



# ZDH

ZENTRALVERBAND DES  
DEUTSCHEN HANDWERKS

## BUILD UP Skills

The EU Sustainable Building Workforce Initiative  
in the field of energy efficiency and renewable energy



### Qualergy2020 – The German Project

### BUILD UP SKILLS - The EU Sustainable Building Workforce Initiative

Ljubljana, 11th to 13th June 2012



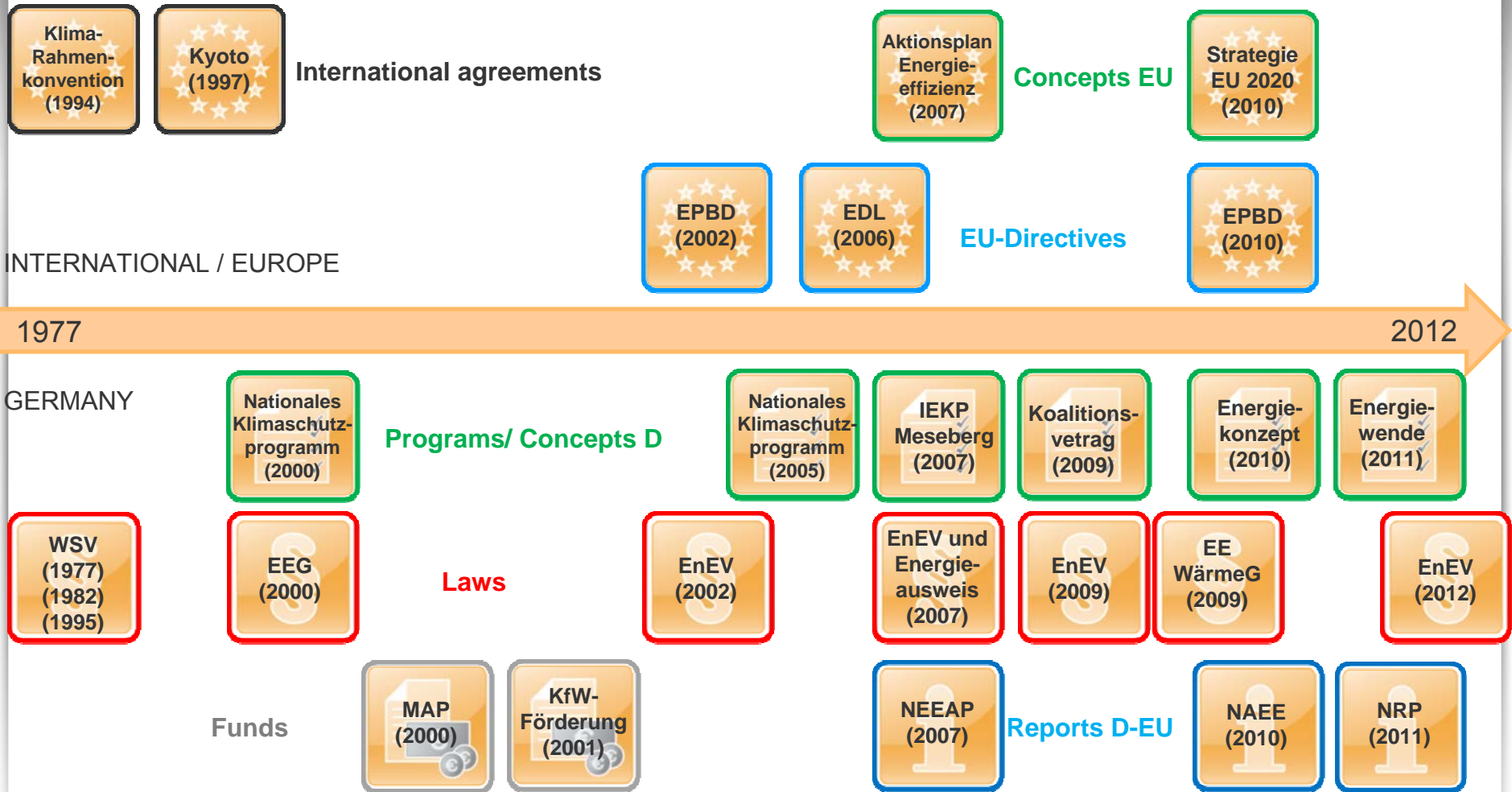
Dieses Projekt wird gefördert  
mit Mitteln der Europäischen  
Union



