



Bundesministerium
für Verkehr, Bau
und Stadtentwicklung

Solar-Technology and Energy-Efficiency - the European and German Approach to New Building Standards

Federal Ministry of Transport, Building and Urban Development

Unit B 12

Energy-efficiency, energy saving and renewable energies in the building sector

Dipl.-Ing. Klaus Dilmetz



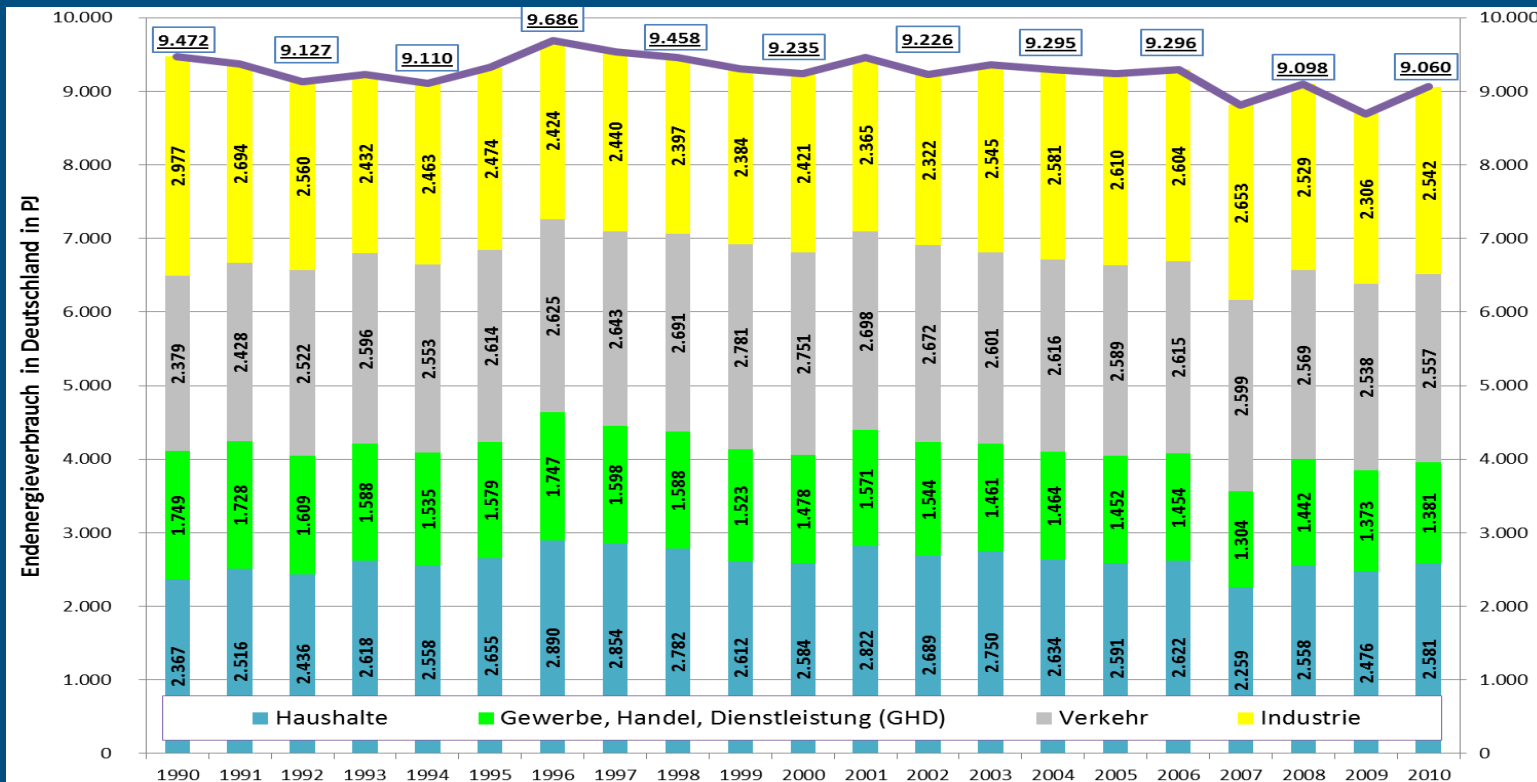
Outlook

- Reasons to Increase the Use of Solar Energy and Save Energy in Buildings by Federal Laws?
- European framework EPBD
- Development of Regulations in Germany
- Requirements
- Who is Involved
- Results / Examples



