

## 9 EUROPEAN COASTAL RESOURCES OF POTENTIAL RELEVANCE TO SEA 5

### 9.1 Introduction

The European coastal resource of potential relevance to SEA 5 is the southwest coast of Norway, which lies to the east of the SEA 5 area. This section presents a summary of the coastal resources of this country, in addition to an overview of coastal conservation and a listing of important conservation sites.

The coastal resources of Norway have previously been described for SEA 1, 2, 3 and 4. The information presented in this summary consists of updated data and new information where available.

### 9.2 Norway

#### 9.2.1 Overview

Norway is situated in the northwestern corner of Europe, occupying the western part of the Scandinavian peninsula. It is bordered by three seas; the North Sea, the Norwegian Sea and the Barents Sea, and three land masses; Russia, Finland and Sweden. It is a mountainous country divided into 18 counties. The two counties closest to the SEA 5 area, and therefore the most relevant, are Hordaland and Rogaland. Norway has a long rugged coastline (approximately 83,281km,) which is deeply indented with many fjords and includes a large number of islands, islets and skerries.

#### 9.2.2 Energy industries

Oil was discovered off the coast of Norway in the late 1960s and the offshore oil industry has been important to the Norwegian economy since the 1970s. Norway became a net exporter of oil and gas in 1975 and oil remains the most important commodity in the energy sector, although natural gas is growing in significance.

In 2002 Norway was the third largest exporter of crude oil in the world, after Saudi Arabia and Russia, and the world's fourth largest gas exporter after Russia, Canada and Algeria (Norway – the official site in the UK website <http://www.norway.org.uk>). At 31 December 2003, there were 64 fields on the Norwegian continental shelf with approved Plan for Development and Operation (PDO), including 12 fields where production has ceased. Forty-eight fields were in production (42 in the North Sea and 6 in the Norwegian Sea) with 4 fields not yet started production (Norwegian Petroleum Directorate website <http://www.npd.no>). The majority of Norwegian oil and gas fields are located to the north and east of SEA 5. An updated resource account with estimates of both produced and remaining resources on the Norwegian continental shelf, shows that there is more than 9.1 billion Sm<sup>3</sup> oil equivalents left to be produced, more than twice as much as has been produced so far (Norwegian Petroleum Directorate website, press release 12/03/04).

In 2003 a total of nearly 127 million tonnes of crude oil and over 61 million m<sup>3</sup> of natural gas were exported with a value of nearly 195 billion and 66 billion Kroner respectively (Tostenson *et al.* 2004).

At the present time there is no information available regarding current Norwegian offshore renewable projects in Norwegian waters. In July 2004 the Norwegian state-owned power company, Statkraft SF, sold its 25% stake in the UK's Barrow offshore wind park. Statkraft,

however, are currently researching and developing salinity power and tidal power technologies with a view to commercially exploiting these technologies within 3-8 years (Statkraft website <http://www.statkraft.com>).

### 9.2.3 Fisheries and mariculture

#### Fisheries

The produce of the fisheries and aquaculture industries of Norway are among the country's top exports, sold to more than 150 countries around the world. In 2003 Norwegian vessels landed over 2.5 million tonnes of fish with a value of nearly NOK 9 billion. Species caught included cod (217,000 tonnes, accounting for 26% of the total catch, worth NOK 2.3 billion), herring (559,000 tonnes, 11%, NOK 1.0 billion), capelin (249,000 tonnes, 3%, NOK 0.26 billion) and blue whiting (851,000 tonnes, 8%, NOK 0.72 billion) (Statistics Norway website <http://www.ssb.no>).

In 2002 Norwegian vessels accounted for nearly 18% (10,242 tonnes, value £810,000) of demersal fish landed into the UK by foreign vessels. Blue whiting dominated the Norwegian landings at 8,917 tonnes, followed by sandeels (1,186 tonnes) and cod (123 tonnes). Norwegian vessels did not land any pelagic or shellfish species into UK ports in 2002 (UK Sea Fisheries Statistics 2002). In the same year, landings by UK vessels into Norway accounted for the 8% of the total demersal species catch landed abroad by UK vessels. Cod was the dominant species landed at 4,366 tonnes, followed by haddock (628 tonnes) and saithe (106 tonnes). In excess of 77,000 tonnes of pelagic species were landed into Norway by the UK fleet, with the catch dominated by mackerel (71,294 tonnes) and herring (5,341 tonnes).

Norway has a differentiated fishing fleet which utilises both coastal and deep-sea fishing. The coastal fisheries utilise a variety of gear type including gillnets, coastal purse seine and Danish seines, while the deep sea fishing fleet use purse seines and pelagic trawls (OSPAR 2000).

In 2002 there were a total of 18,648 fishermen employed in Norway. Fishing was the main occupation of 74.6% (13,913) of this total and a secondary occupation of 25.4% (4,735).

Norway recommenced commercial whaling in 1993 and the annual whale hunt generally runs from May to August with hunts in the Barents Sea for minke whale. In 2002 a total of 671 whales were caught and a quota of 670 set for 2004. Norwegian sealing also takes place in the Barents Sea, with the hunt based mainly on harp and hooded seals. In 2002 a total of 10,691 seals were caught. Of this total nearly 67% were hooded seals and the remaining 33% harp seals.

#### Mariculture

Norway is the leading fish farming country in the world in terms of the production of Atlantic salmon (Aquamedia website <http://www.feap.info>). In 2003, 507,412 tonnes of farmed salmon were sold, with a value of over NOK 8.1 billion. Trout is the second most important farmed species in Norway with 69,128 tonnes, with a value of NOK 1.2 billion (Statistics Norway website). In 2003, Hordaland produced the largest quantity of both farmed salmon and trout at 94,121 tonnes and 17,147 tonnes respectively.