## Objectives in the Energy Sector

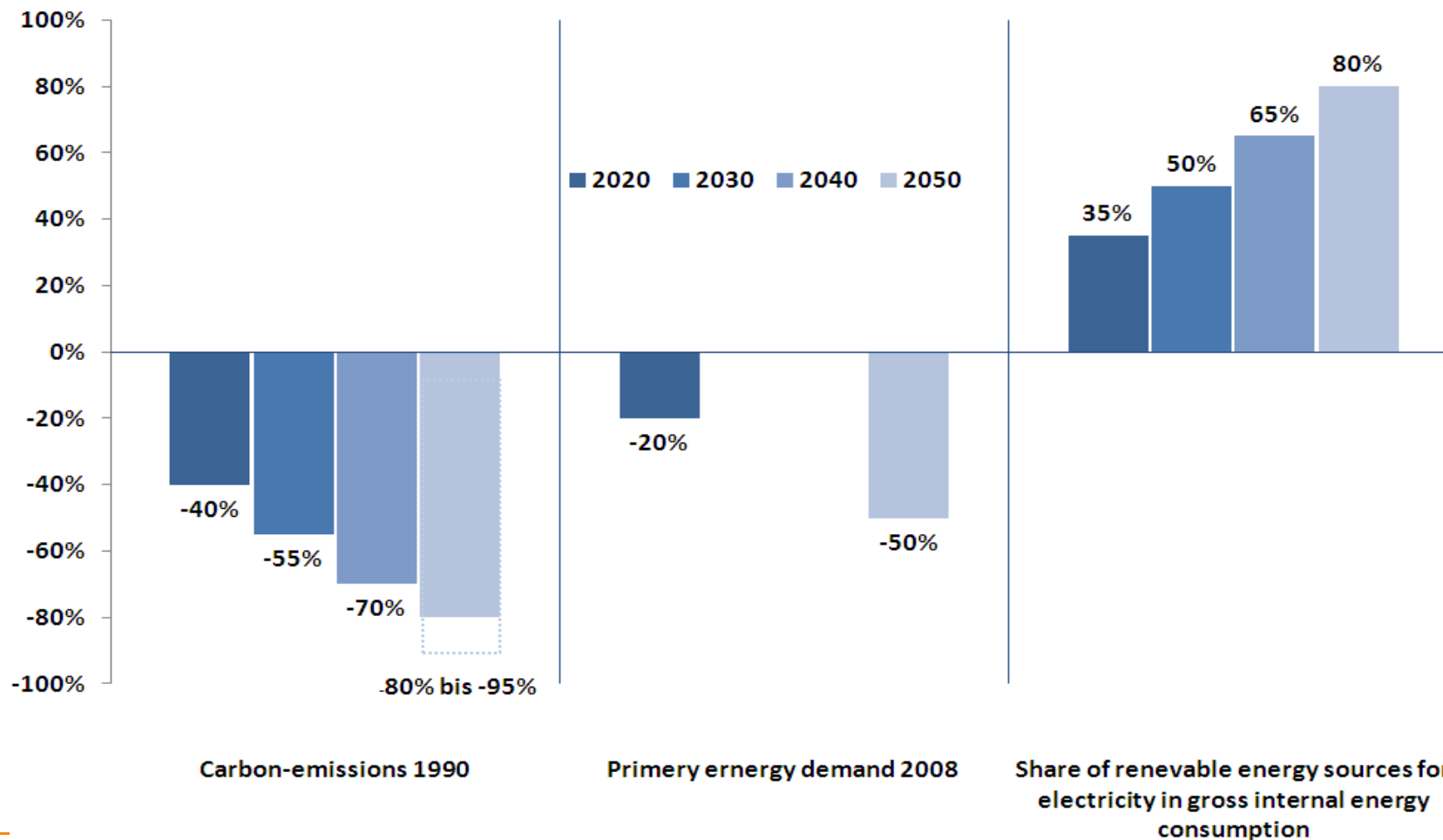
### Measures initiated in Germany:

- Germany strengthened its efforts
- Building sector: legislation, financial incentives, information
- Energy concept 2010, energy transition (Energiewende) 2011
  - Gradual phasing out of nuclear power until 2022 and
  - Accelerated shift to renewables and more energy efficiency



