

**Communication from the Government of the Federal Republic of Germany to
the European Commission of 18 January 2013**

**Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010
on the energy performance of buildings (recast)**

- **National plan for increasing the number of nearly zero-energy
buildings pursuant to Article 9**

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National plan for increasing the number of nearly zero-energy buildings

1. Introduction

Directive 2010/31/EU on the energy performance of buildings (hereafter referred to as the EU Energy Performance Directive —EPBD) stipulates that buildings constructed after 31 December 2020, which by their purpose are to be heated or cooled, must be built as nearly zero-energy buildings. For non-residential buildings to be constructed, which are to be owned and used by public authorities, the obligation enters into force two years earlier. The nearly zero-energy building standard corresponds essentially to the nearly carbon-neutral new construction, which is to be introduced by 2020 in line with the Federal Government's energy plan of 28 September 2010, without displacing the prevailing cost-effectiveness requirements.

The number of buildings with corresponding energy properties is to be increased by suitable other measures in the run up to the regulatory effective dates mentioned above. The Member States should thus draw up national plans to increase the number of nearly zero-energy buildings in line with under the EPBD. These national plans may include targets differentiated by building categories.

Article 9(5) of the EPBD provides that the Commission shall publish by 31 December 2012, and every three years thereafter, a report on the progress of the Member States in increasing the number of nearly zero-energy buildings.

To meet these requirements of the EPBD, the Federal Government has taken or prepared the following steps and measures for new buildings and existing buildings.

2. The German government's energy plan and building sector strategy

On 28 September 2010 the Federal Government adopted the energy plan and the related bill on the 'Energy and Climate Fund' special fund. Key elements are the reduction of energy consumption, the increase of energy efficiency and the development of renewable energies, thereby putting the focus on economic incentives. The aim is to reduce greenhouse gas emissions by 40% by 2020, and by at least 80% by 2050 (compared to 1990). The energetic refurbishment of buildings plays a key role. The aim is to reach a nearly carbon-neutral building stock by 2050. To this end, the primary energy consumption of existing buildings is to be reduced by approx. 80%. Cost-effectiveness and affordability are the key considerations in achieving these aims. Incentives are provided, without imposing forced refurbishments.

Owners and tenants must not be burdened with excessive financial charges, while sensible investments to create energy-efficient buildings must not be prevented.

The strategy of the government in the building sector

The Federal Government has opted for a differentiated strategy in regard to measures enhancing energy efficiency. In the building sector, the approach focuses on *'Require, support, inform — strengthen market forces'*.

'Require' by regulatory law, in particular the Energy Conservation Regulation (EnEV) and the Renewable Energies Heat Act (EEWärmeG); *'Support'* by means of financial incentives and *'Inform — strengthen market forces'* in particular by means of professional energy consulting, continued expansion and qualification of the energy certifications, pilot projects and awareness raising activities, including competitions.

Regulatory law lays down the minimum requirements, subject to the constitutional mandate of proportionality. The EnEV transposes the EPBD with minimum requirements for energy performance (annual primary energy consumption) of buildings. This is done without reference to a specific technology, since a better quality of the building envelope and 'better' systems technology are complementary aspects.

The key instruments in regard to *'Support'* are the KfW support programmes for energy-efficient construction and refurbishment (CO₂ building refurbishment programme), the KfW programme 'Energetic urban renewal' as well as the market incentive programme for the promotion of systems for the use of renewable energies. In regard to *'Require'* and *'Support'*, there is a constant on-going development in order to adapt to technical standards subject to economic considerations. The stringent requirements for the investment aid programme 'better than the Renewable Energy Heat Act (*Erneuerbare Energien Wärme Gesetz - EEWärmeG*)', expedite the development of new products and technologies and assist the transfer of advanced technologies and products as well as know-how to a broader market. The investment aid programme 'Energetic urban renewal' supplements the building-related programmes by providing promotional funds for measures in urban neighbourhoods. Funding is made available especially for the creation of integrated neighbourhood concepts for renovating and upgrading the energy efficiency of the municipal infrastructure, such as neighbourhood-based heating systems.

Energy advisory programmes assist individual owners when making decisions on specific and individual refurbishment measures. Competitions, pilot projects, information material and other awareness-raising measures aim to focus the attention of owners on the issue of energy-efficient construction and refurbishment, show the technical options, and assist in the transfer of technologies and the establishment of research, planning and craftsmanship.

This mix of instruments described in more details below serves to significantly increase the number of nearly zero-energy buildings by 2020. Given the highly diverse owner and building structures, with a very high proportion of private ownership, the Federal Government has opted for voluntary measures, financial incentives and the provision of information subject to the constitutional mandates of subsidiarity and proportionality of State action. Therefore, the Federal Government believes that it is neither possible nor necessary to establish binding numerical guidelines for intermediate targets as far as the number of nearly zero-energy buildings to be achieved in future is concerned.

To bring the energetic aims in line with the demographic developments and real estate industry trends, the Federal Government is currently developing a rehabilitation roadmap. As part of this roadmap, a programme monitoring energy consumption (primary energy, final energy) of the existing buildings is to be established, which will also offer findings on the number of nearly zero-energy buildings.

