

Energy transitions in France and Germany Convergences, divergences & impact on Europe

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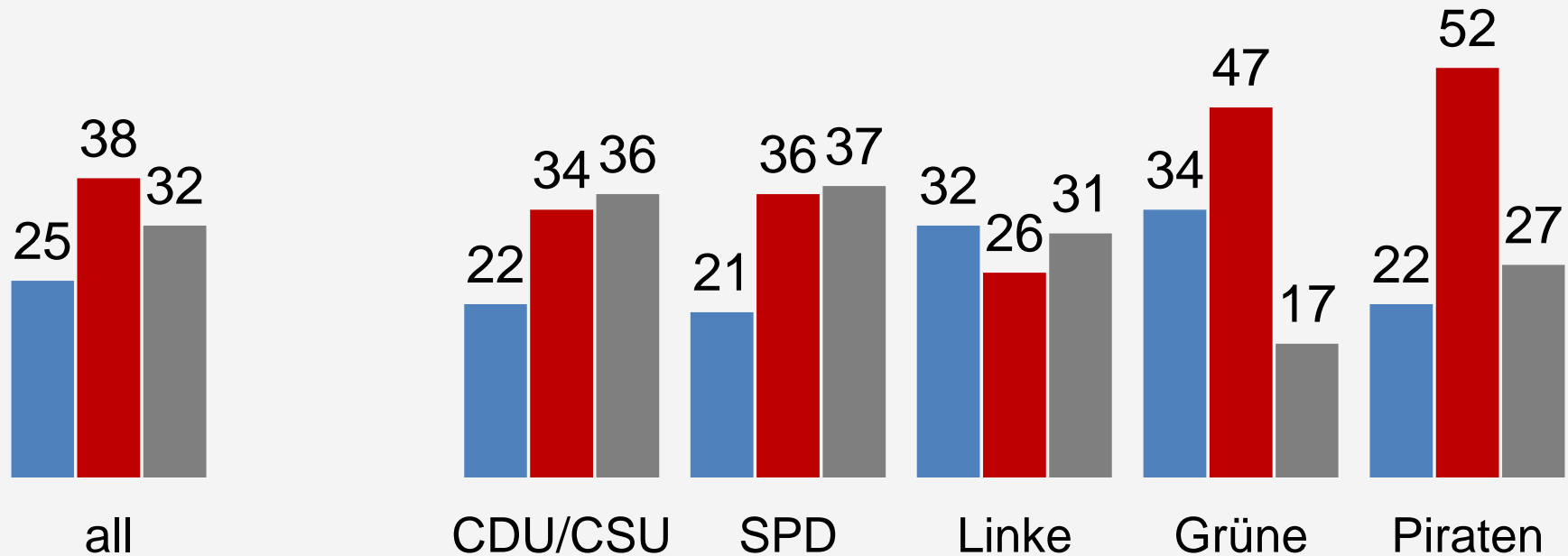
Director Strategy and Politics

Paris, 31 May 2013

For me „Energiewende“ means first and foremost...

- Nuclear phase-out
- Development of renewable energies
- Achieving climate targets

By political party



n=1.010

Energy concept 2010 / overview

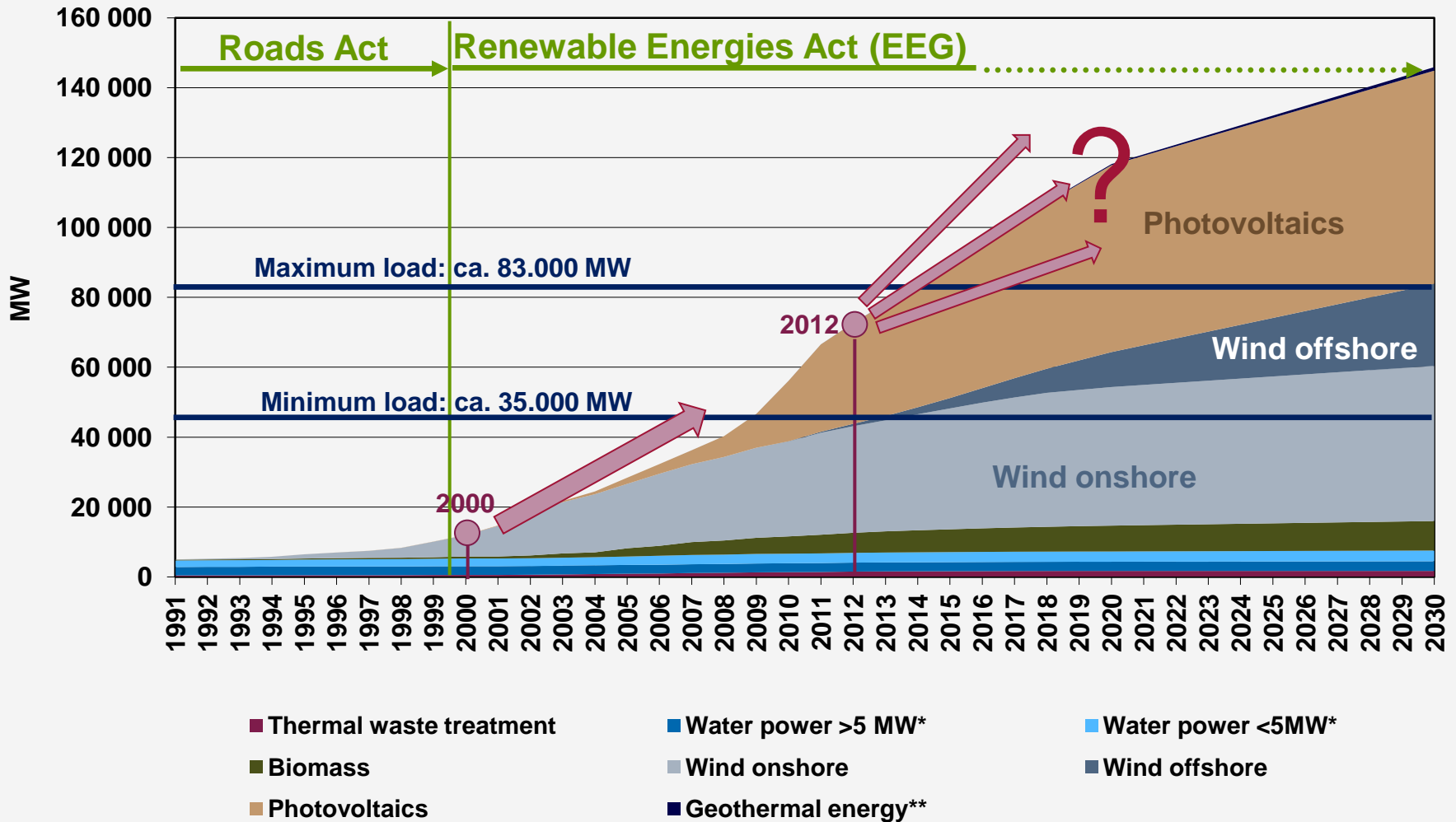
Overview of the objectives:

- Reduction of **greenhouse gases**: 2020: 40%, 2030: 55%, 2040: 70%, 2050: 80-95 %
- Expansion goals for **renewable energy**:
 - Gross final energy consumption: 2020: 18%, 2030: 30%, 2040: 45%, 2050: 60%
 - Gross electricity consumption: 2020: 35%, 2030: 50%, 2040: 65%. 2050: 80%
- Reduction of **heating needs**: 2020: 20%, 2050: 80% (primary energy needs)
 - Doubling the rate of energy-related renovation: from today's 1% to 2% p.a.
- Reduction of **primary energy consumption** by 20% by 2020 and by 50% by 2050
 - Increasing energy productivity by 2.1 % p.a.
- Reduction of **electricity consumption** (10% by 2020, 25% by 2050)
- E-Mobility: One million e-cars by 2020

In summary:

Very ambitious!

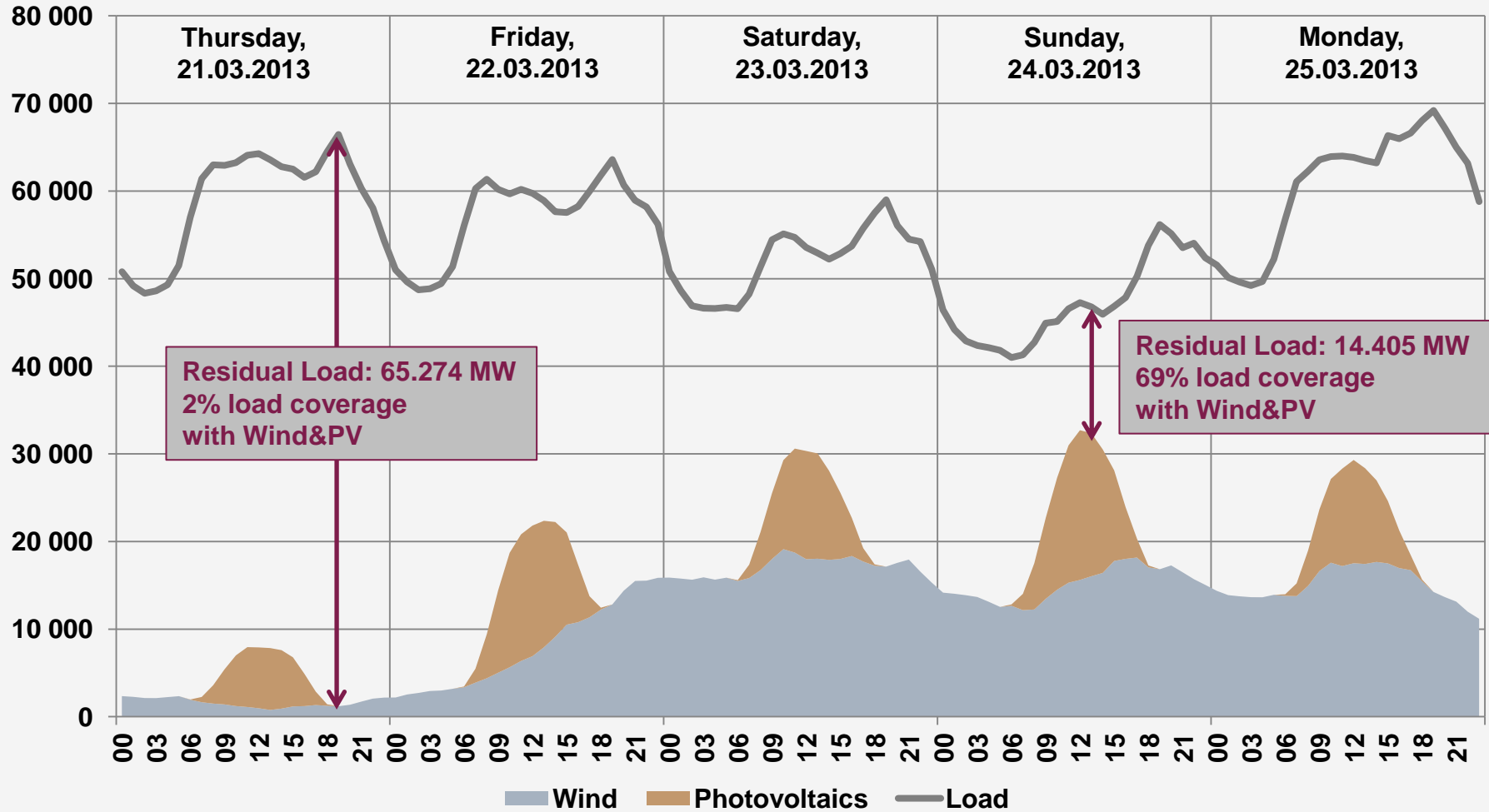
The „German Energiewende“:



* Partly estimated; ** Geothermal energy not visible (2011: 10 MW)

