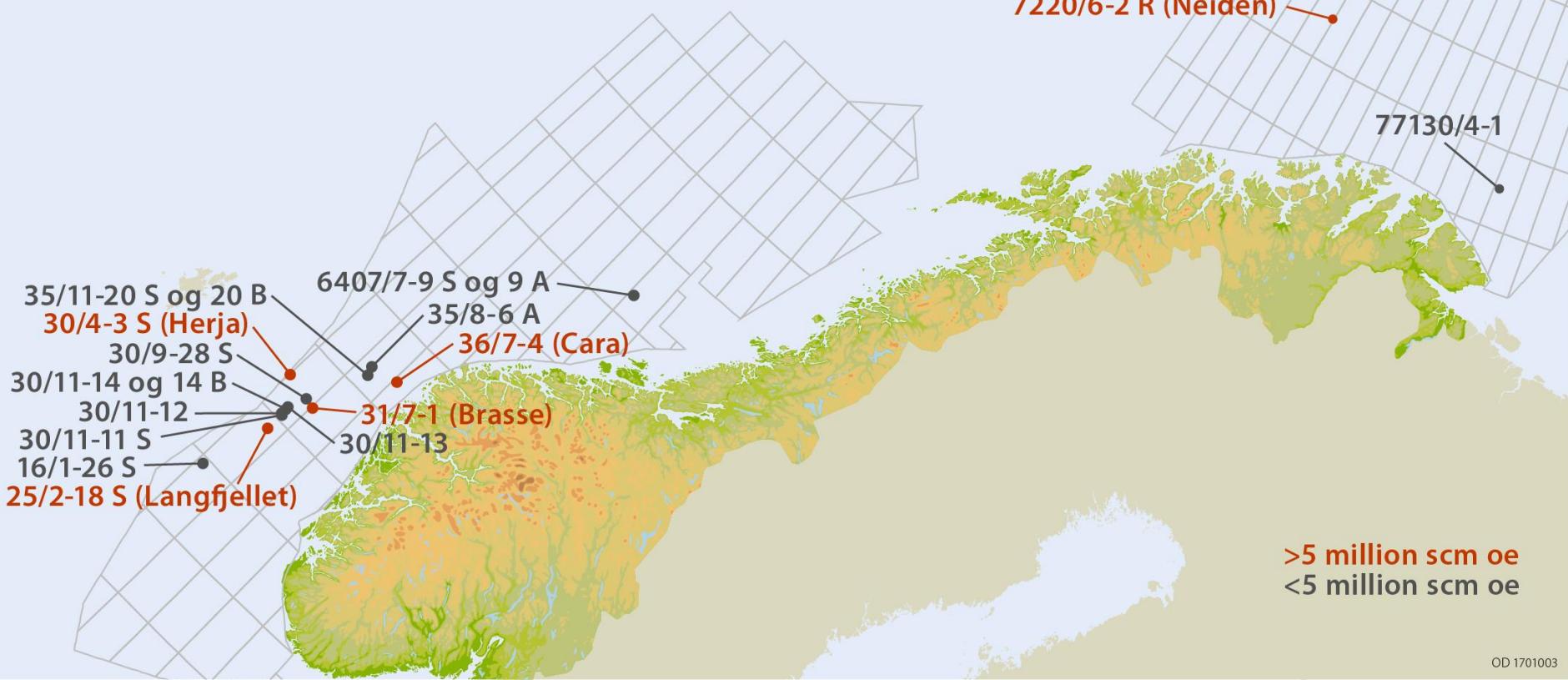
Improved technical
solutions



Significant reduction in exploration activity



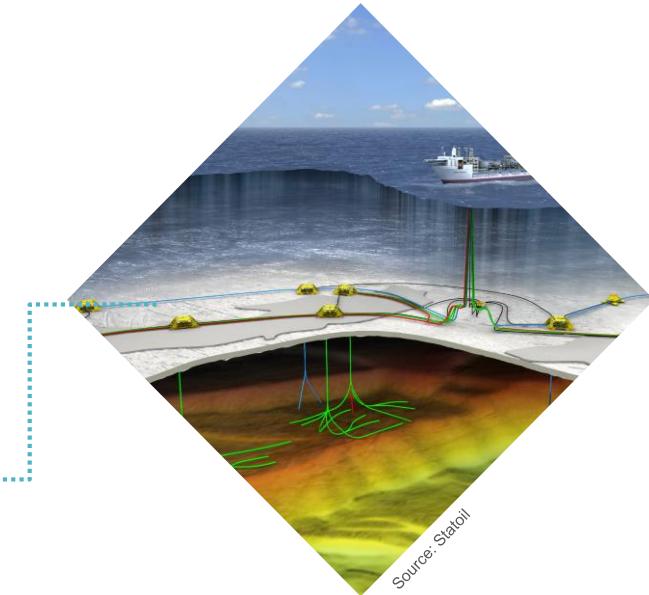
Refuelling is needed to maintain production



77 Discoveries in the Portfolio

Great opportunities

Region	Discoveries	Million scm oe
North Sea	42	276,8
Norwegian Sea	27	181,9
Barents Sea (ex Johan Castberg)	7	139,5
Johan Castberg	1	99,0
Total	77	697,2



What does it take?

