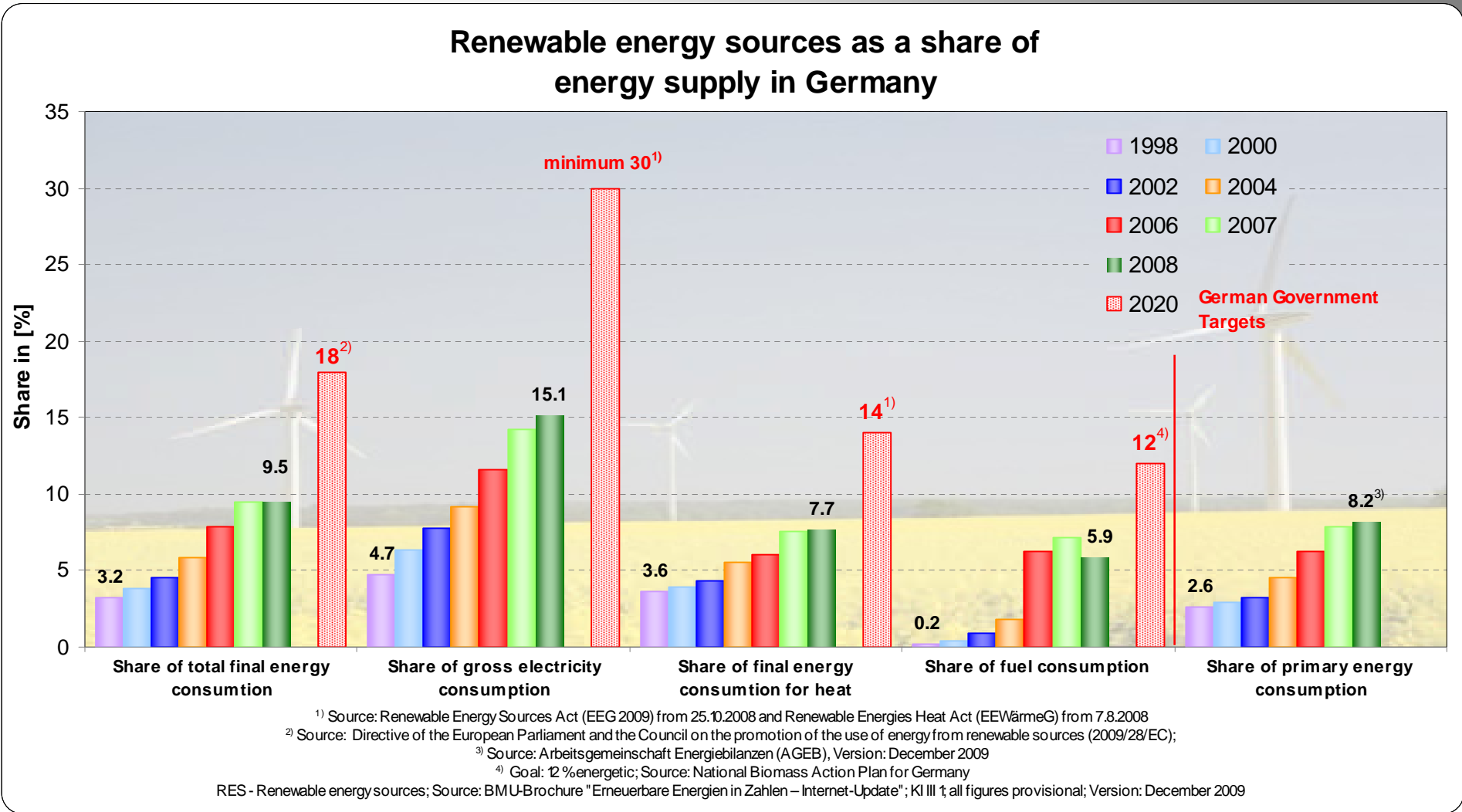


# Renewable Energy Sources Act – EEG

- feed in tariff systems in Germany -

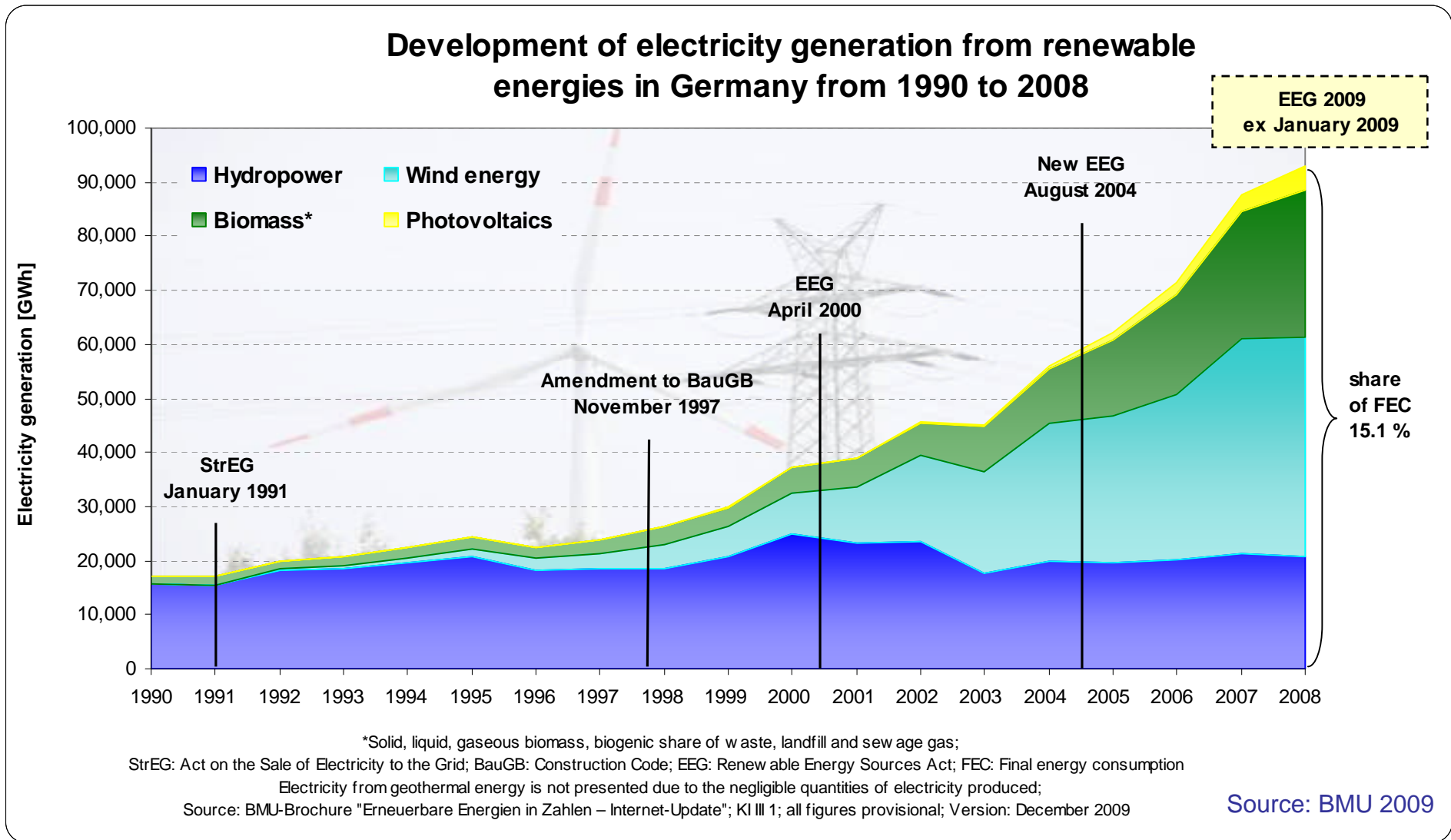
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German Federal Environmental Agency  
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# Contribution of RES to energy supply in Germany