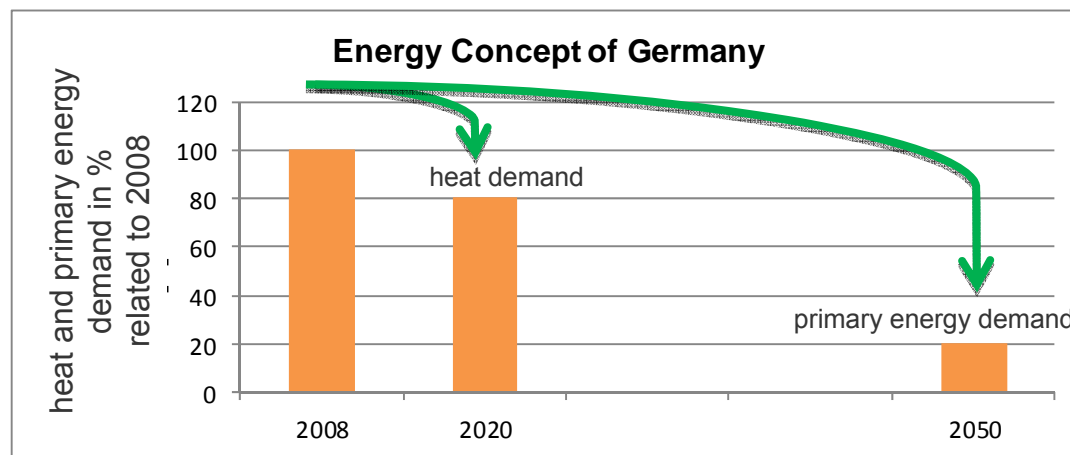


## The challenge of transformation the german energy system



## Targets of the German Energy Concept

1. Existing buildings should be **nearly climate neutral** by 2050
2. **Heating demand** of the building stock should be reduced by **20%** by 2020 – **primary energy demand** by **80%** by 2050
3. **Retrofit rate** should be doubled from 1 % to 2,0 %
4. The share of **renewable energy** should be increased significantly
5. A **road map for deep retrofit** by 2020 – 2050 will be developed



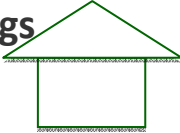


# Analysis of the German vocational education and training system for construction workers

## Basics of the German training system

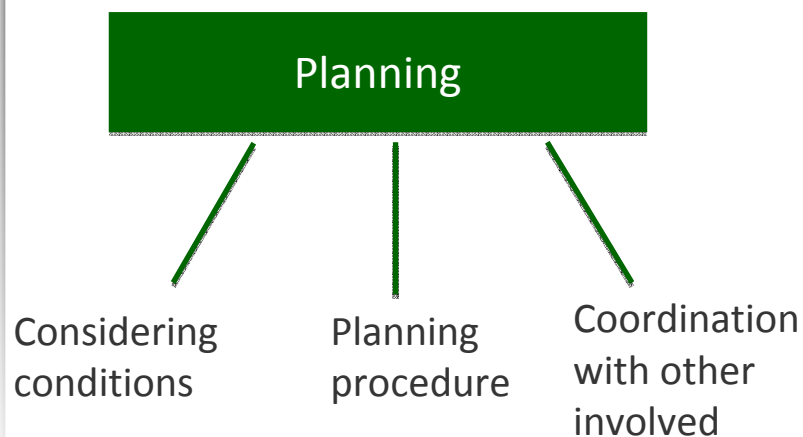
- 3 to 3.5 years in the dual training system
- 45 relevant building and construction occupations (30 alone in the craft sector)
- Crafts: Advanced training to a “master of crafts” with over 1800 hours
- nationally regulated training regulations and master's certificate regulations

## Starting point: Development of a grid for the qualitative analysis

Point of Reference: Buildings 		Processes (construction and reconstruction of buildings)					
		Advisory Services	Planning	Realisation	Approval	Maintenance and Repair	Disposal
Relevant technological sectors	Building envelope	Building shell					
		Roof					
		Facades					
		Windows and doors					
	Infrastructure of buildings	Interior fitting					
		Electrotechnology					
		Heat technology					
		Ventilation and air conditioning					
	Energy supply	Geothermal energy					
		Biomass					
		Solar Heat					
		Photovoltaics					
		Block heat and power plant					
		Wind engine					

## Initial VET

- Identification and analysis of 45 relevant occupations within the building sector
- Systematic identification of qualifications in training regulations
- Further differentiation of the identified processes, e.g. planning:



## Continuing VET

- Systematic identification of qualifications in Master Craftsman regulations (31)
- Investigation of existing further training courses (survey)

Qualitative Analysis

Quantitative Analysis

Grid

- Number of Participants
- Training Hours
- Examination Regulations
- Admission Requirements



## Further differentiation of the grid

Processes																			
Advisory Services		Planning			Realisation							Approval	Maintenance and Repair	Disposal					
<b>Reception of customer wishes</b>	<b>Customer information</b>	<b>Considering conditions</b>	<b>Planning procedure</b>	<b>Coordination with other involved</b>	<b>Preparation of the site / choice of material</b>	<b>Preparatory work at the building</b>	<b>Preparation of the material</b>	<b>Processing of material</b>	<b>Assembly of parts</b>	<b>Connection of systems</b>	<b>Protection and insulation of parts and systems</b>	<b>Commissioning of systems</b>	<b>Documentation and inspection of completed tasks</b>	<b>Clearing of the site</b>	<b>Approval</b>	<b>Assesment of maintenance needs</b>	<b>Execution of maintenance activities</b>	<b>Documentation of maintenance activities</b>	<b>Disposal</b>



### Quantitative analysis of continuing VET offers in Germany

- survey in the German crafts sector and in German industry
- around 300 different courses for renewable energies and energy efficiency in the German crafts sector and in industry
- more than 200 courses alone in the crafts sector
- focus on courses with
  - a) 5 to 50 hours and
  - b) 200 hours and more

