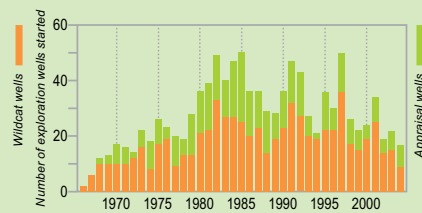


# 3

## Exploration activities





**Figure 3.1** Exploration wells started on the NCS, 1966–2004  
(Source: NPD)

In order to recover the petroleum resources on the Norwegian Continental Shelf (NCS), undiscovered resources must first be explored for and proven. Exploration activities are an important indicator of future production. Typically, it takes several years from a decision to begin exploring for resources to any discoveries being put into production. The framing of the exploration policy is hence an important aspect of Norwegian resource management.

In recent years there has been a trend towards less exploration activity on the NCS than was previously the case and hence towards making fewer major discoveries. For the authorities, it is important that the framing of the exploration policy makes for the rapid and efficient identification of new resources. It is the companies which then undertake the exploration itself and the proving of new resources. The exploration policy is therefore designed to increase the attractiveness of the NCS and to help bring in new players to complement the existing ones. The authorities seek to promote a high level of activity on the continental shelf through the structure of the licensing system and through area access and management.

A fundamental precondition for petroleum activities on the NCS is the coexistence of the oil industry and other users of the sea and land areas affected by such activities. This precondition is also important in the licensing policy, where, in the opening up of new areas, in the announcement of licensing rounds and in the awarding of production licences, much emphasis is accorded to arriving at schemes that cater to the interests of all the users of the marine areas.

### The licensing system

The Petroleum Act no. 72 of 29 November 1996 pertaining to petroleum activities provides the overall legal basis for the licensing system which regulates petroleum activities. The Act and its appurtenant regulations authorise the award of licences to explore for, produce and transport petroleum and so forth.

The Petroleum Act establishes that the proprietary right to subsea petroleum deposits on the NCS is vested in the state. Before permission for exploration drilling and production (a production licence) can be awarded, the area in question must have been opened up for petroleum activities. An impact assessment, covering such aspects as the environmental, economic and social effects of such activities on other industries and adjacent regions, must be carried out.

Production licences are normally awarded through licensing rounds. The government announces a certain number of blocks for which an application for a production licence may be made. Applicants may apply individually or in groups. Production licences are awarded on the basis of impartial, objective, non-discriminatory and published criteria. On the basis of applications received, the Ministry of Petroleum and Energy (MPE) puts together a group of companies for each licence or can make adjustments to a group which has submitted a joint application. The MPE appoints an operator for this partnership, who executes the day to day activities under the terms of the licence.

The production licence regulates the rights and duties of licensees in relation to the state. This document supplements the provisions of the Petroleum Act and specifies detailed terms for each licence. The licence provides an exclusive right for exploration, exploration drilling and the production of petroleum within its specified geographical area.