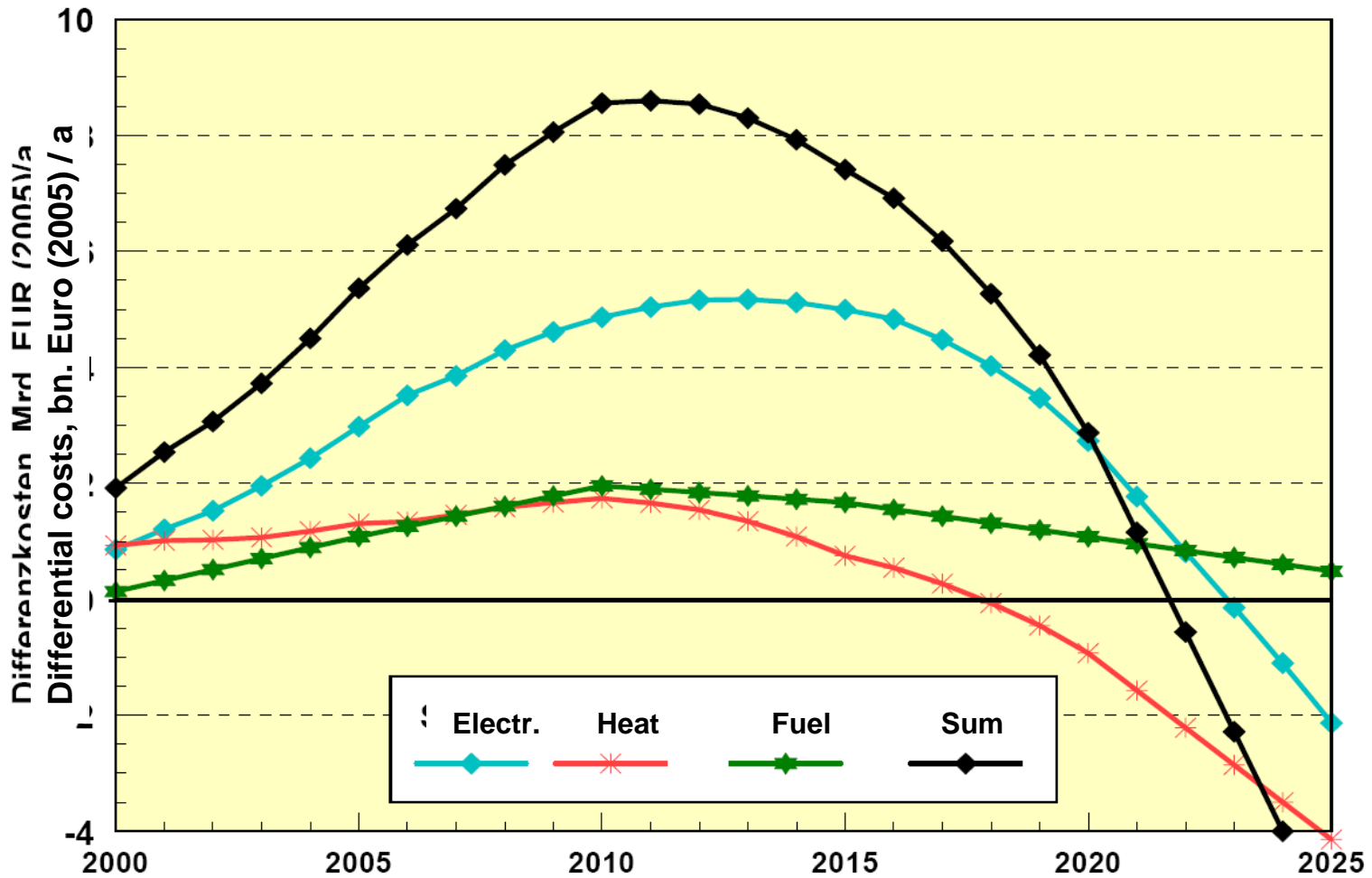
Source: BMU 2009

# Development of RES-E in Germany 1990 - 2008



- **priority connection of installations**
- **priority purchase and distribution of electricity**
- **guaranteed feed-in tariffs**
  - covering extra technology cost and sufficient profit
  - support timeframe long enough to ensure investment security
  - decrease over time (for new installations) enforces cost reduction
- **independence of public budgets – low transfer costs**
  - nation-wide proportional distribution of electricity purchased and corresponding fees to all electricity customers (“EEG-Quota”)
  - EEG defines a legal relationship between private bodies
- **“Exclusive-use” principle**
- **Experience- and Impact Report to German Parliament**