Source: BDEW, BMU-Leitstudie 2011

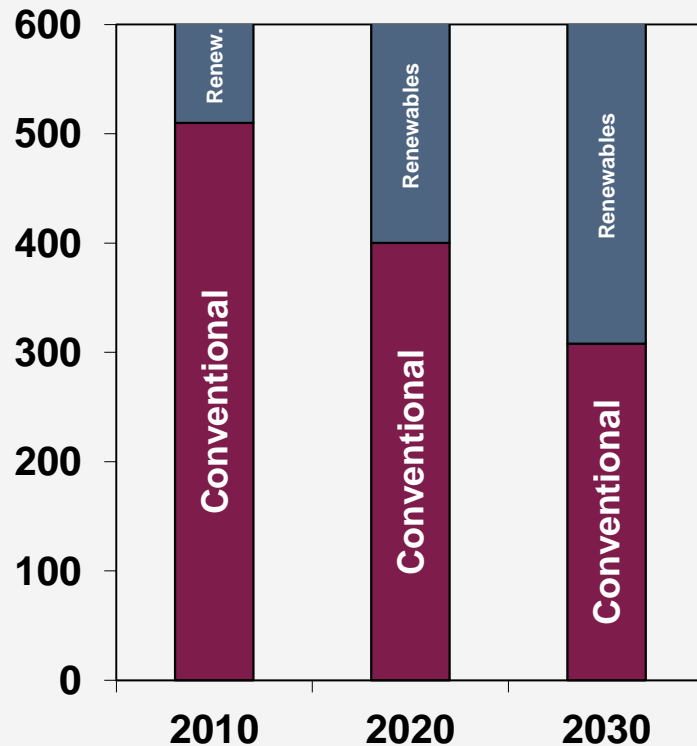
Situation 21 to 25 March 2013



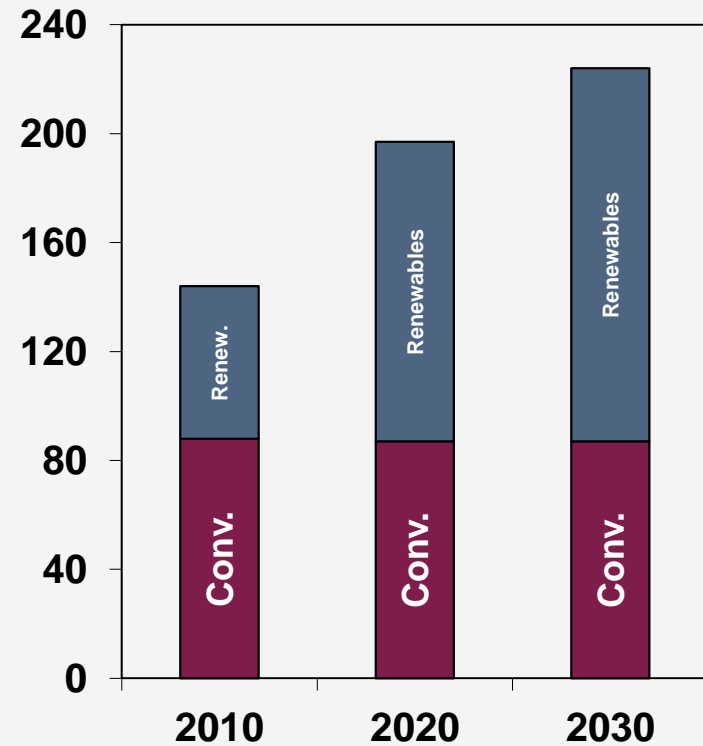
Sources: Transmission System Operators, BDEW (own calculation)

Challenges for the generation system: Considerably more capacity for the same task

Gross electricity generation (TWh)

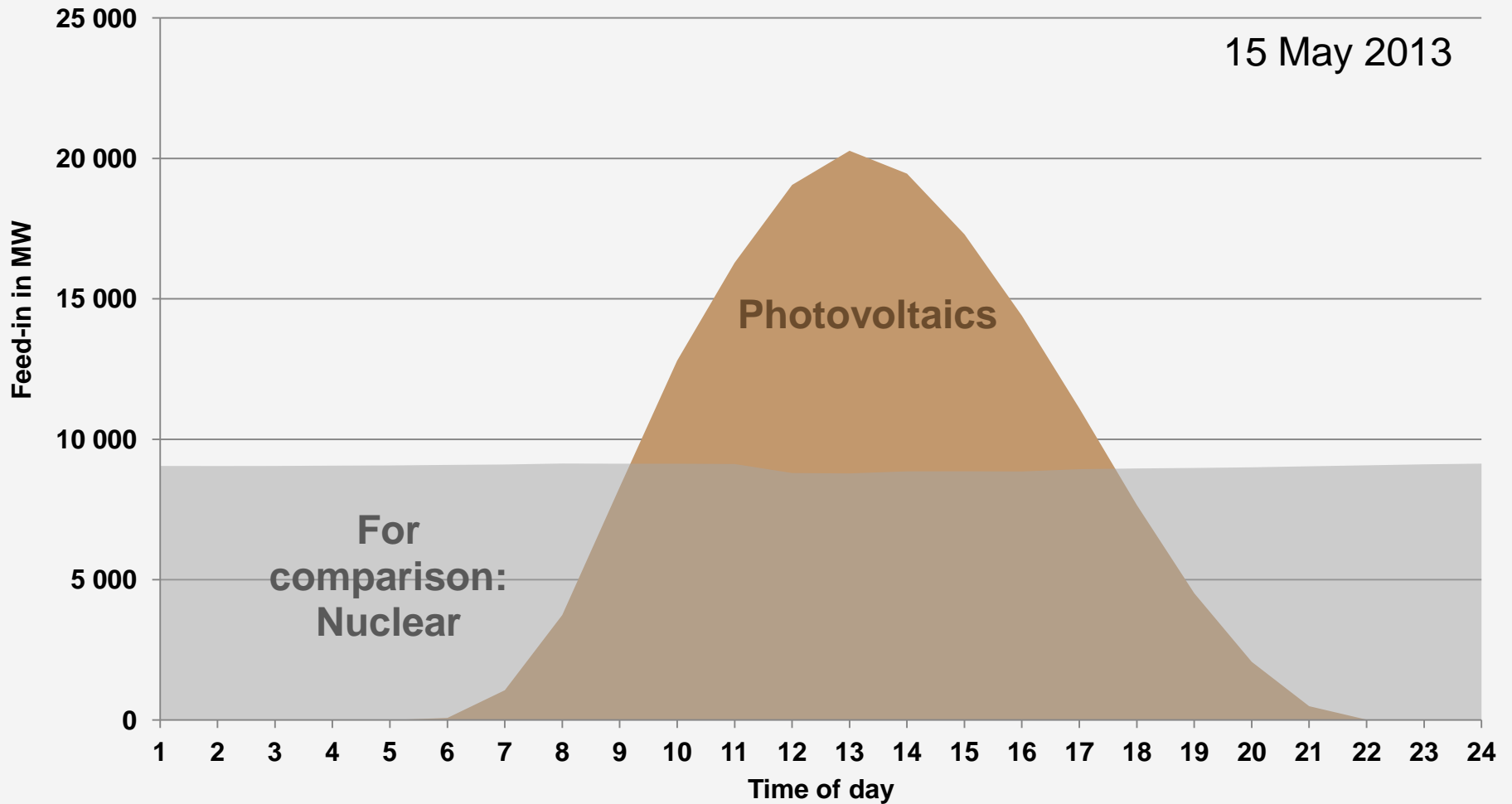


Electricity generation capacity (GW)



- It is necessary to significantly expand capacities for renewable energies to achieve a share of 35 % in electricity consumption by 2020 and 50 % by 2030 (with constant electricity consumption)
- The conventional generation system must be held available as back-up or system service, however, electricity generation declines significantly (economic efficiency?)

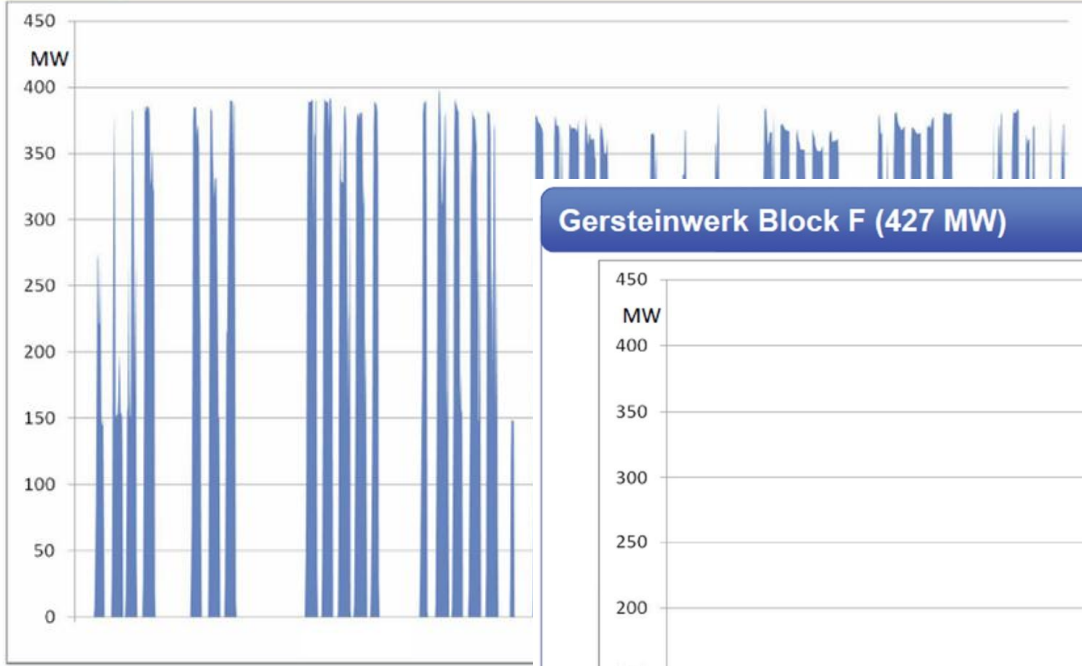
Photovoltaics feed-in, May 15th, 2013



Sources: EEX, www.eeg-kwk.net

Utilisation gas power plant Gersteinwerk (427 MW, implemented in 1973)

Gersteinwerk Block F (427 MW)



June 2009

Gersteinwerk Block F (427 MW)



June 2011

July 2011

Source: RWE

Technical challenges: We need...

- rapidly adjustable, highly flexible power plants
- a reservoir of adequate conventional reserve capacities
- new storage technologies
- an intensive expansion of the power networks
- possibly a new market design
- new control technologies and system services
- and above all more intelligence in the whole energy supply system. From the consumer an the power lines to generation itself.
- Bottom line: a whole range of new innovations...

German Energiewende: New issues...

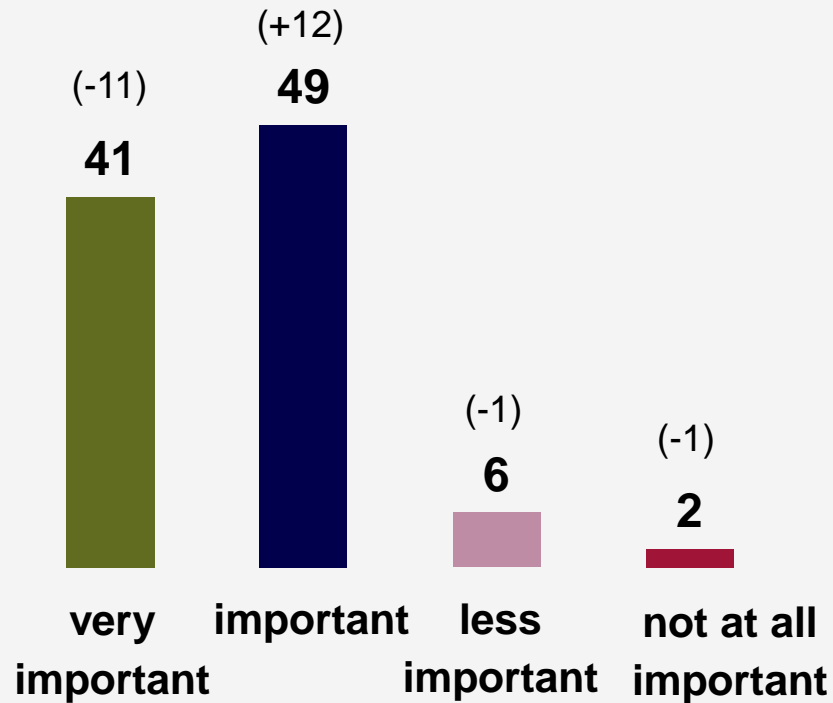
- What about security of supply in Germany?
- What will be the future market design? Capacity remunerations?
- How far will prices for energy rise?
- Will there be a real EU framework for energy and climate policy?
- How is the Energiewende to be financed?
- Can expansion of the networks and infrastructure keep pace with the expectations and the expansion of renewable energies?
- And many other issues...