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Exploration

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Invest for the long term

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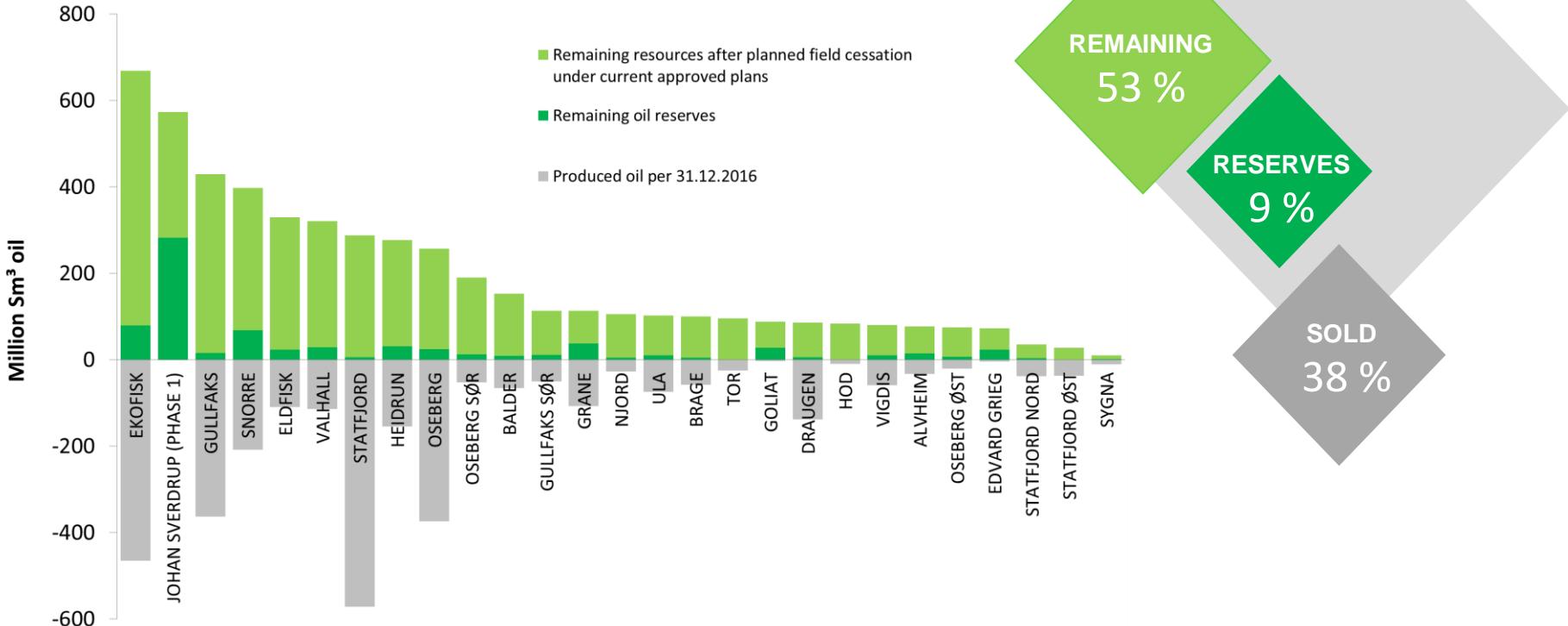
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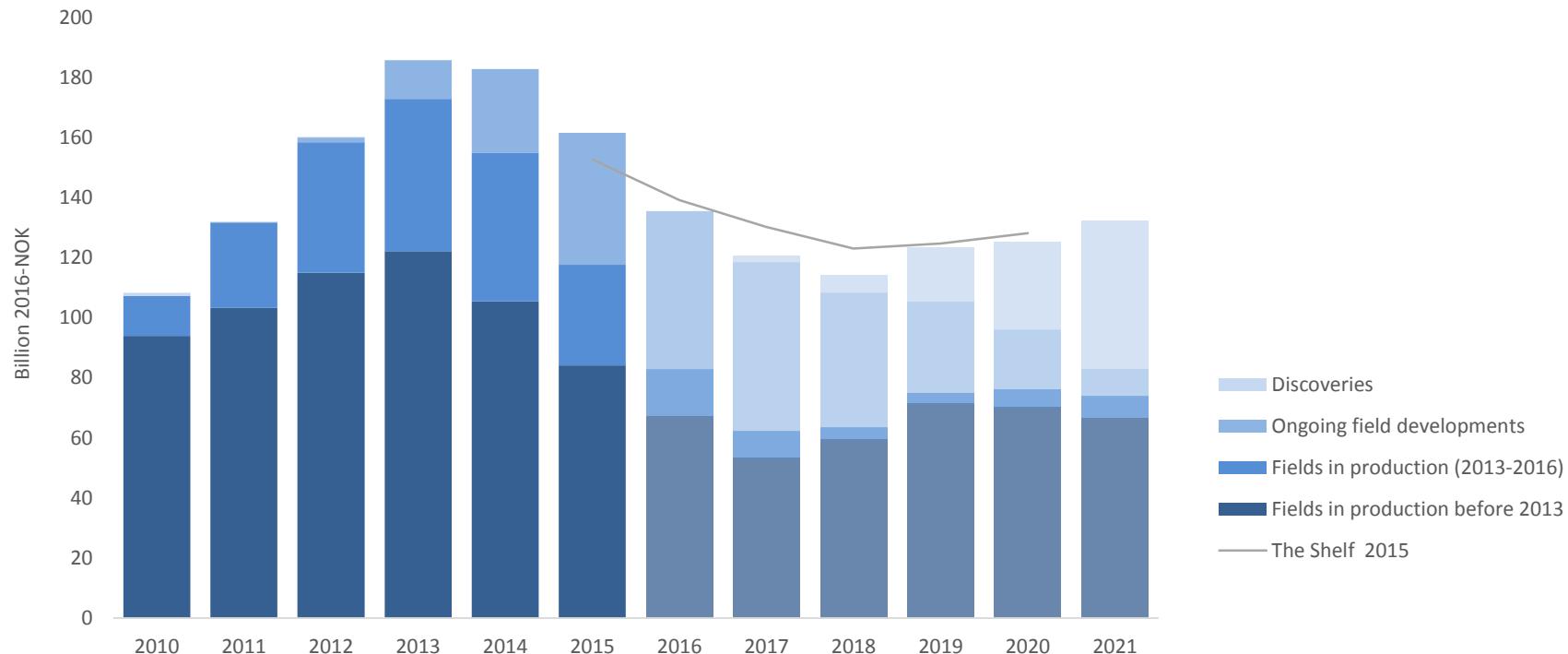
Improved technical solutions