3. Background

In 2011, there were close to 40.5 million apartments in residential and non-residential buildings in Germany. The official building statistics show a stock of approx. 18.2 million residential buildings in 2011. Reliable statistical information on the number of heated or cooled non-residential buildings is not available. Estimates indicate a stock of approx. 1.7 million non-residential buildings.¹ Nearly 70 % of all residential buildings and almost three quarters of all apartments were constructed before 1978. On 1 November 1978, the first thermal insulation regulation entered into force and on 1 February 2002 the first energy conservation regulation. The share of new residential buildings constructed after this point in time accounts for just under 7 % of the total stock of buildings. The share of apartments included in this percentage is close to 5 % of the total stock. Approximately 54 % of all occupied apartments are rented, approximately 80 % of which are located in residential buildings with three and more residential units.

¹ Bremer Energie Institut (BEI): *Der energetische Sanierungsbedarf und der Neubaubedarf von Gebäuden der kommunalen und sozialen Infrastruktur*, 2011

Energetic condition of the existing buildings in Germany

Current research on the energy performance of existing residential buildings in Germany² comes to the conclusion that by the end of 2009, about 42 % of all residential buildings had an insulation of the exterior wall. In nearly 50 % of the cases, this insulation was added as part of modernisation measures. In about 76 % of all residential buildings the roof or the ceilings of the top floors, and in about 37 % the cellar roof is insulated; in about 53 % (roof or top floor ceilings) and 26 % (cellar roof) respectively, the insulation was applied retrospectively. The vast majority of all residential buildings (about 94 %) have double-glazing, and nearly 4 % of the buildings are equipped with triple-glazed windows. According to these findings, the exterior wall insulation of buildings constructed prior to 1978 was modernised at the rate of 1% per year in the period from 2000 to 2009. The annual modernisation rate for thermal insulations of roofs or top floor ceilings in this period ranged from 1.4 to 2.2 %; in the case of cellar ceilings, the rate ranged from 0.3 to 0.5 %. The renewal rate of the main heat generator for existing residential building is at nearly 3 % per year.

The progress in the improvement of the energy performance of buildings is reflected in the observed energy consumption of private households for space heating and warm water. Corrected for temperature, energy consumption declined in the period from 2000 to 2010 by approximately 18 %, while the residential floor area increased by nearly 8 %. This means that the final energy consumption declined by about 24 % within a period of 10 years per square metre. In non-residential buildings, the trend in energy consumption is comparable: the renewal rate of components is often higher in commercial buildings than in residential buildings. In view of the highly diverse building and owner structure, more detailed data are currently being collected.

² IWU, BEI (2010): *Datenbasis Gebäudebestand*, Darmstadt

Use of renewable energy in buildings

In existing buildings, the incidence of systems for using renewable energies is still at a very low level. In 2010, renewable energies (e.g. by the use of solar heating systems) were used exclusively in about 6 % of the existing building, and in part in one-eighth of the buildings (13 %). Data from 2008 show that the use of heating from renewable energies is already much more widespread in single-family and two-family homes. For example, this type of building accounts for 75 % of all currently used energy from renewable energies, as opposed to apartment buildings — about 12 % — and non-residential buildings — about 10 %.

4. Definition of zero-energy buildings

The EPBD states that the national plans pursuant to Article 9(3) shall include, inter alia, the following information:

- a) the Member State's detailed application in practice of the definition of nearly zero-energy buildings, reflecting the national, regional or local conditions, and including a numerical indicator of primary energy use expressed in kWh/m² per year. Primary energy factors used for the determination of the primary energy use may be based on national or regional yearly average values and may take into account relevant European standards;
- b) intermediate targets for improving the energy performance of new buildings, by 2015, with a view to preparing the implementation of paragraph 1;

The specific definition of the nearly zero-energy building standard is developed by the Federal Government with scientific support and having regard to economic considerations. In this regard, the focus is on the 'KfW efficiency houses'³, which are currently funded in Germany under the label of KfW Efficiency House 40, 55 and 70 (in the case of refurbishment, as KfW Efficiency House 55 and 70). The number indicates the amount of annual primary energy consumption (QP) in relation (%) to a comparable new building (reference building) according to the requirements of the Energy Conservation Regulation in force (EnEV₂₀₀₉). An Efficiency House 40, for example, does not use more than 40 % of the annual primary energy consumption (QP) of the corresponding reference building.

³ 'Efficiency House' is a quality seal that was developed by the Federal Government in conjunction with KfW and with the German energy agency, Deutsche Energie Agentur GmbH (dena).

It should be noted that this label does not prejudge future regulatory requirements. To this extent, the above description can only serve as an estimate of what may be considered to be generally as economical (cost-efficient) in 2019 or 2021 following the transposition of the requirement of Article 2(2) of the EPBD.

For the highly diverse group of non-residential buildings no energetic standard has been researched, which might serve as guidance for the nearly zero-energy building standard.

In the further course, it will be shown how in Germany the energetic requirements, and in this connection, how the definition for nearly zero-energy buildings can be developed even further.