## Differential costs of growth scenario



Source: Nit:  
Lead scena

LEIT08/DIFGES-A;  
25.6.08

- **Biomass ordinance** defines approved feedstock
- **Degression** 1,0 % p.a.
- >5 MW remuneration only for electricity from **CHP**
- 1ct/kWh extra for low formaldehyde emissions

up to 150 kW	11,67 ct/kWh
up to 500 kW	9,18 ct/kWh
up to 5 MW	8,25 ct/kWh
5 MW - 20 MW	7,79 ct/kWh

## Incentives steering RES development

- **Scaling of feed in tariffs** acc. to energy output to enable small scale investment into RES
- **Bonuses** to incentivise particular choices for (conversion-)technology or feedstock
  - **Bonuses** are likewise subject of degression
  - **Bonuses** are cumulative (they add up)

- If **Combined Heat Power (CHP)** technology is used **3,0 ct/ kWh** are added to the guaranteed feed in tariff
- Specific requirements for thermal use:
  - CHP generated heat has to replace heat from fossil sources,
  - use of white-list applications or
  - compliance acc. to expertise

- Only plants **up to 5 MW** can receive the Bonus
- **Gas upgrading** (Biomethane):
  - using efficient techniques and heat sources;
  - plants using gas upgraders with capacities up to 350 m<sup>3</sup>/h receive 2ct/ kWh & up to 700 m<sup>3</sup> 1ct/ kWh
- **Innovative technologies** (white-list):
  - e.g. 2ct/ kWh for plants using biogas from organic waste only
  - e.g. 2ct/ kWh for plants applying technologies for thermo-chemical conversion (BtL etc.) and processing straw and similar agricultural residues only

### Incentivised are uses of:

- e.g. material from landscape maintenance (+ 2ct)
- e.g. 30% of liquid manure for Biogas (+ 4-5ct)
- other residues

### Mandatory for liquid biomass

- plants  $\leq$  150 kW
- Soy bean- and Palm oil have to comply with **sustainability criteria** acc. to the respective German ordinances

<u>Basic Tarifs</u>	
$\leq$ 500 kW	6 ct/kWh
$\leq$ 5 MW	4 ct/kWh
$\leq$ 5 MW (wood firing, no SRC!)	2,5 ct/kWh