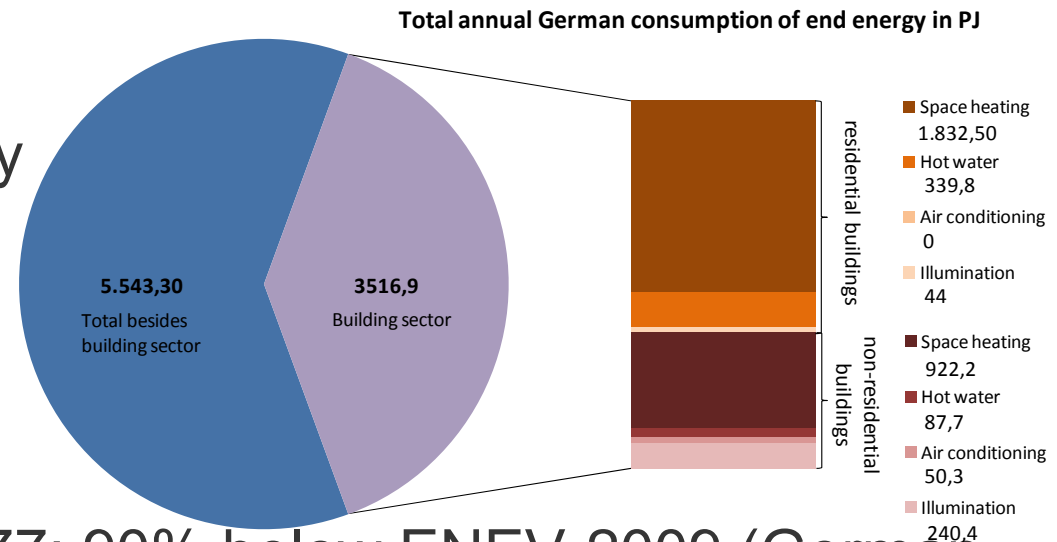
## Statistics on the building and the construction sector

### The German building sector

- Goals in the building sector until 2020: analysis of residential and nonresidential buildings
  - approximately 18 million residential buildings (2.7 to 3.4 billion square meters space)
  - around 2.5 million non-residential buildings (2.2 to 2.7 billion square meters space)

## German building sector

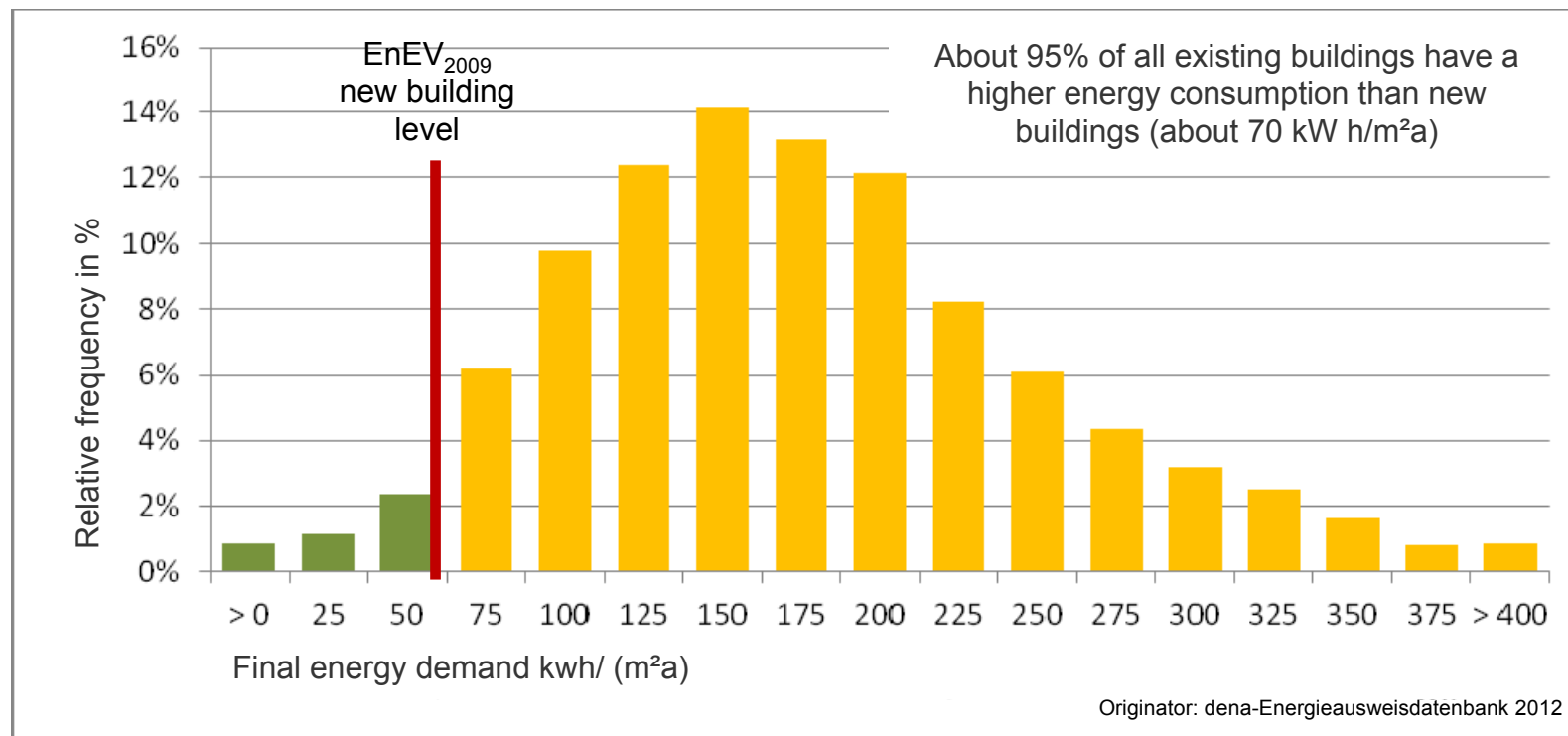
- approx. 40% end energy consumption and 30% of greenhouse gases (CO<sub>2</sub> equivalent)
- ≈ 20.5 million buildings
  - 75% built before 1977; 90% below ENEC-2009 (German energy saving regulation) level
- Potential for energetic refurbishments with a high chance of fast energy savings, **700 PJ need to be saved**