5. National plan for increasing the number of nearly zero-energy buildings

Already since many years, Germany pursues the aim to increase energy efficiency and to enhance climate protection in the building sector (new buildings and existing buildings). This has led already now to an increase of the number of nearly zero-energy buildings (see also Section 4 on KfW Efficiency Houses). In this regard, the voluntary and cost efficient nature of the measures in connection with the mix of instruments referred to in Section 2 ('Compel, Support, Inform — strengthen market forces') is a key aspect. The instruments are described below in detail both for new buildings and for refurbishment measures on existing buildings.

5.1. Research, pilot projects and export reports

5.1.1. Research

Research initiative "Future Building"

Germany supports the development of new materials and processes with the aim to improve the energy efficiency of buildings as part of the "Future Building" initiative. Since the start of the initiative in 2006, approximately 500 research projects with an overall volume of approx. EUR 51 million have been funded. Among other things, about 40 projects of the 'New materials and techniques' cluster were funded. Because new materials and processes, such as vacuum insulation panels, integrative energy generating systems in the building envelope as well as the improvement of thermal insulation properties of already existing materials, will play a key role for the energy efficiency of buildings in future. In addition, a funding policy for education infrastructure buildings in EfficiencyPlus standard is being developed as part of the initiative.

Research grants for solar heating with high solar fractions

Under the 6th Energy research programme of the Federal Government, funding is provided for solar heating as part low-temperature solar heating for buildings with a high solar fraction ranging between 50 and 100 %, including measuring programmes, planning tools and accompanying monitoring. This relates to next generation 'solar buildings' as well as to 'self-sufficient solar buildings', which rely fully on solar heating and power supply for the building by a combination of solar heating, photovoltaic and/or photovoltaic/heating and new solutions for efficient heat storage in the building.

5.1.2. Pilot projects and expert reports

Pilot projects for the development of methods and ways of practical implementation in the construction process to assist the formation of local networks

In a next step, new materials and technologies are tested in pilot projects on a broader practical scale. Such pilot projects aim to identify and eliminate existing barriers in order to make investments into energy-efficient building technology, including renewable energies, in future more economical.

The projects pursue the following specific aims for the:

- development of the significant energy and CO₂ saving potentials in existing buildings;
- development of innovative energetic standards for new buildings and refurbishments;
- transfer know-how transfer and qualification of specialist stakeholders;
- generation of imitation effects through knowledge transfer and public relations;
- support and expansion of the regional competence networks and
- the present introduction of energy saving technologies that are on the brink of economic viability in particular for refurbishment measures to the market to make such measures economically feasible in the medium term.

These findings also contribute, among other things, to the development and advancement of funding programmes.

a - Pilot projects 'Existing nearly zero-energy buildings'

Supported by funds from the CO₂ building rehabilitation programme, the German Energy Agency (dena) carries out approx. 450 pilot projects across Germany for highly energy-efficient refurbishment of residential and non-residential buildings (municipal infrastructure buildings, especially schools). The refurbished buildings remain below the requirements of the EnEV for a comparable new building on average by approx. 50 %.

In addition, dena makes its findings and experience available to planners and craftsmen engaged in the rehabilitation sector via information platforms.

b - Pilot projects 'Roadmap to the EnergyEfficiencyPlus Building'

The 'Roadmap to the EnergyEfficiencyPlus Building' pilot projects for future standards for carbon-neutral new buildings and refurbishments undertaken since early 2011 are additional cornerstones. On the basis of 42 innovative construction projects (new buildings and refurbishments) selected by an expert jury, the pilot project develops and tests future new building and refurbishment standards for residential buildings that are to be nearly carbon-neutral (building standards for 2050). The construction projects are closely monitored in the planning and execution stages by the engineering consultants commissioned by dena.

c - EfficiencyBuildingPlus with electromobility

The Federal Government takes a further step in the form of the new generation of EfficiencyBuildingsPlus buildings. Currently, an inhabited pilot project of the Technical University Stuttgart in Berlin aims to show that the building generates with renewable energies more energy than it consumes for the thermal conditioning of the house and the charging of the electric vehicles with a reach of up to 30 000 km on an annual average. Moreover, the building is also subjected to a sustainability audit (rating system for sustainable building) in accordance with the German certification system, and sets an excellent example in the field of sustainable building. For example, the environmental impact of the building was also observed during the planning stage.

The predecessors of this building were the Plus-Energy houses of the Technical University Darmstadt constructed in 2007 and 2009, which became solar world champions at the solar decathlon competition by using innovative technologies and architecture. In addition to these model buildings, a Germany-wide network of additional EfficiencyBuildingPlus is being developed with the EfficiencyBuildingPlus with electromobility. Here, the focus is on the continuous exchange of information and the financial support for a broader application of this new generation of buildings. Multiple building types are examined, ranging from single-family homes to apartment buildings, both in the form of newly constructed buildings and in the form of refurbishing of existing buildings to the EfficiencyBuilding Plus. For example, currently the refurbishment of old buildings into an EfficiencyBuildingPlus building is examined in the scope of two apartment buildings in Neu-Ulm.

d - Pilot projects 'Construction of new non-residential buildings as part of the municipal and social infrastructure'

Compared with the extensive experience in the residential sector, there is currently still need for research into highly-efficient non-residential buildings — both in terms of the construction and the exploitation phase.

