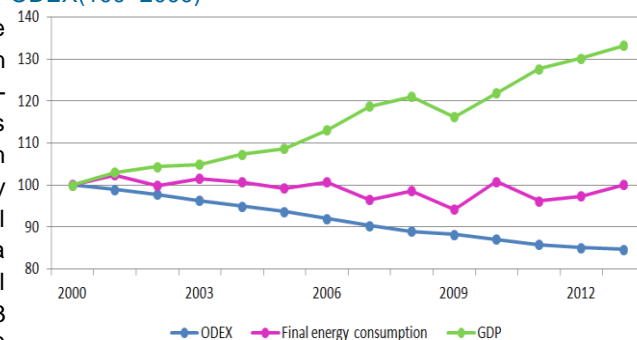


Energy Efficiency Trends

Overview

Over the period 2000-2013, the energy efficiency index for the whole economy (ODEX) decreased continuously, which is equivalent to an energy efficiency improvement of 1.2 %/year. The ODEX is a re-aggregated energy efficiency indicator first calculated at the level of sectors and then re-aggregated to the whole economy. It is cleaned from temperature, structural, and behavioural changes as well as from capacity effects as occurring in an economic crisis. Therefore, it reflects a technical efficiency improvement. The total final energy consumption showed a slightly decreasing trend since 2000 who reversed in 2011, so that the total final energy consumption is on its base level in 2013. The increase in 2013 was also due to the cold winter. On the whole, the development since 2000 shows a clear decoupling of energy consumption and GDP.

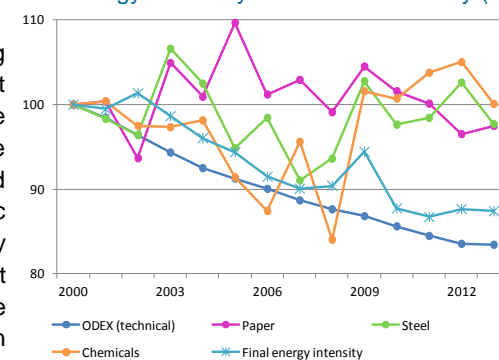
Energy consumption, GDP and energy efficiency index ODEX(100=2000)



Industry

The technical ODEX calculated for industry also showed a decreasing trend since 2000. With around 1.3%/a, the energy efficiency improvement was nearly equivalent to the improvement of the whole economy. The energy intensity of industry, i.e. the final energy consumption per value added, only decreased by 1.0%/a on average between 2000 and 2013 and increased in 2009. This increase was mainly caused by the economic recession. It reflects the fact that energy consumption does not fully decrease in proportion to activity due to some production-independent components. This effect was more pronounced in some energy-intensive industries (as e.g. steel, paper and chemicals) where unit consumption showed much more fluctuations than at the level of the whole industry.

Main energy efficiency indicators in industry (100=2000)

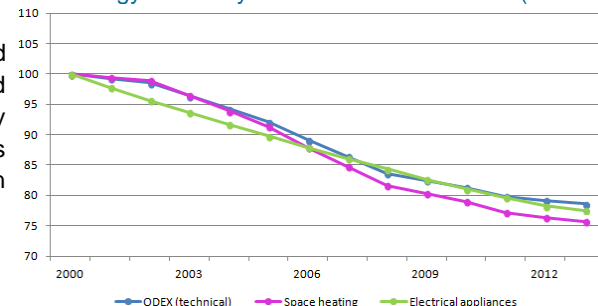


Chemicals : toe per unit of production index; Paper, steel: toe per tonne; final intensity: energy consumption per value added

Households

Between 2000 and 2013, the technical ODEX in the household improved by 1.7%/a. This means that the household sector contributed disproportionately to the energy efficiency progress observed in Germany during that period. Energy efficiency both improved for electrical appliances and space heating. Since 2010, however, the decrease in unit consumption for space heating per m² slowed down in Germany.