Oil Resources in Fields

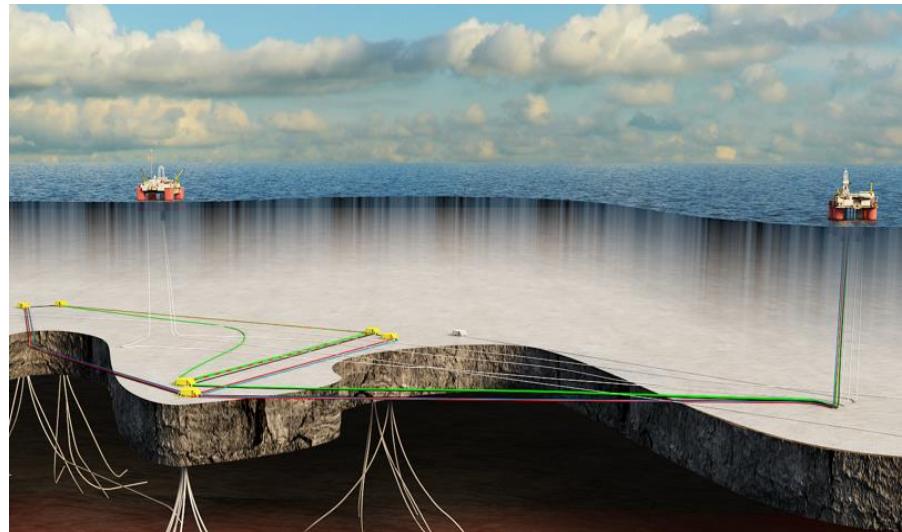
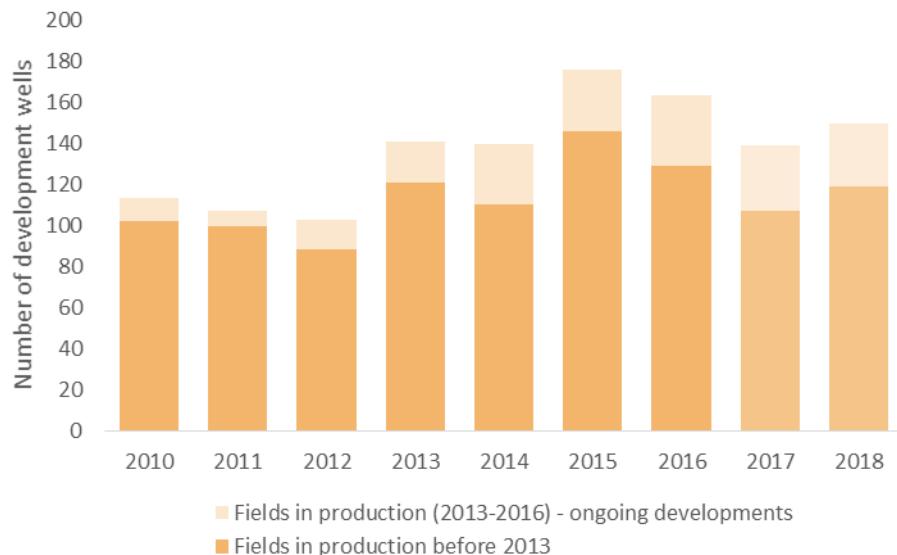
Large remaining volumes