As part of the pilot project, the new construction of schools, childcare facilities and administrative buildings, hospitals and other municipal facilities with an improvement of 60 to a minimum of 45 % on the EnEV 2009 standards (KfW Efficiency House 40, respectively 55) is being funded and scientifically monitored. In doing so, the exemplary planning, their structural implementation and the exploitation phase are being examined, i.a. in regard to their economic feasibility and transferability. As part of the 'Future Building' initiative, a funding policy for educational buildings in the EfficiencyPlus standard is being developed.

e - Pilot project 'Zero-energy building for the Federal Environmental Agency (Umweltbundesamt) in Berlin-Marienfelde'

The 'Zero-energy building for the Federal Environmental Agency (Umweltbundesamt) in Berlin-Marienfelde' pilot project tests compliance with the future energetic requirements for a nearly zero-energy building on a public building model already today.

5.2. New buildings (sentence 2 of Article 9(1) EPBD)

5.2.1. New buildings - regulatory instruments

Stipulations in the Energy Conservation Act (Section 2a of the German Energy Conservation Act — EnEG) and the Energy Conservation Regulation (EnEV)

German energy conservation law seeks to transpose the requirements of sentence 1 of Article 9(1) EPBD by means of the Energy Conservation Act (EnEG).

Builder-owners are obliged, as of 31 December 2020, to construct new buildings in the form of nearly-zero buildings. For newly constructed buildings that are to be used by public administrations and owned by the public administrations, the obligation commences already two years earlier. In this regard, the minimum requirements of the statutory definition in Article 2(2) EPBD have been adopted. This same is also true of the requirement 'very low amount of energy required'. Even though it might be desirable to render this requirement more specific by reference to a specific, uniform energy parameter already in the pending revision, this aim is opposed by the need to consider the principle of economic reasonableness in determining the threshold in the short term.

It is envisaged that the Federal Government Energy Conservation Act will be authorised by regulation (EnEV) to lay down specific requirements for the energy performance of nearly zero-energy buildings. In view of the specific requirements for nearly zero-energy buildings, the relevant provisions will be adopted or amended in good time before 2019.

The present revision of the Energy Conservation Regulation aims to take first steps on the road to a nearly zero-energy building standard. It is envisaged to tighten the energetic minimum standards for new buildings in two phases (in 2014 and 2016) by an average of 12.5% each.

Renewable Energies Heat Act

The Renewable Energies Heat Act obliges builders-owners since 2009 to meet the thermal energy requirements of new buildings in part with renewable energies. This established for the first time a regulatory instrument in the form of the mandatory use of renewable energies for the construction of new private and public buildings.

The mandatory use may be met either by the use of solar heating (a minimum share of heating energy need of 15 %), biomass (solid and liquid: at least 50 %, gaseous: at least 30 %), geothermal energy and environmental heat (at least 50 %), but failing that, also by the use of waste heat, combined heat and power generation and energy conservation measures (15 % better than the EnEV standard). Combinations of renewable energies and with substitute measures are permitted.

In addition, the recast version of the Renewable Energies Heat Act, which entered into force on 1 May 2011, also introduced a 'role model' function of existing public buildings. There is an obligation to cover part of the heating or cooling requirements of public non-residential buildings with renewable energies as soon as the buildings are refurbished.

Expert analysis of the economic and technical framework for determinations in regulatory law and promotion

For the on-going development of regulatory law, e.g. by means of a revision of the EnEV, research contracts are regularly awarded on issues of potential, economically reasonable amendments of the energetic standards. Though the results do not bind the authority adopting the regulation, they are used as an aid in the decision-making process.

Even the KfW support programmes for energy-efficient construction and refurbishment issued as part of the CO₂ building refurbishment programme are comprehensively reviewed on an annual basis within the scope of flanking scientific research. On this basis, the programmes are regularly updated and improved to adapt them to the current state of the art and the actual conditions of the market and to enhance the promotional incentives. If fundamental modifications of the technical requirements have become necessary as the result of e.g. a revision of the EnEV, supplementary expert reports are commissioned as a rule. In addition, the findings form the research development and the pilot projects contribute to the further development of the KfW programmes, which serve to initially prepare the market for new technologies and methods.

5.2.2. New buildings — promotion

Kreditanstalt für Wiederaufbau (KfW) support programme "Energy efficient construction" (residential buildings)

Since the early years of the previous decade, energetic refurbishment of residential buildings and, successively, also the energetic refurbishment of municipal and social infrastructure buildings as well as the creation and construction of energy-efficient residential buildings is funded from the federal budget via the state-owned KfW bank group. For this purpose, approx. EUR 1.4 bn in programme funds were made available in the years up to 2005. Programme funds of approx. EUR 7.8 bn were made available in the period from 2006 to 2011 for the KfW support programmes for energy-efficient construction and refurbishment launched as part of the CO₂ building refurbishment programme. A total of EUR 4.5 bn in programme funds are available for the period from 2012 to 2014.

The current KfW programme 'Energy-efficient Construction' exists since April 2009 and was managed by the KfW bank group under the name 'Ecological Construction' until March 2009.