Energy consumption - in DE

Trend of final energy consumption

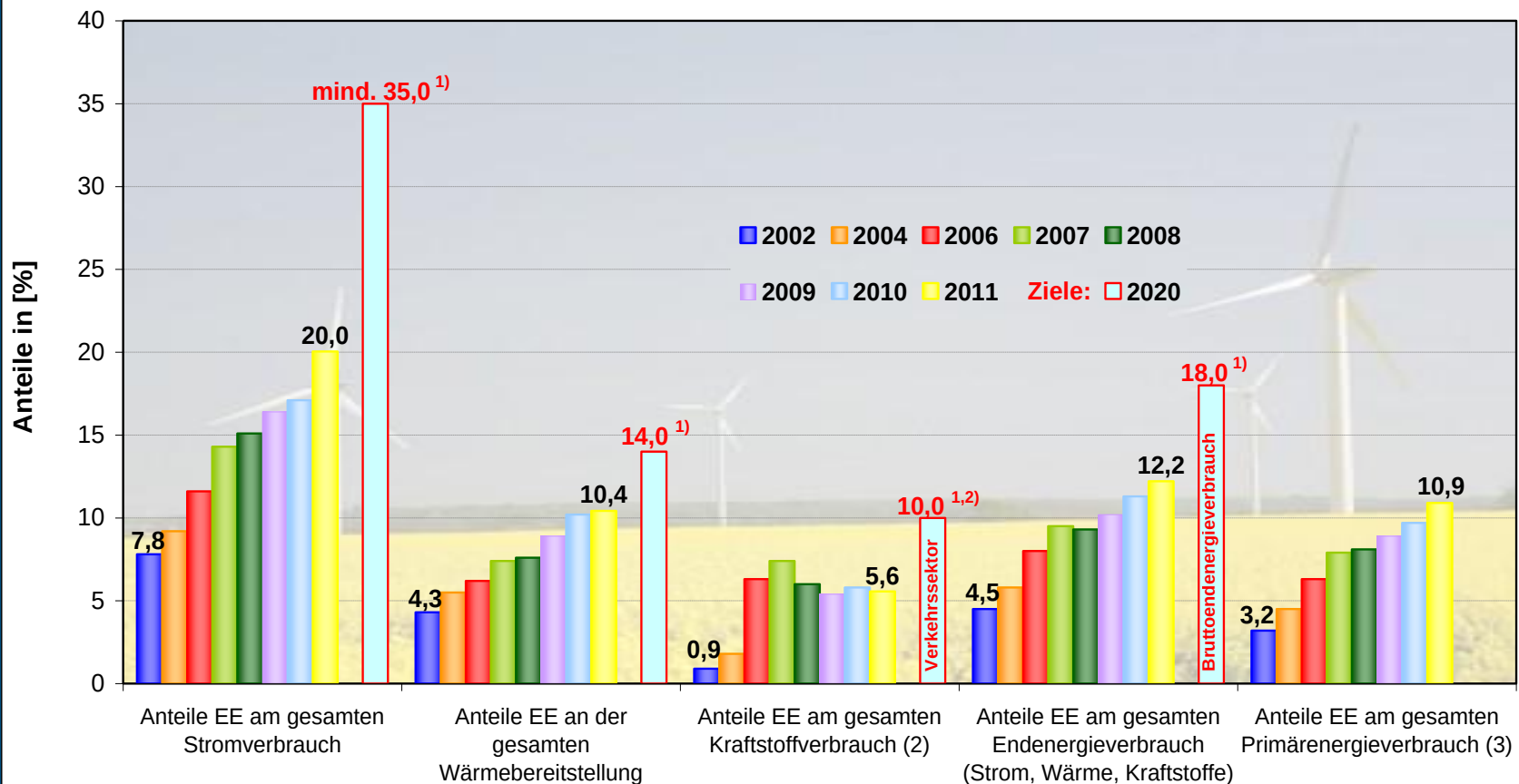


ca.
40 %
buildings

Entwicklung des Endenergieverbrauchs in Deutschland nach Sektoren seit 1990; Quelle: AGEb



