

**Communication**  
**from the Government of the Federal Republic of Germany**  
**to the European Commission**  
**of 28 April 2016**

**2016 annual report in accordance with Article 24(1) of the Directive of the European Parliament and of the Council of 25 October 2012 on energy efficiency (2012/27/EU) – Corrigendum of 2.12.2016**

For the 2016 annual report on progress in meeting the national energy efficiency targets pursuant to Article 24(1) of in conjunction with Annex XIV, Part 1, to the Energy Efficiency Directive 2012/27/EU, the German Government is pleased to provide the following information:

**a) Estimate of the following indicators in the year before last (year X-2)**

			2011	2012	2013	2014	Source
B1	(i) Primary energy consumption	PJ	13 599.3	13 447.1	13 821.6	13 179.6	AGEB
B2	(ii) Total final energy consumption	PJ	8 881.4	8 918.5	9 178.5	8 698.8	AGEB
	Final energy consumption by sector						
B3	Industry	PJ	2 634.0	2 587.1	2 550.7	2 545.4	AGEB
B4	Transport	PJ	2 567.8	2 558.6	2 611.6	2 615.5	AGEB
B6	Households	PJ	2 333.4	2 427.5	2 556.0	2 188.0	AGEB
B7	Services	PJ	1 346.1	1 345.4	1 460.3	1 349.8	AGEB
	Gross value added by sector (real 2010)						
B10	Industry	EUR billion	633.0	635.9	638.4	648.8	Destatis
B11	Services	EUR billion	1 771.4	1 780.4	1 785.2	1 811.2	Destatis
B12	(v) Disposable income of households	EUR billion	1 608.3	1 642.4	1 671.8	1 710.1	Destatis
B13	(vi) Gross domestic product (real 2010)	EUR billion	2 674.5	2 685.3	2 693.3	2 736.4	Destatis
B14	Electricity generation from thermal power generation	TWh	521.1	521.1	521.7	508.9	AGEB
B15	Electricity generation from combined heat and power	TWh	101.4	106.5	104.9	101.6	AGEB
B16	Heat generation from thermal power generation	PJ	736.1	768.0	783.4	758.5	AGEB
B17	Industrial waste heat *						
B18	Heat generation from combined heat and power plants, including industrial waste heat *						

B19	Heat recovery from industrial waste heat *						
B20	Fuel input for thermal power generation	PJ	4 843.9	4 644.2	4 672.7	4 576.9	AGEB
B21	Passenger kilometres (pkm)	Billion	1 131.0	1 135.6	1 144.5	1 167.1	BMVI
B22	Tonne kilometres (tkm) **	Billion	643.1	633.2	646.0	654.6	BMVI
B23	Population	Million	80.3	80.4	80.6	81.0	Destatis

\* where applicable reportable after amendment of the Energy Statistics Act (EnStatG)

\*\* domestic transport

Sources:

Working Group on Energy Balances (Arbeitsgemeinschaft Energiebilanzen – AGEB)

Federal Ministry of Transport and Digital Infrastructure (BMVI)

Federal Statistical Office (Destatis)

Corrected Federal Statistical Office data on population development are now available as time series. These result in retroactive changes to the figures reported in 2015 which are included in the above table for 2011 to 2013. The gross domestic product data are based on a new definition. The data on this have therefore also changed retroactively as a result.

Final energy consumption in the transport sector rose by 3.9 PJ between 2013 and 2014, as a result of the increase in passenger kilometres by around 2.0 % and tonne kilometres by around 1.3 %. Thus, final energy consumption per kilometre in the transport sector fell further between 2013 and 2014. Nevertheless, further action is still needed in the transport sector as well.

## **b) Updates on major legislative and non-legislative energy efficiency measures adopted in the previous year**

The Federal Government adopted its 'National Energy Efficiency Action Plan' (NEEAP) on 3 December 2014. This is a comprehensive energy efficiency strategy grouping together the objectives, a large number of new measures for immediate action and working methods, details of financing and the responsibilities of each stakeholder. The Climate Protection Action Plan 2020, which was also adopted on 3 December 2014, also includes measures to increase energy efficiency and thus improve climate protection. Energy efficiency has thus become the mainstay of the German energy transition.

