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# Assessment of climate change policies in the context of the European Semester

## Country Report: Germany



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The report provides an overview of current emission trends and progress towards targets as well as policy developments that took place over the period from February 2013 to November 2013.

Please feel free to provide any comments or suggestions to the authors through the contacts listed above.

## Short summary

**Background:** Germany has committed to ambitious emission reduction targets, is phasing out nuclear energy and has been actively promoting a shift to renewable energy. The 2010 Energy Concept stipulates targets also for other sectors, and a range of policy measures are in place to enhance energy efficiency in buildings, to promote electric mobility and the expansion of the electricity grid, for example. However, Germany remains reliant on fossil fuels for a significant share of its energy consumption, including coal and lignite for electricity (partially due to the existence of domestic sources).

**Non-ETS emission reduction target:** The German 2020 target is -14% (compared to 2005) and emissions were already reduced by 9% between 2005 and 2011. According to the latest national projections submitted to the Commission and taking into account existing measures, the target is, however, expected to be missed by a small margin of one percentage point: -13% in 2020 compared to 2005.

### Key indicators 2011:

GHG emissions	DE	EU
ESD EU 2020 GHG target (comp. 2005)	-14%	
ESD GHG emissions in 2011 (comp.2005)	-9%	-9%
Total GHG emissions 2012 (comp.2005)	-7%	-12%
GHG emissions/capita (tCO <sub>2</sub> eq)	11.2	9.0

→ **24% higher** per capita emissions than EU average

GHG emissions per sector	DE	EU
Energy/power industry sector	40%	33%
Transport	17%	20%
Industry (incl. industrial processes)	20%	20%
Agriculture (incl. forestry & fishery)	8%	12%
Residential & Commercial	13%	12%
Waste & others	2%	3%

→ **Energy/power industry** sector followed by Industry, Transport and Residential&Commercial

Energy	DE	EU
EU 2020 RES target	+18%	
Primary energy consumption/capita (toe)	3.9	3.4
Energy intensity (kgoe/1000 €)	129	144
Energy to trade balance (% of GDP)	-3.7%	-3.2%

→ **15% higher** per capita consumption, **11% lower** energy intensity, contribution of energy to trade balance slightly above EU average

Taxes	DE	EU
Share of environmental taxes (% of GDP)	2.3%	2.4%
Implicit tax rate on energy (€/toe)	197	184

→ **Slightly lower** share of environmental taxes and **7% higher** implicit tax rate on energy than EU average.

**Key policy development in 2013:** The coalition agreement that was negotiated after the September 2013 elections outlines the broad direction of policies of the new government, including climate and energy. The reform of the Renewable Energy Sources Act forms a centrepiece of the agreement, but specifics are still to be decided. Policy developments include the adjustment of energy efficiency standards for new buildings, the publication of a mobility and fuel strategy and the adoption of a Federal Plan for the transmission grid. However, due to the run-up period to the elections, not many changes were made in climate and energy related policies in 2013.

**Key challenges:** Consumption per dwelling is quite high - Germany is part of the bottom ten within the EU - while at the same time Germany has committed to ambitious energy efficiency targets in the building sector. While the funding schemes for new and existing buildings offered through Germany's national promotional bank, the KfW have provided good results, investments still need to increase significantly. The last amendment of minimum energy efficiency standards for new buildings in October 2013 was a first step but insufficient to get on the right path for achieving the ambitious targets.

In the transport sector, emissions increased from 2011 to 2012 although Germany plans to reduce emissions by 40% by 2050. The mobility and fuel strategy, published in June 2013, mainly focuses on fuel diversification and alternative propulsion technologies but fails to provide an overarching mobility strategy. Also the taxation schemes for transport, specifically the company car taxation and excise duties on transport fuels, do not trigger emission reductions at a sufficient level.

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## I Background on climate and energy policies

Germany is the largest GHG emitter in the EU and has committed to ambitious emission reductions that go beyond the target set by the EU: the Integrated Energy and Climate Package of 2007 and 2008 stipulated a 40% emission reduction target by 2020, compared to 1990 levels. In 2010, the government published the Energy Concept, which provided a long-term strategy for German energy policy and sets a path for a reduction of GHG emissions by at least 80% until 2050 (BMU and BMWi 2010). Its principal objective is to ensure the provision of environmentally friendly, reliable, and affordable energy supply while turning Germany into one of the greenest economies in the world. Nuclear energy was stipulated as a bridging technology at that time and an extension of the operating lifetime was agreed after the phase-out agreements of 2000. However, as a reaction to the Fukushima disaster, the government decided again to phase out nuclear energy by 2022 and updated the Energy Concept accordingly to reflect the accelerated shift to an efficient and renewable energy system (“Energiewende”).

The results of the parliamentary elections in Germany on 22 September 2013 left the CDU/CSU as the main winner gaining 41.5 % of the votes followed by SPD (25.7%), Die Linke (8.6%) and the Green Party (8.4%). Chancellor Merkel’s former coalition partner FDP (liberal party) failed to re-enter the parliament. The new government is a grand coalition formed by CDU/CSU and SPD. Their coalition agreement (CDU/CSU/SPD 2013) was signed on 27 November 2013. The “Energiewende” was a heavily discussed issue during the whole negotiation process. The new government intends to broadly reform the Renewable Energy Act in order to limit the costs of the “Energiewende” for final consumers and to countervail possible overcompensation of some technologies. Regarding instruments on improving energy efficiency, the coalition agreement remained vague and lacks statements on the financial resources that should be allocated to this policy field during the new legislation period. The coalition agreement also defined new competencies for the different ministries, for example, centralising the energy portfolio under the roof of the Ministry for Economic Affairs and Energy (BMWi) and thus largely ending the split of political responsibility on energy issues between the former Ministry for Economy and the Ministry for the Environment (BMU).

More specifically, the 2010 Energy Concept sets the following targets:

**Table I: Climate and energy targets as outlined in the Energy Concept**

Targets	2020	2030	2050
GHG emissions (compared to 1990)	-40%	-55%	-80% - -95%
Renewable Energies			
Share of total energy consumption	18%	30%	60%
Share of total electricity consumption	min. 35%	min. 50%	min. 80%
Energy Efficiency			
Primary energy consumption (compared to 2008)			-50%
Energy productivity	+2.1%/yr (2008-2050)		

Source: Bundesregierung 2011; BMU/BMWi 2012

Next to these targets, the 2010 Energy Concept also outlines specific targets for the building sector (20% reduction of heat demand by 2020; -80% reduction of primary

energy demand by 2050) and for the transport sector (40% reduction of the energy consumption by 2050 compared to 2005) (Bundesregierung 2011). Several legislative acts have been agreed on in 2011 to implement the Energy Concept. In December 2012, the government presented the first annual monitoring report on the progress of the “Energiewende” (BMU/BMWi 2012) including an advisory report by an expert commission giving additional information and outlining the progress and main challenges (Löschel et al. 2012).

