

Part III. Norway

B. ENERGY

Government focal point: Ministry of Petroleum and Energy

Responding ministry: Ministry of Petroleum and Energy

The energy sector and water resources in Norway

Electricity plays a dominant role in the stationary use of energy in Norway, due to the country's large-scale production of hydropower. Norway's per capita consumption of electricity is the highest in the world. However, total energy use per capita is similar to that in other OECD countries when factors such as climate and the dispersed structure of human settlement are taken into account.

Norway's electricity system is largely based on hydropower, which accounts for 98.9 per cent of all electricity production. Norway is the largest producer of power based on renewable energy resources in Europe, with an average annual production of 119 TWh. The country started to develop its very large hydropower potential more than a century ago. Major developments continued through the 1970s and 1980s, but came to a halt in the 1990s. A considerable proportion of the remaining hydropower potential is now protected on the basis of environmental concerns.

There is a substantial potential for increasing hydropower production by upgrading and/or expanding existing installations. The government has introduced a strategy, including simplified licensing procedures, to develop the significant potential for small-scale hydropower plants with a capacity of less than 10 MW.

The legal framework

The first legislation in this area was brought in more than 100 years ago when the development of hydropower started.

When a watercourse is used for hydropower development, conflicts may arise between a number of user groups and environmental interests. It has therefore been necessary for the authorities to develop extensive legislation, including requirements to obtain licences for various purposes. The most important elements in the framework for hydropower development are the protection plans for water resources, the Master Plan for Water Resources, the Industrial Concession Act, the Watercourse Regulation Act and the Water Resources Act. The water resource authorities are responsible for managing water resources within this framework.

The licensing authorities are the bodies responsible for processing licence applications and for issuing licences. They include the Storting (Norwegian parliament), the Government, the Ministry of Petroleum and Energy and the Norwegian Water Resources and Energy Directorate.

In cases where a licence is required, the Directorate is responsible for co-ordinating application procedures. Once a project has been approved in the Master Plan for Watercourses, the actual application process starts when the developer sends notification of the project to the Directorate. The Directorate, in consultation with the local authorities concerned and other authorities, then decides whether an environmental impact assessment (EIA) must be carried out in accordance with the provisions of the Planning and Building Act. Even if this is not the case, the impacts of the project must be described in detail as part of the licence application.

If an EIA is required, the Directorate will determine the final content of the study programme after submitting this to the Ministry of the Environment. When the study programme has been completed, the environmental impact statement is submitted together with the licence application. Both applications and environmental impact statements are subject to a process of public consultation involving various parties including public authorities at county and municipal level, the business sector, NGOs and landowners affected by the proposal. Further details on the licensing procedures may be found in Fact sheet 2004 The Energy Sector and Water Resources in Norway, chapter 4 on legislation: <http://odin.dep.no/oed/english/doc/reports/026021-120007/dok-bn.html>

Energy saving and the promotion of renewables other than hydropower are important, integrated elements of Norwegian energy policy. Norway has large wind power and bioenergy potentials, and can also improve energy efficiency substantially. Enova SF, the national agency for energy efficiency and renewables, promotes projects within these areas. Enova was established in 2001 to make Norwegian energy supply less dependent on hydropower and electricity, and supports projects to diversify energy sources and energy carriers in Norway, such as promoting bioenergy for heating.

From the start in 2001 until 2004 Enova supported projects to achieve energy savings or renewable energy production totalling 5.5 TWh. Enova's goal is to reach 12 TWh by 2010.

Since 2003, the Ministry of Agriculture and Food has been financing a Norwegian bioenergy programme. Its main objectives are to increase bioenergy production from agriculture and forest biomass for heating. In addition the government is considering the introduction of measures to increase the production and use of liquid biofuels from 2006.

The Norwegian Government is currently evaluating the introduction of a market for mandatory "green" electricity certificates jointly with Sweden from 2007. The purpose of the certificates is to increase electricity production from renewable energy sources. Producers of electricity from renewable sources will receive green certificates. The sales of certificates will provide the producers with an income on top of the income from sales of electricity, thus encouraging them to build more capacity based on renewable energy sources.

The Norwegian petroleum sector

In 2004, the petroleum sector accounted for 47 per cent of Norwegian exports. It also provided 28 per cent of the state's total revenues for 2004, through income from the state's direct financial interest (SDFI), taxes and levies from the oil companies and dividends from Statoil. Norway still has substantial oil and gas resources on the continental shelf. It is estimated that 31 per cent of

the originally recoverable oil resources has already been sold and delivered. This leaves an estimated 40 per cent in already discovered fields, and 26 per cent in fields that have yet to be discovered. The remaining 3 per cent derives from possible future measures to improve recovery.