In the programme 'Ecological Construction' served to fund buildings with a maximum energy consumption of 40 respectively 60 kWh pro m²/year of the standard energy-saving building 40 and 60. With the adaptation of the EnEV to the reference building method, the KfW Efficiency House standard with the KfW Efficiency House 55 (including passive house), 70 and 85 levels were introduced in the programme 'Energy-efficient Construction' in April 2009. The figure reflects the maximum applicable primary energy consumption in % in relation to the maximum value under the applicable EnEV 2009.

For the further support of the technical development, the promotion of buildings built according to the KfW Efficiency House 85 standard was ceased, and a new, demanding standard (KfW Efficiency House 40, including passive house⁴) was introduced in the middle of 2010. KfW support is structured in general in such a way that the financial funding increases with the energetic level achieved.

⁴ Passive houses can comply either with the requirements for a KfW Efficiency House 40 or 55.

The number of applications filed (AZ) as well as the number of residential units (WE) of the Energy Saving House 40 and 60 in the period from 2003 up to the end of 2008 is shown in the following Table 1.

Table 1: Development of the funding figures from 2003 to 2008

	Energy Saving House 40		Energy Saving House 60	
	AZ	WE	AZ	WE
2003				
2004	1,384	1,744	-	-
2005	1,927	2,428	-	-
2006	2,830	3,584	7,447	9,582
2007	7,785	17,022	24,769	40,430
2008	5,532	17,158	20,950	33,843
Total	10,462	26,400	17,147	28,066
	29,920	68,336	70,313	111,921

The funding figures for the Energy Saving Houses 40 and 60 from January up to the end of March 2009, as well as the funded KfW Efficiency Houses (EH) 85, 70, 55 and 40 for the period from April 2009 until June 2012 are shown in the following Table 2. The Energy Saving House 40 corresponds more or less to the KfW Efficiency House 70, while the Energy Saving House 60 corresponds to the KfW Efficiency House 85.

Table 2: Development of the funding figures from January 2009 until June 2012

	Efficiency House 85		Efficiency House 70		Efficiency House 55		Efficiency House 40	
	AZ	WE	AZ	WE	AZ	WE	AZ	WE
2009 ¹	10,903	19,159	23,556	50,585				
2010	2,999	5,038	35,648	66,471	3,401	11,132	693	1,624
2011	-	-	34,039	53,938	8,873	18,803	2,384	8,418
2012	-	-	21,967	34,232	4,622	9,205	1,378	4,429
Total	13,902	24,197	115,210	205,226	16,896	39,140	4,455	14,471

¹ The Efficiency House standards are based on the EnEV₂₀₀₉.

The energy-efficient construction of approx. new 463,000 apartments has been assisted since 2003 as part of the support.

5.3. Existing buildings (Article 9(2) EPBD)

The rehabilitation of existing buildings is one of the central tasks in the context of energy conservation and climate protection. Because about 70 % of the buildings (approximately 75 % of apartments) were constructed before the entry into force of the first thermal insulation regulation (1 November 1977), and hence, from a contemporary perspective, with relatively poor thermal insulation. For this reason, the Federal Government, by creating a suitable general framework, provides incentives for owners to refurbish their existing homes from an energy point of view.

In addition to the regulatory requirements of the EnEV, the KfW support programmes for energy-efficient refurbishment is a central focus of the energy savings policy of the Federal Government. A staggered range of incentives offers owner-occupiers and investors incentives for through a tiered support offered incentives for the most effective refurbishment from an energy point of view. The KfW programmes are supplemented by additional programmes and measures, in particular for the introduction of technical solutions of heating and cooling supply and storage, in particular the market incentive programme for renewable energies (MAP). To ensure the quality of the planning and implementation of refurbishment projects, support is provided for local energy consulting as a first measure. Moreover, planning and supervision of the construction phase of refurbishment measures by a qualified expert are funded through the KfW programmes, in addition to the investment measures. These measures are supplemented by measures for the qualification of planners and craftsmen as well as information measures for home owners.

5.3.1. Existing buildings - regulatory instruments Energy

Conservation Regulation (Section 9 EnEV)

For existing buildings, the EPBD does not require energy-related changes in the stock of nearly zero-energy building standards are implemented.

However, under national law, owners are already now obliged in principle to observe demanding requirements for the component that is to be replaced or modified when refurbishing an existing building. The energy-related minimum requirements will continue to

be further developed also in future in an economically reasonable way as part of a balanced overall assessment, having regard to the burdens imposed on owners and tenants (see above).

However, owing to the mandatory principle of economic feasibility of the Energy Conservation Act, it is currently not possible to impose regulatory requirements for increasing the number of existing nearly zero-energy buildings. Moreover, such measures would not be cost-efficient in the sense of the EPBD.

The requirements of Article 9 EPBD are rather implemented by other instruments of a non-regulatory nature. This is achieved in particular by financial incentives.

Renewable Energies Heat Act - escape clause for state regulations (Section 3(2))

Renewable Energies Heat Act — EEWärmeG)

Section 3(2) of the Renewable Energies Heat Act (EEWärmeG) provides an escape clause for the federal states to adopt own provisions for existing buildings. With the 'Renewable Heat Act' (EWärmeG), adopted on 7 November 2007 by the Baden-Württemberg State Parliament, Baden-Württemberg is the first federal state to adopt a heat act. The act aims to establish the use of renewable energies as a standard for heating and hot water preparation in residential buildings. Since January 2010, 10 % of the heating consumption must be covered by renewable energies when replacing a heating system in an existing residential building. Alternatively, energy can be saved by improved thermal insulation of façades or roofs.