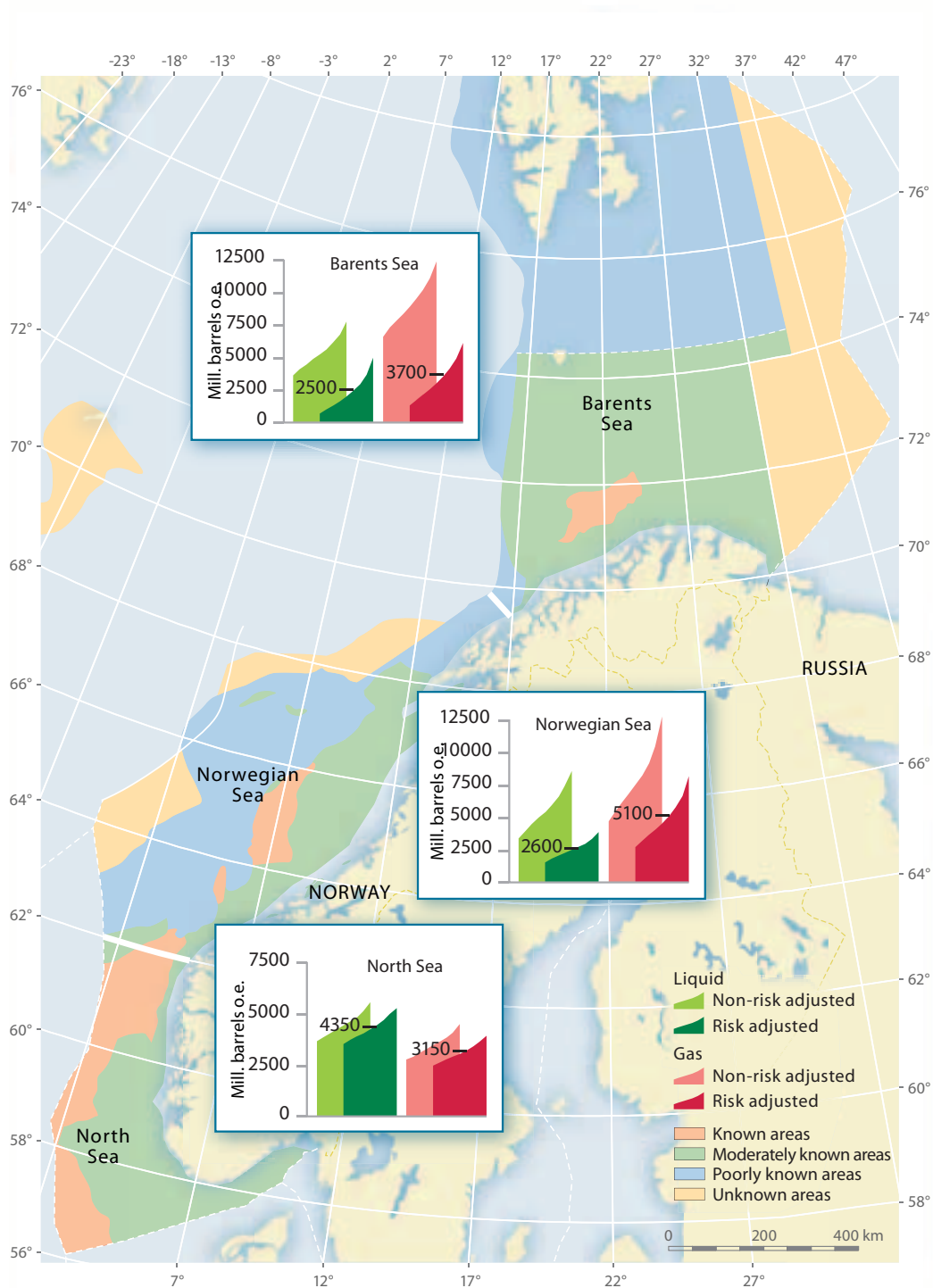


Figure 3.2 Undiscovered resources  
(Source: NPD)

Ownership of the petroleum produced rests with the licensees. Each licence is awarded for an initial exploration period, which can last up to 10 years. A specified work obligation must be met during this period, including seismic surveying and/or exploration drilling and so forth. Providing the work obligation has been completed by the end of the period, the licensees are generally entitled to retain up to half the area covered by the licence for a specified period, generally 30 years. An area fee is charged per square kilometre, as set out in detailed rules. Providing all the licensees agree, a licence can be relinquished once the work obligation has been fulfilled.

### **Mature and frontier areas**

The parts of the NCS that the Parliament has opened up for petroleum activities are the bulk of the North Sea, Norwegian Sea and southern Barents Sea. The Norwegian Petroleum Directorate's (NPD) estimate of undiscovered resources in the areas on the continental shelf are a total of 3.4 billion square cubic metre recoverable oil equivalents. This equates roughly to the volumes that have already been produced to date on the NCS and the resources are divided more or less equally between the three regions, with 35 percent in the North Sea, 36 percent in the Norwegian Sea and 29 percent in the Barents Sea. Depending on the degree of maturity of the different areas, there is some variation in the types of challenges faced in respect of realising the commercial potential of the undiscovered resources on the NCS.