Investments increase from 2019



New wells must be drilled to increase recovery



Source: Statoil

Even More to Gain

Requires know-how and
new technology

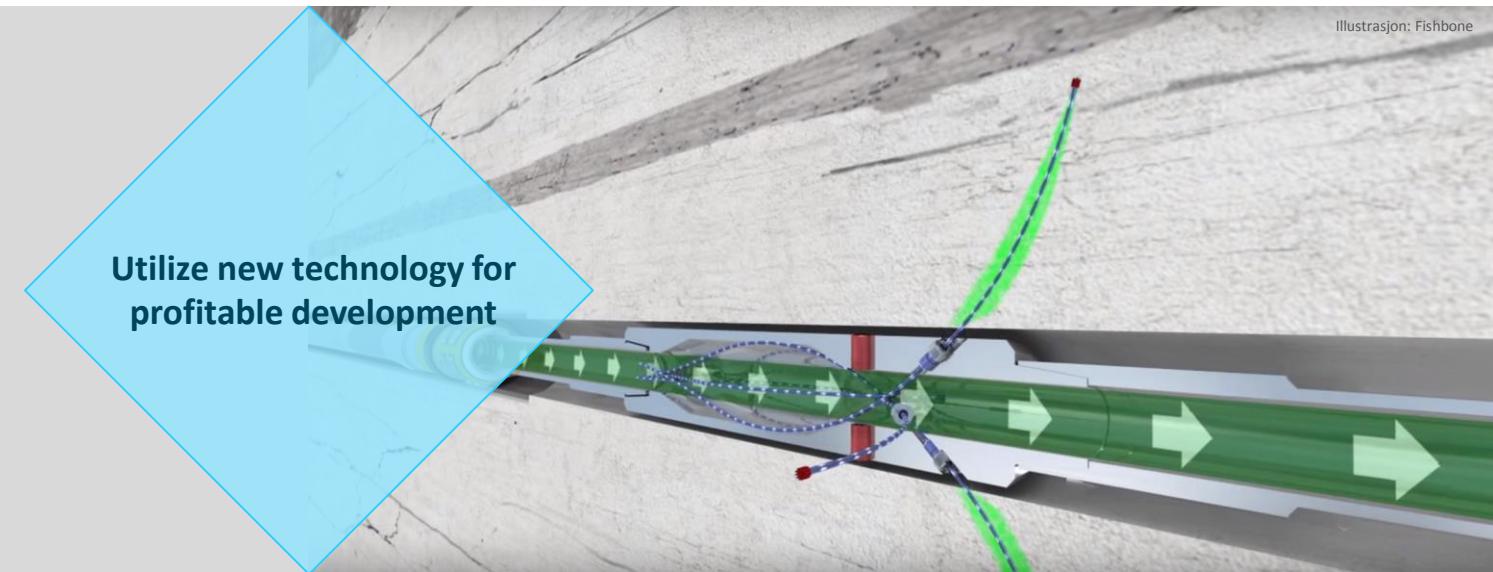
- Tight Reservoirs
- Enhanced Oil Recovery

Tight Reservoirs

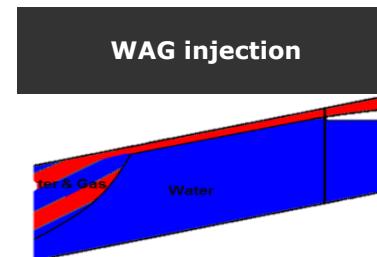
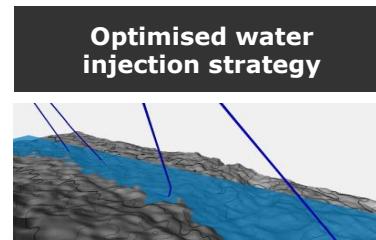
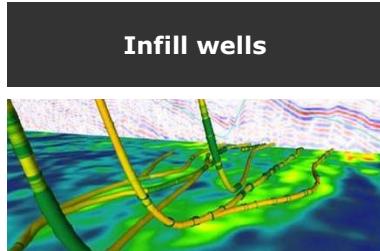
Large oil and gas deposits