As given in the table, the German government is aiming at achieving an emission reduction of -40% by 2020. However, from 2011 to 2012 total GHG emissions increased by 1.6% mainly due to rising emissions from electricity generation: new lignite-fired capacities came into operation and hard coal-fired power generation increased as well as the share of renewable energies - while nuclear-fired and natural gas-fired power generation decreased in 2012 (UBA 2013). These emissions are covered under the EU ETS – a mechanism that should help to shift power generation towards less CO<sub>2</sub> intensive power generation; however, there is currently no functioning price signal as to trigger the fuel switch. The new government will have to clarify if they support corrective action on EU level in this respect which is demanded e.g. from the expert commission supporting the monitoring process (Löschel et al. 2012).

The low price of emission certificates also affects the revenues from auctioning which are used to finance climate and energy related measures through the Climate and Energy Fund (<sup>1</sup>). The budget of the fund for 2013 totals now nearly €1.4 million – only about 70% of the expected budget (BMF 2013). The fund provides finances e.g. for the National Climate Initiative (<sup>2</sup>), for research and development of renewable energies and storage system as well as for energy efficiency measures and electric mobility.

According to OECD (2012), Germany is a leader in green technologies and one of the largest producers of environmental goods and services by successfully “turning environmental challenges in to a source of growth”. The German *Energiewende* explicitly stimulates the greening of the economy by supporting renewable energy, energy efficiency, and resource efficiency. According to a 2008 study commissioned by the Federal Ministry of Environment (BMU), 1.8 million people work in the environmental sector, making up 4.5% of total employment. The study expects that the sector will provide 500,000 additional jobs by 2020 and possibly even 800,000 by 2030 (Jochem et al. 2008). In 2011, the green economy market generated 11 % of German GDP (BMU 2013). In order to speed-up the transition to a green economy, the BMU and the Federal Ministry of Education and Research (BMBF) launched a joint initiative in September 2012, which started with a conference that brought together 450 representatives of science, business, politics, and society (BMBF & BMU 2012).

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<sup>1</sup> For more details see (only in German): <http://www.bundesregierung.de/Content/DE/Artikel/2011/06/2011-06-06-energie-klimafonds.html>

<sup>2</sup> For more details see (only in German): <http://www.klimaschutz.de/>

## 2 GHG projections

### Background information

Germany is the biggest emitter of GHG emissions in the EU and on the 7<sup>th</sup> position when it comes to GHG emission per capita. In 2011, Germany emitted 917 Mt CO<sub>2</sub>eq (UNFCCC inventory 2011), which was 26.7% less than in 1990. Almost 40% of these emissions stem from energy supply. Emissions in that sector have been reduced significantly by almost 20% between 1990 and 2010, reflecting the increased use of renewable energies and natural gas. However, as already stated above, emissions from electricity supply increased again from 2011 to 2012 mainly due to a rising coal-fired electricity generation (UBA 2013). Emissions from energy use decreased by more than 30% from 1990 to 2011, mainly as a result of energy efficiency measures and improved insulation of buildings in Eastern Germany. Germany is also one of the few Member States in the EU where emissions from transport have not increased between 1990 and 2011; rather, transport emissions have decreased by 6% due to higher fuel prices, road tolls, the eco tax, and the increased use of biofuels. Emissions from industrial processes decreased by 23% over the same period of time and emissions from agriculture decreased by 18%, due to decreasing production levels and shrinking numbers of livestock (EEA 2012c, UNFCCC 2012). From 2011 to 2012, total GHG emissions are expected to rise again due to higher emissions from energy supply and use and amounted to 931 Mt CO<sub>2</sub>eq. Emissions from industrial processes and agriculture are expected to further be reduced (EEA 2013b).

### Progress on GHG target

There are two sets of targets to evaluate: 1) the Kyoto Protocol targets for the period 2008-12 (which has just ended) and 2) the 2020 targets for emissions not covered by the EU ETS.

Under the Kyoto-Protocol the emission reduction target for Germany for the period 2008-2012 has been set to minus 21 % based on 1990 for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O and on 1995 for F-gases. An evaluation of the latest complete set of greenhouse gas data (for the year 2011; there is only preliminary data for 2012) shows that Germany's emissions have decreased on average by 26% from the Kyoto base year to 2011 (EEA 2013a). Therefore, Germany is on track to meeting its Kyoto target through domestic emissions reductions directly.

By 2020, Germany needs to reduce its emissions not covered by the EU ETS by 14% compared to 2005, according to the Effort Sharing Decision (ESD) <sup>(3)</sup>. The latest data for 2012 suggests that Germany is on track to meet the Annual Emissions Allocation <sup>(4)</sup> for the year 2013. However, by 2020 Germany might fail to meet its target: National projections (EEA 2013b) show that the country will miss its 2020 target by about

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<sup>3</sup> Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.

<sup>4</sup> Commission decision of 26 March 2013 on determining Member States' annual emission allocations for the period from 2013 to 2020 pursuant to Decision No 406/2009/EC of the European Parliament and of the Council. Online available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:090:0106:0110:EN:PDF>

0.7 percentage points with existing measures but will meet the target with additional measures (see Table 2).

**Table 2: GHG emission developments, ESD-targets and projections (in Mt CO<sub>2</sub>eq)**

	1990	2005	2010	2011	2012*	ESD target**		2020 Projections***	
						2013	2020	WEM	WAM
Total	1,250.3	997.9	943.5	916.5	931.1				
Non-ETS (% from 2005)		508.8	488.7	466.2	476.7 -6%	487.1 -4%	417.2 -14%	421 -13%	400 -18%
Energy supply (% share of total)	428.1 34%	378.9 38%	356.4 38%	354.3 39%					
Energy use (w/o transport) (% share of total)	385.3 31%	267.8 27%	266.5 28%	238.0 26%					
Transport (% share of total)	164.7 13%	161.8 16%	155.0 16%	157.2 17%					
Industrial processes (% share of total)	94.2 8%	78.8 8%	68.7 7%	69.3 8%					
Agriculture (% share of total)	88.0 7%	71.4 7%	68.4 7%	70.4 8%					

Source: UNFCCC inventories; EEA (2013b); Calculations provided by the EEA and own calculations.

\* proxies for 2012 emissions

\*\* The ESD target for 2013 and for 2020 refer to different scopes of the ETS: the 2013 target is compared with 2012 data and is therefore consistent with the scope of the ETS from 2008-2012; the 2020 target is compared to 2020 projections and is therefore consistent with the adjusted scope of the ETS from 2013-2020. 2005 non-ETS emissions for the scope of the ETS from 2013-2020 amounted to 485 Mt CO<sub>2</sub>eq.