The mature areas are characterised by known geology, only minor technical challenges and well developed or planned infrastructure. This makes the probability of success from drilling prospects rela-

tively high, but, equally, means that there is less likelihood of major new discoveries. In some of the mature areas of the NCS, petroleum activities have been going on for more than 30 years, and as a result the geology is well understood and, in many places, the infrastructure is well developed.

Frontier areas on the other hand are characterised by a scant understanding of the geology, major technical challenges and a lack of infrastructure. Here, the uncertainty linked to exploration activity is greater, but, on the other hand, there is the prospect of major new discoveries. These factors tend to limit the number of actors qualified to search for such resources. In addition to wide experience and technical and geological expertise, those operating in these areas must have solid financial backing.

### **Exploration policy in mature and frontier areas**

#### *Mature areas*

Petroleum activities on the NCS began in the North Sea and have over the years, moved northwards. This means that, in terms of exploration, large areas of the North Sea are now considered mature. In addition to this, there has also been considerable exploration of the Halten Bank in the Norwegian Sea and this region, too, is considered mature. The latest area to be considered mature is the area around the Snøhvit field in the Barents Sea. There is currently no production here, but the understanding of the area is good and production and infrastructure are planned through the Snøhvit development now underway.

The probability of success from drilling prospects in mature areas is relatively high, while at the same time the likelihood of making major new discoveries has diminished. The average size of dis-