### Biomass Electricity- & Biofuel Sustainability Ordinances

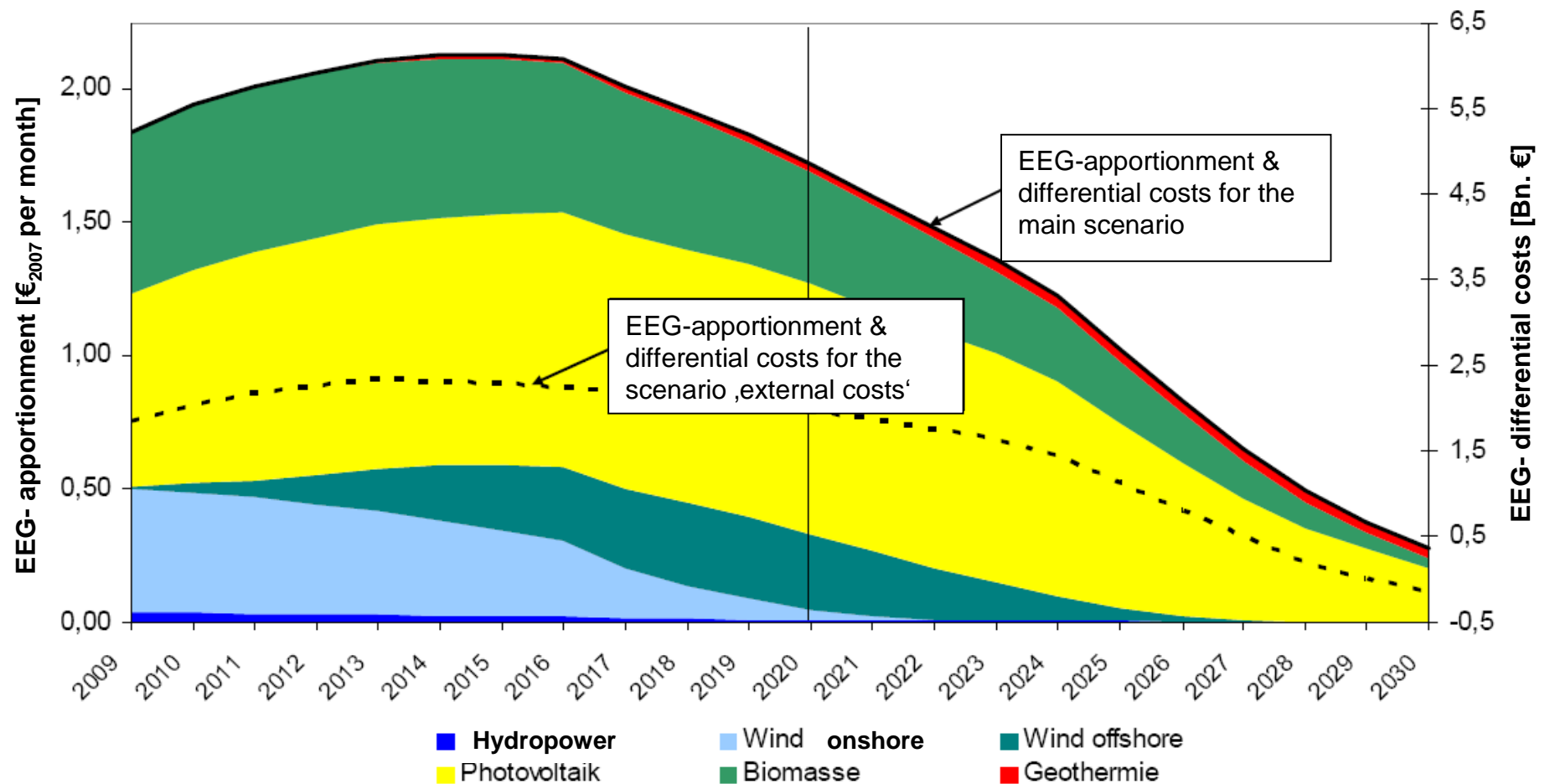
- German ordinances acc. to RES Directive with a detailed list of conditions.
  - **Sustainability criteria** relate to compliance at environmental and social level
1. GHG saving level to be achieved  
(initial 35% saving to be increased to 50 % by 2017)
  2. Land with high biological value or high carbon stock excluded from growing feedstock for biofuels (i.e. primary forest, land for nature protection, natural grassland, wetland, peat land)
  3. EU Production of raw materials in accordance with cross compliance rules (EC) No 1782/2003 (§5)

- Goal: raise share of heat from RES
- Consists of two basic principles: “obligation” and “support”
- Obligation:
  - new buildings have to cover their heat demand proportionally from RE
  - alternative measures
    - connection to district heating grid
    - energy saving arrangements
  - exceptions apply for irrelevant buildings and extreme cases
- Support:
  - public funds until 2020 – 500 millions Euros each year
  - low-interests loans and direct financing
  - bonuses for innovative technologies
  - 25%-reduction for heating systems, whose installation is legally required
- Experience and impact report to German Parliament

