



# Energy Efficiency Profile : Norway

October 2008

## Energy Efficiency Trends

### Overview

In the period 1990-2006 the energy efficiency bottom-up index for the whole economy (ODEX) decreased by 13 % (11% for the EU since 1997). The improvement has been greatest in the transport and household sectors, while the industry sector has a smaller increase in efficiency.

### Industry

The efficiency in the industrial sector (measured at the level of 10 branches - in terms of energy used per production index or per ton - and aggregated to the whole sector) has improved by 6 % in the period. Norway has had a strong growth in chemical industry, especially until 2000, increasing the energy consumption more than the production index. After 2000 part of the energy intensive basic chemical industry has decreased the production, resulting in improved energy efficiency. The decrease of efficiency in the chemical industry contributes most negatively to the total energy efficiency in industry while the production of primary metals (mainly aluminium and ferroalloys) has a positive development of 20 %. The pulp and paper industry also shows an increase in energy efficiency from 1990 to 2006, by 13 %.

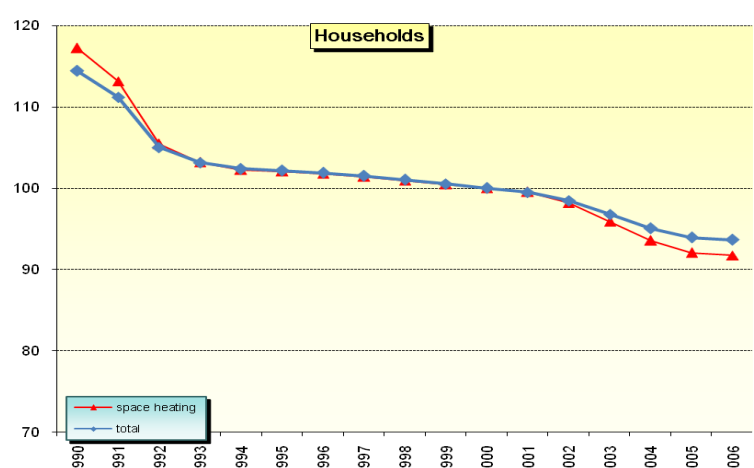
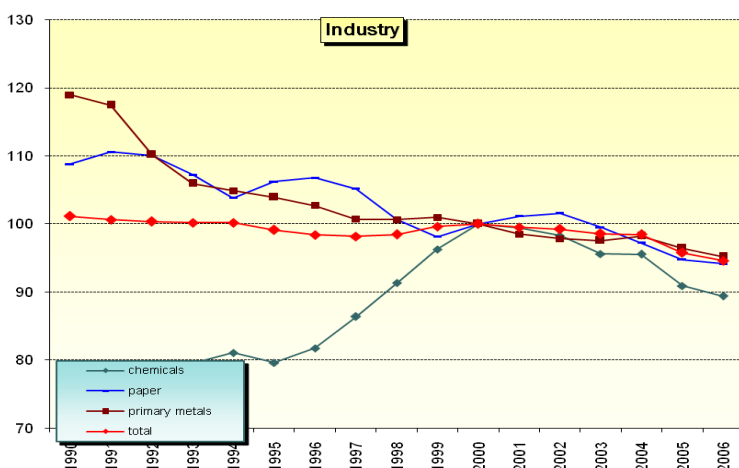
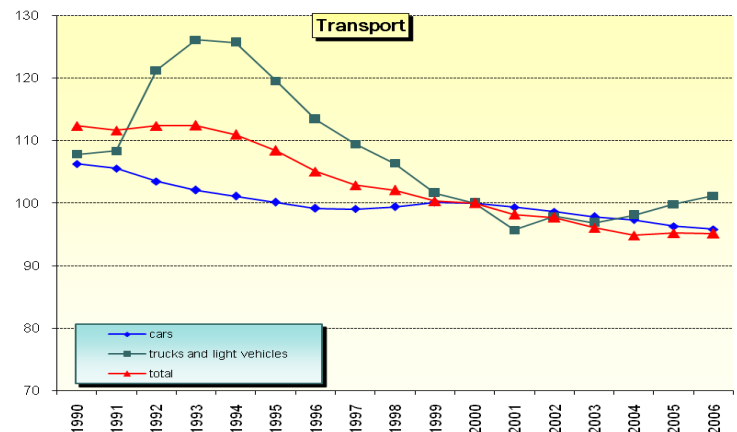
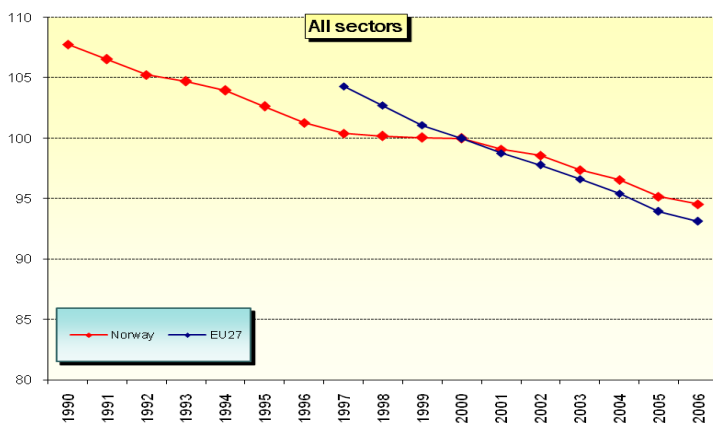
### Households

