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# German-Indian Sustainability and Climate Change Dialogue.

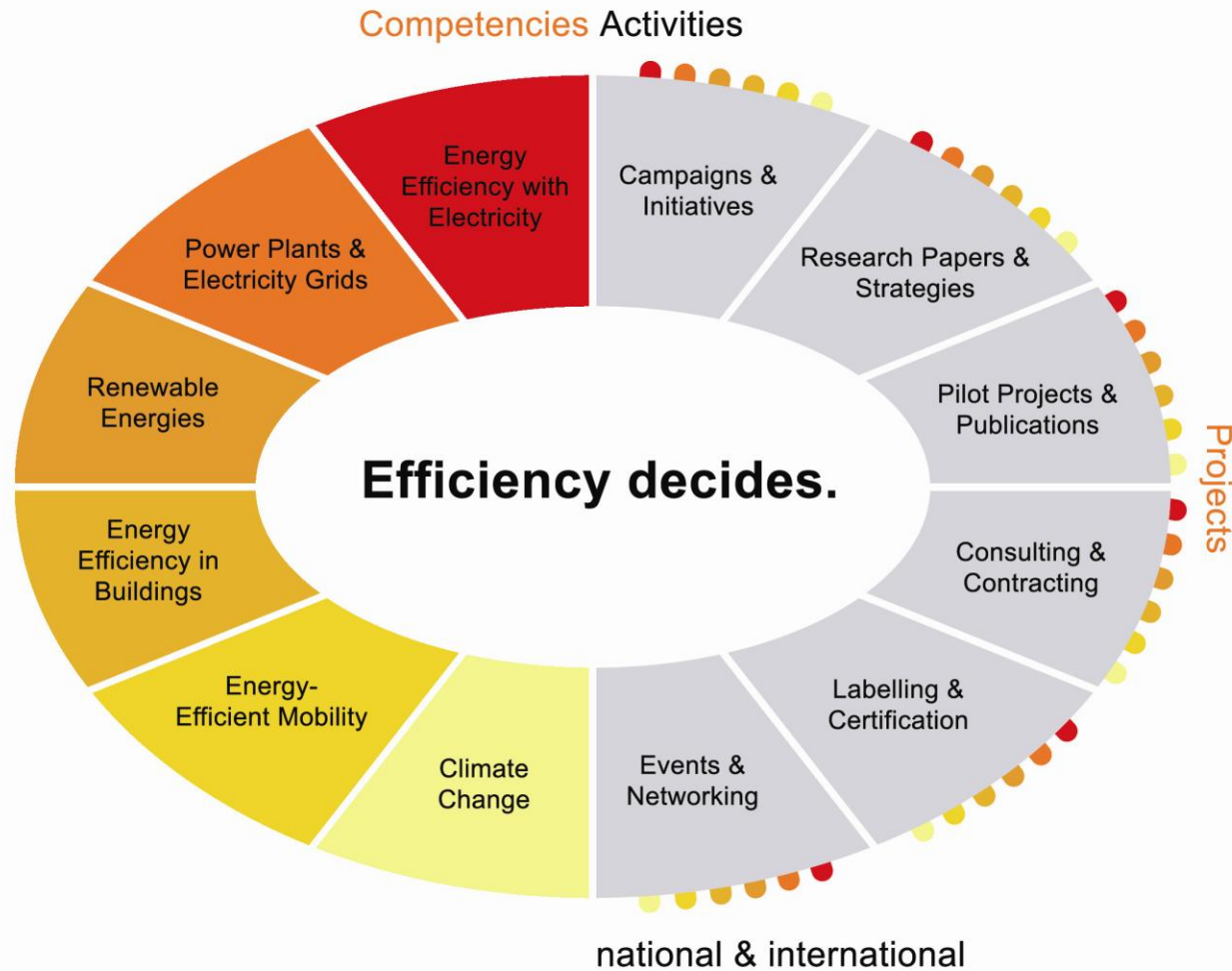
Berlin, 01 October 2008

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# German Energy Agency (dena): Who we are – shareholders and objectives

## Fields of Competence and Activity at dena.



# Renewable Energies.

**Objective:** Significant increase in the contribution of renewable sources to the energy supply, improvement of their competitive position.