## German building construction sector

- Approx. 500.000 companies with 2.4 million employees, more than 80% of employees are qualified or highly qualified workers

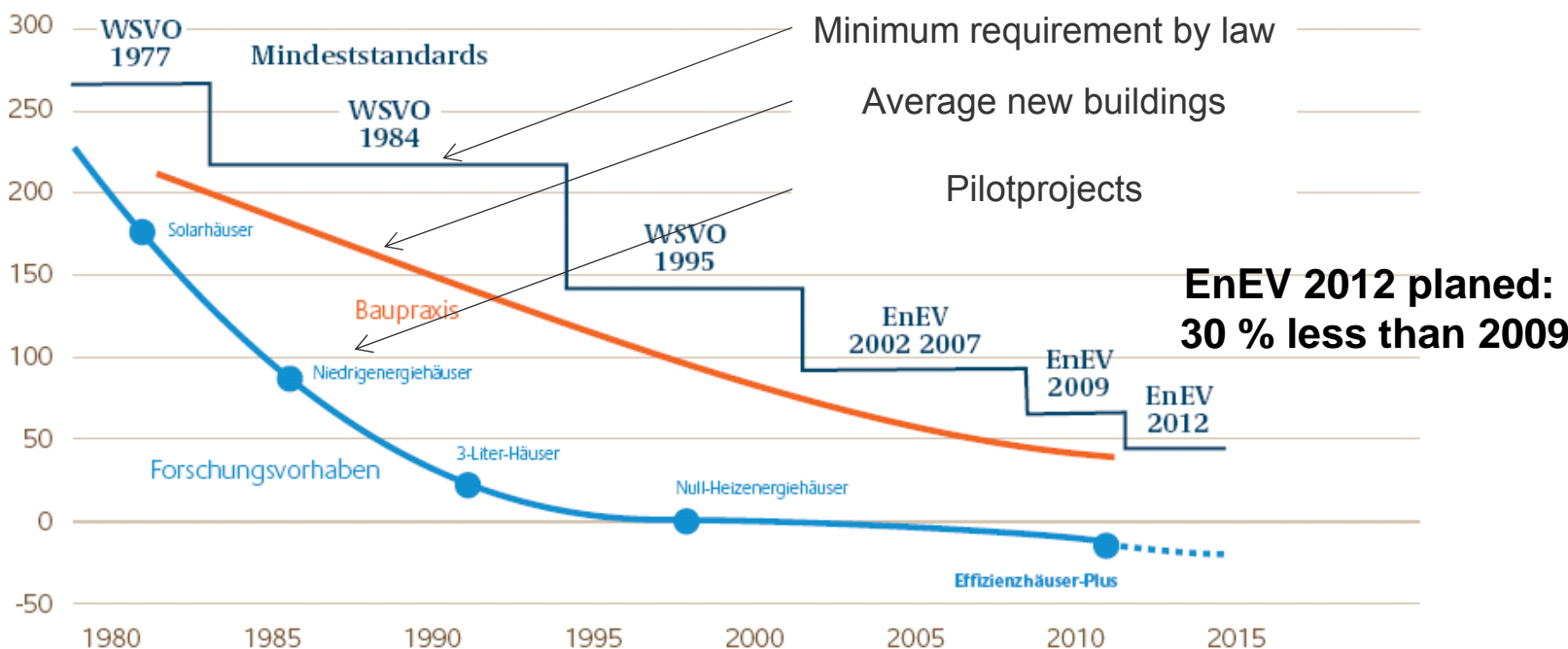
## Current situation of Germany's building stock: Level of energy efficiency still insufficient.