### Mature areas in the North Sea

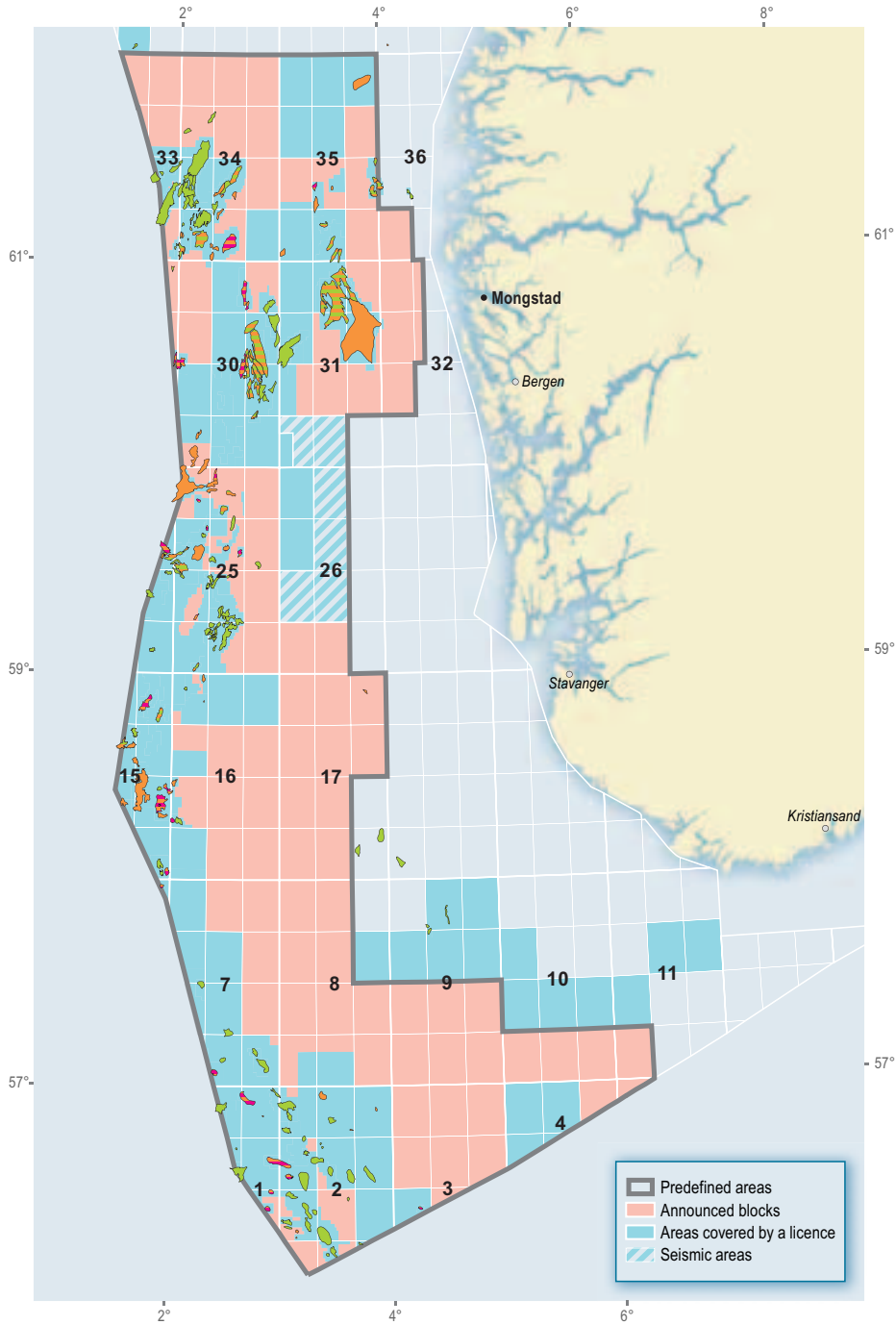


Figure 3.3 Awards in predefined areas – North Sea announcement 2005  
(Source: NPD)