- **Result: Uncertainty**

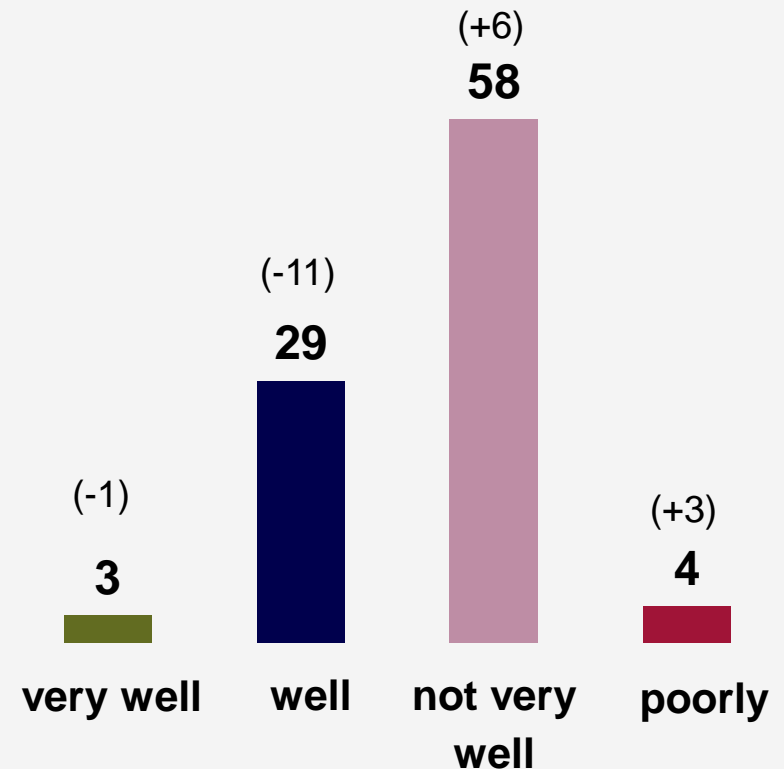
What does the public think?

Importance and progress of the Energiewende

The Energiewende is ...



The Energiewende is progressing...

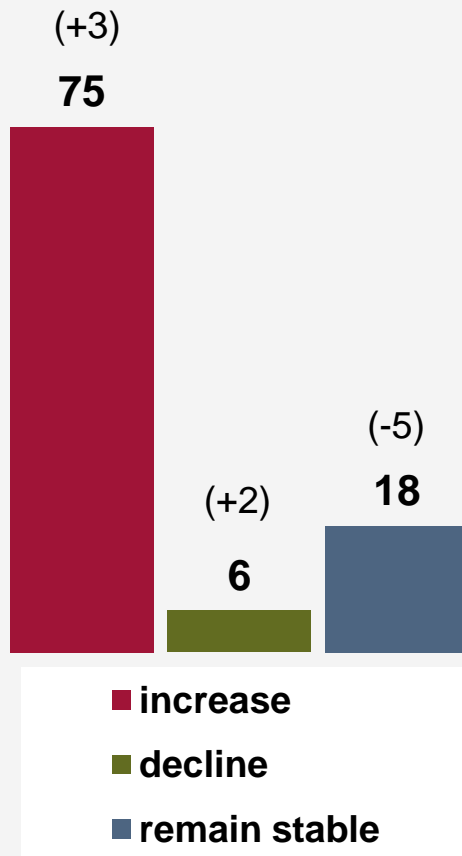


n = 1.011

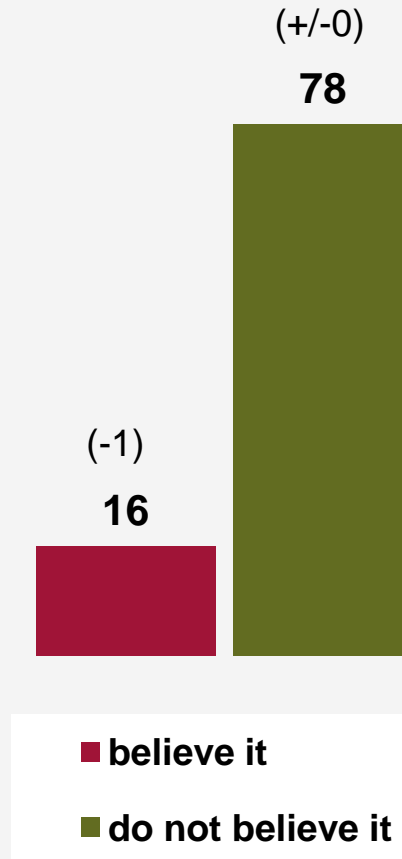
As of 06/2012; changes vs. 01/2012 in brackets

When electricity is generated primarily from renewable energies, ...

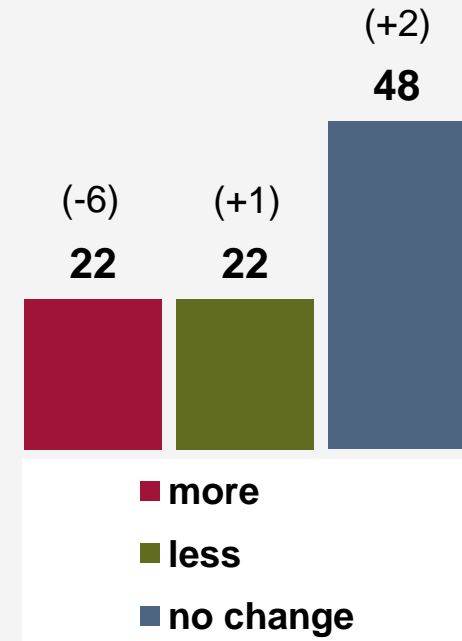
...electricity prices tend to...



...there will be major power failures.



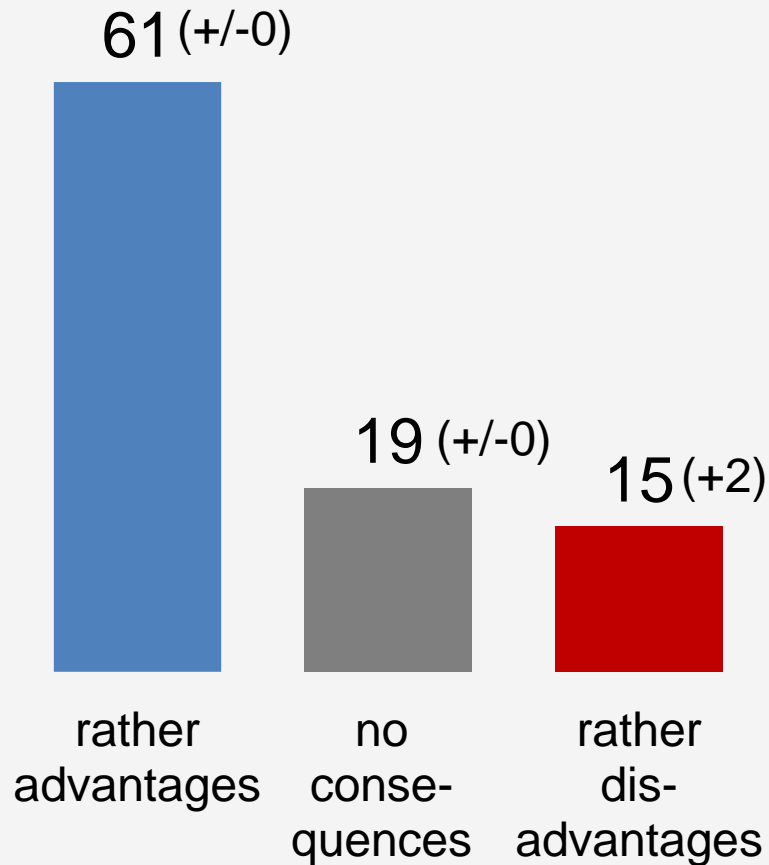
...we will depend ... on electricity imports...



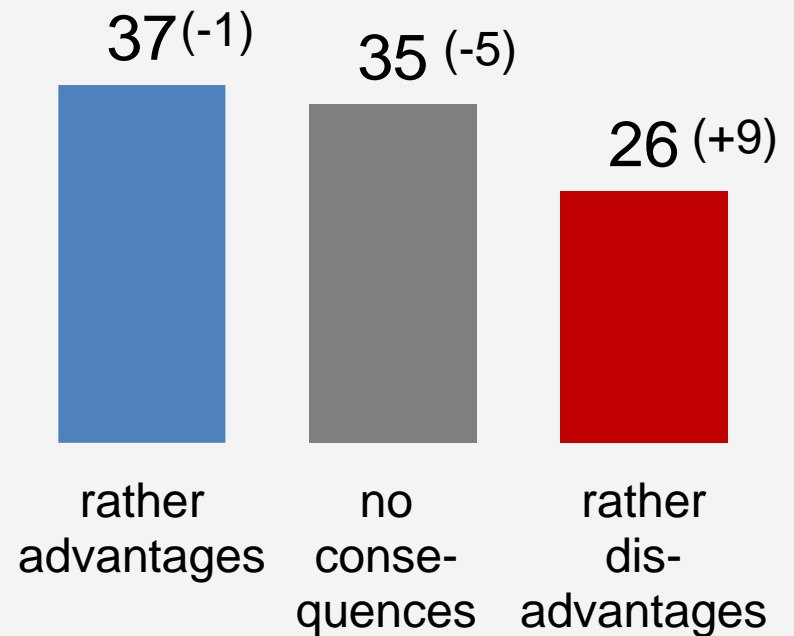
As of 06/2012; changes vs. 01/2012 in brackets n = 1,011

„Energiewende“ has...

for the industrial location
Germany



for me individually



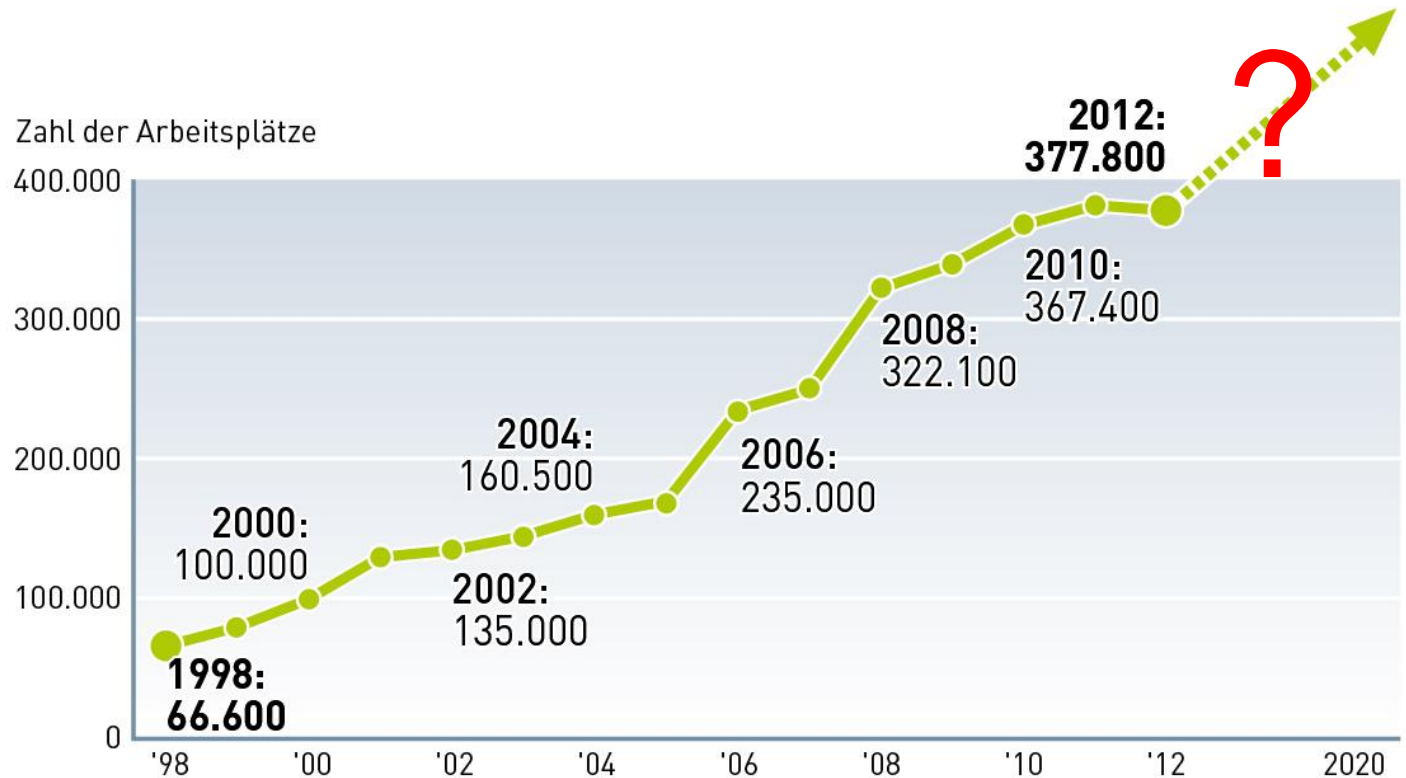
n=1.010; changes vs. 01/2012 in brackets

What about jobs?