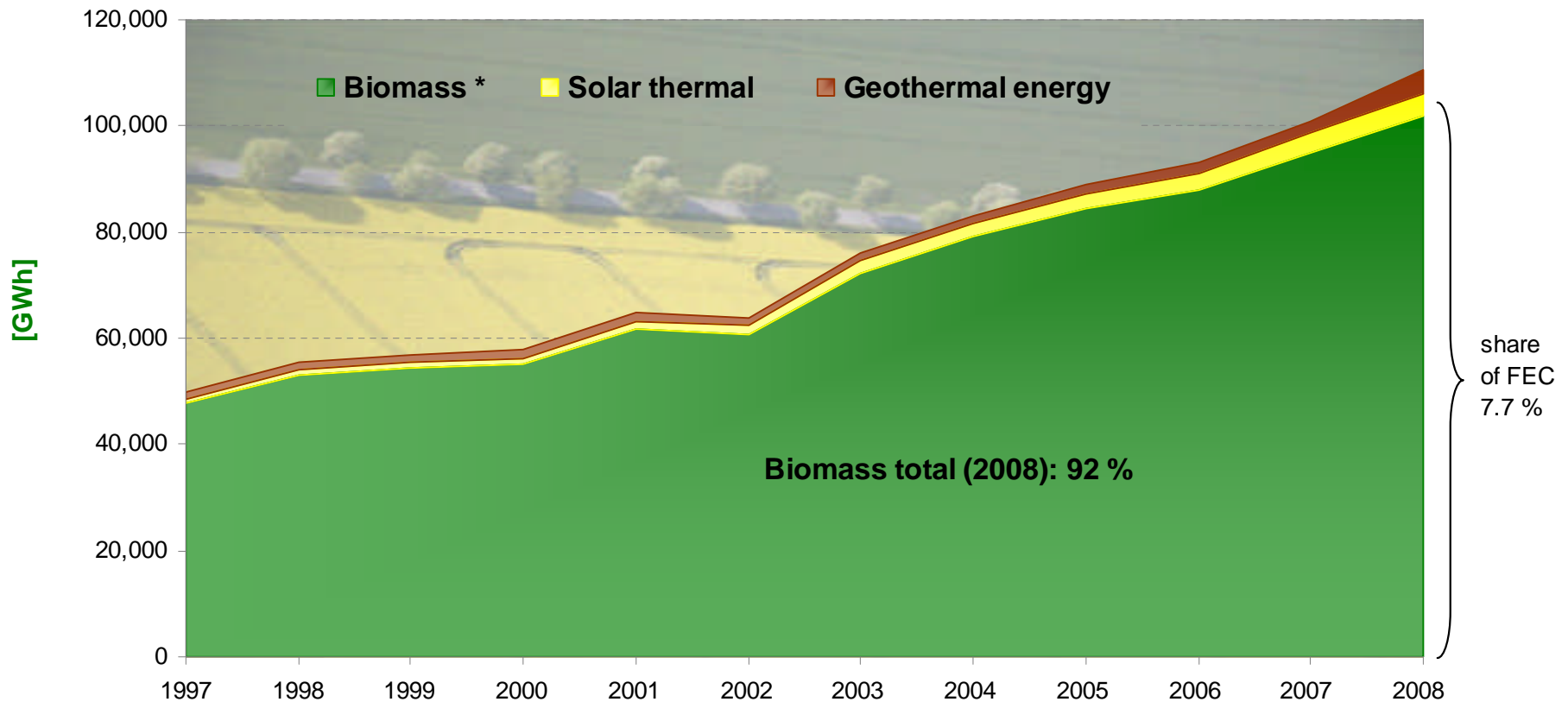
Thank you for your attention!