5.3.2. Existing buildings — promotion

KfW development programme 'Energy efficient refurbishing'

The current KfW programmes forming part of the CO₂ building refurbishment programme of the Federal Government provide a staggered range of support for refurbishments that satisfied ambitious energy-saving standards. In addition to residential buildings, the refurbishment of municipal and social infrastructure buildings is funded since 2007. The funding is provided for all categories of owners by means of low-interest loans or, alternatively for owners of single-family or two-family homes (residential buildings) and apartments held by 'commonhold associations', by means of grants. Dual funding is not permitted.

Following up on the EnEV currently in force, building refurbishments with the aim to meet the KfW Efficiency House 55, 70, 85, 100 and 115 standards are funded. The same rules and requirements as in 5.2.2. apply in regard to primary energy and quality of the structural envelope as well as to the intensity of the funding.

Since 2005, high quality individual refurbishment measures in residential buildings are funded in addition to the funding of comprehensive refurbishments by low-interest loans and grants. By 2010, a total of 230,078 applications were approved and hence measures in 586,293 apartments were supported financially. The requirements for these individual measures are streamlined since 2011 to such an extent that by implementing all measures, the elevated energy standard of KfW Efficiency House 55 is achieved. By the end of June 2012, 45,349 applications for 145,415 apartments have been approved. The number of existing buildings meeting KfW Efficiency House standard is to be increased through refurbishments carried out gradually by individual measures as well as through comprehensive refurbishments. Especially the gradual implementation of individual measures facilitates the refurbishment of buildings by private owners.

Since April 2012, there are special funding provisions for listed buildings and buildings that are particularly worthy of conservation (residential and non-residential buildings). Funding is provided for refurbishments toward the KfW Efficiency House Monument standard in listed buildings or buildings that are classified municipalities as particularly worthy of conservation. In this way, it is possible to improve the quality of the buildings from an energy point of view, while preserving their historical nature at the same time.

The trend in the numbers of applications (AZ), as well as in the number of funded residential units (WE) as part of the CO₂ building refurbishment programmes using federal funds of the KfW in the period from 2001 to 2008 is shown in Table 3. It is not possible to provide a breakdown to individual funding standards for this period. Comprehensive energy-related refurbishments of residential buildings were funded in these years by means of the CO₂ building refurbishment programme. Packages of measures (three combined measures) as well as more ambitious refurbishments at the level of a comparable new building in accordance with EnEV then in force or at a level that undercuts the requirements of the EnEV by 30 % were funded.

Table 3: Development of the funding figures in refurbishments from 2001 to 2008

	AZ	WE
2001	9.862	31.513
2002	14.146	43.218
2003	20.631	69.010
2004	22.599	90.259
2005	24.079	70.237
2006	43.610	154.888
2007	20.582	83.345
2008	28.376	122.016
Total	183.885	664.486

In the course of the revision of the EnEV 2009, the programme requirements (primary energy consumption and transmission heat loss) were tightened by approximately 30 % in April 2009. At the same time, the currently applicable KfW Efficiency House standard described above was introduced. The funding of energetic refurbishment was concentrated in July 2010 to even more efficient standards by ceasing the KfW Efficiency House 130 and by introducing new demanding standards by way of the KfW Efficiency Houses 70 and 55. The trend in approval figures as well as the funded residential units since 2009 implementing the various funding standards is shown in Table 4. It reflects an increasing willingness to carry out highly energy-efficient refurbishments. The demand for funding for the Efficiency Houses 55 and 70 in existing buildings, also comprising buildings on a passive house standard, has increased significantly. This trend continued in the first half of 2012.

Table 4: Development of the funding figures in refurbishments from 2009 until the end of June 2012

		EH 130	EH 115	EH 100	EH 85	EH 70	EH 55
2009 ¹	AZ	17.560	95	11.720	364		
	WE	78.355	425	52.297	1.622		
2010	AZ	4.480	2.658	6.111	4.862	411	103
	WE	35.048	12.261	41.205	19.031	2.741	290
2011	AZ	-	3.062	3.398	2.633	1.737	431
	WE	-	12.001	20.217	10.279	5.833	1.584
2012	AZ	-	1.635	1.793	1.394	966	232
	WE	-	7.803	10.427	6.002	3.245	525
Total	AZ	22.040	7.450	23.022	9.253	3.114	766
	WE	113.403	32.490	124.146	36.934	115819	2.399

¹ Number of residential units determined on the basis of the approved volume. The Efficiency House standards relate to the EnEV2009.

In other words, a total of approximately 1,090,00 apartments were refurbished from an energy point of view in the period from 2001 to the end of June 2012. The number of apartments receiving funding for energy-efficient individual measures is not included in this figure.

Moreover, planning and the supervision of the construction phase of refurbishment measures by a qualified expert is funded through the KfW programme, 'Energy-efficient Refurbishment — Construction Supervision', in addition to the investment measures.