Utilize new technology for
profitable development

Illustrasjon: Fishbone



Toolbox for improved recovery in the production phase



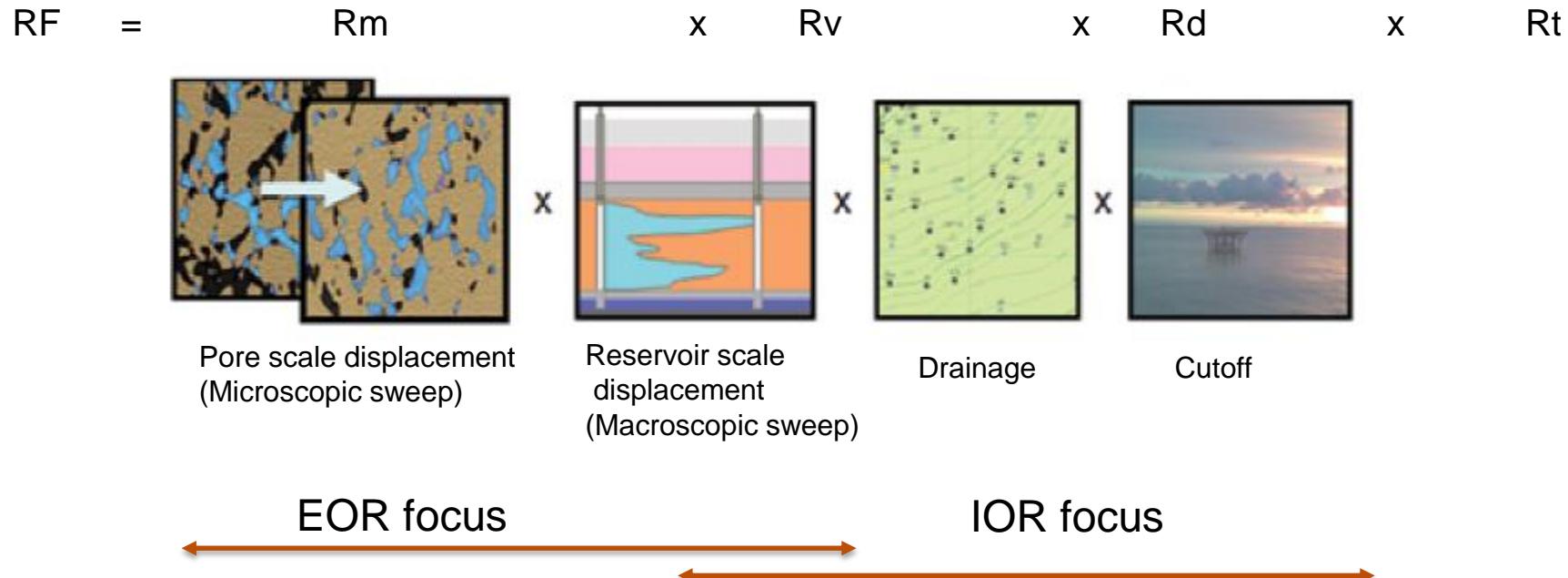
New Technology

Are we too busy to try out new technology?



Enhanced Oil Recovery

Recovery Factor (RF)

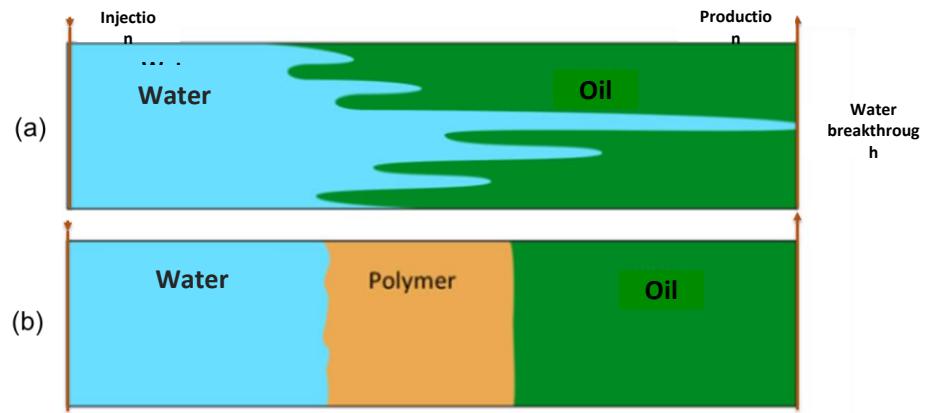


Polymer Injection

An opportunity for Johan Sverdrup



Source: Statoil



What does it take?

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Exploration

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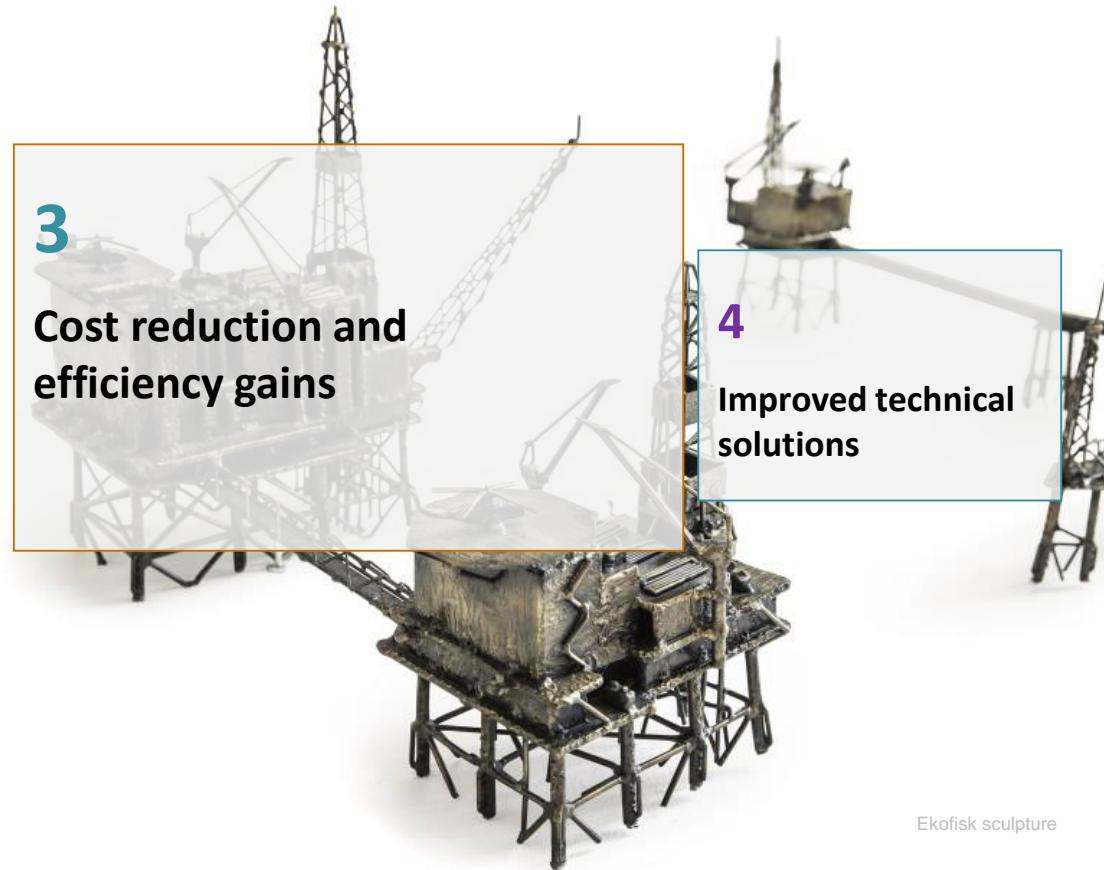
Invest for the
long term