The NEEAP is designed to implement the ambitious national energy efficiency targets in the energy blueprint and includes a wide range of measures for immediate action to reinforce the existing instrument mix and thus meet the savings target under Article 7 EED.

The full text of the NEEAP, together with detailed information on the individual measures for immediate action and longer-term working methods, can be found at <http://bmwi.de/DE/Mediathek/publikationen,did=672756.html>. The following key NEEAP measures in particular were established in 2015:

- Energy Efficiency Network Initiative: since the launch of the initiative in December 2014, 50 energy efficiency networks involving over 500 companies have started up. For 2016 the Federal Government and the associations have committed to the goal of setting up 90 new networks.
- The amendments to the Energy Services and other Energy Efficiency Measures Act (EDL-G) which entered into force on 22 April 2015 introduce a new obligation on non-SMEs to carry out an energy audit by 5 December 2015 and repeat it at least every four years. The Federal Office for Economic Affairs and Export Control (BAFA), which is responsible in this area, keeps a public energy auditor list with people who have the professional qualifications necessary to carry out energy audits in businesses. The BAFA also carries out spot checks on the performance of energy audits since that date.
- On behalf of the Federal Ministry of Economic Affairs and Energy (BMWi), since 1 July 2015 the KfW banking group has been providing increased funding under the CO<sub>2</sub> Building Renovation Programme for the energy renovation and energy-efficient new-build of commercial, non-residential buildings. Funding for energy-efficient new buildings was also added to the existing support for the energy-efficient renovation of buildings forming part of municipal and social infrastructure on 1 October 2015. Businesses and municipalities can benefit from soft loans from central government and repayment grants of up to 17.5 % if they modernise their buildings up to the level of the standard KfW Efficiency House or carry out individual renovation measures on the building envelope or technical systems, for example.
- The Energy Efficiency Strategy for Buildings (ESG) was adopted in November 2015. It is the strategic document for energy transition in the building sector and examines how an almost climate-neutral building stock can be achieved by the year 2050 by means of a combination of energy efficiency and renewable energy sources. In addition to the technical and energy aspects, overarching, longer-term energy policy aspects such as issues surrounding the interaction of electricity and heat, for example, are addressed. Key elements of the Energy Efficiency Strategy for Buildings are the further development of existing measures and the targeted introduction of new instruments to increase the willingness of owners to invest in the energy renovation of their buildings.

In addition, to significantly increase energy efficiency in Germany, further measures designed to avoid a total of 5.5 million tonnes of CO<sub>2</sub> by 2020 were adopted on 1 July 2015:

- Scheme to promote heating optimisation, currently being drawn up: funding is to be provided for the replacement of circulator pumps in buildings by high-efficiency pumps, and heating optimisation by means of the hydraulic balancing of the heating distribution system and additional optional low-investment measures. The programme is designed to contribute at least 1.8 million tonnes of CO<sub>2</sub> towards the 2020 climate protection target. In addition to this scheme, under the redesigned programme to promote crossover technologies, support will be extended to include large industrial pumps. This should save an additional 0.7 million tonnes of CO<sub>2</sub>.
- From 1 May 2016 the KfW Energy Efficiency Programme for Waste Heat will provide support, open to all types of technology, for investment in the modernisation, extension or new construction of installations and in connecting lines to avoid or make use of waste heat. The programme is designed to make a significant contribution to energy savings of 1 million tonnes of CO<sub>2</sub> by 2020.
- Programmes to increase energy efficiency in municipalities: there is still considerable potential at municipal level for improving energy efficiency and reducing greenhouse gas emissions. Targeted support from the federal government can provide incentives to unlock this potential. Existing funding guidelines such as the 'Municipal Guidelines' are to be further developed as part of the BMUB's (Federal Ministry of the Environment, Nature Conservation, Building and Nuclear Safety) National Climate Protection Initiative to promote concrete climate protection and energy efficiency measures by municipalities and the related sector. The various measures will be implemented step by step. For example, a call for proposals for municipal climate protection model projects was published on 4 April 2016.
- The railway undertakings are also to make an additional savings contribution of 1 million tonnes of CO<sub>2</sub> by 2020.

### **c) Total area of buildings to be renovated under Article 5 EED**

In accordance with Part 1(c) of Annex XIV to the EED, the 2016 annual report contains details of the total area of buildings with a **total useful floor area** over 250 m<sup>2</sup> owned and occupied by the Member State's central government that, on 1 January 2016, did not meet the energy performance requirements referred to in Article 5(1).