Fish farming of other species remains at relatively low levels in Norway compared to salmon and trout. Farmed cod is the third most important species farmed and in 2003 approximately 0.22 tonnes of farmed cod was sold. Other farmed species include char, turbot, halibut and eel. Oysters are also cultivated along the Norwegian coast.

Kelp (*Laminaria hyperborea*) and other brown seaweeds are harvested for alginate production along the west coast of Norway. Kelp is the dominate species harvested with an average harvest of approximately 90,000 tonnes per year (OSPAR 2000).

## 9.2.4 Ports and shipping

The North Sea supports some of the busiest shipping routes in the world and most of Europe's largest ports are situated on North Sea coasts and rivers. Maritime trade has also been the impetus for the development and wealth of coastal cities and towns in the south west of Norway.

On the west coast, Bergen is a commercially important port as well as a hub for shipping lines operating from other major European ports. In 2003, there were a total of 28,804 ship calls to the Bergen port district compared to 24,191 in 2002. In the same year, the central port of Bergen alone recorded 21,871 calls compared to 17,225 in 2002. Of this total, the number of calls by leisure craft was 5,675, a 24.2% increase from 2002 (Bergen Harbour Annual Report 2003).

On a nationwide basis, the total volume of cargo loaded and unloaded within the Bergen port district represented approximately 50% of the cargo volume in all the Norwegian port districts combined (Bergen Harbour Annual report 2003). New terminal facilities, expected to be completed in 2004, are expected to increase cargo handling.

In 2003 there were 210 cruise ship calls to Bergen compared with 192 in 2002. The total number of passengers and international ferry crossings increased from 273,172 in 2002 to 330,863 in 2003.

## 9.2.5 Tourism and leisure

Outdoor recreational activities including walking, cycling, swimming, sailing, skiing, mountaineering and fishing are all popular with both local people and visitors to Norway. Cruise ships and leisure craft visit the many fjords and sail along the coastline, some as far north as the Arctic circle. These boats also utilise the berthing facilities at the many sheltered harbours along the coast as stop off points or places to visit.

In March 2004, the National Geographic surveyed more than 200 tourism experts to evaluate 115 of the world's best known destinations according to criteria based on cultural, environmental and aesthetic integrity. Norway's fjords earned the top ranking (Visit Norway website <http://www.visitnorway.com>).

The remains of the first city and wharf at Bergen, which is now a UNESCO World Heritage Site, the canneries at Stavanger which depict the importance of the sardine industry in the 19<sup>th</sup> century and the access to maritime recreational activities are some of the attractions which make the region a centre for tourism.

## 9.2.6 Coastal industries

Norway's overall maritime economy encompasses a broad range of products and services including specialised shipyards, state of the art ships and fishing gear, and the development and supply of aquaculture equipment.

Norway's shipbuilding industry comprises more than 50 small and medium sized shipyards. The industry predominantly focuses on ship repair and the construction of specialised vessels such as ro/ro, chemical tankers, offshore supply ships, cable laying ships and fishing vessels. Norway's ship gear industry manufacture a vast range of products including specialised equipment for coastal and deep sea fishing, while Norway's aquaculture outfitters develop and produce an array of fish farming equipment.

The coastal zone also supports some oil refineries and a small marine aggregate extraction industry.

## 9.2.7 Protected sites

The highest authority concerning nature protection in Norway is the Ministry of Environment but active responsibility is delegated largely to the Directorate for Nature Management. Nature conservation areas in Norway are legally protected by three Nature Conservation Acts and mainly fall into three categories; national parks, nature reserves and landscape protection areas.

The two Norwegian counties nearest to the SEA 5 area are Rogoland and Hordaland and Table 9.1 below describes the national parks, nature reserves, landscape protection areas and other protection areas in these counties in 2000.

*Table 9.1 - Number of protected areas in Rogoland and Hordaland*

County	National parks	Nature reserves	Landscape protected areas	Other protected areas <sup>1</sup>
Rogaland	-	112	11	8
Hordaland	1	138	10	-
Norway Total	28	1476	104	77

Notes: <sup>1</sup> Other protected areas include flora and fauna protection areas (biotope protection)

Source: Statistics Norway website

At present the only area in Norway that is protected specifically for its marine life are the Froan Skerries.

Norwegian Important Bird Areas are dominated by seabird cliffs, other seabird colonies and to a lesser extent important staging areas for migrating birds, particularly geese from the Svalbard populations. The four IBAs on the Norwegian coast of most relevance to SEA 5 are described in Table 9.2 below.

*Table 9.2 - Important Bird Areas on the southwest coast of Norway*

<b>Site</b>	<b>Approximate numbers of birds</b>	<b>Species</b>
Runde	Important numbers	Largest seabird colony in Norway, breeding great skua and Arctic skua
Kjørholmane seabird reserve	Notable numbers	Southernmost colony of notable size, breeding shag and lesser black-backed gull
Jæren wetland system	Notable numbers	Core breeding area for corncrake, important wintering and staging area for inland waterbirds – red-throated diver, black-throated diver, great northern diver and red-necked grebe
Lista wetland system	In excess of 5,000 pairs of waterbirds breed in the area and 5,000-8,000 waterbirds winter there	Breeding redshank, wintering slavian grebe & velvet scoter & passage greylag goose & dunlin

*Source: Heath & Evans (2000)*

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