In 2004, oil production (including condensate and NGL) was 3.2 million b/d, and the forecast for 2005 is an average of 3.2 million b/d. It is anticipated that oil production will be maintained at this level for the next three years, and then decrease up to 2010.

Ever since Norway started offshore petroleum activities, it has been a fundamental principle that the industry must operate within a sound environmental framework and in coexistence with other industries. Besides the petroleum sector, the most important users of the sea are the fishing and transport industries. Our goal is for these industries to be able to carry out their business without harming the environment, natural resources or each other's business interests. As the petroleum industry has moved northwards to more sensitive areas, these considerations have become even more important. In response to this, the government intends to draw up integrated management plans for marine areas.

The petroleum industry is a major source of emissions to air. Nationally, petroleum operations account for 30 per cent of CO₂ emissions. This share is expected to remain unchanged in 2005-2006 and then fall off. Petroleum operations have become more efficient, as demonstrated by the fact that CO₂ emissions per oil equivalent produced dropped by 22 per cent from 1990 to 2003. This is partly a result of general improvements in technology and measures to reduce emissions, for instance the introduction of the CO₂ tax in 1991. The petroleum sector generates 22 per cent of Norway's NO_x emissions. Emissions from this sector have been rising gradually since 1991, mainly because of a rise in energy demand, but are expected to level off in 2005 and then decrease. Most of the measures that reduce CO₂ emissions also help to reduce NO_x emissions from the petroleum sector. The reduction in emissions of CO₂ and NO_x per unit of oil or gas produced gives an indication of improvements in efficiency on the Norwegian continental shelf.

Petroleum activities also lead to discharges of oil and various kinds of chemicals into the sea. The target of zero environmentally hazardous discharges to the sea from petroleum operations was established in Report to the Storting No. 58 (1996-97), Environmental Policy for Sustainable Development. Since then, the authorities and industry have worked together to define the target precisely and arrive at solutions for achieving it. The target applies in the first instance to new stand-alone developments, but from 31 December 2005 will also apply to existing installations. It applies to all offshore operations, from drilling and well operations to production and discharges from pipelines.

Further information about the energy sector and the petroleum sector in Norway may be found in:

Fact sheet 2004 The Energy Sector and Water Resources in Norway:
<http://odin.dep.no/oed/english/doc/reports/026021-120007/dok-bn.html>

Fact sheet 2005 on Norwegian Petroleum Activity:
<http://odin.dep.no/oed/english/doc/reports/026031-120027/dok-bn.html>

International co-operation

Norway is part of an integrated Nordic market for electricity. Norway's interconnection capacity is now to be further reinforced with the construction of a new cable to the Netherlands, which will link the country directly to the continental markets.

Norway co-operates extensively with a number of developing countries in the energy sector. This co-operation is based on recognition of the fundamental importance of reliable energy supplies for economic development. Economic development is essential if governments are to succeed in fighting poverty and providing social services.

The co-operation focuses on those parts of the energy sector where Norway is considered to have a comparative advantage and thus an interesting partner for developing countries. In practice, this means hydropower and petroleum.

The emphasis is on sustainable, long-term management of natural resources to benefit developing countries and their populations, with due consideration of environmental, social and safety issues. It is considered to be of the utmost importance that national legal systems for proper management of the energy sector are put into place, incorporating internationally accepted principles. It is equally important to establish national priorities and licensing systems based on these.

An important means of achieving these objectives is what is known as institutional co-operation, which is largely a Norwegian concept. In practical terms, institutional co-operation involves direct co-operation between a Norwegian government agency (in the energy sector, this could be the Norwegian Petroleum Directorate or the Norwegian Water Resources and Energy Directorate) and a similar institution in a developing country. This is a way of ensuring that the whole range of issues related to resource management is covered.

In 2002, the Norwegian Investment Fund for Developing Countries (NORFUND), which is fully owned by the Norwegian Government, joined forces with the Norwegian power company Statkraft to invest in renewable energy in developing countries. The aim of the resulting joint venture, Statkraft NORFUND Power Invest AS (SN Power), is to develop, own and operate small, ecofriendly power plants in developing countries. This venture is part of the Government's follow-up of the Johannesburg summit, which emphasised the importance of access to renewable energy. As an industrial investor with a broad interface with Norwegian expertise and know-how, SN Power can make an important contribution towards increasing the supply of renewable energy and generally to strengthening environmentally sound energy systems in developing countries.