Development of jobs in the field of renewable energies in Germany

After continued growth, the number of jobs slightly declined for the first time in 2012. This was especially due to the crisis in the solar industry. The total number of jobs remained on the previous year's level because wind and bioenergy developed well.

**Branchenziel
2020: 500.000**

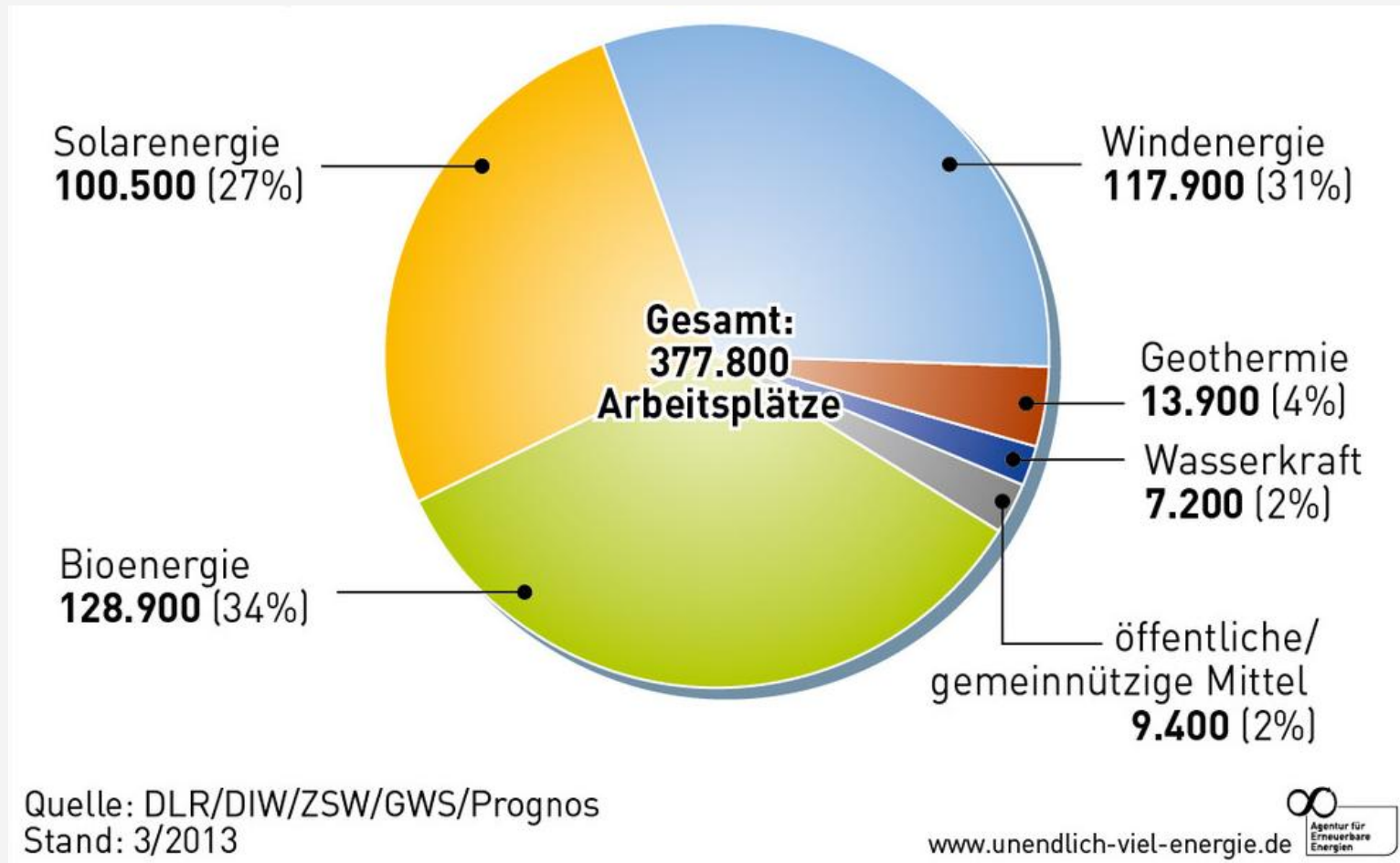


Quellen: BMU/AGEE-Stat, DLR/DIW/ZSW/GWS/
Prognos, UBA, BEE; Stand: 3/2013

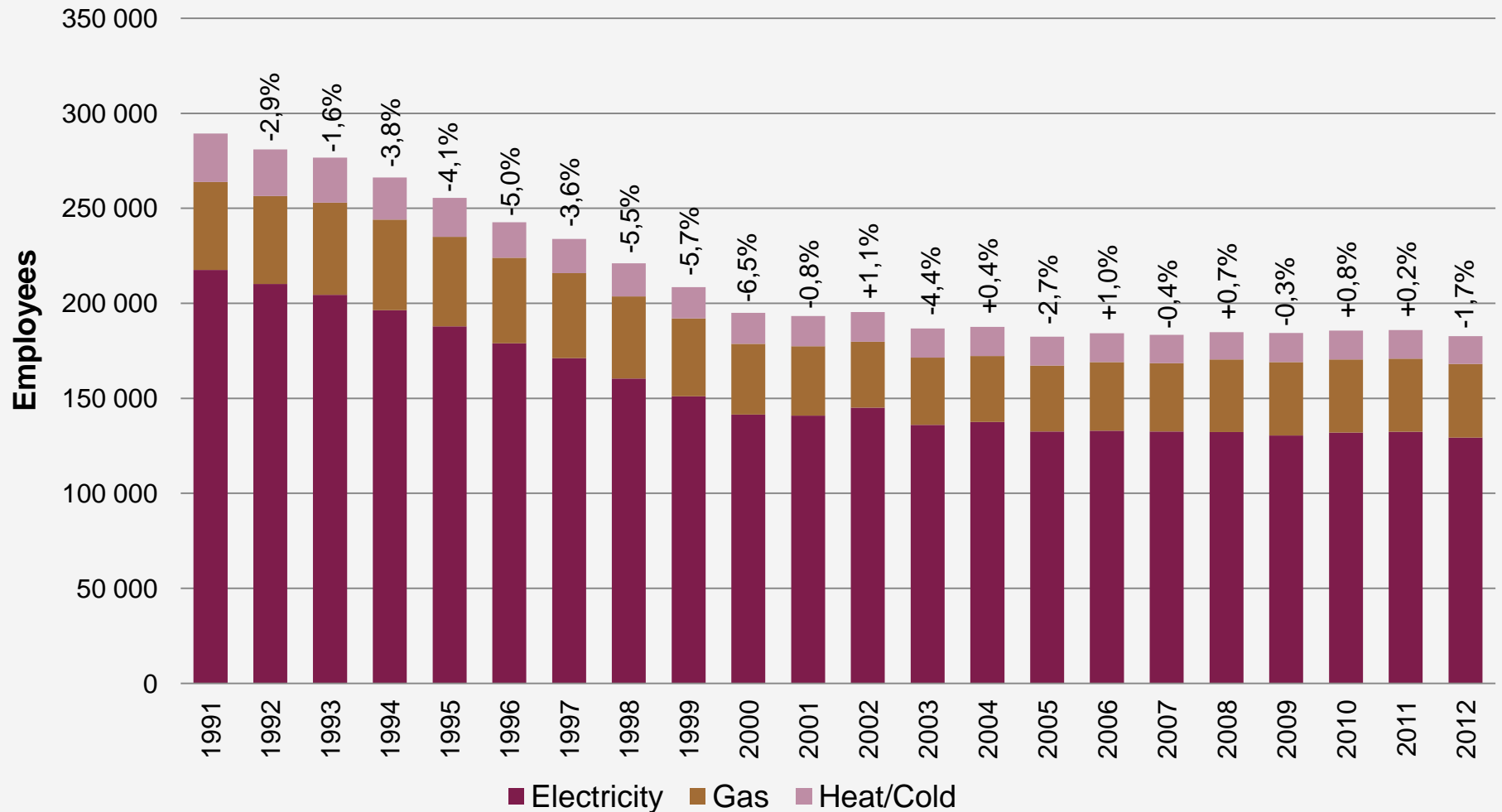
www.unendlich-viel-energie.de
Agentur für
Erneuerbare
Energien

Renewable energies: 378,000 jobs in 2012

Number of jobs by sector



Jobs in the „classical“ energy sector



Source: BDEW, Status May 2013

Jobs: Consequences

But:

- Almost 42 million employees in Germany
- About 29 million social secured employees
- Out of which 5.2 million in manufacturing industry sector (18 %)
- 830,000 employees in energy intensive branches alone.

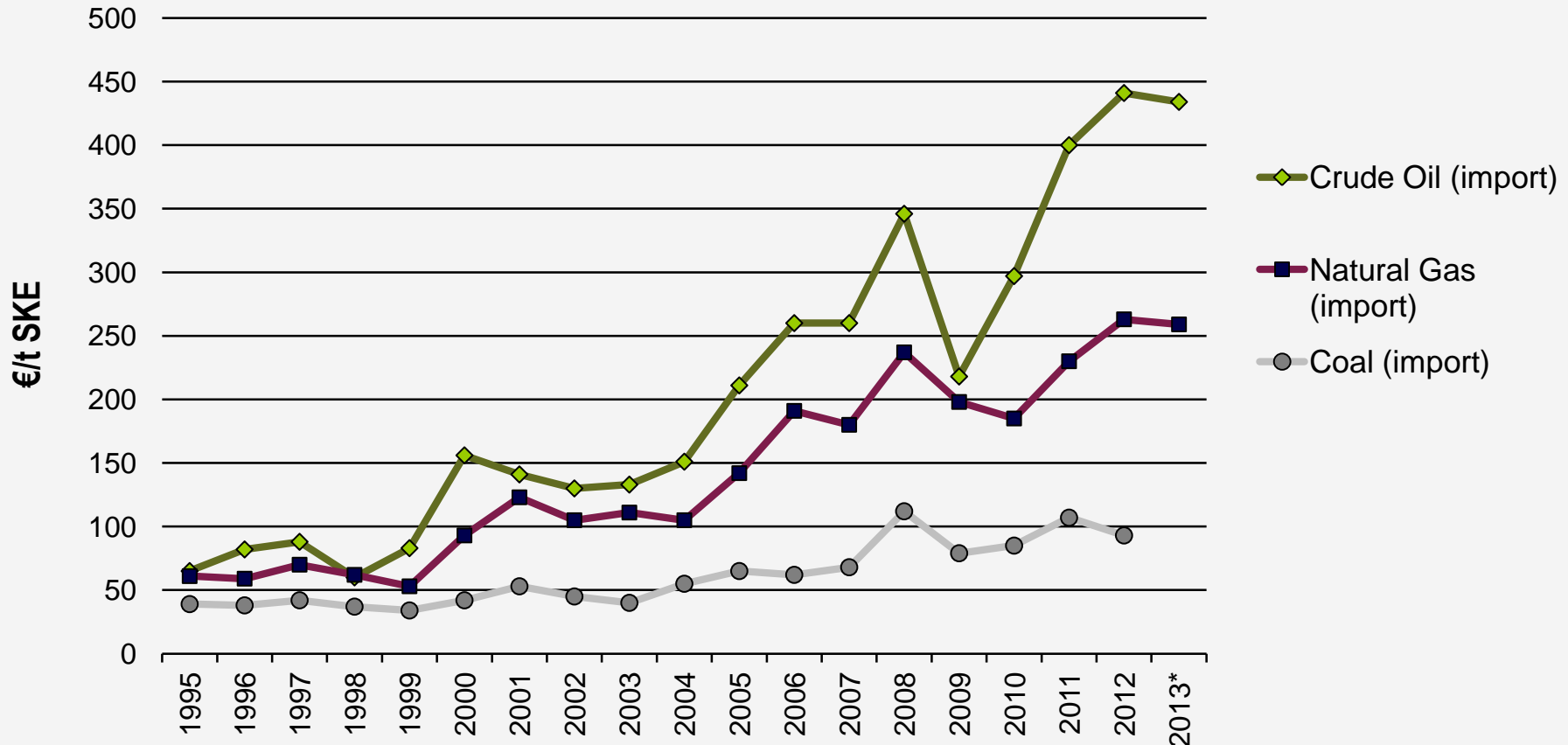
Challenging questions:

- Which consequences will Energiewende have on these jobs?
- Will industry sector jobs remain competitive?
- Can Germany keep its industrial value change and the successful medium sized industrial sector?