## Mature areas in the Norwegian Sea

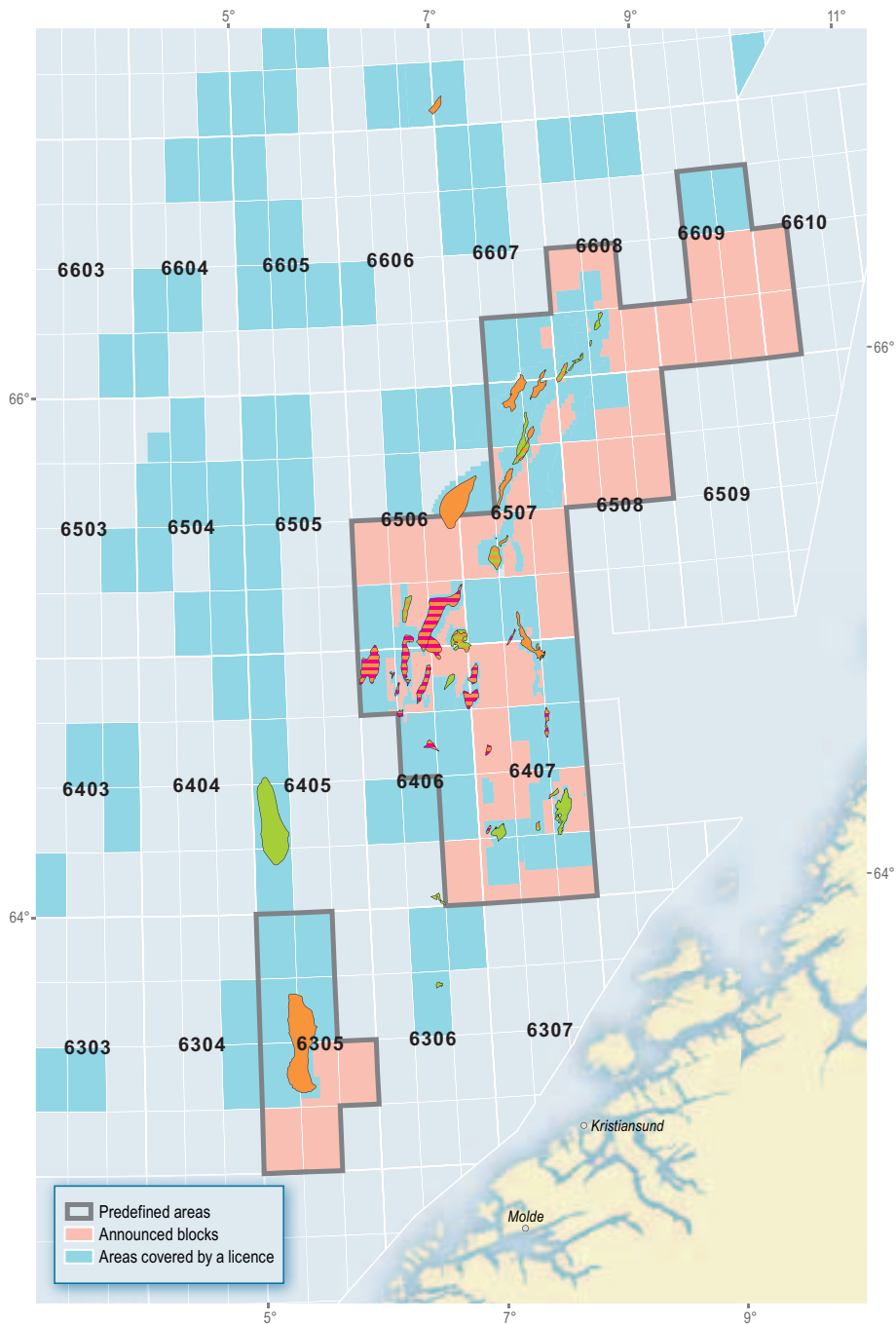
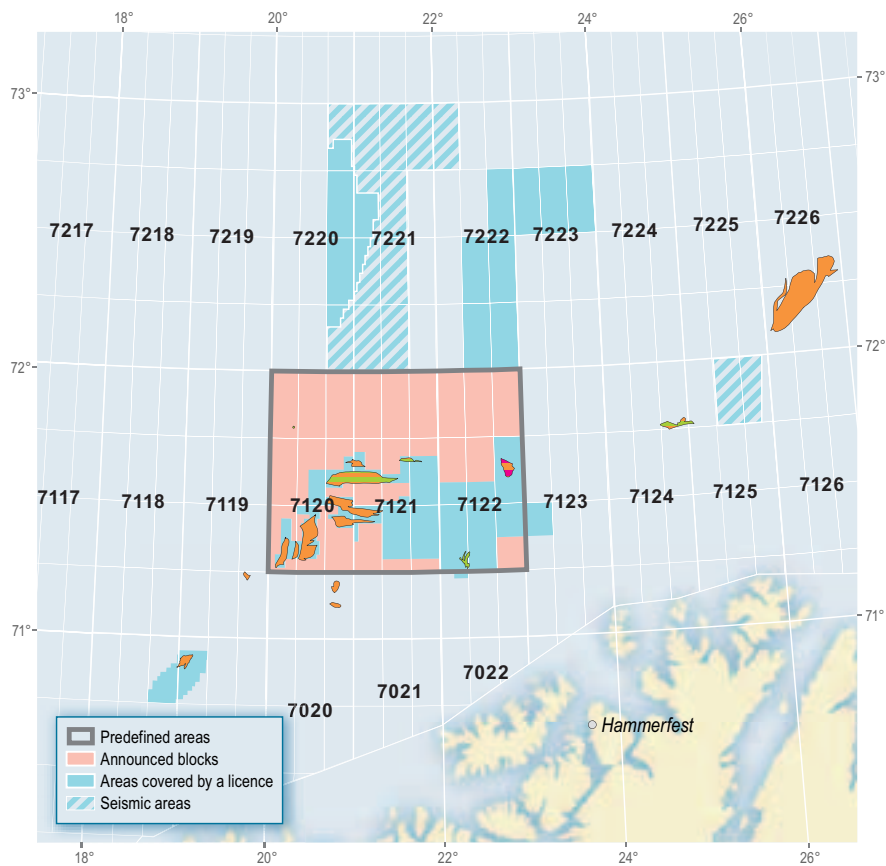


Figure 3.4 Awards in predefined areas – Norwegian Sea announcement 2005  
(Source: NPD)

## Mature areas in the Barents Sea



**Figure 3.5** Awards in predefined areas – Barents Sea announcement 2005  
(Source: NPD)

coveries in mature areas is also expected to fall off. As a result, the value of each discovery to the oil companies is less, and the largest oil producers are therefore showing less interest in these areas. Also, the life expectancy of the existing infrastructure is limited and it is therefore important to prove and recover resources in the area before it is abandoned. If this is not done, profitable resources may remain in the ground, because the discoveries are too small to warrant a separate infrastructure development.

