



Federal Ministry
for Economic Affairs
and Energy

Energy Efficiency in the German Building Sector

–

National Action Plan Energy Efficiency and Energy Saving Ordinance 2014

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2. Dezember 2014



Agenda

- (1) The German Energy Transition (“Energiewende”)**
- (2) National Energy Efficiency Action Plan (NAPE)
- (3) Legal Framework – Building Sector
- (4) Promotion of Energy Efficiency in the Building Sector



German Energy Transition–Strategy up to 2050

- **Climate protection**
 - ⇒ Reduction of GHG emissions as an international goal
- **Secure and develop German industrial base**
 - ⇒ security of supply, payable
- **Reduction of import dependency**
 - ⇒ despite an increasing global energy demand

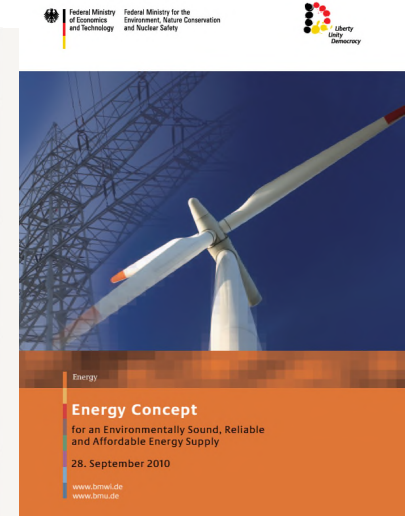


- **International: Aim of 80-95% GHG reduction up to 2050 (G20 L'Aquila)**
- **European: 20-20-20 Energy Pact 2009**
- **National: Integrated Energy and Climate Program 2007, Energy Concept 2010 and Phase-out of nuclear energy 2011**



Energy Concept

The Energy Strategy 2010	2011	2020	2030	2040	2050
Reduction in greenhouse gas emissions (base year: 1990)	- 23 %	- 40 %	- 55 %	- 70 %	- 80 %
Share of renewable energies in total final energy consumption	11 %	18 %	30 %	45 %	60 %
Share of renewable energies in electricity consumption	22 %	35 %	50 %	65 %	80 %
Reduction of primary energy consumption (base year: 2008)	- 6 %	- 20 %			- 50 %



› By 2020:

› - **40%** Green House Gas (**GHG**) emissions compared with 1990 levels

› - **20%** Primary Energy Consumption (**PEC**) compared with 2008 levels

› By 2050:

› - **80%** Green House Gas (**GHG**) emissions compared with 1990 levels

› - **50%** Primary Energy Consumption (**PEC**) compared with 2008 levels

Energy Concept – Chapter Buildings

› By 2020

- **20% Heat demand** (incl. warm water)

› By 2050

- **80% Primary energy demand**

Existing building stock to be “almost climate neutral”



Energy Efficiency in the Building Sector

- › about **35-40 % of final energy consumption** in Germany
- › about **30 % of CO₂- emissions**
- › **65 % of buildings** had been erected before the enactment of the first legislation setting building standards to save energy in **1977**.





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Strategies and Instruments by the Federal Government

Cabinet of Ministers 3rd December 2014

- **National Action Plan for Energy Efficiency („NAPE“)**
- **Climate Action Programm (BMUB)**
- **Progress Report for the Energy Strategy**



National Energy Efficiency Action Plan (NAPE)

- Contains **immediate measures** that are both quantifiable and non-quantifiable, as well as measures for the establishing of a **permanent processes**
- **Comprehensive approaches:**
 - Energy Efficiency Strategy for buildings
 - Energy Efficiency as a business model
 - Improve transparency and guidance
- **Immediate measures** of the NAPE lead to an additional reduction of primary energy consumption **of 390 to 460 PJ** or **25-30 Mio. t CO₂** (data without transport)
- **Fullfills the EED:** requires additional savings of 290 PJ Final energy consumption (cumulated for 2015-2020)
- **Supplies** to reach the Targets of the **Energy-Concept 2010:**
 - Contributes an important share to reduce Energy Consumption until 2020 (PEV) and
 - to account for 50% of the remaining efforts to reach the 40%-target until 2020