The money issue

Prices for primary energy

Annual averages in €/t SKE

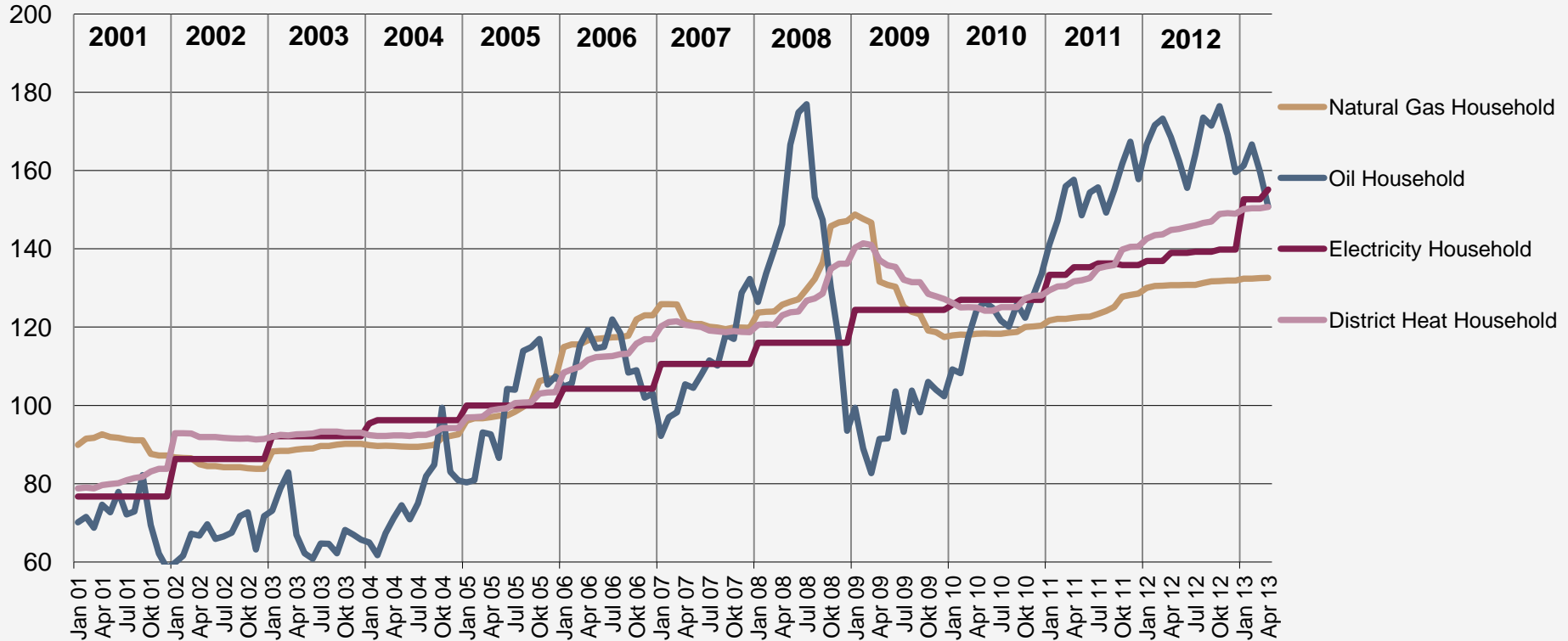


Sources: BAFA, Kohlenstatistik e.V.

*Crude Oil (import) and Natural Gas (import) until incl. 02/2013, third-country coal until incl. 12/2012

Development of energy prices for households

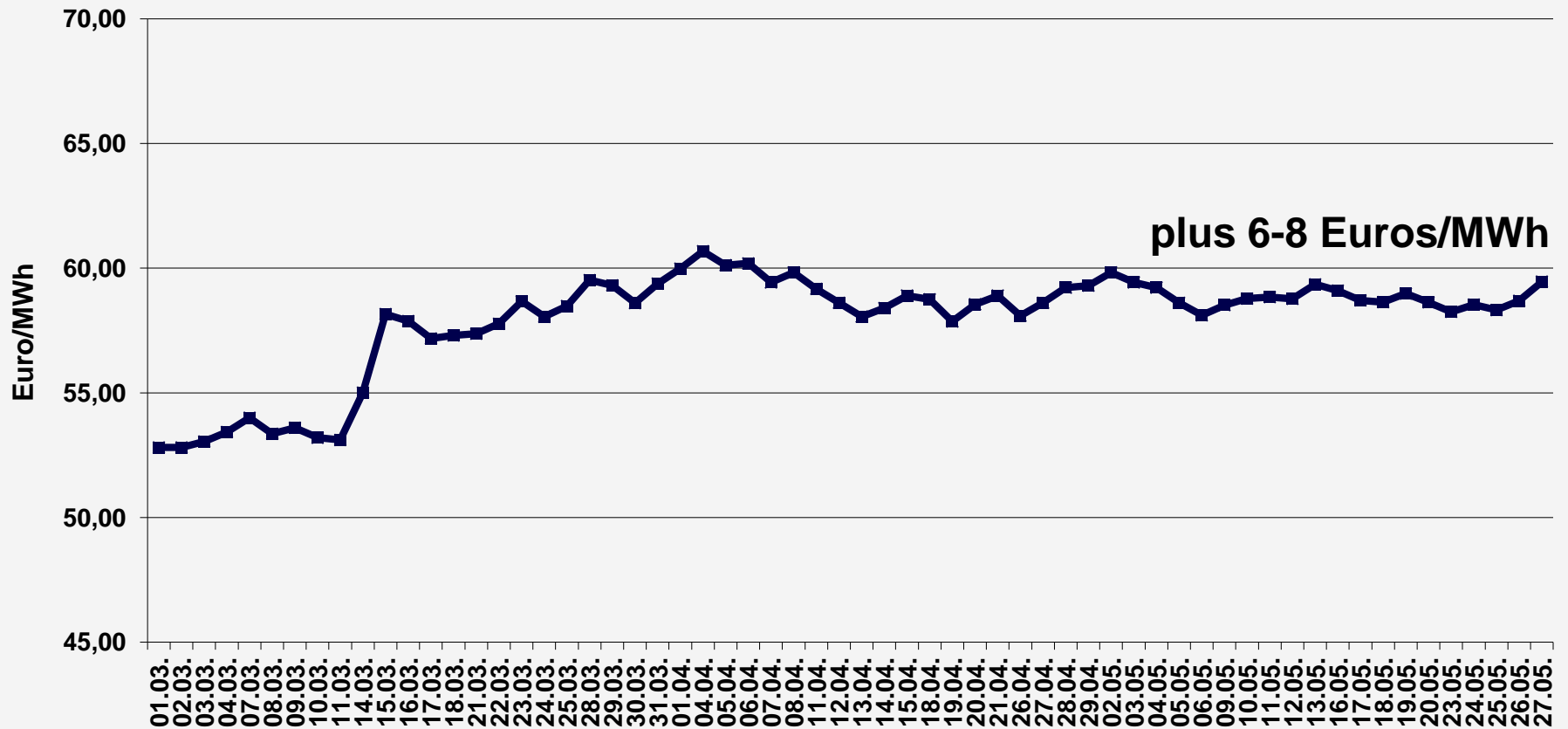
Index



Sources: Statistisches Bundesamt (FS 17, R 2), BDEW (Electricity 3,500 kWh) Indexed values: 2005 = 100, As of: incl. 04/2012

The graph shows the price development (indexed rate of price increase, **no absolute fuel prices**) of heating oil, gas, electricity and district heating for households since January 2001 relating to base year 2005 (annual average)

Costs of the German Energiewende: Electricity prices at the European Energy Exchange (EEX), Derivatives, base load



Change
on 27/05/11
versus 10/03/11:

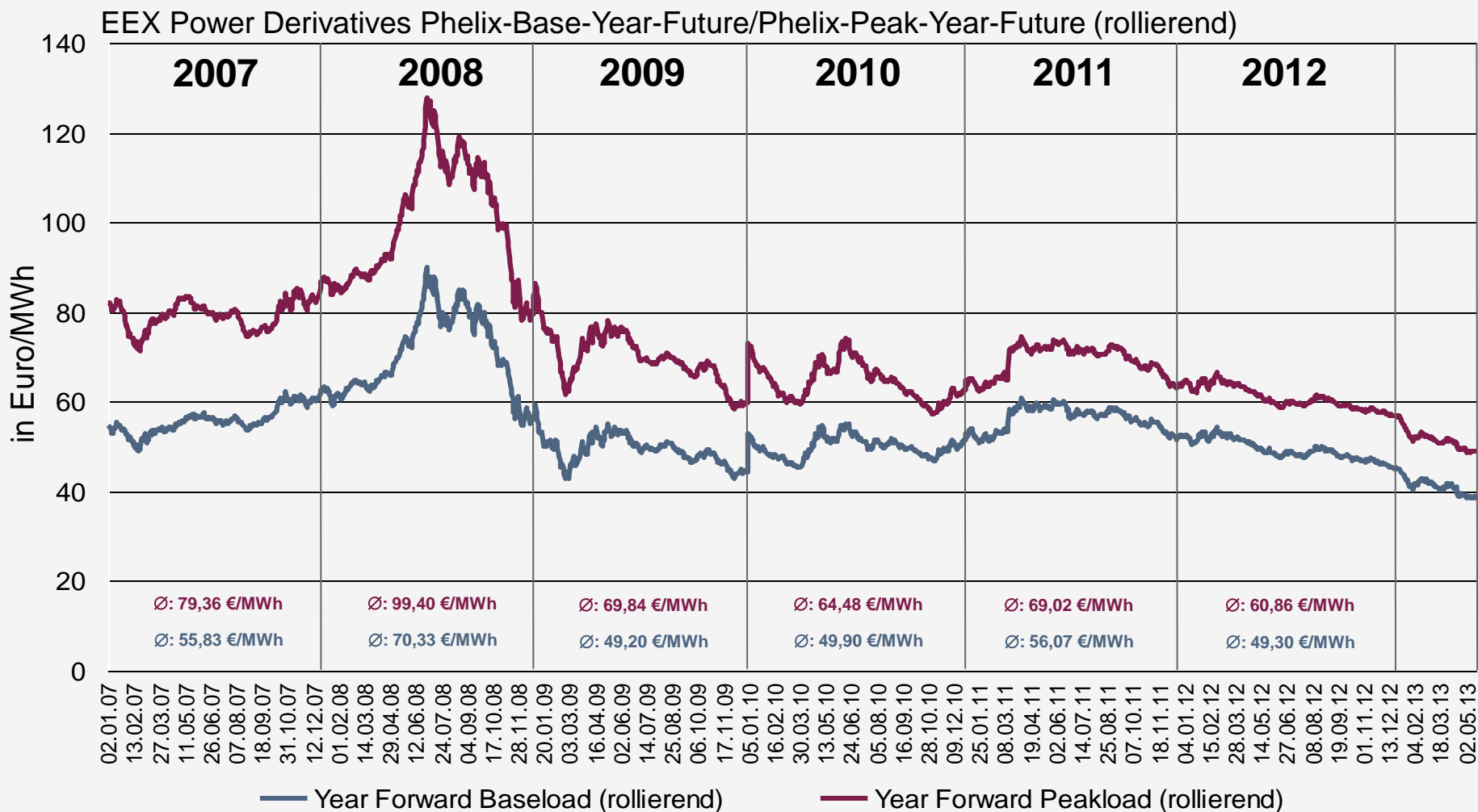
■ Jahr 2012

+12%

Source: EEX

Price development at the energy exchange

Futures market: Annual futures (01/01/2007 – 22/05/2013)