\*\*\* Projections with existing measures (WEM) or with additional measures (WAM).

Legend for colour coding: green = target is being (over)achieved; orange = not on track to meet the target

Total greenhouse gas emissions (GHG) and shares of GHG do not include emissions and removals from LULUCF (carbon sinks) and emissions from international aviation and international maritime transport.

National projections of GHG emissions up to 2020 need to be prepared by the Member States in accordance with the EU Monitoring Mechanism <sup>(5)</sup> every two years, and the latest submission was due in 2013. The projections need to be prepared reflecting a scenario that estimates total GHG emissions reductions in line with policies and measures that have already been implemented (with existing measures, WEM), and an additional scenario that reflects developments with measures and policies that are in the planning phase (with additional measures, WAM) may also be submitted.

In the following two tables, these measures have been summarised with a focus on national measures and those EU instruments expected to reduce emissions the most. Please note that the table includes also measures that address GHG emissions covered under the ETS such as measures reducing emissions from electricity generation (e.g. feed-in tariffs). An update on the status of the policies and measures is included in order to assess the validity of the scenarios.

<sup>5</sup> Decision No 280/2004/EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol.

**Table 3: Existing and additional measures as stated in the 2013 GHG projections**

Existing Measures (only important national measures)		Status of policy in November 2013
Energy	Renewable Energy Source Act: Guaranteed feed-in tariffs and grid access	Still in place, but is to be reformed by the new government in 2014 (see Chap.4).
	Market Incentive Programme (Solar, Biomass, Heat pumps, Storage capacities): Incentives for building owners and investors	Still in place; funding was increased in 2012 (see Chap.4)
	Renewable Energies Heat Act (EEWärmeG): Building code which sets minimum standards for new buildings	Still in place, last amended in 2011
	Adjusted energy taxation for firms	Implemented
Energy Efficiency	KfW Incentives and grants	Support schemes for energetic rehabilitation of buildings are in place. For example support for first purchase of a new building or KfW Efficiency House 70, 55 or 40 or a comparable passive house is granted.
	Combined heat and power(CHP) Act: Bonus payments for feed-in of electricity from modernised CHP plants and new small CHP plants	Still in place; last amended in 2012
	Special fund for energy efficiency in SMEs: coupling of financial incentives for energy audits with low interest loans for investments in energy efficiency. Addressed to small and medium sized enterprises	In place. New directive was published on 22 July 2013. The Federal Office of Economics and Export Control (BAFA) administers the programme.
	Renewable energies Heat act (large appliances) (EEWärmeG)	From 2012 onwards the market incentive programme supports large solar thermal appliances with 50% of investment costs; large heat pumps receive support even in new buildings
	Energy efficiency ordinance 2009 (EnEV): Building code with 30% more ambitious standards	Last amendments passed in October 2013 and will enter into force on 1 May 2014 (see Chap.4).
Transport	Redistribution of Highway toll for heavy duty vehicles: Highway toll revision to account for CO <sub>2</sub> emissions	Toll was last revised in 2009; HDVs are categorised according to four emission classes; according to the coalition agreement, the new government intends to extend the toll to all federal roads (CDU/CSU/SPD 2013).
	Mandatory biofuel quotas	In place since 2007
	Mandatory efficiency standards for new cars	Implemented (EU Regulation)
	Introduction of CO <sub>2</sub> based car taxation	Implemented since July 2009, amended in 2010
	Extension of Highway toll for heavy duty vehicles	Since August 2012 toll is extended to four-lane federal highways

Source: Reporting of MS in accordance with Decision No 280/2004/EC about their GHG emission projections up to 2020, May 2013

Additional Measures (only important national measures)		Status of policy in November 2013
Energy	Renewable Energy Act regarding the further development of power-to-gas and heat storage	Planned for 2013. However, no legal drafts have been published.
Energy Efficiency	Extension of support programmes for SMEs: energy efficiency networks	Planned for 2014
	Common procurement of energy-efficient products	Planned for 2014
Transport	VAT for Aviation (LuftVStG)	Implemented in 2011. Federal Minister for Transport Mr. Ramsauer proposed to abolish this tax on flight tickets. This was still envisaged during coalition negotiations in the working group "transport", but was revoked in the coalition agreement (Airliners 2013).
	Funding programme for electric mobility (part II)	Planned for 2013. Financing guidelines were published in June 2013. Project proposals could be handed in until 23 August 2013.
	Regulation on CO2 from cars and vans: post-2020 targets	Planned for 2020
	Revision of fuel taxation	Planned for 2015
	Revision of taxation of company cars	Planned for 2015
Other non-ETS sectors	Full SF6 substitution in Magnesium production	Planned for 2015
	HFC substitution in many application sectors	Planned for 2015

Source: Reporting of MS in accordance with Decision No 280/2004/EC about their GHG emission projections up to 2020, May 2013

According to the current state of implementation, the existing measures as referred to in the WEM scenario are in place. The majority of the additional measures are still in the planning stage and some will be implemented only in the upcoming years, such as a revision of the taxation system for company cars and fuel in general as well as the support for energy efficiency on the company level and of products. Overall, it seems likely that Germany is going to achieve its 2020 target if at least some of the additional measures are implemented.

### 3 Evaluation of National Reform Programme 2013 (NRP)

In April of each year, Member States are required to prepare their National Reform Programmes (NRPs), which outline the country's progress regarding the targets of the EU 2020 Strategy. The NRPs describe the country's national targets under the Strategy and contain a description of how the country intends to meet these targets. For climate change and energy, three headline targets exist: 1) the reduction of GHG emissions, 2) the increase of renewable energy generation, and 3) an increase in energy efficiency.

The German NRP 2013 mainly foresees actions in the fields of renewable energy including grid development, as well as actions to improve energy and resource efficiency. In the following table, the main policies and measures as outlined in the NRP of April 2013 <sup>(6)</sup> have been summarised, and their current status (implemented, amended, abolished, or expired) is given, with specifics on latest developments.