**Internationally:** Development of the market position enjoyed by renewables

**Nationally:** Integration of renewables into the energy infrastructure

<p><b>Renewable Energy Export Initiative</b></p> <p>Increase of the German market share of renewable energy technologies</p>	<p><b>Pilot projects abroad with systematic PR and marketing support</b></p> <p>E.g. solar roofs on German schools and institutions abroad</p>	<p><b>Policy advice</b></p> <p>Creation of favourable legal and economic parameters for the development of renewables both nationally and internationally</p> <p>Monitoring of the implementation of strategies and development measures</p>	<p><b>Bioenergy</b></p> <p>Resources</p> <p>National biomass action plans</p> <p>Biogas feed-in</p>	<p><b>Electricity grid</b></p> <p>Grid extension</p> <p>Grid fees</p> <p>Intermittency</p> <p>Smart Systems</p> <hr/> <p><b>Competence Centre for Offshore Wind</b></p> <p><a href="http://www.offshore-wind.de">www.offshore-wind.de</a></p>
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# Kyoto Targets and EU-conditions for increased renewable energy use in the electricity sector

## International targets for CO<sub>2</sub> Emission Reduction.

- Kyoto Protocol targets

  - 5% CO<sub>2</sub> emission reduction (between 2008-2012, relative to 1990) for all industrialized countries

  - 21% reduction for Germany as part of the EU burden sharing

- EU target

  - 20% CO<sub>2</sub> emission reduction by 2020

- German target

  - 40% CO<sub>2</sub> emission reduction by 2020

## Current EU Targets.

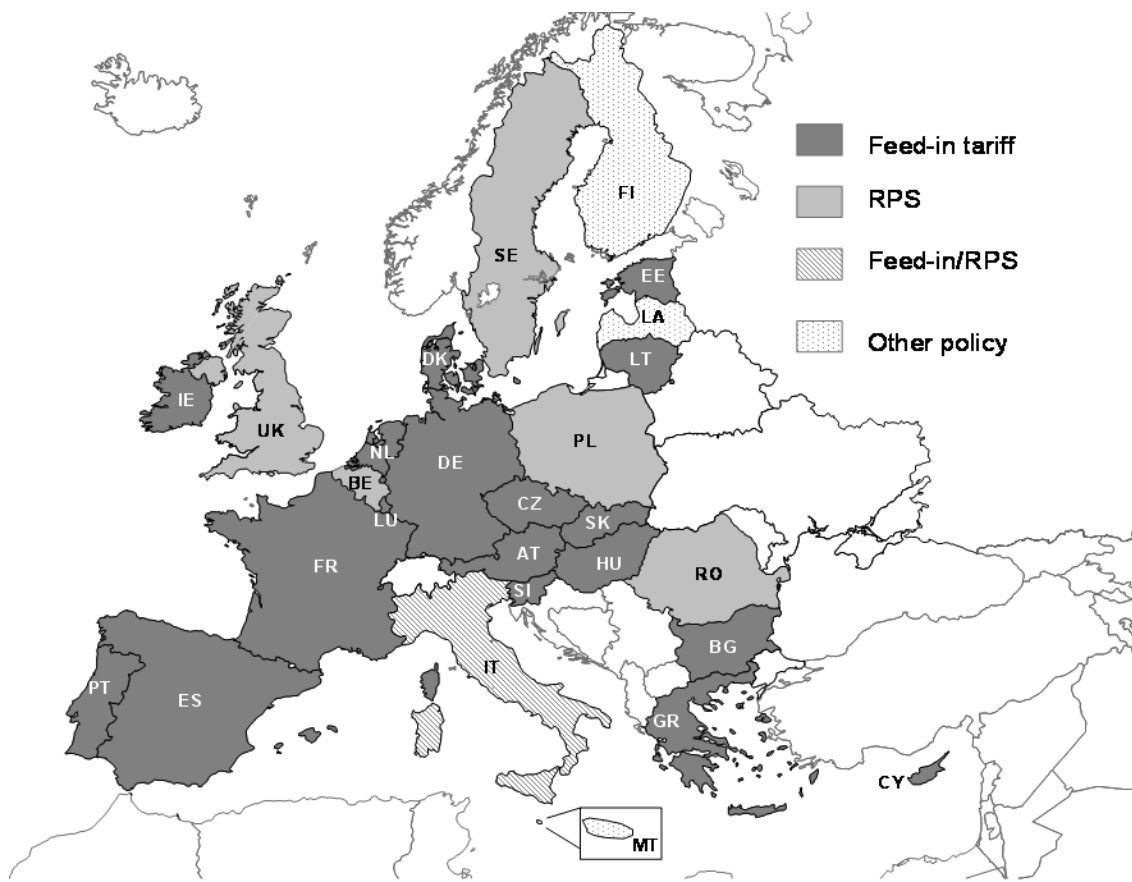
- 10% share for biofuels in petrol and diesel by 2020
- 20% increase in energy efficiency by 2020
- 20% share of renewable energies in the total energy consumption by 2020
- 20% reduction of greenhouse gases by 2020