3

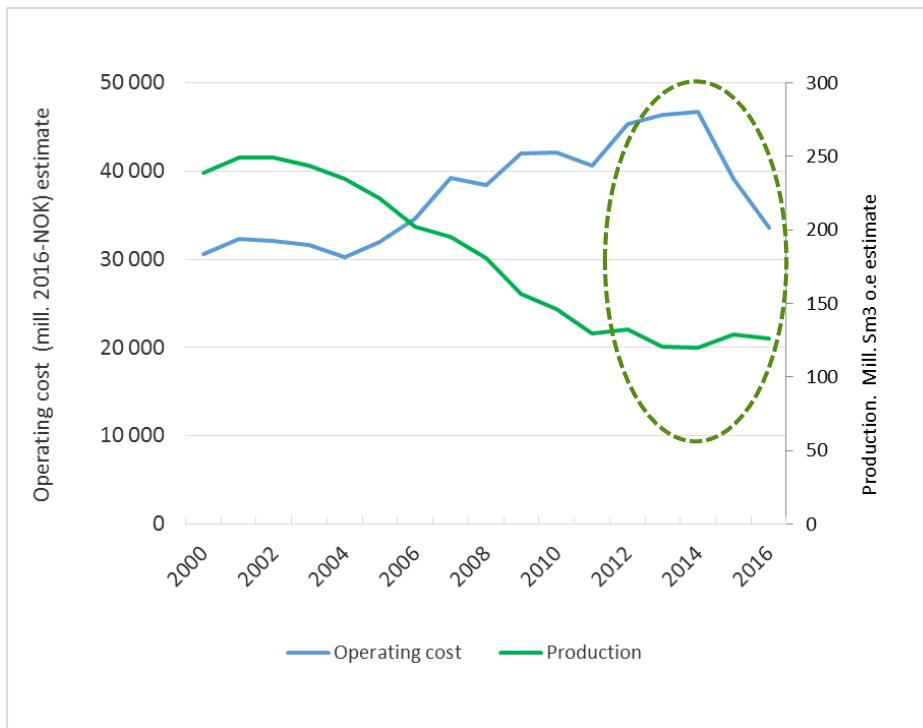
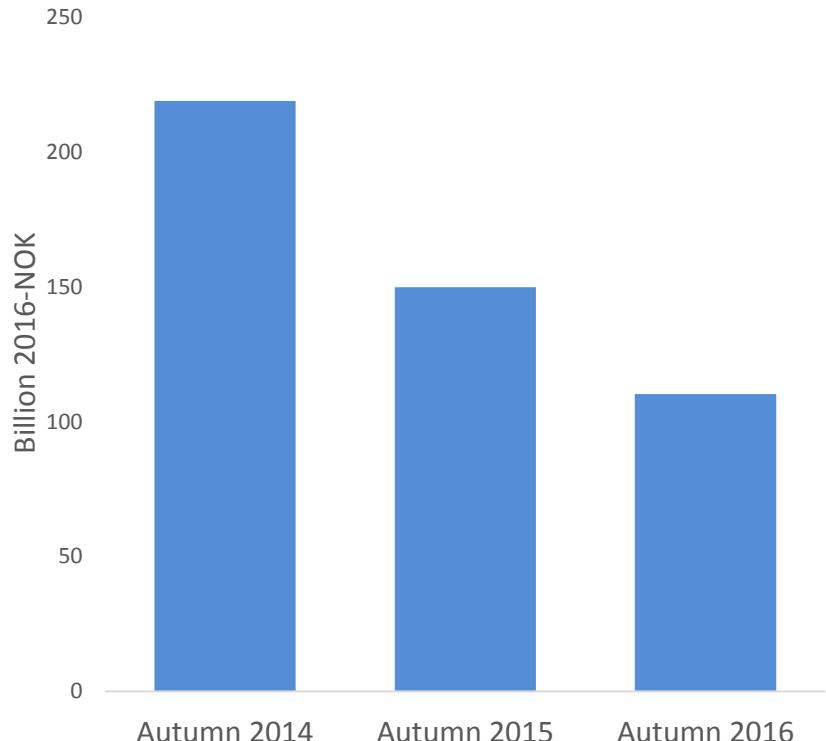
Cost reduction and
efficiency gains

