



Energy Efficiency Profile: Germany

Energy Efficiency Trends

July 2011

Overview

In the period 1991-2008, the energy efficiency index for the whole economy (ODEX) in Germany decreased by 26 %, which is equivalent to an energy efficiency improvement of 1.4 %/year on average. Since 2000, however, the efficiency improvement in Germany slowed down. Whereas between 1991 and 2000, a continuous decrease by 1.7 %/year could be observed, which was above the EU average, the decrease in the period 2000-2008 only amounted to 1.1%/year, and more or less followed the EU average.

Industry

The main reason for the slowing down of the energy efficiency improvement since 2000 was the reversal of the energy efficiency development in the industrial sector. During the 1990s, the energy efficiency in industry measured by the industrial ODEX progressed by about 24 %, which was at least partly due to the breakdown of industry in Eastern Germany in the first half of the 1990s. Since 2001, however, the energy efficiency improvement in some branches slowed down or even turned back, especially in the energy-intensive steel industry. Since 2004, however, energy efficiency in industry improved again in the same order of magnitude as during the 1990s.

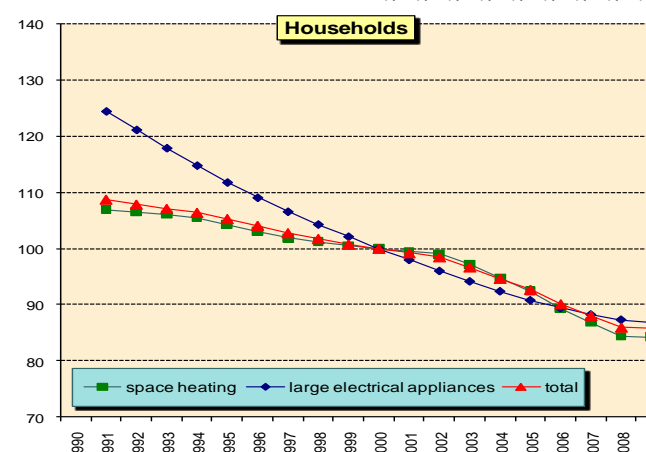
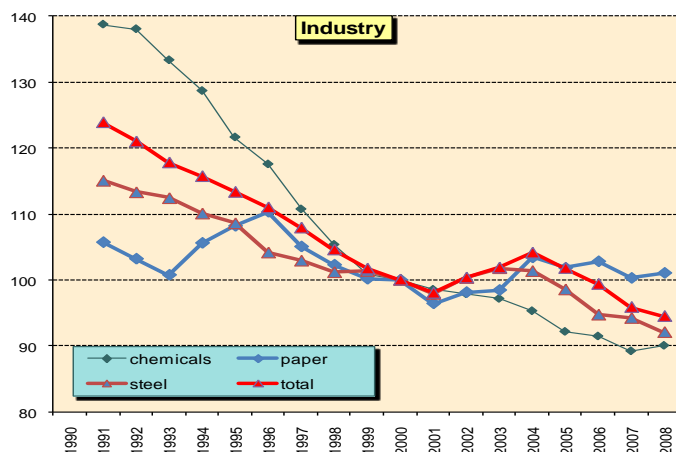
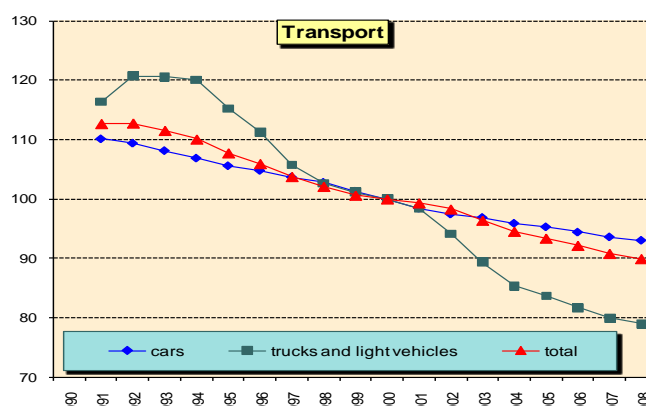
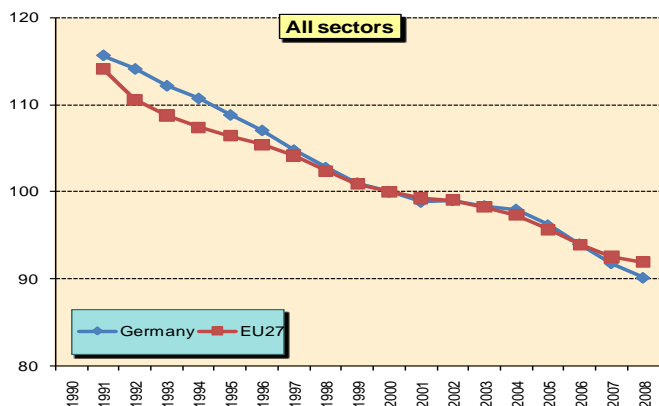
Households

Between 1991 and 2009, the technical ODEX in the household sector as a whole decreased by about 23 % or almost 1.4 %/year. Energy efficiency both improved for electrical appliances and space heating. In contrast to the development at the level of the whole economy, the efficiency improvement sped up since 2002. In 2009, however, a stagnation could be observed.