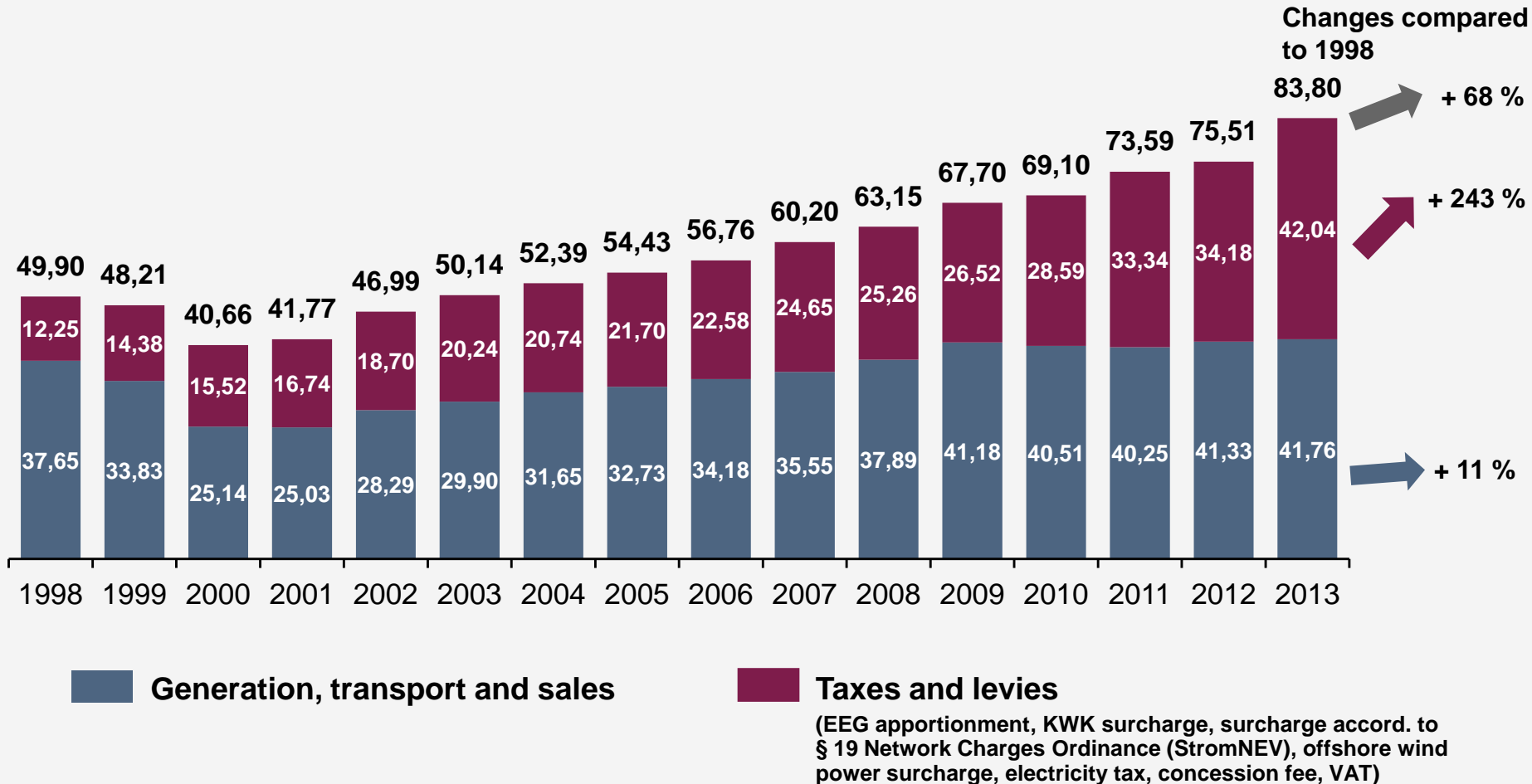


Source: EEX

Electricity bill for households

Average monthly electricity bill of a three-person household in Euros

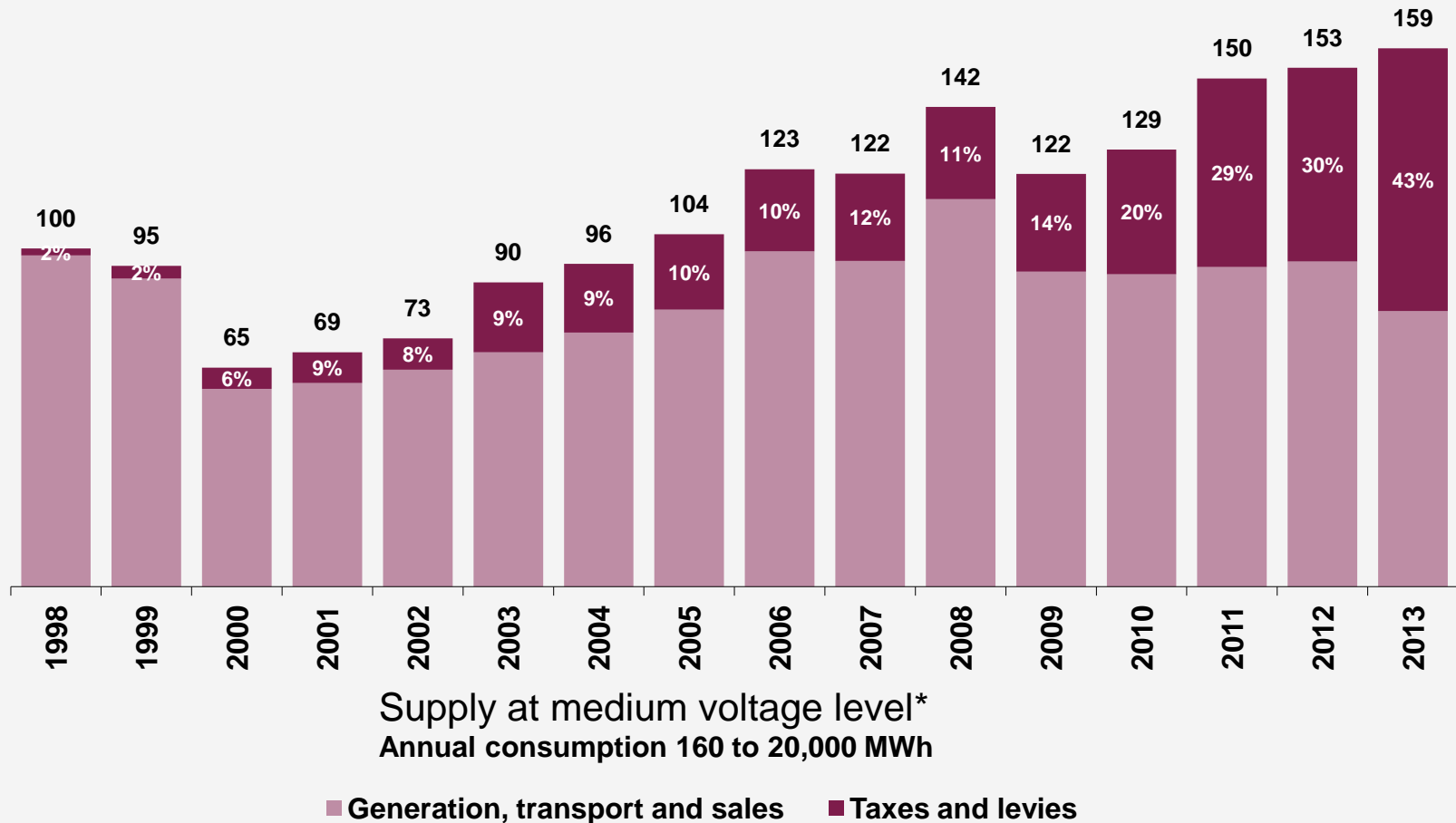
Yearly consumption: 3,500 kWh



Source: BDEW, As of: 04/2013

Taxes and levies: industrial electricity

Development of electricity prices for the industry (1998 = 100)



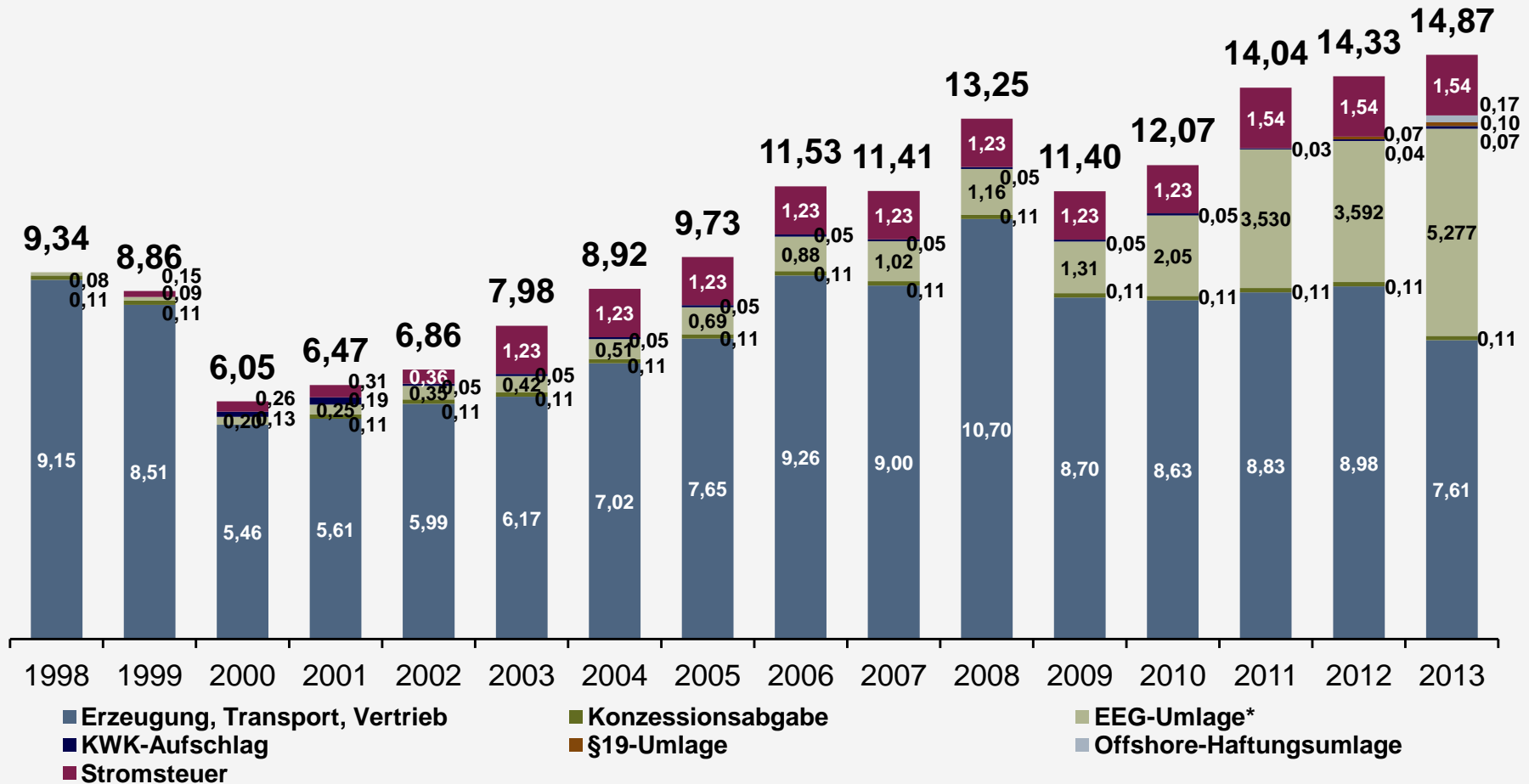
* Including electricity tax

Sources: VEA, BDEW; As of: 05/2013

Electricity prices for industrial customers also rise considerably due to levies and taxes