**Table 4: Main policies and measures as outlined in the NRP, April 2013**

<b>Building modernisation programme</b>	
Status as stated in the NRP	Approved
Status as per Nov 2013	Implemented
Description of policy or measure	Under the CO <sub>2</sub> Building Rehabilitation Programme KfW stimulates investment in energy efficiency measures by offering low-interest loans through various sub- programmes. Investments in e.g. building insulation, heating and energy-efficient water supply and sanitation systems of urban quarters, and the professional supervision of construction projects. The programmes are directed towards the construction of energy-efficient new buildings, renovation of residential properties, as well as the energy efficient refurbishment of public buildings.
<b>Advice on energy efficiency through advice centres</b>	
Status as stated in the NRP	Implemented
Status as per Nov 2013	In place
Description of policy or measure	The government offers advice to households on energy efficiency and saving potentials via 650 regional consumer centres. Appointments can be also made online or via a hotline. The consultation is carried out by a total of 400 independent and competent energy experts.
<b>Programme of investment grants to support investment in energy-efficient production processes that alleviate climate change</b>	
Status as stated in the NRP	Announced
Status as per Nov 2013	The Federal Ministry for the Economy currently runs a call for tenders for the implementation of this programme
Description of policy or measure	The programme is designed to supports the market launch of highly efficient horizontal technologies and energy-efficient production processes that alleviate climate change. The programme is directed towards small and medium-sized companies. The programme foresees investment support.

<sup>6</sup> All NRPs are available at: [http://ec.europa.eu/europe2020/making-it-happen/country-specific-recommendations/index\\_en.htm](http://ec.europa.eu/europe2020/making-it-happen/country-specific-recommendations/index_en.htm)

### Energy Check Programme

Status as stated in the NRP Launched in June 2012

Status as per Nov 2013 In place

Description of policy or measure

Energy checks are offered that are organised by regional consumer centres. According to information from the ministry, three different checks are offered. First, a basic check (€10) on energy consumption, heating and circulation. Second, a building check (€20) where an energy expert evaluates the efficiency of the heating system, the structure of the thermal insulation as well as assesses the suitability of the building for the installation of renewable energy systems. A third option is the heating value check during heating season (€30) examining the optimal regulation of gas or fuel oil-fired condensing boilers. Low income households receive the checks for free. The programme applies both to rented space and private property.

### Grid Development

Status as stated in the NRP Grid Development Plan approved by the Federal Network Agency in 2012

Status as per Nov 2013 Federal Requirements Plan Act was passed by the Bundestag on 25 April 2013. The Bundesrat adopted the plan on 7 June 2013.

Description of policy or measure

In order to ensure the sufficient supply of electricity and accounting for the increased production of electricity from renewable energy sources, the existing electricity grid needs to be optimized, strengthened and expanded. By amending the German Energy Act (EnWG) as well as passing the Grid Expansion Acceleration Act (NABEG) the government established a legal basis for expansion requirements of the transmission grid and streamlined the planning and approval processes for new power lines (particularly in case of cross border grid projects). Main instruments are the grid development plan (Netzentwicklungsplan) and the Federal Requirements Plan Act (Bundesbedarfsplan). Passed in spring 2013, the federal requirements plan contains in total 36 grid development projects. Information on the progress of the projects is provided by the federal network agency (Bundesnetzagentur).

### Establishment of a Market Transparency Authority for Power and Gas

Status as stated in the NRP The authority is to be launched in early 2013

Status as per Nov 2013

On 12 December 2012, the bill on a market transparency authority for power and gas entered into force. The authority is currently under construction and already monitors the compliance with the requirements of EU Regulation 1227/2011. By the end of 2014, the market transparency authority is expected to also record and evaluate all data on electricity and gas trading. This section is still to be established. The bill for a separate transparency authority for fuel entered into force in March 2013. The authority started a three month pilot operation phase in August 2013. After this period, the authority will continue operating on a regular basis (BMWi 2013c).

Description of policy or measure

A Market Transparency Authority for Power and Gas should be established at the Federal Network Agency and the Federal Antitrust Agency (Bundeskartellamt) should ensure transparent pricing. The bill also transposes EU Regulation 1227/2011 into German law.

**Implementation of the German Resource Efficiency Programme (ProgRes)**

Status as stated in the NRP Programme was adopted in February 2012

Status as per Nov 2013

In the framework of the programme various projects are under implementation. Resource efficiency is integrated in the operation and programmes of various federal ministries and agencies. A monitoring of resource productivity is done by the federal office for statistics. Compared to 1994 (reference year), resource productivity increased by 43.6 % in 2011. A progress report needs to be prepared by the federal government every four years.

Description of policy or measure

The programme provides a framework for existing measures and activities targeting resource efficiency such as the introduction of environmental management systems or the expansion of closed-loop systems. Resource productivity should be doubled by 2020 compared to 1994.

**Closed Substance Cycle and Waste Management Act (KrWG) (Kreislaufwirtschaftsgesetz)**

Status as stated in the NRP Act adopted in 2011

Status as per Nov 2013

In force since 01 June 2012. However, Germany falls short on the implementation of the 5-tier hierarchy of waste. The Act offers the opportunity to deviate from the waste hierarchy as it does not put material recovery over thermal recovery for waste with a calorific value of 11,000 kJ/kg. While German environmental NGOs, such as the NABU, criticise that this legal provision enable municipal waste management to use both bulky and industrial waste streams (both of which are not regulated with ordinances and both have high calorific values) to fill the capacities of municipal waste incineration plants, private waste management may use a similar argument to criticise that private waste management is prevented from business operation by municipal authorities who want to have their waste incineration plants' capacities fully exploited (Hirschnitz-Garbers and Lambert 2013).

Description of policy or measure

The bill transposes EU Directive 2008/98/EG into German law and updates German waste management law. Inter alia, 65% of residential waste and 70% of construction waste shall be recycled by 2020.

## 4 Policy development

This section covers significant developments made in key policy areas between February 2013 and November 2013. It does not attempt to describe every instrument in the given thematic area.

### Environmental Taxation

In Germany, the share of environmental tax revenues in overall tax revenues was at 5.82% in 2011, and therefore below the EU average. The same holds true for a comparison of these revenues with GDP, amounting to only 2.25% in 2011. Germany has no explicit carbon tax in place. However, Germany has a high implicit tax rate on energy, with a value of approximately EUR 196 per ton of oil equivalent in 2011. This is the 6th highest value among the EU MS. At the same time, Germany's economy exhibits relatively low energy intensity and was the 8th least intensive in the EU in 2010. Despite

the high implicit tax rate, the share of energy tax revenues in total tax revenues is thus relatively low (Eurostat 2013a). According to a paper by FÖS (2013), the relative importance of environmental taxes has been decreasing since 2004, mainly because fuel use decreased while income taxes increased.

The ecologic tax reform of 1999 aimed at encouraging environmentally positive behaviour change, such as the use of renewable energy or the reduction of energy consumption through tax regulation. The reform is summarised as “Ecotax” but contains the reform of different existing taxes, most importantly the mineral oil tax, and the introduction of a tax on electricity use (Bundesumweltamt 2011). The revenues are primarily used for financing pensions thus reducing the tax burden on labour. Further environmental taxes were introduced in 2011 on civil aviation and on nuclear fuel. In July 2013, then Federal Minister for Transport Peter Ramsauer proposed to abolish the tax on flight tickets (Tagesspiegel 2013). This was still envisaged during coalition negotiations in the working group “transport”, but was revoked in the coalition agreement of CDU/CSU and SPD signed in the end of November 2013. However, the German Association on Aviation (Bundesverband der Deutschen Luftverkehrswirtschaft – BDL) announced to continue its efforts aiming at abolishing the tax on flight tickets (airliners.de 2013).