In addition to the funding provided with the aim of energy conservation and climate protection, the state funding also serves to limit the burden on tenants, users and owners resulting from the refurbishment costs, for example, by reducing the recoverable costs on the rent pursuant to Section 559a of the German Civil Code (BGB). The reduction of the financing costs and/or investment costs also facilitates the economically feasible implementation of the refurbishment measures.

Since 2007, the Federal Government also supports municipalities, social organisations and municipal companies in the energy-efficient refurbishment of their buildings with the funds of the CO₂ building refurbishment programme. While the funding was at first only limited to measures in schools, day care centres for children and facilities for child and youth care, it was extended in April 2011 to all categories of buildings, such as swimming pools, museums and administrative buildings. Funding is provided for high-efficiency individual measures and comprehensive refurbishments towards a KfW Efficiency House 55, 70, 85 and 100. The system and intensity of the funding correspond to those for residential buildings. In the period from 2007 up to the end of June 2012, funding was provided for energy-efficient refurbishment of approx. 1,350 buildings of the municipal and social infrastructure.

Market incentive programme

The Market Incentive Programme (MAP) is another key funding instrument of the Federal Government. As far as existing buildings are concerned, it contributes towards meeting the target of a share of 14 % of renewable energies in the heating and cooling supply in the heating sector by 2020 (as of 2011: 10.4 %).

Funding is provided for solar heating systems, biomass systems and heat pumps. The programme section on investment grants provides for increased funding by means of a bonus system (in other words, basic funding plus bonus funding), for example if the renewable heating systems are installed in buildings that are particularly well insulated and with a reduced need for energy (efficiency bonus) or if various renewable energies are combined with each other in order to achieve the use of a high percentage of renewable energies and a high efficiency standard (combination bonus 'solar/biomass' or 'solar/heat pump').

Efficient within the meaning of the MAP funding guidelines are residential buildings that meet the requirements for the building envelope of a KfW Efficiency House 55 according to the currently applicable EnEV 2009. The bonus currently amounts to 50 % of the basic funding. Since August 2012, especially innovative and not yet economically viable techniques for using renewable energies in new buildings are once again eligible for funding. This serves to increase the incentive to go beyond the minimum requirements of the Renewable Energies Heat Act and to construct buildings with high renewable energy fractions. In this way, a contribution is made to the development of new buildings with higher renewable energy fractions.

Financial assistance for combined heat and power generation

The most recent revision of the Combined Heat and Power Generation Act (CHP Act) seeks in particular to achieve a CHP share in power energy of 25 % by 2020. The revision includes in particular an increase of the supplements for power generated in CHP system and the funding of heating networks, facilitation for the funding for the modernisation of systems, new means to support the retrofitting of heating plants and condensation power plant into CHP systems as well as for heat and cold storage. The revision entered into force on 19 July 2012. Moreover, the support programme for highly efficient, small CHP systems (up to 20 kilowatt) adds to meeting the CHP target of the Federal Government.

KfW programme 'Energetic urban renewal'

To develop energy savings potentials even more intensively, it will become more important in future to establish the refurbishment process beyond individual buildings on a broader urban development basis. In particular, in inner-city neighbourhoods with historical buildings and buildings worthy of conservation, a careful balancing of energy-related refurbishment measures and architectural conservation interests is required. In doing so, the requirements for energy saving and structural monument conservation conditions must be harmonised in such a way that the townscape remains intact while taking energy conservation and climate protection into consideration at the same time. The 'Energy-efficient Urban Renewal' programme seeks to initiate comprehensive measures in the field of the energy-efficiency of neighbourhood buildings and infrastructure in order to offer, i.a., a broader spectrum for the use of renewable energies and to involve additional investor groups in the refurbishment process. Grants for integrated neighbourhood concepts and refurbishment managers are provided by the programme. Said refurbishment managers are to supervise in particular the investive implementation of the concepts, coordinate the investors, organise the participation of citizens, etc. Moreover, loans reduced in price through federal funds serve to promote investments in the infrastructure (heating, heat stores, water supply and sanitation, street lighting, etc.).

5.3.3. Information, consulting

Energy consulting

Qualified, knowledgeable and quality-assured energy consulting, planning and construction services create confidence in the sustainability of their investments among investors. For this reason, the Federal Government has extended the funding for qualified and supplier-independent energy consulting services. Local energy consulting services in residential buildings with detailed proposals for measures for energy-related refurbishment are funded with 50 % of the costs that are eligible for funding, with up to EUR 400 per individual counselling. Even in the case of gradual refurbishment, the recommended measures shall aim to achieve a state of the building which can be considered to be a state of lasting energy-efficient refurbishment. The aim is to create a KfW Efficiency House eligible for funding by means of the support programmes.

Information deficits are often the main obstacle to energy efficiency investments in buildings. For example, energy consulting services for private consumers and energy checks for households are organised via the consumer protection agencies of the Federal Government and the federal states.

Energy consulting services for private consumers are currently being offered in 200 consumer protection agencies and in 460 municipal consulting points by approx. 380 energy consultants. In both 2010 and 2011, approx. 100,00 private consumers benefited from individual energy counselling. This offer was recently extended by phone and email services. Accordingly, the number of consulting services is expected to increase.