Building sector in the NAPE

- **Immediate measures**
 - Improve of energy consultation
 - Tax depreciation for energetic renovation
 - Development and increasing CO₂-building renovation subsidies
 - Checks and efficiency Labelling for existing Heating
- **Mid-term measures (Energy Efficiency Strategy buildings - ESG):**
 - Subsidies for energy consulting in municipality
 - **Further development of energy saving law**
 - Examination of the flat-rent-law to stimulate energetic renovations
 - Concepts for building specific renovation plans
 - Enhancement of subsidies for RES in buildings
 - Increase the implementation of new technical standards; Establish a research network to improve research funding
 - Holistic approach with all stakeholders
 - synergies with other aspects (comfortable indoor climate, age-based)



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Legal Framework – Building Sector

- Germany requires minimum energy efficiency in buildings since 1977.
- The standards have become sharper both for **new buildings** and for **existing properties** in recent years and regulations (beside) got more and more complex
- The main legislative basis for this are the **Renewable Energy Heat Act** and the **Energy Saving Ordinance**.



Renewable Energy Heating Act



Renewable Energy Heating Act (since 2009):

- Germany's Renewable Energy Heating Act aims to account for **increase the share of renewable heat to 14 percent** by 2020 (Score 2013 about 9 percent).
- **New building** owners – private persons, firms, and the public sector – **are obligated to get a certain share of their heat from renewable energy.**
- **Public owners of existing buildings** are obliged to use a share of RES even in cases of **major renovations.**
- **Private owners of existing buildings** get **financial support** for heat generating technologies using renewable energy (e.g. grants so-called Market Incentive Programme)



Energy Saving Ordinance I - Basic



- Part of the **implementation** of the Energy Performance of Buildings - Directive 2010/31/EU – EPBD
- Minimum **energy requirements for new buildings** in so far as **they are heated or cooled using energy**
- Minimum **energy requirements for refurbishment** and expansion of **existing buildings**
- Minimum **requirements for heating, cooling, air handling and lighting technology** and the **hot water supply** of buildings
 - All requirements are based upon the **cost optimal level** (economic feasibility)
- **Energy Performance Certificates (EPCs)** for buildings (existing and new)
- Energetic inspection of air conditioning systems
- Punishment of violations
- ...



New Energy Saving Ordinance II (2014)



- **Amendment of the Energy Saving Law (EnEG):** Creating the precondition to establish the Near Zero Emission Standard (Transposition of the EPBD) in 2016 by the EnEV
- Tightening of **the primary energy requirements for new buildings from 2016 on 25 percent.**
- **There are some mandatory retrofitting obligations** (e.g. to insulate the upper floor ceiling, insulation of pipes and fittings or to substitute old heaters – operating before 1985).
- Owners of real estate are required to pass an **energy performance certificate to the buyer or tenant.** The energy performance certificate must be presented at time of visit.
- **New efficiency classes in the EPC**
- ...



New efficiency classes

ENERGIEAUSWEIS für Wohngebäude
gemäß den §§ 16 ff. der Energieeinsparverordnung (EnEV) vom 1...

Berechneter Energiebedarf des Gebäudes Registriernummer ¹ (oder: „Registriernummer wurde beantragt am...“)

Energiebedarf CO₂-Emissionen ³ kg/(m²·a)

Endenergiebedarf dieses Gebäudes
kWh/(m²·a)

Primärenergiebedarf dieses Gebäudes
kWh/(m²·a)

Angaben zum EEWärmeG ⁵

Ersatzmaßnahmen ⁶

Erläuterungen zum Berechnungsverfahren

Efficiency Class	Final Energy [kWh/(m ² ·a)]
A+	< 30
A	< 50
B	< 75
C	< 100
D	< 130
E	< 160
F	< 200
G	< 250
H	> 250

The efficiency class is determined by the final energy demand (respectively the energy consumption)

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kWh/(m²·a)

Anforderungen gemäß EnEV ⁴

Für Energiebedarfsberechnungen verwendetes Verfahren

Primärenergiebedarf
Ist-Wert kWh/(m²·a) Anforderungswert kWh/(m²·a)

Energetische Qualität der Gebäudehülle H_T: ...