Share of Renewable Energies in Germany



1) Quellen: Ziele der Bundesregierung; Erneuerbare-Energien-Gesetz (EEG); Erneuerbare-Energien-Wärmegesetz (EEWärmeG), EU-Richtlinie 2009/28/EG;

2) Der gesamte Verbrauch an Motorkraftstoff, ohne Flugbenzin; 3) Berechnet nach Wirkungsgradmethode - Quelle: Arbeitsgemeinschaft Energiebilanzen e.V. (AGEB);

EE: Erneuerbare Energien; Quelle: BMU-KI III 1 nach Arbeitsgruppe Erneuerbare Energien-Statistik (AGEE-Stat); Hintergrundbild: BMU / Brigitte Hiss; Stand: März 2012; Angaben vorläufig

European framework:

security of energy supply

- reducing demand of energy
- saving energy
- more energy efficiency and renewables

economic efficiency, competitiveness

- reducing energy costs
- economic measures for more energy efficiency
- decreasing energy demand especially for existing buildings

sustainability, climate protection

- Kyoto Protocol/ follow-up agreement
- climate change, global warming, ghg emissions
.....

European obligation

DIRECTIVE 2010/31/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 19 May 2010 on the energy performance of buildings (recast) – (guidelines for all MS)
more: www.buildup.eu

Implementation in Germany: “Energy Saving Order” (EnEV)
Requirements for new and existing buildings (e.g. refurbishments, energy certificates)

EPDB - covered scopes e.g.:

heating systems

insulation, energetic
quality of building envelope

hot water supply

air conditioning systems

ventilation

energy certificates

illumination

renewable energies
solar – technique

DIRECTIVE 2010/31/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 19 May 2010
on the energy performance of buildings
(recast)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 194(2) thereof,

Having regard to the proposal from the European Commission,

Having regard to the opinion of the European Economic and Social Committee ⁽¹⁾,

Having regard to the opinion of the Committee of the Regions ⁽²⁾,

Acting in accordance with the ordinary legislative procedure ⁽³⁾,

Together with an increased use of energy from renewable sources, measures taken to reduce energy consumption in the Union would allow the Union to comply with the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC), and to honour both its long term commitment to maintain the global temperature rise below 2 °C, and its commitment to reduce, by 2020, overall greenhouse gas emissions by at least 20 % below 1990 levels, and by 30 % in the event of an international agreement being reached. Reduced energy consumption and an increased use of energy from renewable sources also have an important part to play in promoting security of energy supply, technological developments and in creating opportunities for employment and regional development, in particular in rural areas.

- (4) Management of energy demand is an important tool enabling the Union to influence the global energy market and hence the security of energy supply in the medium and long term.

EPBD

Article 2

Definitions

For the purpose of this Directive, the following definitions shall apply:

...

2. 'nearly zero-energy building' means a building that has a very high energy performance, ... The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby;

EPBD

Article 9

Nearly zero-energy buildings

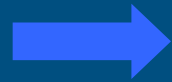
1. Member States shall ensure that:

(a) by 31 December 2020, all new buildings are nearly zero- energy buildings; and

(b) after 31 December 2018, new buildings occupied and owned by public authorities are nearly zero-energy buildings.

Member States shall draw up national plans for increasing the number of nearly zero-energy buildings. These national plans may include targets differentiated according to the category of building.

Strategies to increase renewables and energy efficiency e.g.



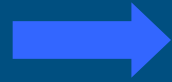
Law

Energy Saving Order (EnEV) – Energy Certificates, requirements for buildings



Financial benefits

promotion by e.g. KfW-Federal Bank – additional BAFA for renewable energies



Information, transparency in the market, best practice projects
promoting Energy Certificates, PR



Research

program for research in the building sector – ca. 9 Mio. €/a



Renewables in Legislation

Draft of next EnEV

§ 5

Anrechnung von Strom aus erneuerbaren Energien

(1) Wird in zu errichtenden Gebäuden Strom aus erneuerbaren Energien eingesetzt, darf dieser Strom ~~in den Berechnungen von dem~~ nach § 3 Absatz 3 und § 4 Absatz 3 ~~von dem berechneten~~ Endenergiebedarf abgezogen werden, ~~wenn~~ soweit er