In addition, an energy check for households is available, which is also organised by the consumer protection agencies. The energy check comprises a basic check for electricity at home (for tenants), a building check and a check for the efficient coordination of the system technology. The contribution of consumers is negligible (EUR 10 for a basic check, EUR 20 for a building check, EUR 30 for an efficiency check). The performance of 30,000 energy checks is scheduled for 2012.

In addition to the above, energy checks are also available without public funding in connection with other services or as part of customer loyalty schemes by the various market participants, e.g. by craftsmen and energy utilities.

List of energy efficiency experts for energy consulting and KfW Efficiency Houses

Finding a well-qualified expert is one of the first steps in a high-quality energy-efficient refurbishment, refurbishment for the Efficiency House Monument or when constructing a new building. The national list of energy efficiency experts for the support programmes of the Federal Government in the field of energy efficiency aims to improve the quality of local energy consulting services (see Energy consulting services), of the construction supervision funded by the KfW as well as the expert energy-related planning of particularly efficient residential buildings by means of uniform qualification criteria, proof of regular advanced training and random checks of the results. In this way, the support programmes are rendered more transparent and home owners can find suitable experts more easily. Therefore, the Federal Government has developed and introduced a list for the federal support programmes of the Federal Governments (local consulting services and support programmes of the KfW for energy-efficient construction and refurbishments) on the basis of transparent specifications.

Energy certifications

As part of the revision of the EnEV (EnEV 2012), an obligation to provide energy-related key indicators in real-estate advertisements and to hand over the energy certification to buyers and new tenants has been introduced. The obligation, introduced in 2007, to display the energy certification in buildings used by public administrations with a high incidence of public access is being extended to smaller public buildings as well as to large private buildings with a high incidence of public access.

The energy certifications provide transparency about the essential energy-related properties of the buildings.

In addition to the extended requirements for energy certifications, stipulated by the Directive, the new EnEV seeks to enhance the informative value of the energy certifications by adapting, i.a., the colour shading of the number ray in the energy certification and the information on the use of renewable energies.

Communication and public relations by the Federal Government, the Federal States and other stakeholders

The 'Energy Efficiency' initiative and energy-related information offered by dena aim to inform consumers, professional audiences and multipliers about a variety of energy efficiency potentials. For example, practical information and specific tips show users how to use energy efficiently, to save energy and to avoid unnecessary energy consumption.

For the range of small and medium-sized enterprises, grants of up to 80 % are provided for 'energy consulting services for SMEs' and low-interest loans for energy-efficiency measures for the entire company, including its commercial real estate,

5.4. Exemplary role of the public sector

Renewable Energies Heat Act

The revision of the Renewable Energies Heat Act, which entered into force on 1 May 2011, provides that existing public buildings should set an example. The exemplary role of public buildings includes the obligation to cover part of the heating and cooling consumption of public non-residential buildings with renewable energies as soon as the buildings have been refurbished fundamentally (use obligation). The obligation of the public sector to comply with this role model function applies to existing buildings owned by the public administration as well as to buildings owned by third parties that are rented or leased not merely temporarily for public purposes. In the latter case, the public administration must ensure that the landlord takes the necessary measures to comply with this use obligation.

The obligation for existing buildings owned by a public administration does not apply if, in a specific instance and due to special circumstances, compliance with the obligation or substitute measure would cause disproportionately high costs or an unreasonable hardship in any other way, especially if the measure is shown to be economically infeasible by the result of an economic feasibility study, having regard to the life cycle costs. The obligation also does not extend to public buildings that are owned or possessed by a municipality or an association of municipalities, if the latter is overindebted at the start of the fundamental refurbishment (or would become overindebted as a result of the refurbishment), or if the measure would entail additional costs.

Federal buildings

As part of the turnaround in energy policy adopted in June 2011, the Federal Government decided that federal buildings should set an example in the reduction of energy consumption. The decision provides that all new buildings of the Federal Government as of 2012 are to be constructed in line with the nearly zero-energy standard. For existing federal buildings, an energy-efficiency refurbishment roadmap is to be developed. The aim is to create a nearly carbon-neutral stock of existing buildings by 2050. Already by 2020, a reduction of the final energy consumption for heating by 20 % is to be achieved. To this end, specific buildings are to be improved in regard to energy efficiency to such an extent that the nearly zero-energy standard is met.

6. Intermediate target

In the area of regulatory law, the Federal Government plans to improve the energy performance of new buildings referred to in Section 5.2.1 by increasing the energetic minimum requirements for new buildings (residential and non-residential) on average by 12.5% p.a. in 2014 and 2016. In this way, the energetic minimum standards are gradually brought in line with the nearly zero-energy standard.

Pursuant to the energy plan, the primary aim of the Federal Government is to reach the nearly zero-energy standard for new buildings by 2020. In the light of the uncertain price trend for energy and construction materials and services, the Federal Government focuses on flexible tools to maximise the number of such buildings in new and existing buildings.

In particular, the promotional grants system embedded in a broader overall concept and consisting of various grant levels with mounting grant amounts and their continuous development on the basis of regulatory requirements and technical specifications, as well as the transfer of the results from research and pilot projects, motivate investors to construct already now buildings with an ambitious level of energy efficiency, even up to the KfW Efficiency House 40. This is also in line with the approach of the Federal Government in its energy plan, which focuses on economic incentives and voluntary compliance.