Verfahren nach DIN V 4108-6 und DIN V 4701-10

Verfahren nach DIN V 18599



Energy Saving Ordinance III – further developments

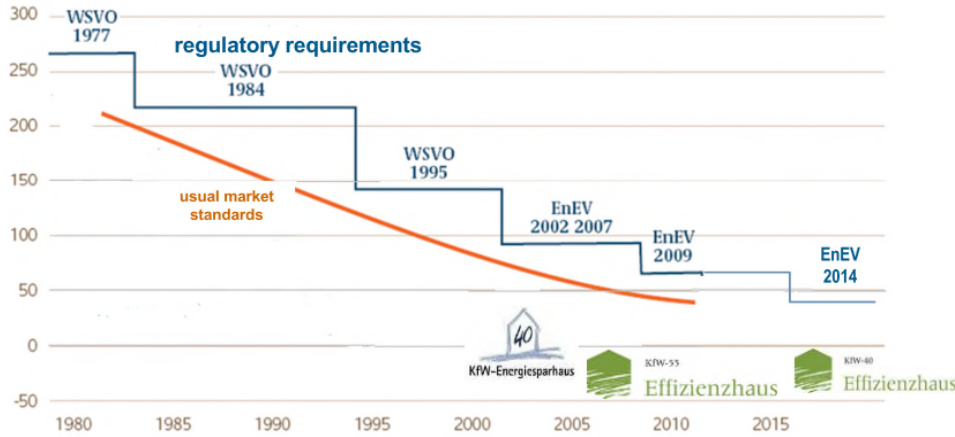


- Establishing the **Near Zero Emission Standard** (Transposition of the EPBD) until the end of 2016 – research project is running
- Checking the **requirements for existing buildings** on the base of cost-optimal level
- Verifying **transparency and clearness** of EPCs
- Checking to make the **execution even more effective** (responsible: Bundesländer)
- Assessment of **Reconciliation** of EnEV and EEWärmeG



Requirements and results

Primary Energy Demand (PED) for Heating [kWh/m²a] e.g. one-family house



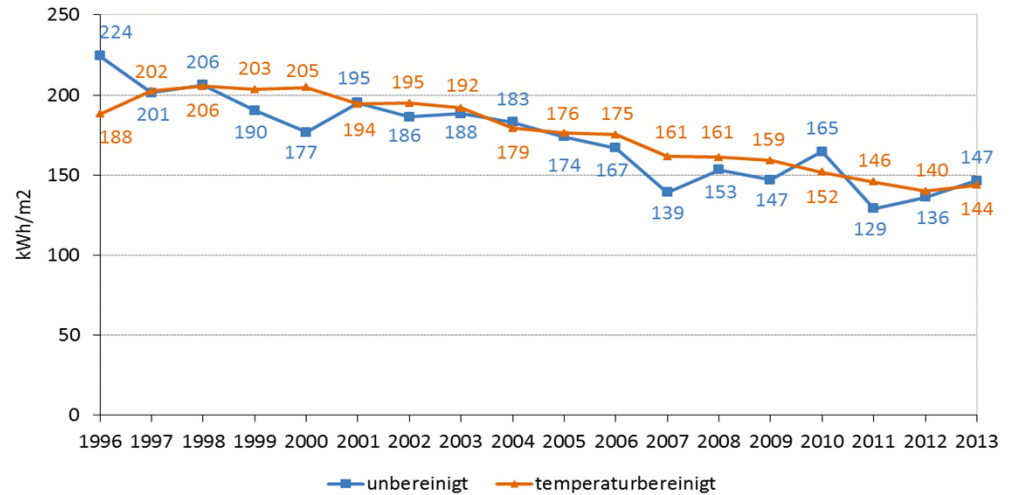
Heat consumption in private house holds

~200

2000

~140

2013





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Important Promotional Programmes

- **On-site Consultation on Energy Saving**
supports house owners to get a first analysis of their building's energy saving potential and possible measures, including finance
- **CO₂-Retrofitting Programme**
grants and loans for constructing and retrofitting residential buildings and buildings of the local public and social infrastructure
- **KfW Energy Efficiency Programme**
offers loans for retrofitting non-residential buildings
- **Market Incentive Programme**
supports the owners of existing buildings in the use of renewable energy for heating or cooling (solar, biomass, geothermal installations)
- **Baseline for all Promotion Programs: legal requirements of EEWärmeG und EnEV**



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Thank you!

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