Average electricity prices for the industry in Cent/kWh (including electricity tax)

Annual consumption 160 to 20,000 MWh (Supply at medium voltage level; feed-in 100kW/1,600h to 4,000kW/5,000h)

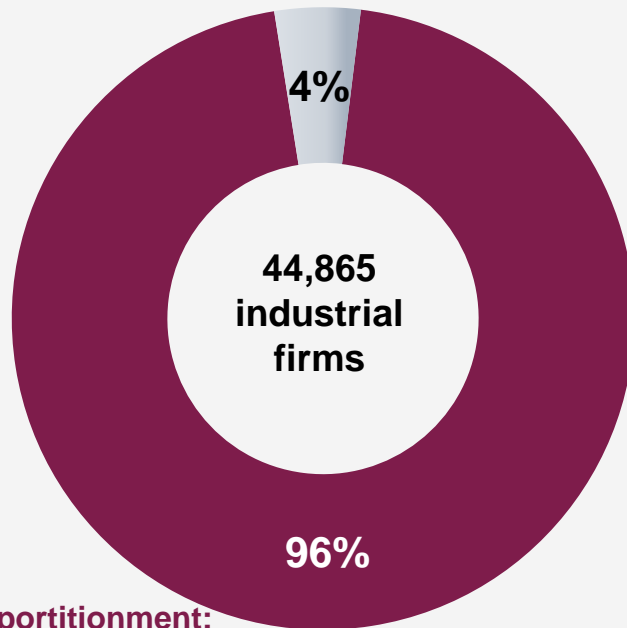


* From 2010 application of the Ordinance on a Nationwide Equalisation Scheme

Sources: VEA, BDEW; As of: 05/2013

Most industrial firms have to pay for renewable energies...

1,638 businesses/business units benefit from the special equalisation scheme under Article 16 EEG



**Full EEG apportionment:
rd. 43,000 industrial firms**

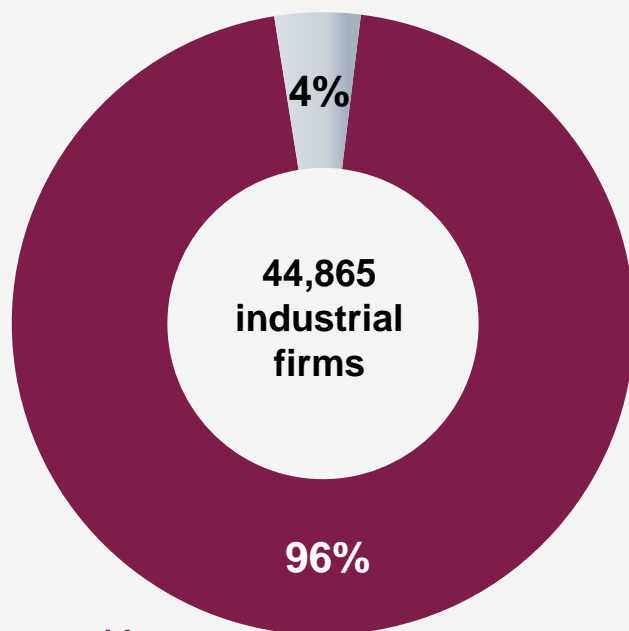
96% of all industrial firms in Germany pay the full levy (2013: 5,277 ct/kWh) for the renewables energy act (EEG)!

* Economic activities defined in sections B (mining and quarrying) and C (manufacturing), German Classification of Economic Activities, 2008 edition (WZ 2008)

Sources: BDEW (own calculation based on forecast data for EEG apportionment 2013 of 15/10/2012), BAFA, Stat. Bundesamt

...but there are some exceptions:

1,638 businesses/business units benefit from the special equalisation scheme under Article 16 EEG



**Full EEG apportionment:
rd. 43,000 industrial firms**

Only 4% of all industrial firms in Germany pay a reduced levy for the renewables energy act (EEG):

- electricity intensive industrial firms (e. g. steel, aluminium, chemical base materials, paper)
- costs for electricity have to exceed 14% of the gross value added
- >1 GWh yearly consumption
- Additionally: Railways
- International competition...

* Economic activities defined in sections B (mining and quarrying) and C (manufacturing), German Classification of Economic Activities, 2008 edition (WZ 2008)

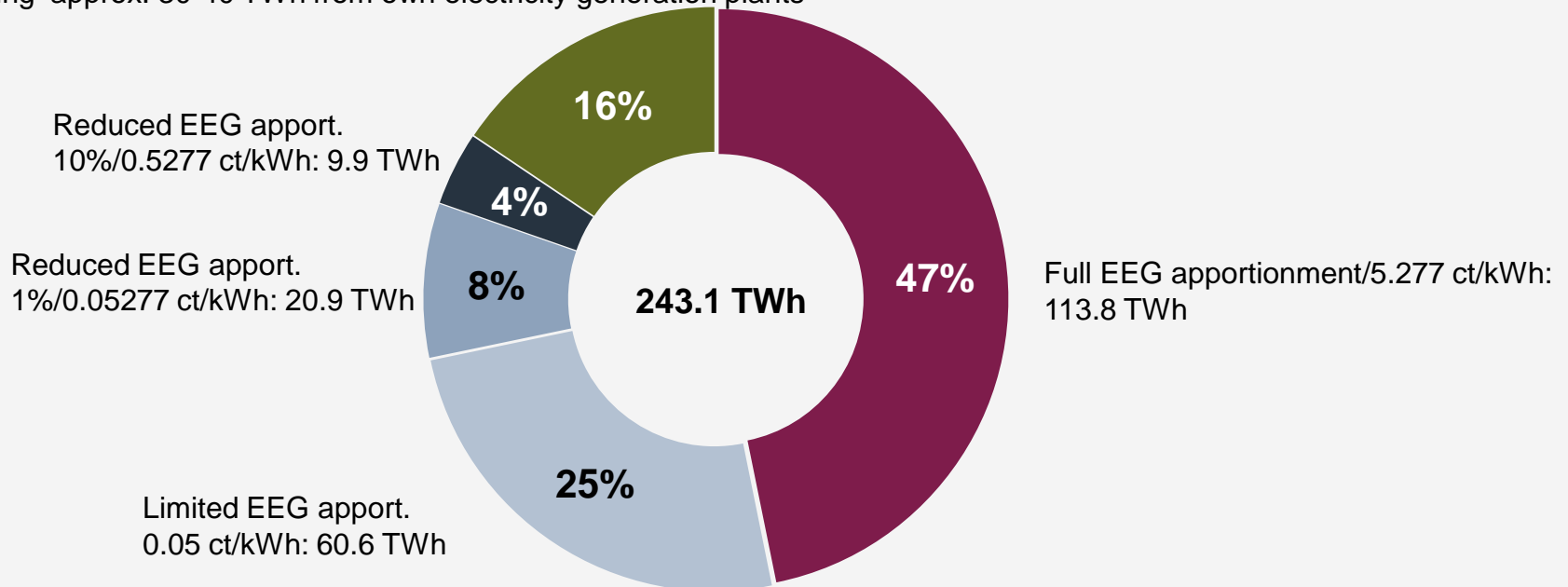
Sources: BDEW (own calculation based on forecast data for EEG apportionment 2013 of 15/10/2012), BAFA, Stat. Bundesamt

Financial reliefs for power-intensive industry

EEG 2013: Who will be „relieved“?

Industrial electricity consumption in 2013 according to EEG forecast 2013: **243,1 TWh**

Relief from EEG apportionment according to §37 EEG: Industries consuming approx. 30-40 TWh from own electricity generation plants

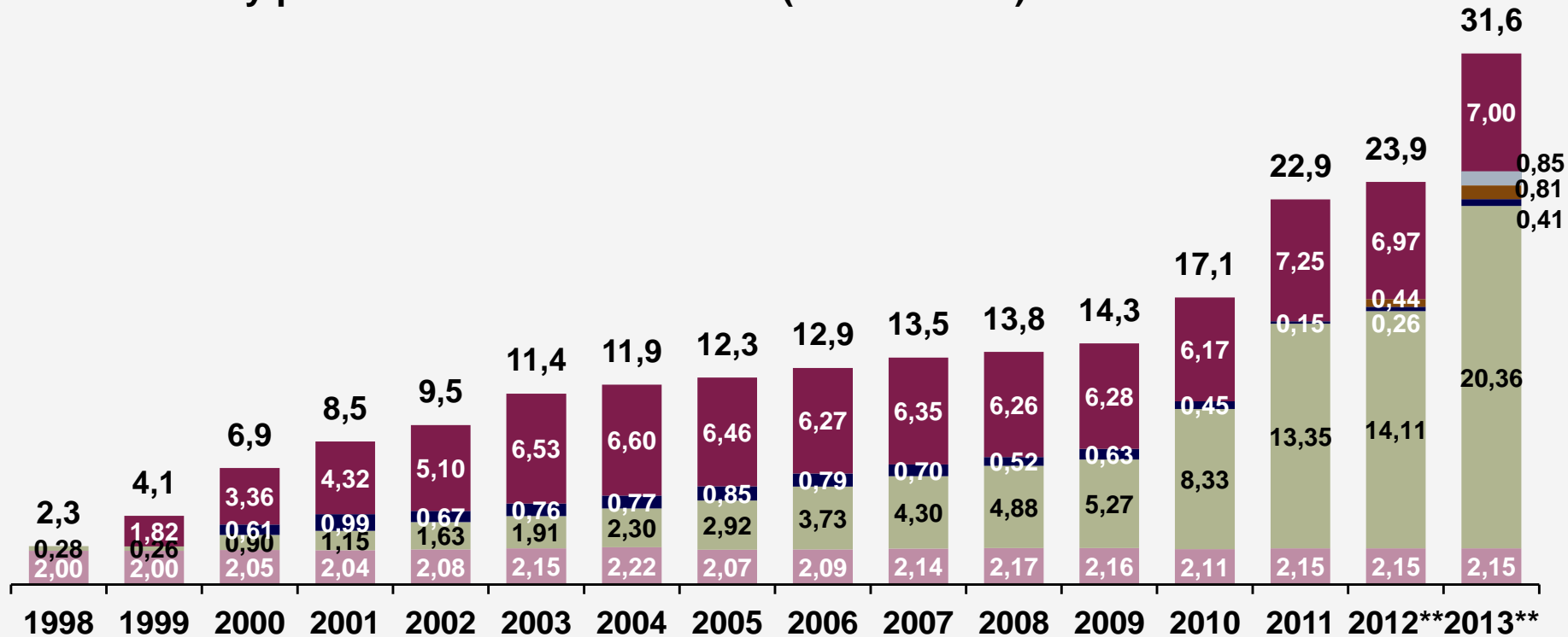


- **Full EEG apportionment for nearly half of the industrial electricity consumption!**
- **Without exceptional rules according to §40 EEG 2012, the surcharge in 2013 would be 4.23 ct/kWh, thus 1.05 ct/kWh lower.**

Source: BDEW (own calculation based on EEG 2013 forecast data of 15/10/2012)

Total burden of taxes and levies

Total electricity price burden in billion Euros (without VAT*)



■ Concession fee ■ EEG apport.*** ■ KWK surcharge ■ §19 surcharge ■ Offshore surcharge**** ■ Electricity tax*****

* Burden of VAT 2011 rd. 7.5 bn Euros

** Provisional estimation

*** until 2009 additional costs versus energy exchange price; from 2010 application of the Ordinance on a Nationwide Equalisation Scheme; 2012/2013 according to EEG apportionment forecast