The electricity and energy tax was partly reduced for energy-intensive industry until December 2012. The official argument behind this is to protect industry from disadvantages in international competitiveness. Additional tax relief was granted pursuant to a formula taking into account pension contributions. According to a 2012 Greenpeace study, these measures reduced the average electricity tax from 2.05 €/kWh to only 1.2 €/kWh (Greenpeace 2012). In December 2012, a law was adopted to prolong this top rate tax relief until 2022, amounting to annual tax savings of €2.3 bn. From 2015 on these tax advantages are, however, only granted if companies introduce energy management systems or alternative systems for small- and medium sized companies. For 2013 and 2014 interim regulations apply stipulating that companies need to prove that they started the implementation of an energy management system. In line with the EU-Commission recommendation (2003/361/EG) <sup>(7)</sup>, small and medium sized companies are eligible for tax advantage also if alternative energy efficient systems in accordance with DIN EN 16247-1 are employed (IHK Ulm 2013). Furthermore, the government requests the sector as a whole to improve energy efficiency by 1.3% annually between 2013 and 2015 and by 1.25% in 2016, when these rates will be reviewed <sup>(8)</sup>.

Moreover, German industry can benefit from state aid in accordance with Art. 10a of the EU-ETS Directive (2009/29/EC): In August 2013, the European Commission approved a German guideline allowing energy intensive industries to offset the costs from EU emissions trading by receiving compensation payments from the state (BMW 2013b) <sup>(9)</sup>.

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<sup>7</sup> Commission recommendation 6 May 2003 concerning the definition of micro, small and medium- sized enterprises (notified under document number C(2003) 1422) (Text with EEA relevance) (2003/361/EC).

<sup>8</sup> Gesetz zur Änderung des Energiesteuer- und des Stromsteuergesetzes sowie zur Änderung des Luftverkehrsteuergesetzes Gesetz vom 05.12.2012, Bundesgesetzblatt Teil I 2012 Nr. 57 11.12.2012 S. 2436

<sup>9</sup> Bekanntmachung zur Änderung der Richtlinie für Beihilfen für Unternehmen in Sektoren bzw. Teilsektoren, bei denen angenommen wird, dass angesichts der mit den EU-ETS-Zertifikaten verbundenen Kosten, die auf den Strompreis abgewälzt werden, ein erhebliches Risiko der Verlagerung von CO<sub>2</sub>-Emissionen besteht (Beihilfen für indirekte CO<sub>2</sub>-Kosten) Vom 23. Juli 2013

As of 1 January 2014, German companies eligible for this state aid will be able to retroactively apply for compensation payments for 2013.

### **Energy Efficiency**

Germany has committed to ambitious energy saving targets as specified in the Energy Concept (see also Chapter 1). As mentioned above, Germany's economy is the 6th least-energy-intensive economy in the EU, and the intensity declined considerably (-17%) from 2005 to 2011. The country's final energy consumption in 2011 also dropped approximately by 10% compared to 2005. This is a result of a slight decrease in the residential and transportation sector. In the time between 2010 and 2011 this development slowed down to a decrease of 5% (Eurostat 2013a).

The energy efficiency branch reports increasing turnovers underlining the economic potential and positive labour market implications of stimulating energy efficiency. According to a study by DENEFF (2013), the turnover amounts to € 146 bn in 2012 - an increase of 16% compared to 2011 (DENEFF 2013). Particularly, the boom is facilitated by increasing turnovers in the sectors building materials and construction installations, energy consultancy and building management. More than 800,000 jobs are connected to this branch (ibid.).

The expert commission supporting the monitoring of the energy transition (Löschel et al. 2012) argues that - besides some progress - speed and intensity of improvements need to be increased in particular in the building and transport sector (see also section below): in the building sector the need for action is related to effective measures addressing the existing buildings that shall be "climate neutral" by 2050. The OECD (2012) also states that the building sector still has a high saving potential, although strict regulations and incentive programmes are already under implementation. The Energy Saving Ordinance (EnEV) <sup>(10)</sup>, first introduced in 2002, sets minimum requirements for the energy performance of buildings and introduces energy performance certificates. The last amendment was passed in October 2013 and will enter into force on 1 May 2014. The amendments refer to new buildings only, increasing the energy efficiency requirements by 25% starting from 1 January 2016. In addition, by 2021, all new buildings need to fulfill the nearly energy neutral standard as defined by EU Energy Performance of Buildings Directive (Directive 2010/31/EU). For public buildings, this obligation applies already from 2019 onwards. Moreover, owners of houses are required to replace oil and gas heaters installed before 1 January 1985 or older than 30 years with modern heating systems until 2015. Provisions regarding the Energy Performance Certificates have been tightened. For example, it becomes compulsory to include energy performance data in housing advertisements (BMVBS 2013a).

However, even the BMVBS (2013c) states that the implemented measures to address energy efficiency in buildings are at present insufficient in order to reach the national target of reducing the primary energy demand <sup>(11)</sup> by 80% by 2050.

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<sup>10</sup> Energieeinsparverordnung as amended on 29 April 2009, Bundesgesetzblatt Teil I 2009 Nr. 23, p. 954)

<sup>11</sup> According to BMVBS, "primary energy demand" is referring to non-renewable primary energy demand only (BMVBS 2013c) based on the provisions in the EnEV.

The government offers grants and low-interest loans for energy efficiency refurbishments of new and existing buildings through the CO<sub>2</sub> building modernisation programme. The programme was established in 2006 and is a centrepiece of the government's energy efficiency strategy. Within this framework, several KfW funding schemes exist, including "efficiency house" and "energy efficient construction" for new buildings or "energy efficient refurbishment" for existing buildings. From 2006 to 2012, the programme provided €9.3 billion for the refurbishment or energy-efficient construction of 3 million flats and 1,400 municipal buildings. The funding, which stems from the Energy and Climate Fund, was raised from €936 million to €1.4 billion annually for 2012-2014. Additionally, in 2012, the government announced to provide €2.4 billion between 2013 and 2020. However, this still falls short of providing the annual €3 billion that were originally expected. According to the BMVBS, the programme supports 300,000 jobs annually (BMVBS 2012b). In July 2013, BMVBS improved the conditions for redevelopment managers supported in the framework of the KfW programme on energy efficient urban redevelopment. Based on the evaluation of initial experiences, the eligibility period for financial support are extended by 1 year to 3 years and the maximum amount of support is raised to € 150,000. These new conditions also apply to municipalities with already approved funding proposals (BMVBS 2013b).