## Cut the energy demand – German energy saving ordinance

### Entwicklung des energiesparenden Bauens

Primärenergiebedarf Heizung (kWh/m<sup>2</sup>a)



- 01.11.1977: heat saving ordinance 1977 — 01.02.2002: energy saving ordinance EnEV 2002
- 01.01.1984: heat saving ordinance 1984 — 18.11.2004: energy saving ordinance EnEV 2004,
- 11.01.1995: heat saving ordinance 1995 — 01.10.2007: energy saving ordinance EnEV 2007
- 04.05.1998: heating system ordinance — 01.10.2009: energy saving ordinance EnEV 2009

- Relevant technologies and processes are available regarding: building shell; building infrastructure; energy supply  
➔ Technology leaps not expected until 2020
  
- Feasibility of climate protection goals and objectives until 2020
  - Increasing the share of renewable energy sources feasible due to national laws and regulations (EEG)
  - Reduction of greenhouse gases (40%) feasible
  - Reduction of energy consumption (20%) in the building sector not feasible without additional investments➔ The annual investment of €57.5 billion for refurbishment measures must be increased

- Scenario considers type, construction year & energy demand to calculate total surface area [m<sup>2</sup>] for restoration actions as well as costs for replacement of installation engineering

### Step 1: Definition of basic conditions for restoration

- 3.4 billion m<sup>2</sup> habitable surface
- 2.5 billion m<sup>2</sup> useable surface
- Residential before 1996
- Non-residential before 1977
- 50% of insulated buildings
- Demanded saving: 700 PJ

### Step 2: Classification/calculation for restoration to save 700 PJ

<u>1-/2-family house</u>	<u>surface area</u>	<u>energy use</u>	<u>impact</u>	<u>restoration area</u>
<1949 non-isolated	389.966.400 m <sup>2</sup>	180 kWh/a	80,6 %	124.336.279 m <sup>2</sup>
<1949 isolated	151.653.600 m <sup>2</sup>	90 kWh/a	61,1 %	25.932.766 m <sup>2</sup>
<1979 non-isolated	621.057.600 m <sup>2</sup>	180 kWh/a	80,6 %	184.292.493 m <sup>2</sup>
<1979 isolated	241.522.400 m <sup>2</sup>	90 kWh/a	61,1 %	41.300.330 m <sup>2</sup>
<1996	361.080.000 m <sup>2</sup>	80 kWh/a	56,3 %	67.080.640 m <sup>2</sup>
<2001	120.360.000 m <sup>2</sup>	50 kWh/a	30,0 %	0 m <sup>2</sup>
>2001	120.360.000 m <sup>2</sup>	35 kWh/a	0,0 %	0 m <sup>2</sup>





- Restoration and installation efforts sum up to costs in €/m<sup>2</sup>:  
residential buildings: €500/m<sup>2</sup>, non-residential: €380/m<sup>2</sup>
  - €372.8 billion residential, €195.4 billion non-residential
  - Total current investment of €57.5 bn./a for refurbishments must be increased to €81.1 bn./a to achieve 2020 goals
- **Additional investment of €23.6 billion/a necessary (11 bn. in residential and 12.6 bn. Euros in non-residential)**