Previously, the authorities conducted licensing rounds on the principle of gradual exploration of

areas. There was a gradual shift northwards in step with increased understanding of the areas. The knowledge accumulated through systematically building on expertise from previously awarded production licences has meant that the frequency of discoveries on the NCS has been high.

As the NCS has matured, the need for this form of gradual access has reduced. In mature areas, it is important that the industry has access to larger areas, so that time-critical resources can quickly be developed. It is also important that the areas allocated to the industry are explored quickly and efficiently.



The government has therefore changed its policy on mature areas and, in 2003, introduced a scheme for production licence “Awards in Predefined Areas” (APA) in mature parts of the NCS. This scheme has led to the creation of predefined exploration areas, comprising, mature areas of the NCS. The areas will be extended, but not reduced, as new areas mature. In addition, there is the proposal for a fixed annual cycle of licensing rounds in mature areas. So far, this has led to two such rounds in mature areas, APA 2003 and APA 2004. Figure 3.3, 3.4 and 3.5 indicate the announced area in APA 2005.

An area within a predefined area that has been relinquished between announcement and the application deadline will be included in the announcement area. This means that all areas relinquished within the predefined area will automatically be considered as announced at the time they are relinquished. In this way, other companies, who may have a different view of prospects in the area, will rapidly be given the opportunity to explore it. This means swifter circulation of areas and more efficient exploration of the mature areas.

More frequent licensing rounds and larger announced areas in each round have brought about an increase in licensed areas. At the beginning of 2005, 16 percent of the area open for petroleum activities on the NCS were covered by a licence – an increase of 9 percent from previous year.

For the authorities, it is important that an area covered by a licence is explored. The framework must therefore seek to encourage companies who have been awarded production licences not to leave the area idle, but to actively explore it.

To meet the challenges resulting from larger sections of the NCS now being designated as mature and from larger sections being covered by licences, the framework has been changed.

In the mature areas, the work obligations that the companies assume on award of new production licences are designed as a set of activity and decision-making junctures, where the companies must decide, at each decision-making juncture whether they wish to undertake new activities under the licence or relinquish the area in its entirety.

A second important change is that, on award, the production licence areas are more ‘tailored’ than previously in that the companies are only awarded areas where the companies have concrete plans.