Based on the terms 'owned by central government' and 'owned by administrative departments at a

level below central government' used in Article 5(1) EED, the buildings belonging to the following organisations are used to define the balance area for the application of Article 5 EED:

- All Federal Government buildings except for social security institutions (Federal Employment Agency, statutory pension scheme, etc.) administering public services.
- All administrative entities in the material sense (government buildings and other buildings used for administrative purposes, i.e. executive authorities in the material sense which are empowered to adopt nationally binding rules and regulations, generally under public law, including single living quarters and office buildings for the armed forces (in accordance with Article 5(2)(b)).

The initial basis for implementation will be the 'Energy renovation roadmap for Federal Government properties' (ESB) already developed in previous years. The extent to which other properties will have to be included in order to meet the requirements of Article 5 will be reviewed at the appropriate time.

From this balance area belonging to the relevant organisations, we can estimate a net floor area of heated and/or cooled buildings of around 4.8 million m<sup>2</sup>. To determine the renovation rate of 3 % per year, the following sub-areas can be subtracted from this total floor area:

- Article 5(2)(a) of the Directive leaves Member States free not to set or apply the requirements for the energy renovation of some building types. These also include buildings listed for conservation, which account for around 10 % of the building area.
- Some 23 % of the buildings under consideration that are not listed for conservation were built after 1995 in accordance with the provisions of the 1995 Heat Conservation Regulation [Wärmeschutzverordnung] and the associated Heating Systems Regulation [Heizungsanlagenverordnung] and thus meet the minimum energy performance requirement laid down in the EU Buildings Directive.
- Of the remaining buildings, around 3.5 % have a useful floor area of less than 250 m<sup>2</sup>.

The total area of buildings with a **total useful floor area** of over 250 m<sup>2</sup> in the above balance area that, on 1 January 2016, did not meet the energy performance requirements referred to in Article 5(1) EED is therefore around 3.2 million m<sup>2</sup>.

The table below shows how the total area used to determine the renovation rate of 3 % per year is arrived at:

<b>Total area (NFA) of the relevant organisations</b>			<b>approx. 4.8 million m<sup>2</sup></b>	
	Share	Reference area		Sub-area
minus listed buildings	approx. 10.0 %	of 4.8 million m <sup>2</sup>	~	0.5 million m <sup>2</sup>
minus built since 1995	approx. 23.0 %	of 4.3 million m <sup>2</sup>	~	1.0 million m <sup>2</sup>

minus buildings < 250 m <sup>2</sup> NFA	approx. 3.5 %	of 3.3 million m <sup>2</sup>	~	0.1 million m <sup>2</sup>
<b>Total area (NFA) used to calculate the 3 % renovation rate</b>				<b>max. 3.2 million m<sup>2</sup></b>

This area of around 3.2 million m<sup>2</sup> thus relates to:

- heated and/or cooled buildings occupied by the central government with a total useful floor area of over 250 m<sup>2</sup>,
- which were built before 1995,
- are not listed for conservation and
- do not meet the minimum energy performance requirements laid down in the EU Buildings Directive.

This does not necessarily mean that these buildings do not meet the national minimum energy performance requirements. If energy renovation measures have already been carried out since they were built, this could reduce the area quoted. The necessary information on this is currently being collected (see comments in section (d) below).

#### **(d) Total savings achieved in the previous year pursuant to Article 5 EED**

According to Part 1(d) of Annex XIV to the EED, the annual report should contain details of the total floor area of heated and/or cooled buildings owned and occupied by the Member State's central government that were renovated in the previous year pursuant to Article 5(1) or the amount of energy savings in eligible buildings owned by its central government as referred to in Article 5(6).

In its communications to the Commission of 20 December 2013 and 5 June 2014 the Federal Government reported that, in implementing Article 5 EED, Germany was making use of the option to proceed according to Article 5(6) rather than Article 5(1) to (5) EED and to take other cost-effective measures, including deep renovations and measures to change the behaviour of occupants in order to achieve energy savings by 2020 in accordance with Article 3 EED.