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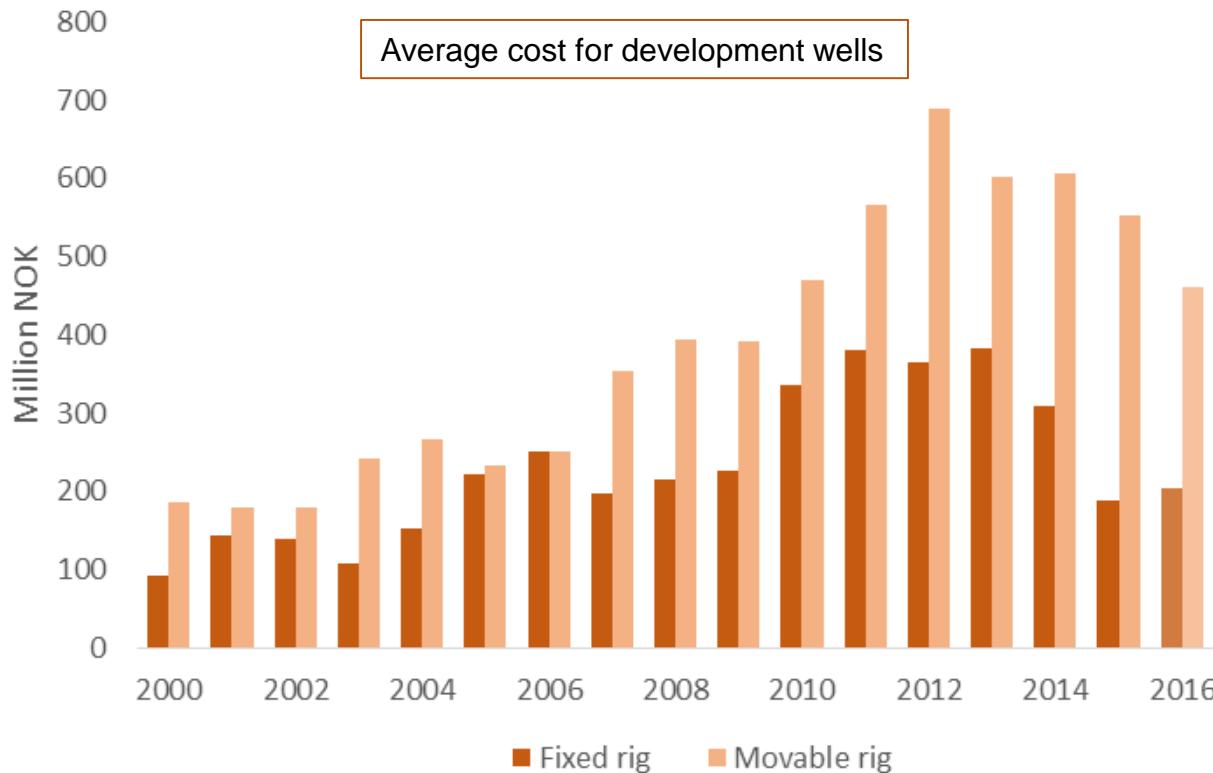
Improved technical
solutions



Development- and operating costs are slashed



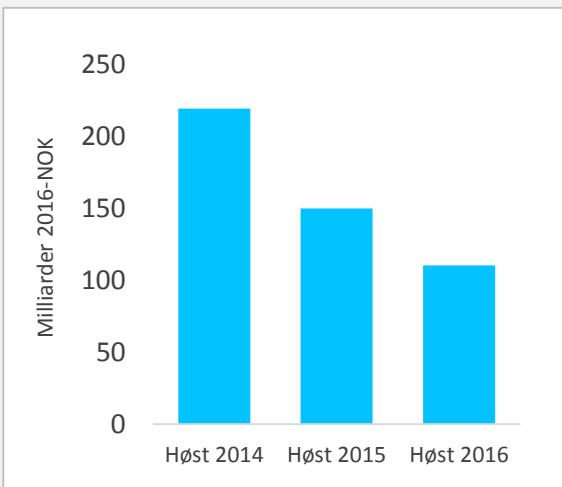
Increased drilling efficiency – reduced costs



Cost Control

Skru på langlysene

Investment (7developments)



What does it take?