## Analysis of labor supply and demand in construction occupations until 2020

### Quantitative demand for skilled workers by 2020

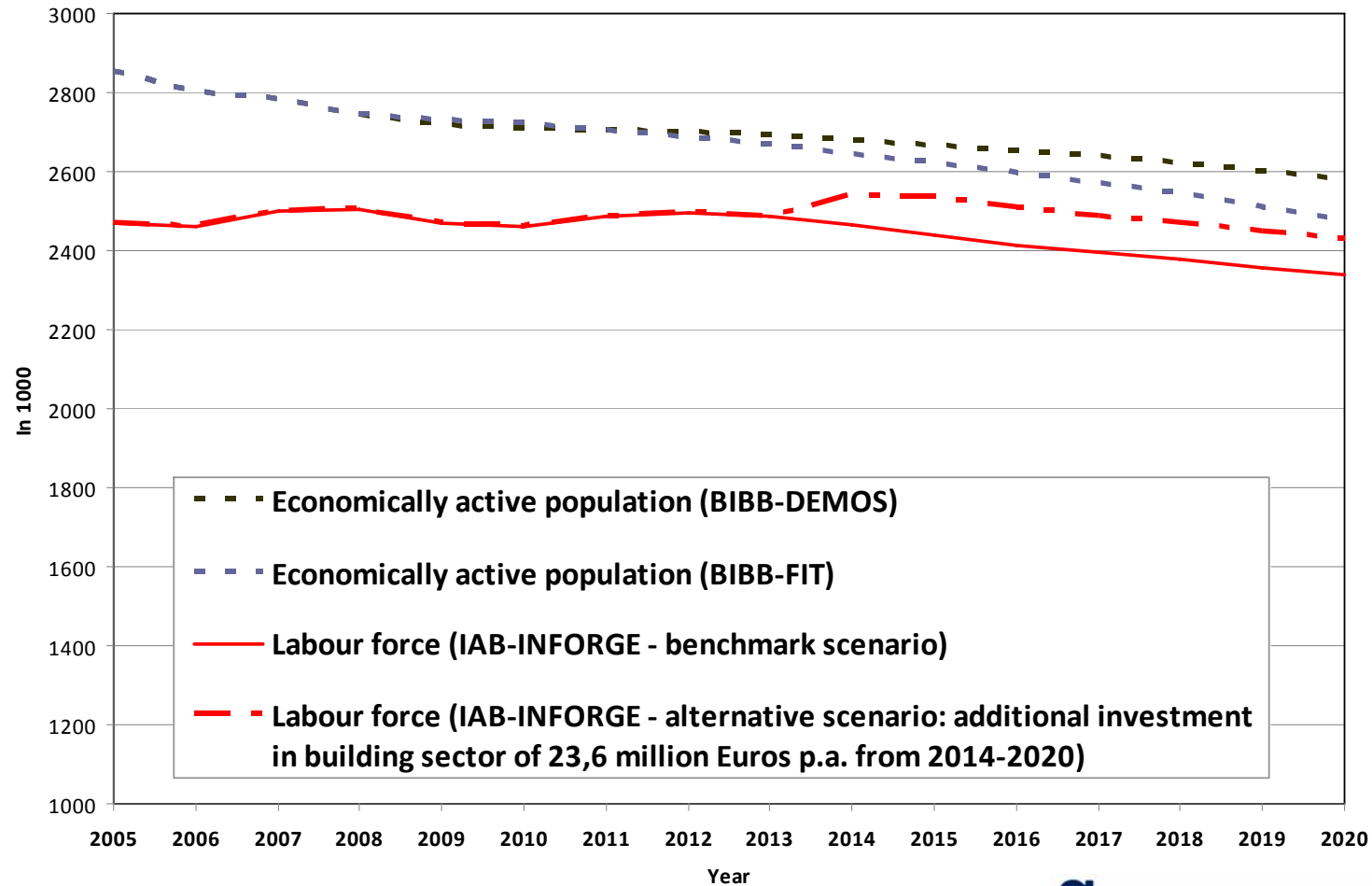
- **Benchmark scenario** (projection of current trends without additional investment)
  - no nationwide shortage of skilled workers
    - increasing employment of older persons
    - higher labor force participation of women



- **Alternative scenario** (modelled calculations for additional investments of € 23.6 billion a year (2014-2020)
  - consideration of all building trades: mathematically, the labor supply meets the demand
  - But: In some selected professions shortages may occur
    - electrical trades
    - Metal construction, plant engineering, steel construction, installation, assemblers
    - Regional differences cannot be mapped, but are very likely
  - From 2020 on there will be increasing nationwide shortages in the construction labor markets