# Additional slides

# EEG<sub>2009</sub>-monthly cost/ consumer – forecast



### Contribution of renewable energy sources to heat supply in Germany, 1997 - 2008



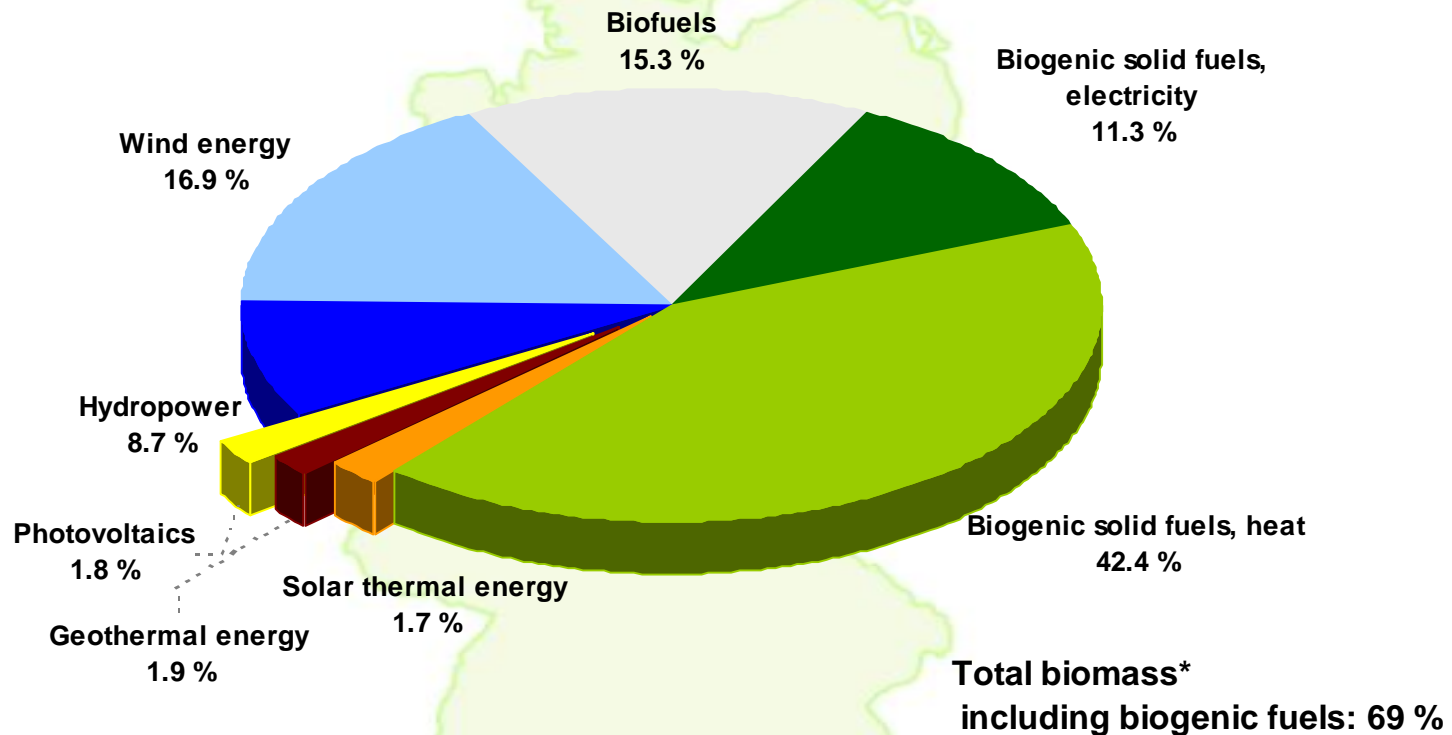
\* solid, liquid, gaseous biomass, biogenic share of waste;  
Source: BMU-Brochure "Erneuerbare Energien in Zahlen – Internet-Update"; KI III 1; all figures provisional; Version: December 2009

- Biofuels could have positive impacts:
  - GHG reduction (through fossil-fuel substitution);
  - Rural employment/income; more agrobiodiversity; soil carbon increase, less erosion
- But impacts could also be negative:
  - GHG from cultivation, soil carbon loss, indirect land use changes...
  - Loss of biodiversity from land-use changes (leakage), water use, agrochemicals, erosion...
  - Food price feedbacks