Main energy efficiency indicators in households (100=2000)

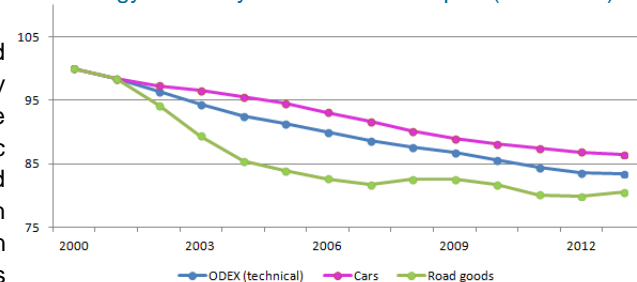


Space heating : koe per m²; large electrical appliances: kWh per dwelling

Transport

In the period 2000-2013, the energy efficiency index of transport improved by 1.3%/a, i.e. at the same rate as the ODEX for the whole economy. 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. The development for trucks was less smooth and also showed periods of increasing unit consumption. The contribution of the other transport modes (air, train, buses, and motorcycles) is less important due to their small shares in consumption. Modal shift had a comparatively small impact on transport energy consumption in Germany.

Main energy efficiency indicators in transport (100=2000)



Cars: litres per 100 km; Road traffic of goods (trucks): koe per tonne-km

Energy Efficiency Policy

Institutional and energy efficiency targets:

With its Energy Concept from September 2010 and the decisions from summer 2011, Germany initiated a far-reaching transformation of its energy system, the so-called “Energiewende”. Alongside intensifying the use of renewable energies, reducing energy consumption by increasing energy efficiency is a key pillar of the Energiewende. The Energy Concept also includes ambitious energy efficiency targets for Germany: primary energy consumption shall be reduced by 20% until 2020 and by 50% until 2050. Electricity consumption is planned to be cut by 10 % until 2020 and by 25 % until 2050 (all compared with 2008). However, a remaining shortfall to meeting the primary energy target in 2020 was estimated to be around 10 to 13% based on current forecasts and an extrapolation of the statistical development of primary energy consumption observed up to 2013. This is equivalent to a decrease in primary energy consumption of between 1440 and 1870 PJ which is necessary to reach the 2020 target. In order to fill this gap, the German Federal Ministry for Economic Affairs and Energy (BMWi) presented the “National Action Plan on Energy Efficiency” (NAPE) in early December 2014. The NAPE includes new

and further developed policy measures to increase energy efficiency in buildings, industry and the tertiary sector. The highest contributions to energy and CO₂ savings are expected from a newly introduced competitive tendering scheme for energy efficiency and the establishment of up to 500 energy efficiency networks in industry.

At the same time, the German Federal Ministry for the Environment, Nature Conservation, Buildings and Nuclear Safety (BMUB) presented a “Climate Action Programme 2020” which includes – among others - some further policy measures for the transport sector. The NAPE measures, together with the transport measures, are expected to lower primary energy consumption by 500 to 620 PJ by 2020. This means that this package of measures, most of which are planned to start in the course of 2015, cannot completely close the gap to the primary energy target, but they do make a substantial contribution to doing so. However, additional, substantial contributions have to come from the energy sector, which is also considered in the Climate Action Programme 2020.

Main energy efficiency policy measures and their impacts

Sector	Key policy measures of the NAPE and the Climate Action Programme 2020	Impacts		
		Final energy [PJ]	Primary energy [PJ]	CO ₂ emissions [Mt CO _{2eq.}]
Cross-sectoral	Introduction of a competitive tendering scheme for energy efficiency	10.7-21.5	25.7-51.6	1.5-3.1
	Support of Energy Performance Contracting	3.2	5.4	0.3
Industry & Tertiary	Energy Efficiency Networks Initiative	50.0	75.0	5.0
	Upgrading the KfW efficiency programme	10.9	29.4	2.0
	Obligation to perform energy audits for non-SMEs (implementation of Art. 8 EED)	33.3	50.5	3.4
Buildings	Upgrading and increased funding of the CO ₂ Building Renovation Programme	9.6	12.4	0.7
	Energy saving legislation	11.6	13.5	0.7
Appliances & Products	National Top Runner Initiative	15.8	37.9	2.3
	National Energy-efficiency Label for Old Heating Installations	8.4	10.0	0.7
Transport	Extension of HGV toll to all vehicles >7.5 t	4.2-9.8	4.6-10.8	0.3-0.7
	Differentiation of HGV tolls based on vehicles energy consumption	21.0-32.2	23.1-35.4	1.5-2.3
	Strengthening of public transport	9.8-14.0	10.8-15.4	0.7-1.0

Sources: <http://www.bmwi.de/DE/Mediathek/publikationen,did=672756.html>;

<http://www.bmub.bund.de/en/topics/climate-energy/climate/national-climate-policy/climate-action-programme/>