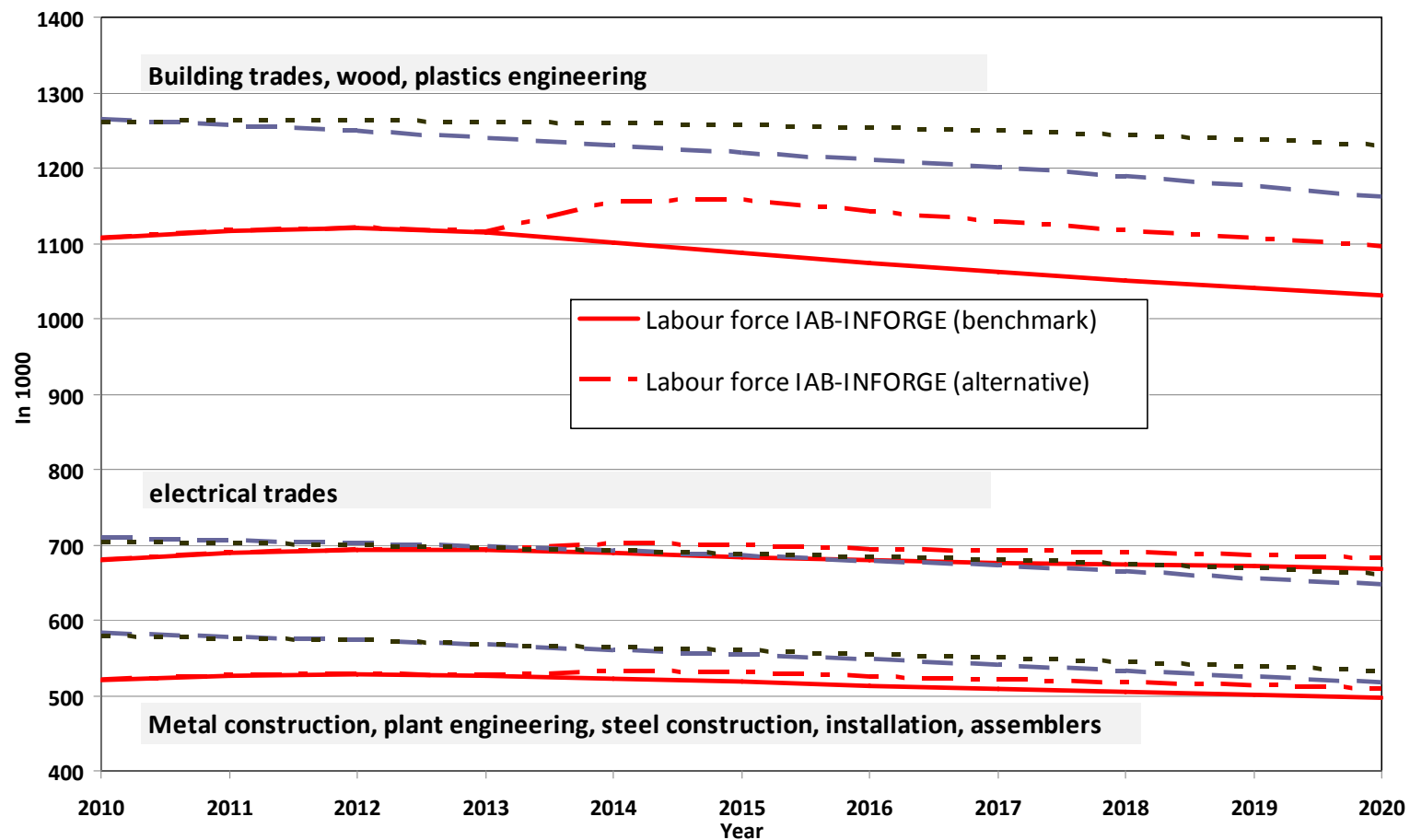


### Labour demand and supply in building trades until 2020





Labor supply and demand of the building trades selected by benchmark and alternative scenario to 2020 within the three largest occupations





### Meetings and events

- Kick-off-meeting 12.01.2011
- 3 consortium meetings
- Presentation of interim results 05.31.2012

### National platform

- 56 suppliers (incl. consortium)
- from different types of society

**Website [www.bauinitiative.de](http://www.bauinitiative.de)**

### Layer 3: National Platform



### Layer 1: Consortium

(coordinator for analysis activities)





Login

Build Up Skills

Nationale Initiative

Unterstützer

Informationen

Suchbegriff eingeben



## Initiative zur Ausbildung und Qualifizierung von Arbeitskräften im Bausektor in den Bereichen Energieeffizienz und Erneuerbare Energien

### Hintergrund

#### Was macht die Europäische Bauinitiative – Build Up Skills Deutschland?

Unter Federführung des Zentralverbands des Deutschen Handwerks untersucht ein aus sechs Partnern bestehendes Konsortium, wie viele Fachkräfte am Bau in Deutschland beschäftigt sind, welche Qualifikationen diese Personen besitzen und ob sie quantitativ und qualitativ ausreichen, um die klima- und energiepolitischen Ziele im Gebäudebereich bis 2020 erreichen zu können. Die Untersuchung läuft von November 2011 bis April 2013 und ist Teil der europäischen Initiative BUILD UP Skills – der Initiative zur Ausbildung von Arbeitskräften in den Bereichen Energieeffizienz und Erneuerbare Energien. Entsprechende Untersuchungen sollen in allen EU-Mitgliedstaaten stattfinden. Sie haben zum Ziel, Lücken im Bereich der Qualifizierung und bei der Anzahl der Beschäftigten aufzudecken und die erforderlichen Schritte zur Beseitigung der Defizite in sogenannten Qualifikations-Road-Maps darzulegen. Diese Erarbeitung soll mit den wesentlichen gesellschaftlichen Gruppen und den Ministerien abgestimmt werden. Die europäische Bauinitiative hat damit eine erhebliche Bedeutung für die nationale Bildungs- und Energiepolitik.

[Mehr über Build Up Skills erfahren ... ▶](#)

### Unterstützer

#### Unterstützer

Die Europäische Bauinitiative – BUILD UP Skills Deutschland wird von einer großen Zahl von Institutionen unterstützt, die alle relevanten gesellschaftlichen Gruppen in Deutschland präsentieren.

[Mehr über die nationalen Unterstützer erfahren... ▶](#)

### Publikationen

#### Publikationen

Hier finden Sie aktuelle Hintergrundinformationen und Überblicks-Präsentationen zur Build-Up-Skills-Initiative. Im Laufe des Projektes werden sukzessive die **Praxismaßnahmen** eingestellt

### Ziele

#### Ziele

Im Rahmen der europäischen Bauinitiative wird untersucht, ob die Anzahl und die Qualifikation der am Bau-Beschäftigten in Deutschland ausreichen, um die energie- und klimapolitischen Ziele in Deutschland erreichen zu können.

[Mehr zu den Zielen erfahren ... ▶](#)

### Newsletter

#### Newsletter

Bleiben Sie auf dem aktuellen Stand: melden Sie sich für den Newsletter an.

[Zur Anmeldung... ▶](#)





**Thank you for  
your attention !**