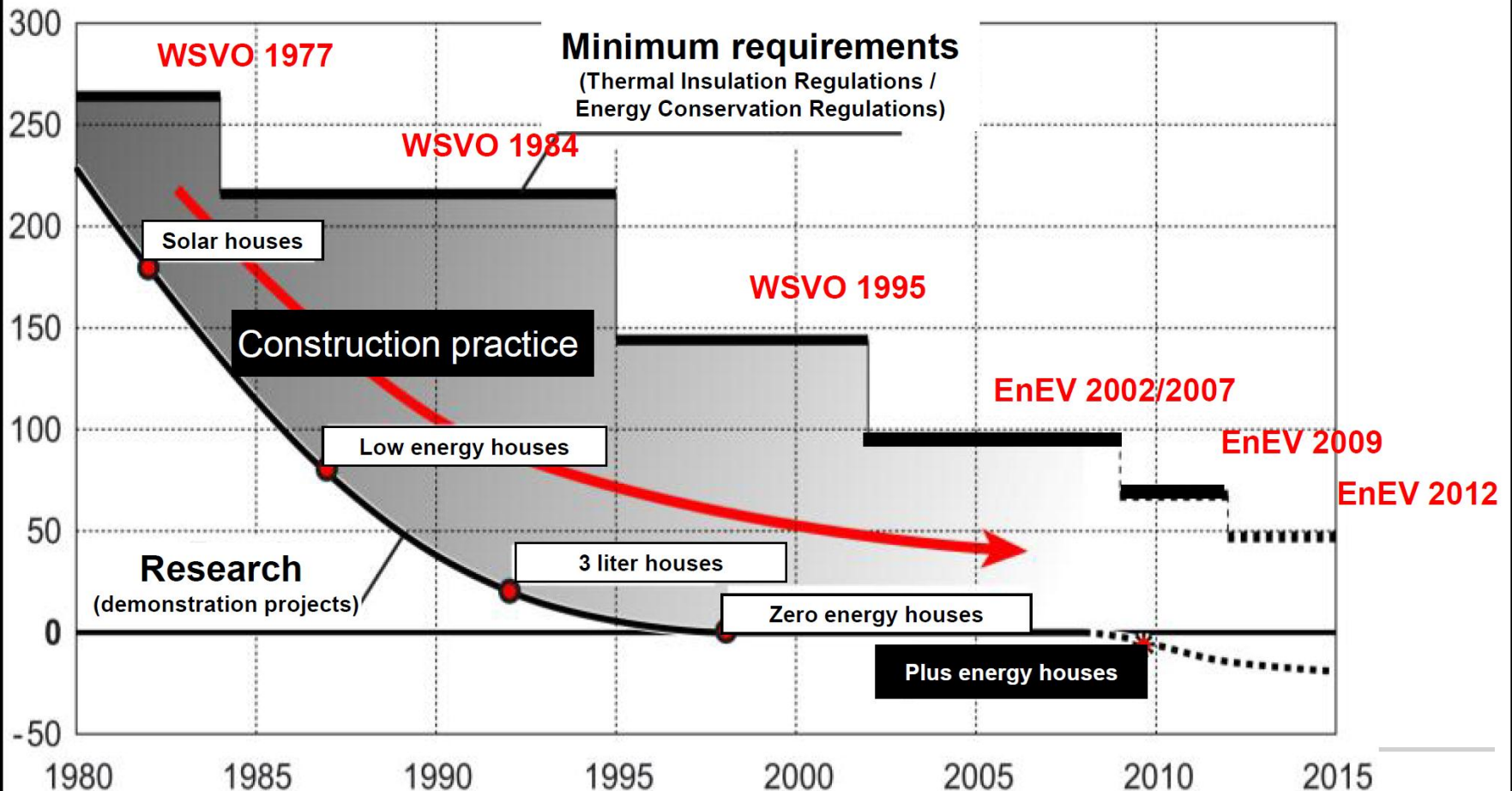
1. im unmittelbaren räumlichen Zusammenhang zu dem Gebäude erzeugt ~~wird~~ und
2. vorrangig in dem Gebäude ~~unmittelbar nach Erzeugung oder nach vorübergehender Speicherung~~ selbst genutzt und nur die überschüssige Energiemenge in ein öffentliches Netz eingespeist ~~wird~~.

Es darf höchstens die Strommenge nach Satz 1 angerechnet werden, die dem berechneten Strombedarf der jeweiligen Nutzung entspricht.