## Final Energy Supply from RES

**Structure of final energy supply from  
renewable energy sources in Germany in 2008**

Total: 240.3 TWh

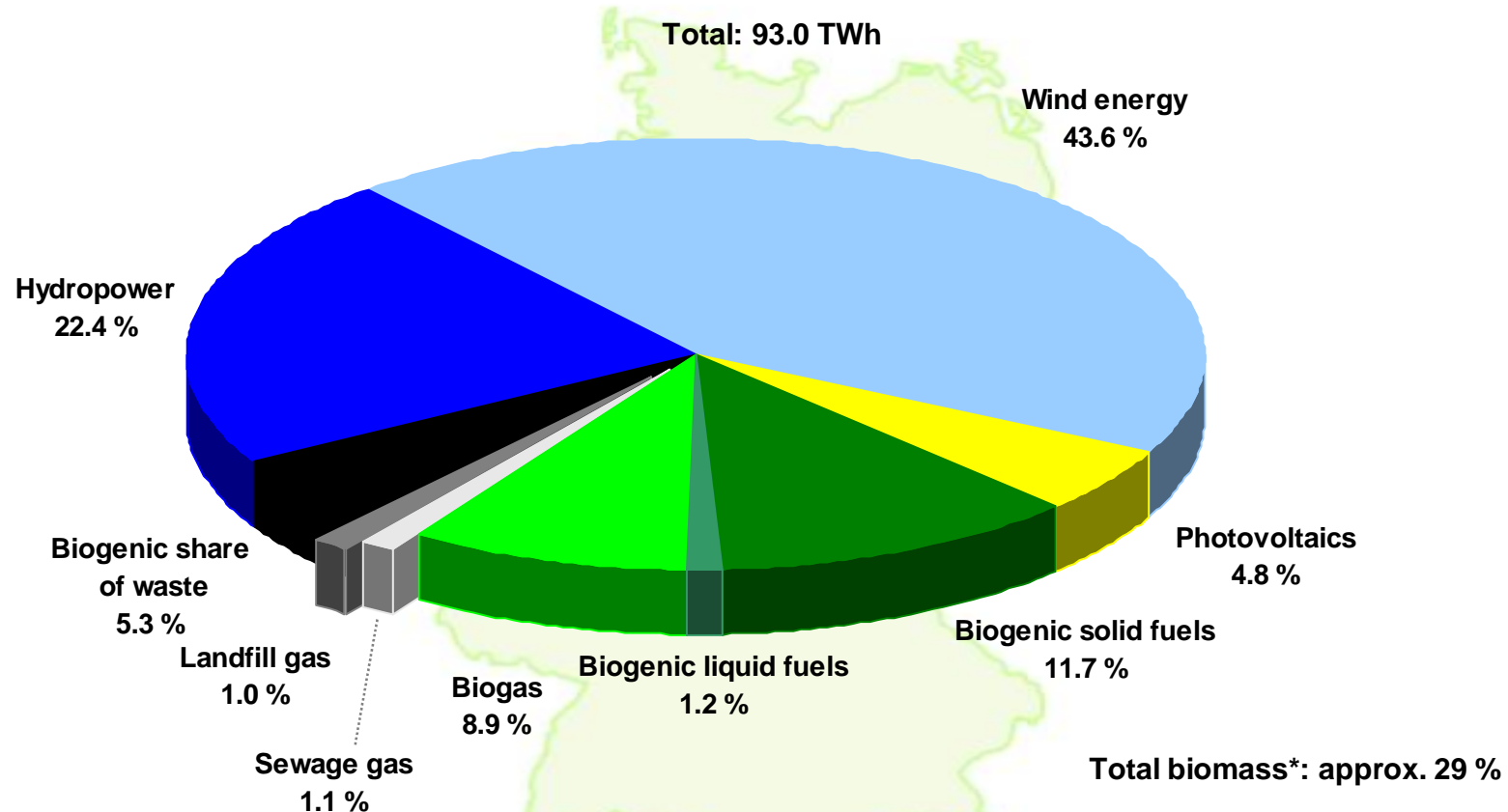


\*biomass: solid, liquid, gaseous biomass, biogenic share of waste, landfill and sewage gas;

Source: BMU-Brochure "Erneuerbare Energien in Zahlen – Internet-Update"; Kl III 1; all figures provisional; Version: December 2009

## Electricity Supply from RES

**Structure of electricity supply from renewable energy sources in Germany in 2008**



\*Solid, liquid, gaseous biomass, biogenic share of waste, landfill and sewage gas

Source: BMU-Brochure "Erneuerbare Energien in Zahlen – Internet-Update"; Kl III 1; all figures provisional; Version: December 2009