A study published by the working group on energy balance (AG Energiebilanzen) revealed that energy consumption in the heat market increased by 4% in the first half of 2013. Under consideration of a comparably long heating period in the winter of 2012/2013, the consumption growth has also to be attributed to the old and inefficient heating infrastructure in Germany: More than 70% of oil and gas heaters are older than 15 years and only less than 1/4 of heating systems are younger than ten years. As a result, German heating market contributes to 40% of energy related CO<sub>2</sub> emissions. Moreover, the working group stressed that the predominant use of fossil fuels for heating has a negative effect on Germany's climate balance (Agentur für Erneuerbare Energien 2013). In June 2013, the ban of storage heaters installed before 1990 was revoked. The ban dated back to a decision of the grand coalition in the last legislative term that was supposed to come into effect in 2019. The federal government explained that the storage heaters provide a flexible electricity storage capacity relevant for the energy transition while the argument has been harshly criticized by environmental action groups such as Greenpeace (Süddeutsche 2013; IWR 2013).

## **Renewable Energy**

Renewable energy use as a portion of final consumption has been especially increasing in Germany. However, at 12.3% of total consumption in 2011, Germany needs to further increase the share of renewables to meet its target (based on the EU Renewable Energy Directive) of 18% by 2020. The share of renewably-generated electricity in final electricity consumption more than doubled from 10.1% to 21.3% from 2005 to 2011 (Eurostat, 2013b). . Based on the Energy Concept, the national target is to increase the share of renewable energy in electricity production to 35% by 2020. The coalition agreement of the new government formed by CDU/CSU and SPD foresees now a corridor for the expansion of renewable energies including an upper and lower bound. By 2025, a maximum share of 40-45% and by 2035, a maximum share of 50-65% should be achieved (CDU/CSU/SPD 2013). These targets seem to be in line with the previous 2020 target, although there has been no upper limit so far. However, according to the BEE, the implementation of an upper bound for renewable electricity generation implies that the

annual growth rate of 2.2% over the last four years will decrease to 1.34% until 2025 which constitute a massive slow-down of the renewable expansion (BEE 2013b). The German Advisory Council on the Environment (SRU) emphasized that a share of 60-70% of renewable electricity generation by 2030 is economically and social feasible (SRU 2013).

The principle instrument for the promotion of renewable electricity is at present the Renewable Energy Sources Act (EEG) that guarantees fixed feed-in tariffs for renewable energy. As one of its first actions, the new coalition plans to “fundamentally reform” the feed-in tariffs system. The coalition agreement already outlines some elements of the reform, and there are numerous proposals from scientific institutes, NGOs, associations and lobby organisations that are intensively discussed (<sup>12</sup>).

So far, the EEG was last amended in June 2012, retrospectively applying from April 2012. With the aim to prevent over-subsidisation for PV, the amendment set lower feed-in tariffs (<sup>13</sup>), a flexible degression mechanism and a cap of 52 GW. The total degression contains a monthly basis degression rate of 1% and a flexible degression rate on top depending on the amount of newly installed capacity in the past 12 months. The flexible degression rate can both increase and decrease the overall degression depending on how much the newly installed capacity exceeds or falls below the yearly envisaged corridor of 2,500 to 3,500 MW of newly installed capacity. Degression rates are published every three months by the Federal Network Agency (Bundesnetzagentur). According to the recent publication, feed-in tariffs for PV will decrease on 1 November, 1 December and 1 January by 1.4% respectively (Bundesnetzagentur 2013a).

The costs of the support scheme are distributed to the consumer via the EEG levy. The levy caused fierce debates in October 2012 when it was announced to increase by 1.6 cent/kWh to 5.3 cent/kWh in 2013 (Tagesschau 2012). In October 2013, the four transmission grid operators announced that the EEG levy will reach €ct 6.24 in 2014, an increase of €ct 0.94 compared to 2013 (Tagesschau 2013a). For 2015, the operators estimate that the surcharge will range between €ct 5.85 and 6.86 per kWh (R2B 2013). The levy is calculated by the difference between the spot market price and the amount required by the feed-in tariff at a given time; and the spot market price was reduced also due to the increasing share of renewable electricity generation in the last years: for 2014, the European Energy Exchange (EEX) quoted the price for the supply of base load electricity in Germany with 3.661 €ct per kWh which is 24% lower than the year before (BEE 2013). This dynamic derives from the electricity price determination mechanism at the stock market: the renewable electricity is offered by the grid operators (which are legally obliged to take over all renewable electricity and sell it at the spot market), thus leading to a shift in the merit order towards lower prices per kWh. Additionally, the presently very low price of EU ETS certificates does not sufficiently increase the marginal costs for electricity generation from fossil fuels, a mechanism that would otherwise

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<sup>12</sup> Proposals include reducing feed-in tariffs for onshore wind, introducing an auctioning system for determining the support levels or completely abolishing the feed-in tariff and introducing a new support mechanism.

<sup>13</sup> In the framework of the 2012 amendments, feed-in tariffs for PV installations were reduced to 13.5 to 19.5 cent/kWh.

increase spot market prices as in particular coal-fired electricity would be offered at higher prices to cover the additional costs.

In addition, there are exemptions from the levy for energy intensive companies. Particularly since the 2012 amendment, companies that are consuming more than 1 GWh per year (formerly 10 GWh) and companies for which electricity costs account for more than 14% (formerly 15%) of the gross value added can apply for the exemption from the levy. By September 2013, 2,295 companies and business components were exempt from the EEG levy, compared to 2,055 companies in 2012. According to the BMU, the EEG levy could be diminished by €ct 1.35, if all exemptions for German companies were revoked (Süddeutsche 2013a). On these grounds, amendments of the current regulations are foreseen as part of a broader reform of the EEG as announced in the coalition agreement of CDU/CSU and SPD (CDU/CSU/SPD 2013). The exemptions are also part of the EU Commission's investigation of the EEG under state aid rules<sup>14</sup> as they may distort competition and are not acceptable under state aid rules (DG Competition 2013).

Overall costs of the "Energiewende" were (and are) subject to fierce debate and estimations vary considerably. A good overview on different calculations was presented by the SRU (2013): Based on Nitsch et al. (2012), the expansion of renewable energies reaching a share of 63% by 2030 would result in additional costs of EUR 137 billion compared to a fossil fuel-based reference scenario. These additional costs, however, would be compensated by the lower operational costs of renewable energies in the following ten years (SRU 2013 based on Nitsch et al. 2012; similar results based on Gerbert et al. 2013). In addition, further benefits would result from reduced external costs (SRU 2013).

