Still Much to Discover

The Norwegian Petroleum Directorate (NPD), responsible for resource management on the Norwegian Continental Shelf, has a new boss who is also a geologist by profession. We talked to Director General Bente Nyland about the future of this huge geological province.

More than 40 years have passed since the first well was drilled offshore Norway, and more than 60 fields have been put on stream, of which the giants Ekofisk, Statfjord, Gullfaks, Troll and Oseberg are best known. NPD estimates that the Norwegian Continental Shelf (NCS), encompassing the North Sea, the Norwegian Sea and the Barents Sea, holds approximately 13 billion m^3 (82 billion barrels) of oil equivalents in total. Roughly 36% has already been produced, approximately 38% are considered reserves, while 26%, or 3.4Bm^3oe (21Bboe), are yet to be found.

In retrospect, what made the NCS turn into a world class petroleum province?

First and foremost: good planning by the authorities. They decided to move slowly and build geoscientific knowledge by gradually opening the area and by using established knowledge on geology and play models from the UK and Dutch continental shelves as the basis for moving forward. In addition, being a geologist with an exploration background, I must emphasise that some key geological factors, such as source, reservoir, trapping and timing, were vital when the North Sea petroleum system was generated.

Meaning that the 15 last years of the Jurassic determined the Norwegian's fate?

Without doubt, Upper Jurassic source rocks (the Draupne Formation) have probably generated 99% of the oil we have discovered so far. Without these widespread black shales, the entire NCS would have been a failure.

Having the resource figures recently published by NPD in mind, what's your main challenge in your new position?

My main concerns are to ensure that our production profiles are reliable and sustainable, and to try to reduce the decline in oil production by focussing on how to improve recovery from existing fields. We have to keep in mind that an increase of 1% in reserves gives about 600 MMboe, with a value of USD 50 billion.

We also need to secure entry to new acreages in areas where undiscovered resources are difficult to access due to environmental concerns, conflict with fisheries, deep water, complicated geology and arctic conditions. Lowering emissions and ensuring that the industry implements the best technology available on existing and future fields wherever possible is another objective.

And finally, we must communicate the importance of the petroleum sector to the public, not only for our own welfare, but also as an important source of energy to Europe.

The NCS is an area with a long term perspective that will need well-educated young people with good ideas for at least two more generations. The easy part has been done – the real challenges are ahead.

The undiscovered resource is the equivalent of a staggering 40 giant fields (defined as >500 MMboe). This should make the NCS very attractive for quite a few companies!

Correct, and the number of new companies entering the NCS has increased dramatically since the year 2000, with 46 companies applying in the last round (APA 2007). In addition to abundant resources, we consider easy access to data and a stable framework as important conditions for newcomers.

Several of the supermajors have, nevertheless, reduced their activity on the NCS considerably. Do you think the newcomers will contribute in such a way that the remaining resources will be found?

The important thing is to have companies with a long term perspective, enthusiastic employees and relevant technical experience, and to ensure that these companies have a portfolio to grow.

Finally, knowing that seismic has been the key to all discoveries so far, will this also be true in the future, or do we have to rely on other technologies in our effort to find the last drop of oil?

I think a combination is necessary. So far, seismic has been important to map out large areas and add geological information, but other techniques will be important in order to focus on the most prospective targets.

Halfdan Carstens
Editor in Chief

Photo: Halfdan Carstens

Bente Nyland is NPD's third Director General since 1972. She is the first woman to serve in this position and has worked for NPD since 1989 after five years employment with Statoil. In NPD she has been involved with undiscovered resources, exploration of new areas, new players on the Norwegian shelf and license rounds.

Objectives and duties

"The Norwegian Petroleum Directorate shall contribute to creating the greatest possible values for society from the oil and gas activities by means of prudent resource management based on safety, emergency preparedness and safeguarding of external environment.