Between 1990 and 2006, the household sector as a whole had an improvement of energy efficiency by 21 %. The household energy efficiency index is calculated based on energy use for space heating per m<sup>2</sup> and water heating per dwelling. On the whole, the climate corrected energy consumption of the household sector has been stabilizing since the mid 1990s. The unit consumption per square meter and corrected for climate changes, has decreased as well as the energy consumption per dwelling and per capita.

### Transport

In 2006, the energy efficiency index of the transport sector improved by 15 % compared to the base year 1990. This development is partly caused by the efficiency improvements in the car park as a consequence of the penetration of new, more efficient cars (measured by a specific consumption in l/km) and the dominating role of cars within the transport sector. Unit consumption of trucks and light duty vehicles grew during the early 1990s, while it has decreased after that. Air transport is the third most important transport mode and there has been a large decrease in energy use per passenger travelling by air.

Energy efficiency index, base 100=2000



# Energy Efficiency Policy Measures

## Institutions and programmes

The alteration to a more environmental friendly energy production and use in Norway is since 2002 managed by Enova SF. Enova is a public enterprise for promoting energy savings, new renewables and environmentally friendly natural gas solutions which is fully owned by the Government of Norway, represented by the Ministry of Petroleum and Energy. Enova's main mission is to contribute to environmentally sound and rational use and production of energy, relying on financial instruments and incentives to stimulate market actors and mechanisms to achieve national energy policy goals.

Alteration of energy use and production is financed through the Energy Fund. The budget in 2007 was 1277 mill. NOK (160 mill. €). The Energy Fund is primarily financed through a surcharge on the grid tariff for tapping power from the distribution grid (1 øre/kWh).

## Industry

Enova is working to boost the competitiveness of Norwegian industry through environmentally friendly and efficient energy use. Companies that have projects with total potential energy results of more than 0.5 GWh can apply for investment support. Projects that can be supported are energy-efficient solutions or processes, measures for energy recovery or use of waste heat conversion to renewable energy sources. The maximum grant level is 20 % of approved project costs.

The companies have to report energy consumption and production figures to Enova at least five years after the project is finished. As a part of the program, Enova gathers energy consumption and production figures in a database. The companies have to once a year report their figures on a web-based reporting scheme. Enova calculates specific energy consumption for different industry sectors and presents the anonymous data on web. These benchmarking figures may be used to compare the company with other similar companies or with their own historical figures (see <http://www.enova.no/industrinettverk/>).

## Households, Services

Enova has a helpline, giving energy savings advices free of charge or distributing information material etc. There is also a special information program for children from 6 to 15 years old, with books, website, networks, competitions etc. Enova SF has developed a programme called "Regnmakerne" that is approaching children and youths to become more aware of energy use and its environmental impacts. A "regnmaker" is a person that is particularly interested in decreasing people's energy use, basically use resources as wind-, water- and solar energy and is engaged in environmental aspects on earth.

Private and public building owners can apply for grants for additional costs in planning, implementation and/or investments in energy efficient buildings. The grant level is normally 0.2-0.50 NOK/kWh (0.02-0.06 €/kWh) saved or produced energy. The Housing Bank administers various loan and grant schemes for residential energy efficiency measures.

Heat production from biomass, waste heat and heat pumps may be supported in order to make the projects profitable. There are also support schemes for biomass processing, heat distribution and for other renewable energy sources.

## Transport

The government considers cost-efficiency to be essential in regulating the environmental impact of transport. The duties on petrol and diesel, as well as the registration tax on vehicles, are high. Road pricing is also in use in order to finance road infrastructure and/or to reduce traffic in cities.

## Energy prices and taxes

The electricity tax in Norway has been very low in a European perspective (13 €/MWh from 1 January 2007) while mobile energy use is heavily taxed. The CO<sub>2</sub> tax is currently the most important instrument to reduce emissions of greenhouse gases. From 1 January 2005 a Norwegian emission trading system was adopted.

## Selected Energy Efficiency Measures

Sectors	Title of Measure	Since	Energy saved
Industry, buildings	Energy fund	2002	10 TWh <sup>1</sup>
Households	Grants to electricity savings in households 2003	2003	0.1 TWh
Households	"Regnmakerne"	2003	
Industry	Norwegian industrial energy efficiency network	1989	0.7 TWh <sup>3</sup>
Buildings	Norwegian building network	1996	0.7 TWh <sup>4</sup>
Transport	Public transport packages	1996	

<sup>1</sup> Based on supported projects in 2001-2007

<sup>2</sup> In the period 1995-2000

<sup>3</sup> In the period 2002-2006

<sup>4</sup> In the period 1996-2002