Transport

In 2008, the energy efficiency index of transport improved by 23 % compared to 1991. Efficiency improvements in the car stock as a consequence of the penetration of new, more efficient cars (measured by a specific consumption in l/km) and a continuous trend to diesel cars, contributed steadily to this development. Unit consumption of trucks and light duty vehicles grew until the mid 1990s, but afterwards, it also contributed to the observed efficiency gains in transport, especially during 2001-2004. The contribution of the other transport modes (air, train) and vehicle types (buses, motorcycles) is less important due to their small shares in consumption. Modal shift had therefore a comparatively small impact on transport energy consumption.

Energy efficiency index (base 100=2000)*



*All indicators measured as a three-year moving average
Source ODYSSEE For more information : <http://www.odyssee-indicators.org/>

Energy Efficiency Policy measures

Institutions and programmes

On 28 September 2010, the German Government adopted the “**Energy Concept for an Environmentally Sound, Reliable and Affordable Energy Supply**” (www.bmwi.de; www.bmu.de). The aim was to develop and implement an overall strategy for the period up to 2050. Among the nine fields of action (among others the expansion of renewable energies, grids and storage capacities and the limited extension of the operation live of existing nuclear power plants by an average of 12 years), energy efficiency was seen as a key issue, since the Energy Concept is based on a dual strategy: reduction of energy demand by significantly increasing energy efficiency and covering the remaining energy demand largely by renewables. Nuclear energy was originally seen as a bridging technology. As a consequence of the nuclear disaster in Fukushima on 11 March 2011, the German Government has rethought the planned prolongation of the operation life of nuclear power plants and decided on a phase-out of nuclear energy until end of 2022.

With regard to energy efficiency, the Energy Concept from September 2010 includes both relatively ambitious targets and specific measures for achieving these targets. At the level of the whole economy, primary energy consumption shall be reduced by 20% until 2020 and by 50% until 2050, both compared to 2008. Electricity consumption is planned to be cut by 10 % until 2020 and by 25 % until 2050, again compared with 2008. In addition, the following sectoral energy efficiency targets have been set in the Energy Concept: for buildings a doubling of the building renovation rate from about 1 % to 2 % and a reduction of the heating requirements by 20% until 2020 and by 2050 a reduction of the primary energy demand by 80% for transport a reduction in final consumption by about 10% by 2020 and 40% by 2050, in this case compared to 2005.

With the decisions of the Federal Government from June 6th, 2011¹ and the decisions of the Bundesrat from July 8th, 2011², important cornerstones for future energy policy as a consequence of the nuclear disaster in Fukushima were laid down. In the following, some important measures from the Energy Concept and the decisions from June and July 2011 referring to an enhancement of energy efficiency and a reduction of greenhouse gas emissions are shortly described by sector.

Industry, tertiary and private consumers

For the first time, a special energy efficiency fund will be established and financing for the existing National Climate Initiative will be significantly increased. Both initiatives shall initiate important efficiency measures at all levels - municipalities, industry, SMEs and consumers. With regard to product labeling and standards, Germany is advocating ambitious standards at EU level and a transparent labeling for cars, products and buildings. A “White Certificates” pilot project is announced in cooperation with industrial associations. In industry, a wider spread of energy management systems and energy audits which will help industry to better identify and tap its efficiency potential, is planned. In addition, successful financial support programmes especially for small and medium-sized companies shall be extended.

Buildings

The building sector is regarded as the key to greater energy efficiency. In this sector, the following measures are planned: inclusion of the climate neutral building standard, to be met by new buildings by 2020, in the Energy Saving Ordinance in 2012; developing of a renovation roadmap for existing buildings which starts in 2020; ensuring better funding for the CO₂ building rehabilitation programme to support efficiency measures and assessment whether a budget-independent financing of building refurbishment programmes (e.g. by White Certificates) from 2015 is possible; increasing the market incentive programme for the use of renewable energies for heat generation in buildings; launching a new support scheme “performance-enhancing urban rehabilitation”. The proposal of the Federal Government for a tax deductibility of building renovation was initially refused by the Bundesrat.

Transport and Mobility

In the transport sector, a strong focus is on Germany’s electric mobility strategy, which aims to have 1 million electric vehicles on road until 2020 and 6 million until 2030. At the European level, the German Government is advocating for ambitious CO₂ limit values for all classes of vehicles. The German Government is also taking steps to foster a higher share of vehicles that run on natural gases and to increase the share of sustainably produced biofuels. A further developing of the emission-based vehicle tax and the HGV toll in order to achieve a greater reduction of greenhouse gases is planned, too.

Impact evaluation of selected measures

Sector addressed	Titel of the measure	CO ₂ Reduction (Mt) in 2030 (compared to base year 2005)
Power sector	Extension of electricity generation from renewable energy sources	36
Power sector, industry	Revision of the EU emission trading scheme (EU-ETS)	15
Industry	Incorporation of industrial N ₂ O emissions into the EU-ETS	40
Transport	Introduction of mandatory admixing for fuels	11
Buildings	KfW CO ₂ building refurbishment programme	12
Households, tertiary, industry	Electricity savings resulting from various measures	7
Buildings	Energy Savings Ordinance	7
Transport	Reduction in car fleet consumption as part of the EU CO ₂ strategy	6
Buildings	Market incentive programmes for biomass and solar power	5

Source: Oeko Institute et al.: Policy Scenarios for Climate Protection V. Berlin 2009 (With Measures Scenario). Link: <http://www.uba.de>.



¹ <http://www.bmu.de/energie/wende/doc/47465.php>; <http://www.bmu.de/energie/wende/doc/47467.php>

² http://www.bundesrat.de/clin_161/nn_8336/DE/parlamentsmaterial/plenarprotokolle/plpr-node.html?__nnn=true