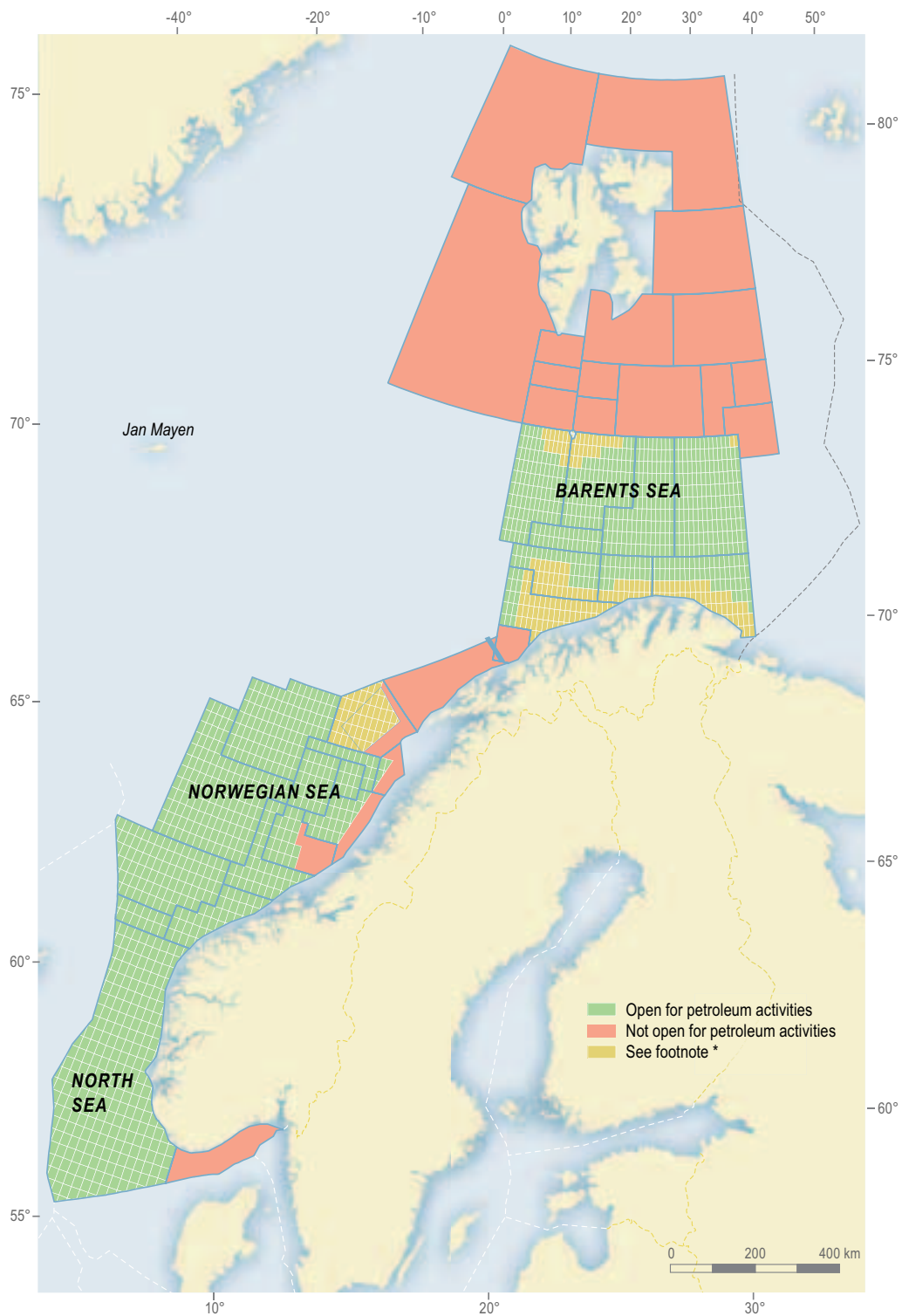
In addition, at the end of the initial period, changes have been made to which areas companies are permitted to hold onto. Previously, at the end of the initial period, companies could retain up to 50 percent of the awarded area with no obligation for any specific further activity. Now, however, the companies may, as a rule, only retain areas in which they plan to commence production.

#### *Frontier areas*

The areas which are currently considered to be immature on the NCS are large parts of the Barents Sea and Norwegian Sea. In the Norwegian Sea, this is true in particular of the deep-water areas and the northernmost sections. In addition to this, the coastal areas in the southern section of the NCS are also relatively immature.

In these areas, it is still possible to make major new discoveries. The potential for such discoveries in the frontier areas serves to sustain the competitiveness of the NCS from an international perspective, and the areas retain the potential for attracting interest from the biggest multinational oil companies. More and more of the southern NCS is now mature. This has triggered the need to investigate the conditions for petroleum activities in the large frontier areas that remain in the northern sections of the continental shelf.





\* Area excluded from year-round petroleum activities in light of the ULB (government report on impact on Lofoten - Barents Sea of petroleum activities)

**Figure 3.6** Open and not open areas on the NCS  
(Source: NPD)



Figure 3.7 Norwegian and Russian part of the Barents Sea  
(Source: NPD)

In response to environmental and fisheries concerns, the government initiated an assessment study of the consequences of year-round petroleum activities in the Lofoten – Barents Sea area. On the basis of the results, the government decided that awarded areas in Nordland VI off the Lofoten islands should not be opened up further for petroleum activities. This issue will be considered anew when the overall management plan for the Barents Sea has been prepared. At the same time, the government decided on a general opening up of future year-round petroleum activities in the already-opened areas of the southern Barents Sea, with the exception of certain especially valuable areas.