1

Exploration

2

Invest for the long term

3

Cost reduction and efficiency gains

4

Improved technical solutions



Oil Resources in Fields

Large remaining volumes



New technologies to improve recovery

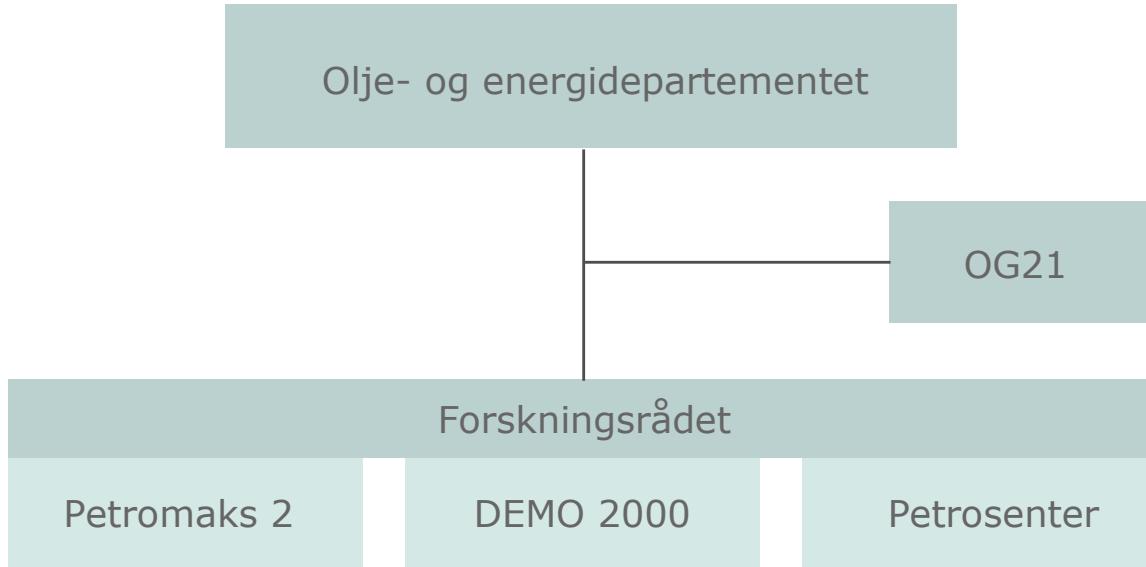


Foto: Statoil



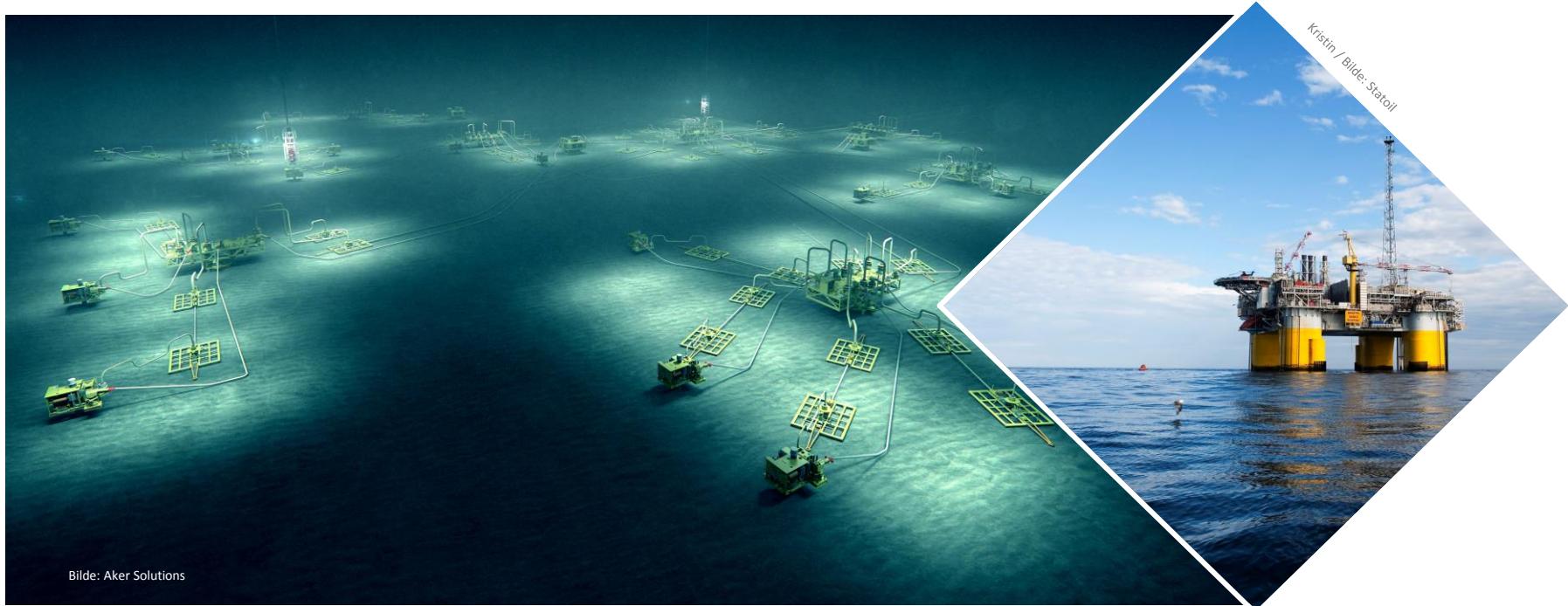
Develop, Qualify and Implement new technology

Need for more full scale field tests



Area solutions

Effective use of the existing infrastructure



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Course for the industry – what does the NPD do?

15.09.2017 **This autumn, the NPD will organise a one-day course for the oil companies on the NPD's responsibilities and roles. The course will be held in Norwegian on 14 November and in English on 15 November.**

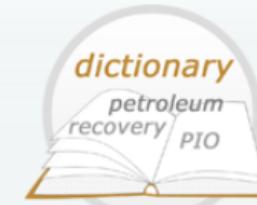


We had a corresponding course for the industry late last year. The target group is members of licence committees for exploration, discoveries and fields, other industry experts and authority contacts in the oil companies.

The goal of the course is to refresh knowledge about what the NPD does during the exploration, development and operations phases in relation to the industry. The course will place particular emphasis on follow-up of production licences.

A programme for the day along with registration will be published closer to the date.

DICTIONARY



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We do not a paper work only!





OLJEDIREKTORATET

Questions?