The expert commission supporting the monitoring of the energy transition (Löschel et al. 2012, p.101) outline that the aggregated costs for the economy as a whole for electricity did not increase: The share of payments for electricity compared to nominal GDP was 2.5% in 2011 (as well as in 2009 and 2010) which is the same level as in 1991. However, the expert commission expects that the aggregated costs are likely to increase in the coming years reflecting the build-up of renewable energies, grid extensions as well as back-up capacities and storage systems.

In the context of the cost debate, the impact of the "Energiewende" on low-income households is gaining increased attention. The DIW (2012) notes that in 2011, households spent on average 2.34% of their consumption expenditure on electricity. This share increased to 2.5% in 2013. For the lowest income group this share is significantly higher at 4.55% in 2013. However, the EEG levy accounts for only 0.5%. The DIW also proposes measures to compensate these households for rising electricity prices, such as adjusting the existing benefits system or providing energy efficiency support, which would not exceed the revenues from the VAT on the EEG levy.

Next to the EEG, in April 2013, KfW and the Federal Ministry for the Environment launched a new programme supporting the market penetration of battery storage technology in connection with PV systems with low-interest loans and repayment subsidies. The state supports investment with 660 €/kW installed PV capacity. Finance is available for up to 100% of eligible net investment costs and subsidy amounts to a

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<sup>14</sup> The EEG - as a support mechanism for renewable energies – is expected to be in line with state aid rules.

maximum of 30% of the investment cost. So far, 500 loan applications worth €10 million have been submitted (total budget 2013: € 25 million) (KfW 2013). Moreover, the Ministry for Education and Research supports research in solar electricity with up to € 50 million. The financing guidelines were published in May 2013 <sup>(15)</sup>. The research focus is set on the market of the future covering topics such as decentralized energy supply systems for economical PV operation, innovative manufacturing techniques and PV production as well as quality PV modules as a unique selling point for the German PV industry (BMBF 2013). Project outlines could be handed in until 28 August 2013.

With regard to the promotion of renewable heat, the principal instrument is the 2008 Renewable Energies Heat Act (EEWärmeG), last amended in 2011 that obliges owners of any new buildings and of public buildings undergoing major renovations to cover part of the heating or cooling with renewable energies. The overall objective is to increase the share of renewable energy in heating to 14% in 2020. The sector already provides employment for 76,000 people (BMU 2012a). Calculations by the working group energy balance (AG Energiebilanzen) revealed that heat from renewable sources has a share of 10% in the heat market and accounted for an annual saving of GHG emissions of 40 million tCO<sub>2</sub>eq in 2012 (Agentur für Erneuerbare Energien 2013).

### **Other Energy Generation**

A first draft law on fracking was presented in February 2013 stipulating strict rules in form of rigid environmental impact studies and a general prohibition of fracking activities in drinking water protection areas: at the urging of the CDU in Baden-Württemberg a revised draft was agreed stipulating the prohibition of fracking activities in water protection areas as well as catchment areas of drinking water lakes. In June the coalition party CDU/CSU and FDP finally decided not to submit the draft law to the parliament before parliamentary elections. According to the coalition agreement, the grand coalition opposes fracking if toxic chemicals are used (which is the case at present), but does not elaborate on prohibiting fracking activities in Germany on a legal basis. Instead, the coalition agreement stresses the necessity to fill the knowledge gaps regarding fracking in a transparent stakeholder oriented process (CDU/CSU/SPD 2013).

### **Energy Networks**

The *Energiewende* will require a significant expansion of the electricity transmission and distribution networks by 2030. A study commissioned by the German Energy Agency and published in December 2012 estimated that investment for the low voltage distribution grid of up to €42.5 billion will be required by 2030 to integrate renewable energy generators into the network.

In addition, the discussion in the recent years has focused on the high voltage transmission grid. The German government has taken several measures to speed up the expansion of the electricity network in the last years. The 2009 Power Grid Expansion Act (EnLAG) defined 24 priority grid expansion projects that are necessary to secure energy supply in the future. It also opened the possibility to the grid operators to get a refund for

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<sup>15</sup> The financing guideline for R&D on photovoltaic can be downloaded here: [http://www.erneuerbare-energien.de/fileadmin/Daten\\_EE/Dokumente\\_\\_PDFs\\_/130508\\_bekanntmachung\\_foerderung\\_fe\\_photovoltaik.pdf](http://www.erneuerbare-energien.de/fileadmin/Daten_EE/Dokumente__PDFs_/130508_bekanntmachung_foerderung_fe_photovoltaik.pdf)

the extra costs for underground high voltage AC cables through the grid operating fees. However, the implementation of most projects is delayed, inter alia because approval procedures are delayed when planned lines cross several *Bundesländer*. By 2012, only 214km of the planned 1834km lines have been built and none of the pilot underground cables has been put into operation (Bundesnetzagentur 2012). Pursuant to the Grid Expansion Acceleration Act (NABEG) that came into force in 2011, an additional federal planning procedure is being carried out. The first national grid development plan was completed in November 2012 by the Federal Network Agency (Bundesnetzagentur) and the four German grid operators, identifying 2,800 km of additional lines and 2,900 km of lines that need to be upgraded. Based on this document, the law on the Federal Plan (Bundesbedarfsplangesetz) was passed and entered into force in July 2013 determining the priority lines for transmission grid development for the next 10 years. Reporting on the implementation progress of a total of 36 projects is provided by the Federal Network Agency and is made available online.

In order to stimulate expansion of grids connecting offshore wind plants, the Energy Industry Act (EnWG) was amended in November 2012, requesting grid operators to develop a binding offshore grid development plan every year. Moreover, the amendment provides for a liability regulation for network operators. Accordingly, grid operators can be held liable by plant operators for damage resulting from delayed grid connections. In the case of delays, the liability of the responsible grid operator is limited to a maximum of €17.5 million and up to €1 bn in the case of severe delays. Remaining costs can be passed on to the consumers through a levy.

In order to strengthen public acceptance for grid expansion and increase the investment volume, a key issue paper has been signed by the Federal Environment Minister Peter Altmaier, Federal Minister of Economics and Technology Philipp Rösler, and four Transmission System Operators (TSOs) in July (BMU & BMWi 2013). According to the agreement, citizens that are affected by the construction of a transmission line receive the opportunity to invest in that specific grid extension project. The contribution needs to be at least EUR 1,000 at an interest rate of 5%. Citizens' financial contribution should cover up to 15% of the total investment costs. The political support for engaging citizens in financing the construction of transmission lines has been reassured in the coalition agreement of CDU/CSU and SPD. The coalition partners also stressed the need to allow for early and intensive consultations with citizens in order to strengthen public acceptance for grid expansion (CDU/CSU/SPD 2013).