Work began as early as 2011 on developing a national 'Energy renovation roadmap for Federal Government properties' (ESB), carrying forward the Federal Government's energy objectives to develop a climate-neutral building stock (Energy Efficiency Framework, 3.6.2011, Federal Ministry of the Environment, Nature Conservation, Building and Nuclear Safety, BMUB – formerly the Federal Ministry of Transport, Building and Urban Development, BMVBS). To achieve these objectives, we need measures that go well beyond the national minimum requirements for the energy renovation of existing buildings, but which are cost-effective at the same time. The ESB lists the properties in terms of their potential for energy efficiency improvements. Properties with great potential for renovation take precedence over those with a lower potential for energy renovation and should

accordingly be assessed earlier. In the next few years the energy efficiency of the building stock will thus be systematically improved on the basis of the order of priority indicated. In order to achieve this goal, as a first step, for all civilian-use properties, the energy efficiency of the individual buildings on a property is to be assessed in a standardised Property Energy Plan (*Liegenschaftsenergiekonzept* – LEK) and a report drawn up with recommendations for the renovation measures to be taken. The LEKs are based on a standard template ('Standard Energy Blueprint') so that the methodology for collecting and processing the necessary data and the calculation method are laid down uniformly. As a result of the standard format, the results of the LEKs can be processed and displayed more effectively in the database, allowing them to be compared uniformly at national level.

The LEKs for the first properties are currently being drawn up. Of these approximately 275 properties to be examined, about 50 are within the balance area of Article 5 EED. Taken together, these approximately 50 properties have a thermally conditioned net floor area of around 740 000 m<sup>2</sup>.

The BMUB has received the first LEKs for assessment and determining the measures to be taken. In the next step, the efficiency of each individual building measure will be checked using a standard system. As a result of the timing and organisational process of implementing the ESB, including compliance with the time limits for the procurement process, no building projects pursuant to Article 5(1) EED based on the LEKs were carried out last year in heated and/or cooled buildings owned and occupied by the central government of the Member State concerned. In 2015 only small-scale measures and measures for immediate action were implemented without LEKs. Since the above measures have not so far been recorded centrally, the database for implementing the ESB is currently being extended to accommodate this. Side by side with this, the individual building administrations have been instructed to compile data on this. Similarly, data on military properties are also in the process of being compiled.

Nevertheless, a number of measures to increase energy efficiency in all civilian-use properties have already been implemented under the 'Energy savings programme for government buildings', which was set up prior to the introduction of the ESB. Following evaluation of the reports received to date on the measures completed in 2015, we may expect to see energy savings of at least 7 116 MWh/a (based on final electrical and heat energy). **In 2014 the measures completed in 2013 led to total savings of 7 690 MWh. In 2015 the measures completed in 2014 led to savings of 7 076 MWh.** Not all the measures planned under the 'Energy savings programme for government buildings' have been implemented yet or reports on their completion are still outstanding. The potential saving to be achieved if all the measures applied for and approved are implemented in full is around 35 000 MWh/a.

**e) Energy savings achieved by means of the alternative measures adopted under Article 7(9) EED**

The table below shows the final energy savings achieved in 2014 by means of alternative measures notified under Article 7(9) EED. These are the 10 measures effective in 2014 with the greatest anticipated savings. This selection of measures alone covers a total of around 80 % of the savings target by 2020 under Article 3 EED notified by the Federal Government. Further measures, in particular as part of the implementation of the National Energy Efficiency Action Plan, started up in 2015. Their impact will be reported on in the 2017 annual report.

The measures listed below were checked for whether there were any discrepancies in the savings notified for 2014. The actual savings achieved have been adjusted accordingly where necessary.

Notification No:	Title of measure:	Final energy saving in 2014 in petajoules:
M 13	Energy and electricity tax	74.0
M 02	Energy Saving Regulation (existing stock)	11.0
M 04	KfW support programmes for energy-efficient construction and renovation (CO <sub>2</sub> Building Renovation Programme)	5.3
M 01	Energy Saving Regulation (new build)	4.6
M 15	Aviation tax	4.2
M 06	Investment in enterprises scheme	2.7
M 17	Federal advisory programmes	2.2
M 16	Emissions trading	1.3
M 03	Renewable Energy and Heat Act (EEWärmeG)	0.8
M 08	Market incentives programme to promote the use of renewable energy in the heat market (BAFA section)	0.6