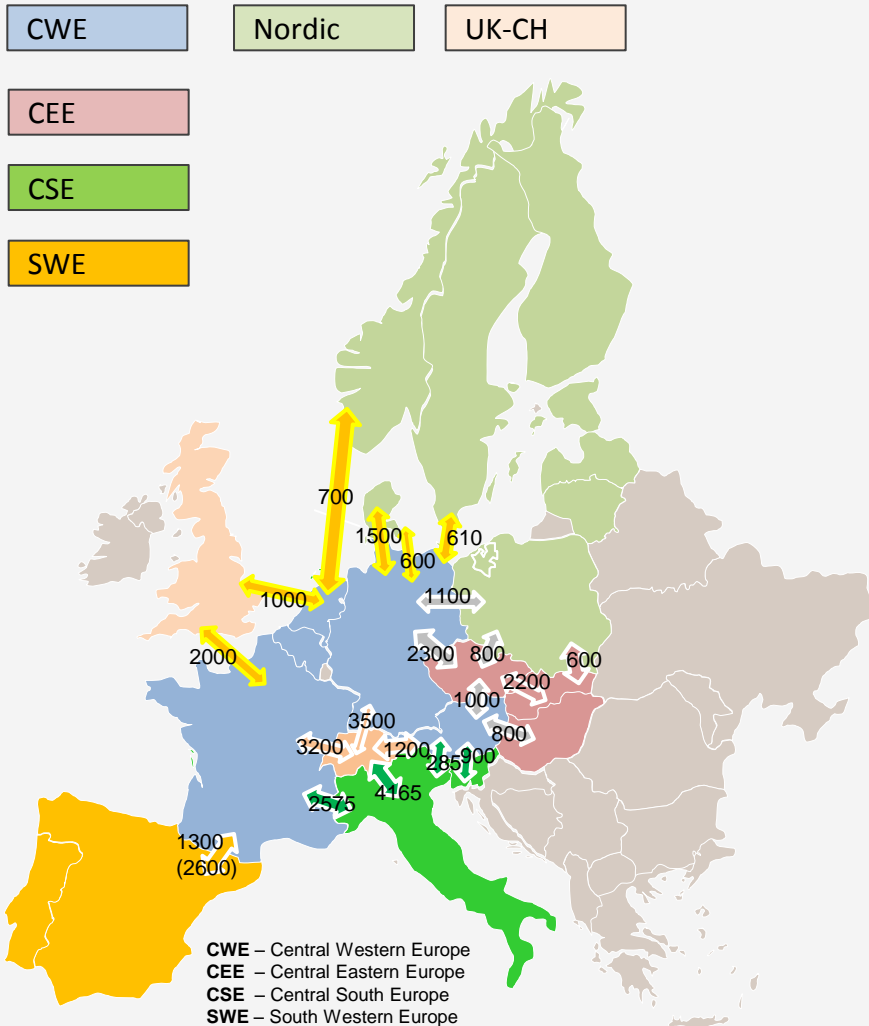
**** 2013: Estimation

***** 2012/13: according to AK „Steuerschätzung“ (committee for tax estimation of the Federal Ministry of Finance), May 2013

Source: BDEW, As of: 05/2013

International Prices of energy

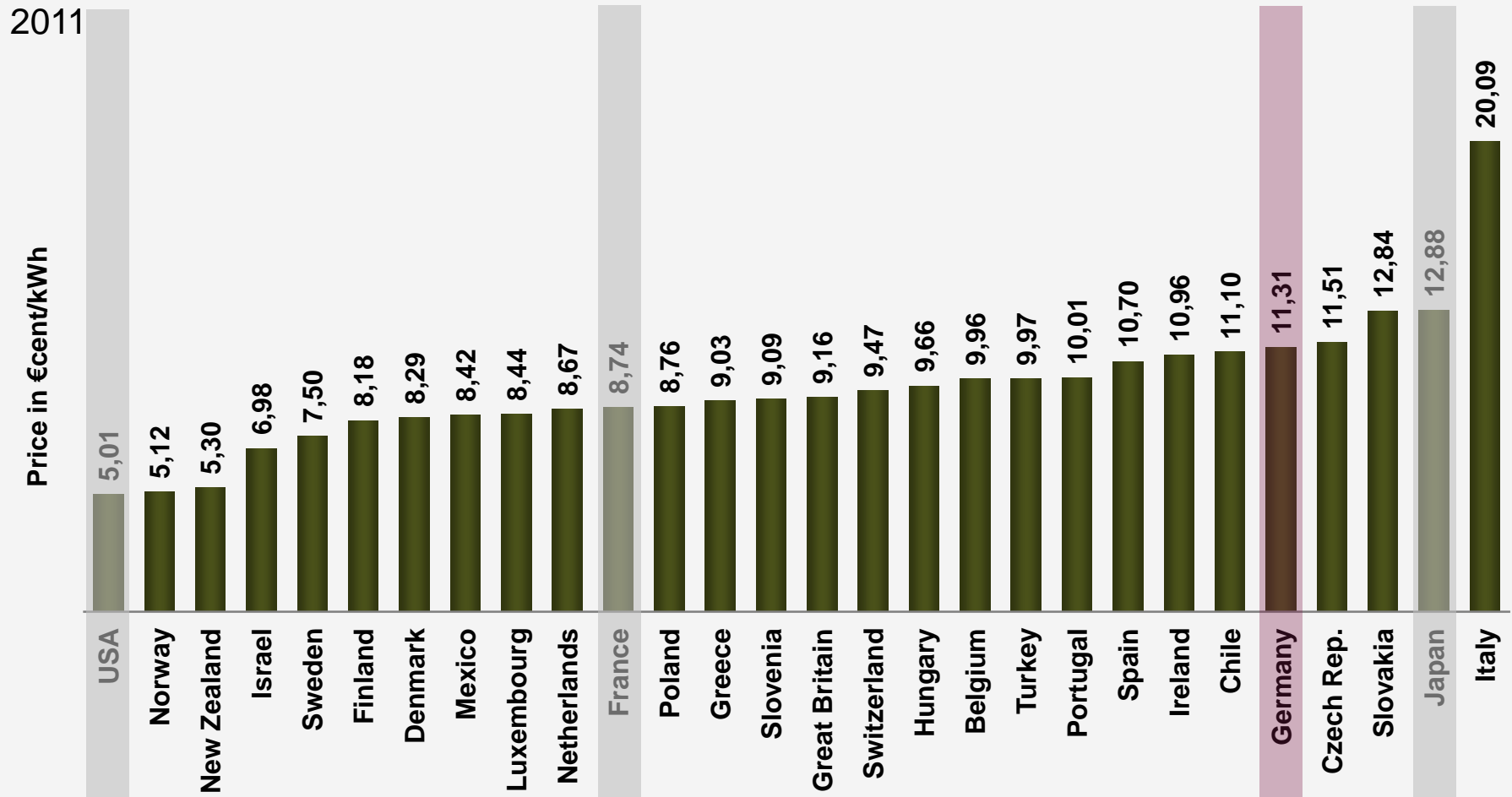
Integration of the European energy exchange until 2014 and beyond...



Targets of market integration in the European energy exchange:

- By end of 2014: European Day-ahead trade (implicit auction and price coupling)
- Intra-day trade of excess capacities on an integrated market platform
- Establishment of a cross-border electricity balancing market

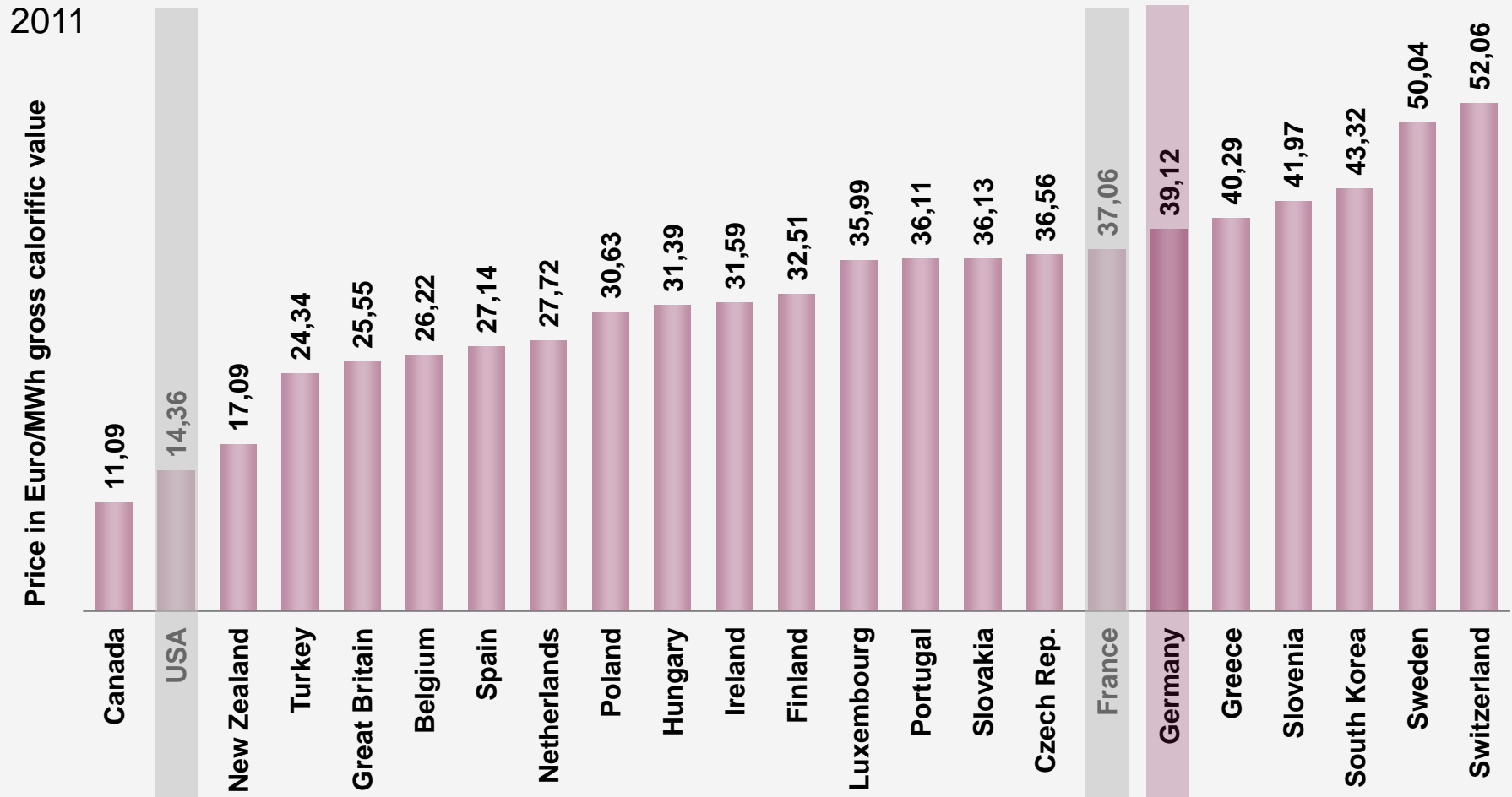
International energy prices for the industry: Electricity industry



Source: International Energy Agency (IEA); consumption not clear

* Exchange rate US\$/Euro average 2011

International energy prices for the industry: Gas industry



Source: International Energy Agency (IEA); consumption not clear

* Exchange rate US\$/Euro average 2011

Summary

Summary

Problems:

- Uncertainty (security of supply, prices, market design...)
- What will be our future market design (including Renewables)?
- European Framework conditions not precise enough
- Growing prices for energy
- International competition of German economy
- Economic pressure on Germans small (but many) industrial champions

Summary

Hope:

- Growing awareness of the challenges we are facing.
- Financial reliefs for companies under competition.
- Still: Germany's energy security of supply is one of the best in the world.
- Innovation: Energiewende is one of the most interesting and challenging industrial projects of our time.

Thank you for your attention!

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[BDEW Bundesverband der
Energie- und Wasserwirtschaft e.V.](http://www.bde.de</p></div><div data-bbox=)