In the winter of 2003, the Ministry of Petroleum

and Energy and the Ministry of Fisheries and Coastal Affairs set up a working group to assess the feasibility of a coexistence between the fisheries and petroleum industries in the area from Lofoten northwards, including the Barents Sea. Institutions participating were: The Ministry of Fisheries and Coastal Affairs, the Ministry of Petroleum and Energy, The Directorate of Fisheries, the Institute of Marine Research, the Norwegian Petroleum Directorate, the Norwegian Fishermen’s Association and the Norwegian Oil Industry Association. The working group summarised its work in a report completed in July 2003.

In Report to the Parliament no. 38 (2003–2004) the government stated that it wished to continue the work done in this group to evaluate issues between the petroleum and fisheries sectors. The MPE aims to resume work in this coexistence group in 2005.

With the announcement of the 18<sup>th</sup> licensing round in 2003, the industry was given access to relatively large areas in frontier areas as well. The announcement was the largest in frontier areas since 1965. With the 18<sup>th</sup> licensing round, the principles regarding amendments to the rules for relinquishing sections of mature areas were also extended to apply to frontier areas. It is not, however, expedient for the companies with production licence in frontier areas to submit a development plan at the end of the initial period, so the main rule for relinquishments in these areas is confined to resources proven by drilling. As in mature areas, the same amendments have also been made in frontier areas in respect of tailoring the areas that are allocated.

#### *Unopened areas*

There are still large parts of the NCS which the Parliament has not opened up for petroleum activities – the whole of the northern Barents Sea, Troms 2, Nordland VII, parts of Nordland VI, coastal regions off the Nordland coast and the Skagerak (see figure 3.6).

A decision by the Parliament on the opening up of these areas for petroleum activities is required before they can be announced in any licensing round. As a basis for the Storting's decision, an impact assessment, covering such aspects as the environmental, economic and social effects of the activities on other industries and adjacent regions, will need to be carried out. The issue must also be put to local authorities and key stakeholding organisations which may be considered to have a particular interest in the matter.

In addition to the above-mentioned areas, the present government has also decided not to allow petroleum activities in especially vulnerable areas in the Barents Sea and Nordland VI. Activities here will be reassessed once the management plan for the Barents Sea is ready.

#### **Area with overlapping claims**

The boundary between Norway and Russia has still not been finally drawn and is currently being negotiated by the Russian and Norwegian authorities. The area is outlined in figure 3.7 and covers roughly an area the size of the Norwegian part of the North Sea.

#### **Industry structure**

Industry structure here refers to the number and composition of the oil companies involved in petroleum activities on the NCS. The key place occupied on the NCS by the largest multinational players is a natural consequence of the fact that it has been characterised by projects that are few in number, large in size and resource-intensive, and with very substantial assets to be realised. To a large degree therefore, the authorities aimed to limit the players to the biggest multinational companies, since it is these who, from their wide experience and expertise, were best able to exploit the demanding opportunities the NCS offered. As the continental shelf has matured and the challenges it poses have changed and diversified, it is important that the composition of the players involved should in turn reflect this new reality. In recent years therefore, there has been a focus on bringing new competent players onto the NCS, and these have been smaller players who have a particular focus on mature areas and tail-end production.



*Prequalification*

In order to facilitate the terms for new players, in Report to the Parliament no. 39 (1999–2000) *Oil and gas activities* a scheme for prequalifying new operators and licensees was introduced. From the scheme's inception to January 2005, 25 companies had prequalified for, or become licensees on the NCS. Other companies are currently being evaluated or have indicated a wish to prequalify.

The figure shows prequalified and new companies on the NCS since 2000. Those marked with an asterisk no longer exist today as independent companies.

**Prequalified/new companies since 2000**

Sumitomo	OER	Petoro
Paladin	Talisman	Mærsk
Aker Energy *	Ruhrgas	Anadarko
Dong	Kerr McGee	CNR
Pelican *	Pertra	Lasmo*
GdF	Oranje Nassau	Revus
Lundin	Endeavour	Centrica
DNO	BG Norge	Wintershall
	Altinex	Noble Energy

\* Companies that no longer exists as individual companies