Improvements in the buildings sector

e.g. using EE- techniques and thermal solar systems

Primary energy demand – heating [kWh/m²a]



Energy Certificates

- lead to more transparency and promote innovative solutions for the whole building
- since 2008 in Germany an obligation also for existing buildings (in case of selling and renting)

www.bmvbs.de

ENERGIEAUSWEIS für Nichtwohnegebäude

gemäß den §§ 16 ff. Energieeinsparverordnung (EnEV)

Gültig bis: 14.06.2019

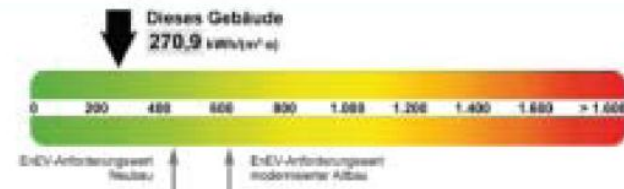
Aushang

Gebäude

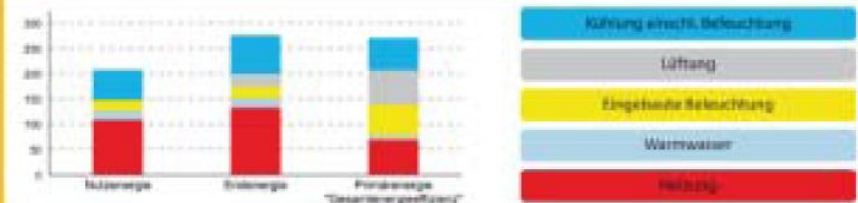
Hauptnutzung/ Gebäudekategorie	Deutscher Bundestag / Parlamentärsgebäude
Sonderzone(n)	
Adresse	Platz der Republik 1, 11011 Berlin
Gebäudeteil	Reichstagsgebäude
Baujahr Gebäude	1894
Baujahr Wärmeerzeuger	1998
Baujahr Klimaanlage	1998
Nettogrundfläche	40.047 m ²