Furthermore, the exemptions of the grid network charges for industry have been changed: In reaction to the ruling of the court of appeal Dusseldorf from March 2013 (Ruling 816385) and the concerns of the European Commission regarding generous exemptions for energy intensive companies, the Cabinet of Ministers passed a law on amending the Electricity Network Charges Ordinance and the Energy Industry Act. Instead of the prior complete exemption from network charges, the law introduces reduced charges for companies with annual electricity consumption above 10 GWh. Charges vary according to consumption levels and grid use: Companies with at least 8.000 hours pay 10% of the charge, for 7.500 hours use or above 15% of the charge are due and for 7.000 hours or above 20%. From 2014, the share of the charge to be paid is calculated on the basis of a so-called physical component accounting for the contribution of the company for grid relief and stability. Additional costs for transmission grid operators can be passed on to final consumers (BMWi 2013a).

## Transport

Emissions from transport have slowly decreased between 1990 and 2010 but showed a slight upward trend in 2011. Also, their proportion among Germany's total emissions has increased to 17%, indicating that these emissions are especially important to address moving forward (Table 2). Average emissions of newly registered passenger cars are especially high in Germany at a level of 141.5 CO<sub>2</sub>/km. The level is the 8<sup>th</sup> highest in the EU and has decreased at a lower rate than EU average between 2005 and 2012 (Eurostat 2013a). However, Germany does not apply a registration tax which has been considered a suitable instrument for addressing this issue (ACEA 2012). Germany's annual ownership tax is at EU average and is since 2009 based on CO<sub>2</sub> emissions and cylinder capacity (ACEA 2012). Cars emitting less than 110g/km are exempted from the CO<sub>2</sub>-related part of the tax. Additionally, HGVs circulating on motorways and federal highways pay a distance-based toll (CE Delft 2012).

With respect to taxes on transport fuels, Germany applies rates which are well above the EU average for petrol and for diesel. However, diesel is taxed at strikingly lower rates than petrol, with a difference of approximately €200/1000 liters (European Commission 2013).

The 2010 Energy Concept foresees emission reductions in the transport sector of 10% by 2020 and 40% by 2050 compared to 2005. A 2012 study estimates that a 37% reduction could already be achieved by 2030 (Öko Institut 2012). The expert commission supporting the monitoring of the energy transition (Löschel et al. 2012) argues for further steps beyond just addressing electric mobility. In particular, the commission states that comprehensive mobility concepts are still missing which are aligned to a "renewable mobility strategy" addressing different transport systems, passengers and freight traffic and their interconnections.

On 12 June 2013, the Cabinet of Ministers passed the mobility and fuel strategy that has been prepared by the Federal Ministry of Transport, Building and Urban Development (BMVBS 2013). After various consultation rounds and with a wide range of stakeholder recommendations the strategy gives an overview of the status, potential and challenges of transport technologies and the various options for energy and fuel considering different modes of transport. This so-called 'learning strategy' is aimed at giving information and orientation but focuses only on fuels and does not address overall questions of future mobility. In the long-run this fuel strategy will therefore be integrated into a broader mobility strategy. Despite the fact of lacking concrete targets, several measures and actions have been identified as necessary, such as the need for a clear biofuel strategy, the further stimulation of e-mobility and further investments in research and development of new drive technologies. The strategy emphasizes the importance of the European dimension and cooperation among member states in creating a sustainable mobility sector.

Regarding electro-mobility, the government published a Government Programme for Electric Mobility in 2011. The programme aims at having 1 million electric cars in use by 2020 (10.651 cars registered by August 2013 (Tagesschau 2013)) and to turn Germany into a leader in electro-mobility. It sets out key actions that the government will take until the end of 2013 to create an enabling framework. This includes: the increase of funding for R&D by 1 billion euro by 2013; the gradual transition of government fleet to electric cars; 10 year vehicle tax exemption for cars with less than 50g/km emissions; and the establishment of regional showcases and technical lighthouse projects. In April 2012, the

government chose four regions that will receive €180 million over a period of three years under the “showcases electric mobility” programme (BMVBS 2012b). In December 2012, an act was passed that extended the exemption from the vehicle circulation tax <sup>(16)</sup> from five to ten years and included all types of electric vehicles. The National Innovation Programme for Hydrogen and Fuel Cell Technology provides support amounting to €1.4 billion until 2016.

### **Adaptation**

In 2008, the federal government published the national climate adaptation strategy and succeeded in formulating an action plan in 2011, which stipulated the main cornerstones of German climate change adaptation strategy in four areas: “information dissemination, federal framework, activities under federal competence, and international responsibility.” The Federal Environment Agency has developed indicators for the strategy (see Schönthaler et al. 2011). The first indicator based report is expected to be published by the end of 2014. The progress report of the national climate adaptation strategy is expected to be published in 2015.

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<sup>16</sup> Gesetz zur Änderung des Versicherungsteuergesetzes und des Kraftfahrzeugsteuergesetzes (Verkehrsteueränderungsgesetz - VerkehrStÄndG). Gesetz vom 05.12.2012 - Bundesgesetzblatt Teil I 2012 Nr. 57 11.12.2012 S. 2431

## 5 Policy progress on past CSRs

As part of the European Semester, Country Specific Recommendations (CSRs) for each MS are provided by the EU Commission in June of each year for consideration and endorsement by the European Council). The recommendations are designed to address the major challenges facing each country in relation to the targets outlined in the EU 2020 Strategy. In the following table, those CSRs that are relevant for climate change and energy that were adopted in 2013 are listed, and their progress towards their implementation is assessed.

Existing Country Specific Recommendations	Progress
<p>Keep the overall costs of transforming the energy system to a minimum, in particular by reviewing the cost-effectiveness of energy policy instruments designed to achieve the renewable energy targets and by continuing efforts to accelerate the expansion of the national and cross-border electricity and gas networks.</p>	<p>The overall spending for the support of renewable energy further increased, so did the EEG surcharge while it must be noted that the aggregated spending of end consumers for electricity compared to GDP has not increased since 2009 and is on the same level as in 1990 (Löschel et al. 2012; see also Chap.4, renewable energies).</p> <p>However, a reform of the current support system for renewable electricity (EEG) is a major policy issue of the new government and it wants to present a revision by end of April.</p> <p>For improving the expansion of the grid where most needed, the Federal Plan (Bundesbedarfsplangesetz) entered into force in July 2013 determining the priority lines for transmission grid development for the next 10 years containing also cross-border projects to Denmark: No. 8 &amp; 29; Belgium: No. 30; Austria: No. 32 &amp; 36; and Norway (nord.link): No. 33 (see also Bundesnetzagentur 2013b).</p>

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