Primärenergiebedarf „Gesamtenergieeffizienz“



Aufteilung Energiebedarf



Aussteller



Signature of the issuer

15.06.2009

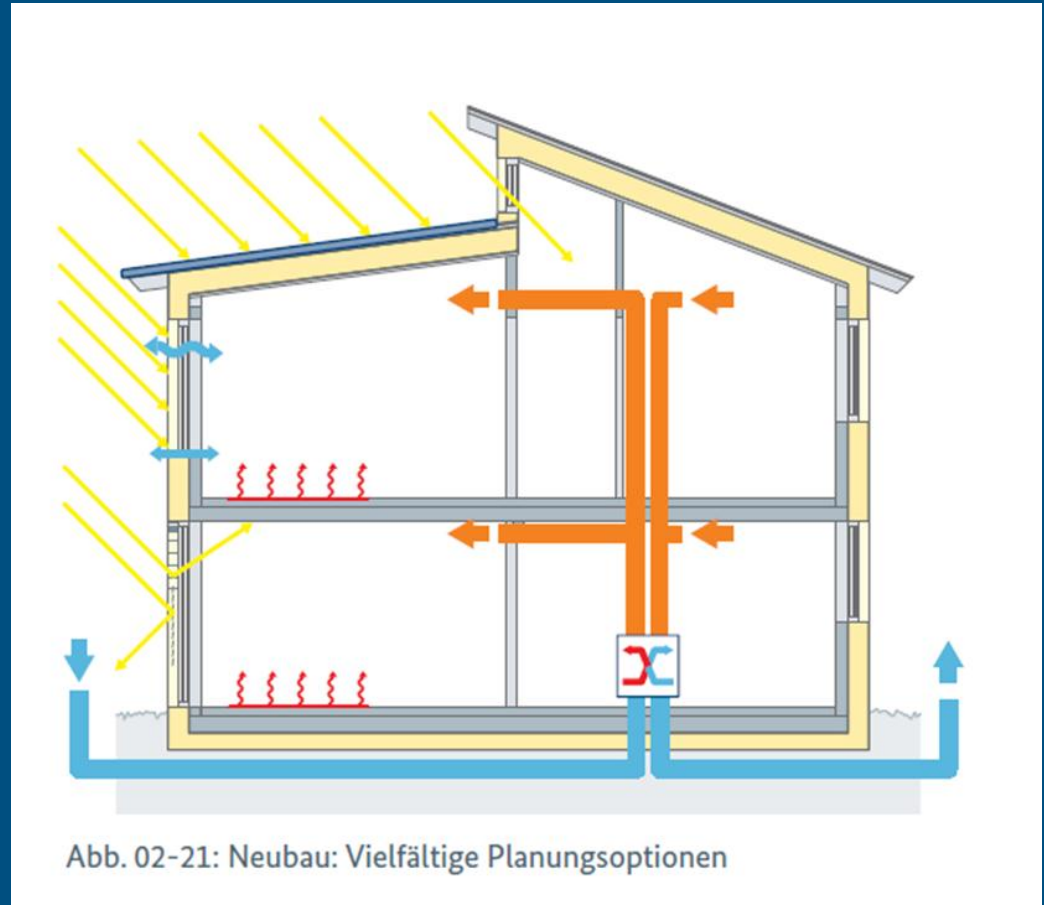
Datum

Dr. Rüdiger Ehm

Unterschrift des Ausstellers

New Buildings

- many options for energy efficient engineering and integrate solar systems



Existing Buildings

- Use of high potentials in the existing buildings stock for more energy-efficiency and renewable energies (e.g. PV-Solar Systems)

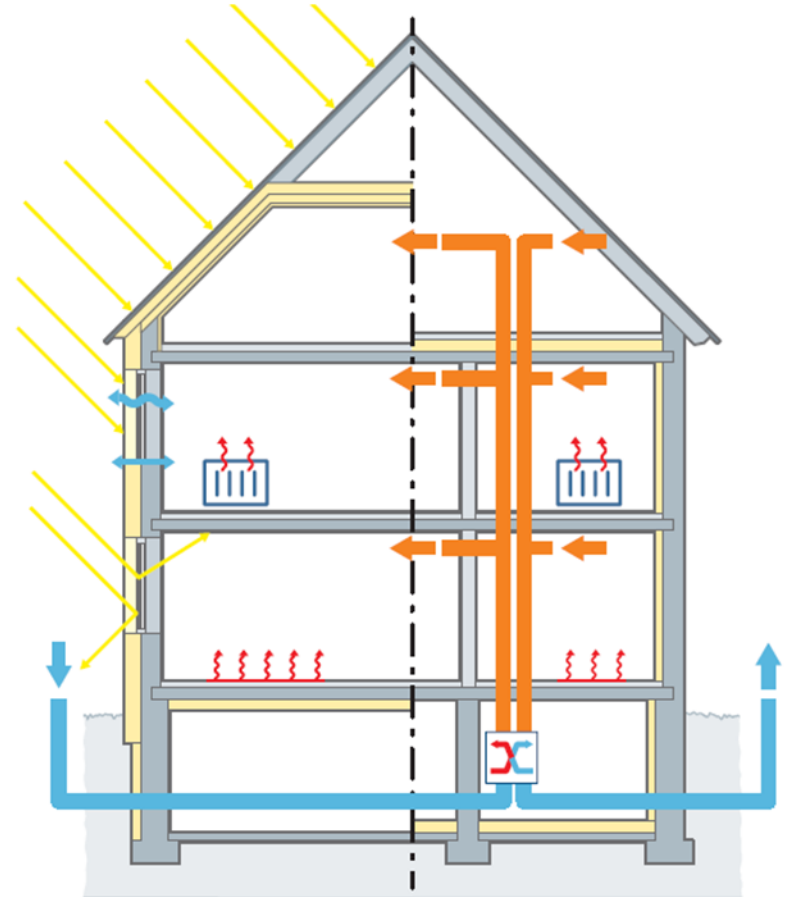


Abb. 02-22: Altbau: Potenziale des Bestandes nutzen

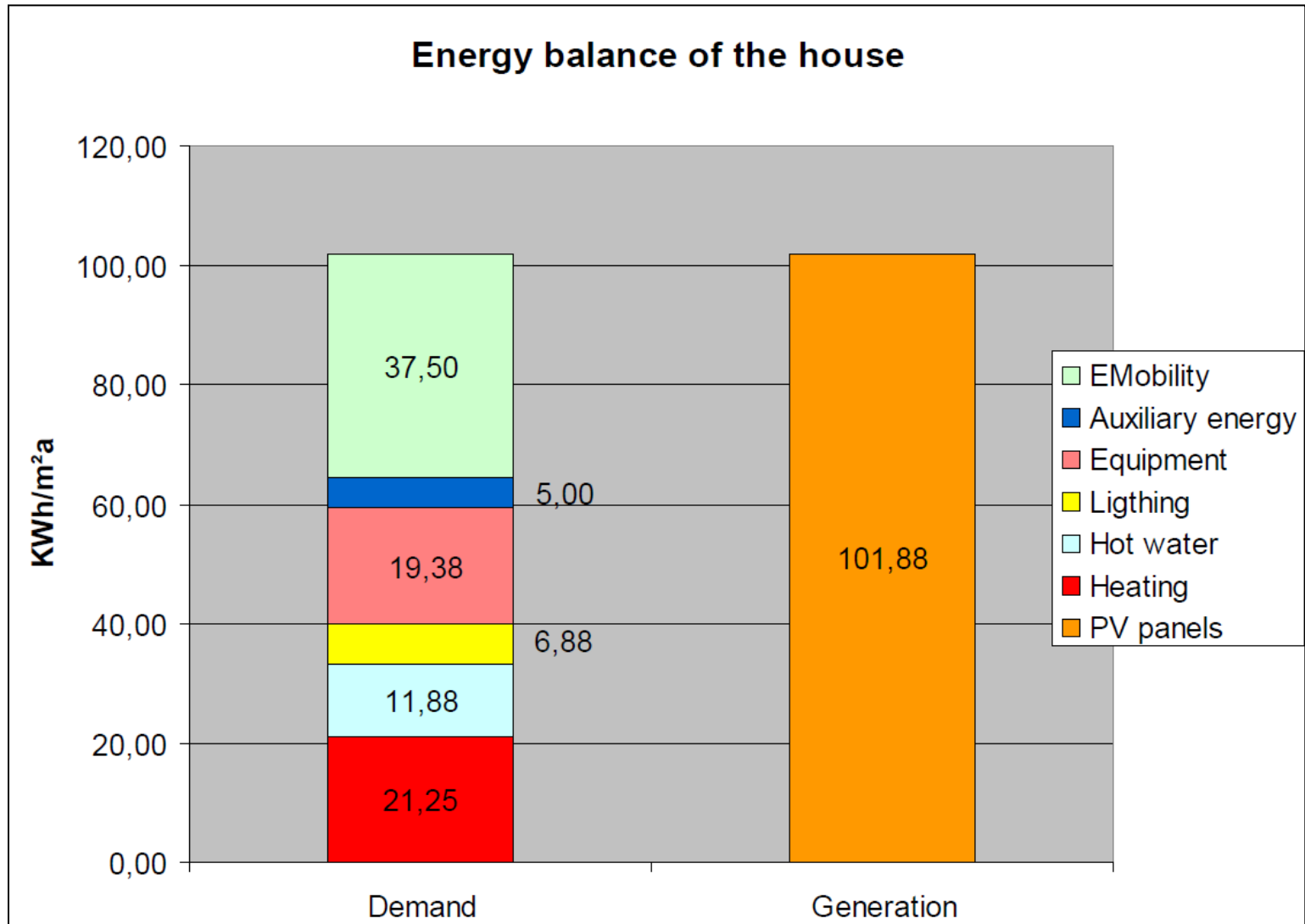
Results

- decrease of energy demand through better techniques and products e.g. windows, insulation products
- increase of energy efficiency e.g. high-efficient heating, cooling and air-conditioning systems
- increasing use of renewable energy e.g. PV-Systems / Solar-heating/cooling
- better building design, engineering and combination of technical systems, building construction and the renewable energies
- further development of regulations, education and training quality level especially for renewable energies
- best practice examples to promote solutions for future standards











energy plus house combines building and transport



Energy plus house in Berlin (Source: Werner Sobek)

thank you for your attention!

Federal Ministry of Transport, Building and Urban Development

Unit B12

Invalidenstraße 44
D-10115 Berlin
Klaus Dilmetz
Tel.: 030 2008 7127
klaus.dilmetz@bmrvbs.bund.de

www.bmvbs.de