## Current Legal Framework for RE in the Electricity sector – European Model: Feed-in tariff.

- **Priority for feed-in of Renewable Energy**
- **Extensive regulation of grid access!**
- **Fixed tariff** for several years (**based on the competitiveness of each technology**)
- **Declining incentive structure (degression)**
  - ➔ In 18 EU countries already implemented
  - ➔ Diffusing around the world

## Feed-in tariff diffusion in the EU.

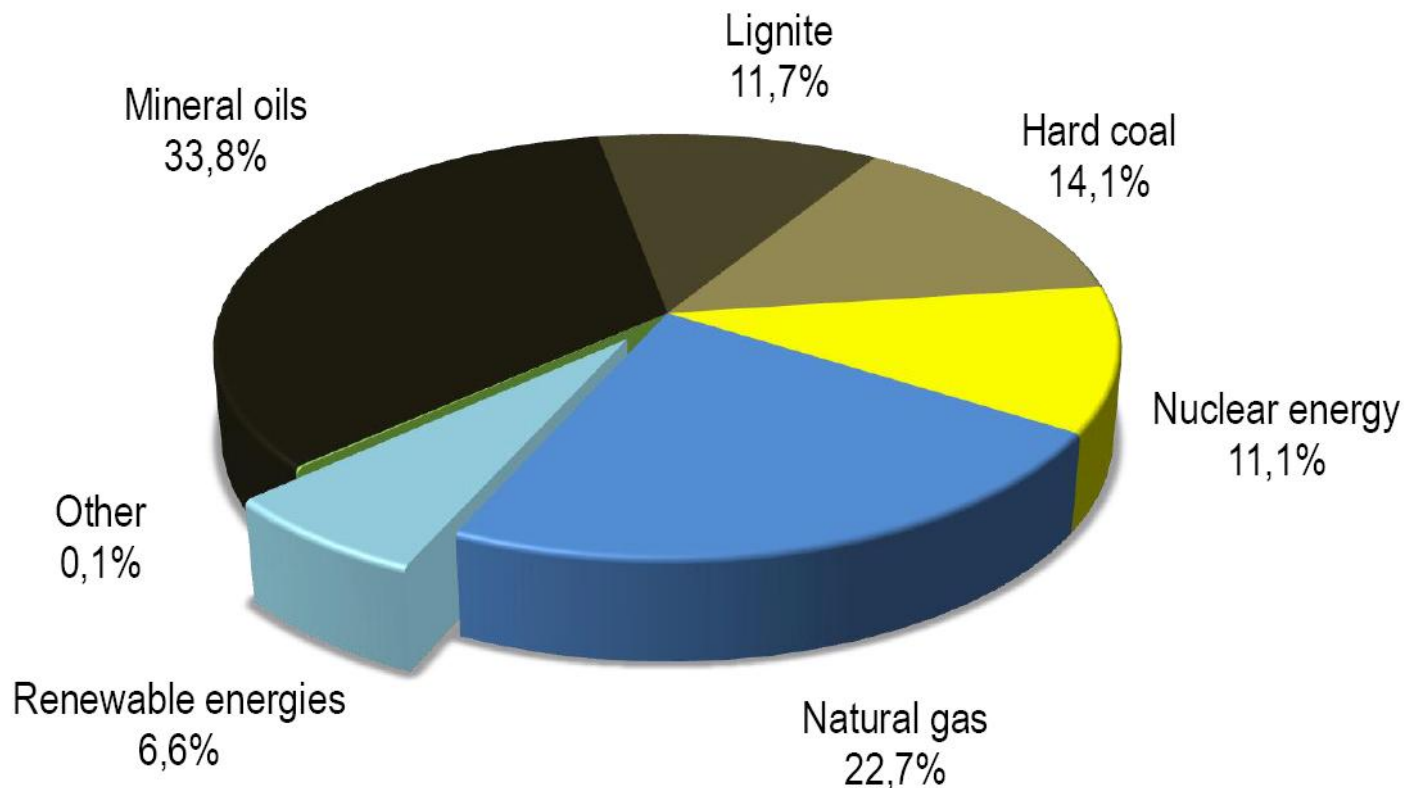


Source: Wilson Rickerson 2007



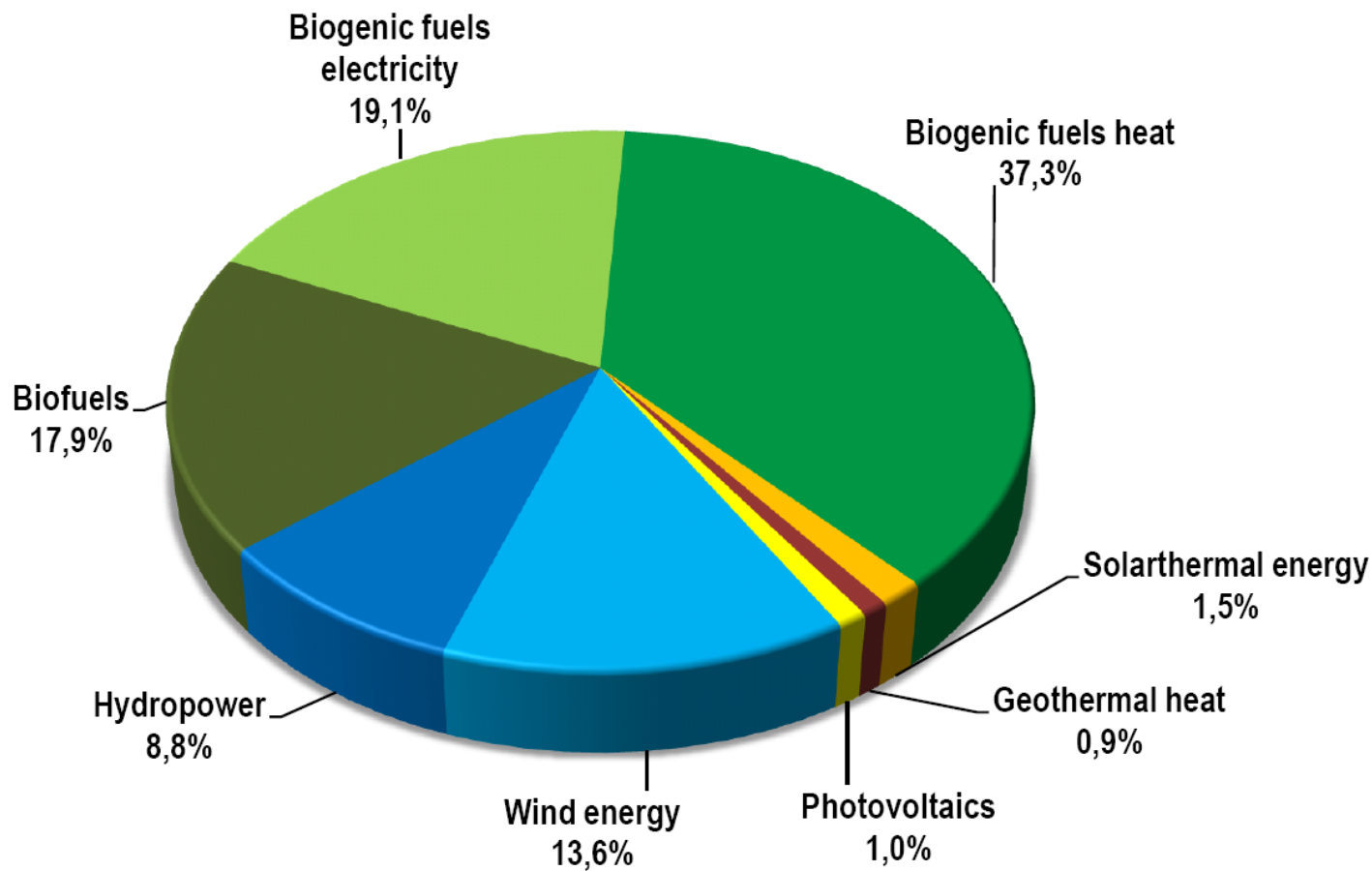
## German Challenges: Climate change and security of energy supply

## Structure of primary energy consumption in Germany in 2007 - Total: approx. 13.842 PJ.



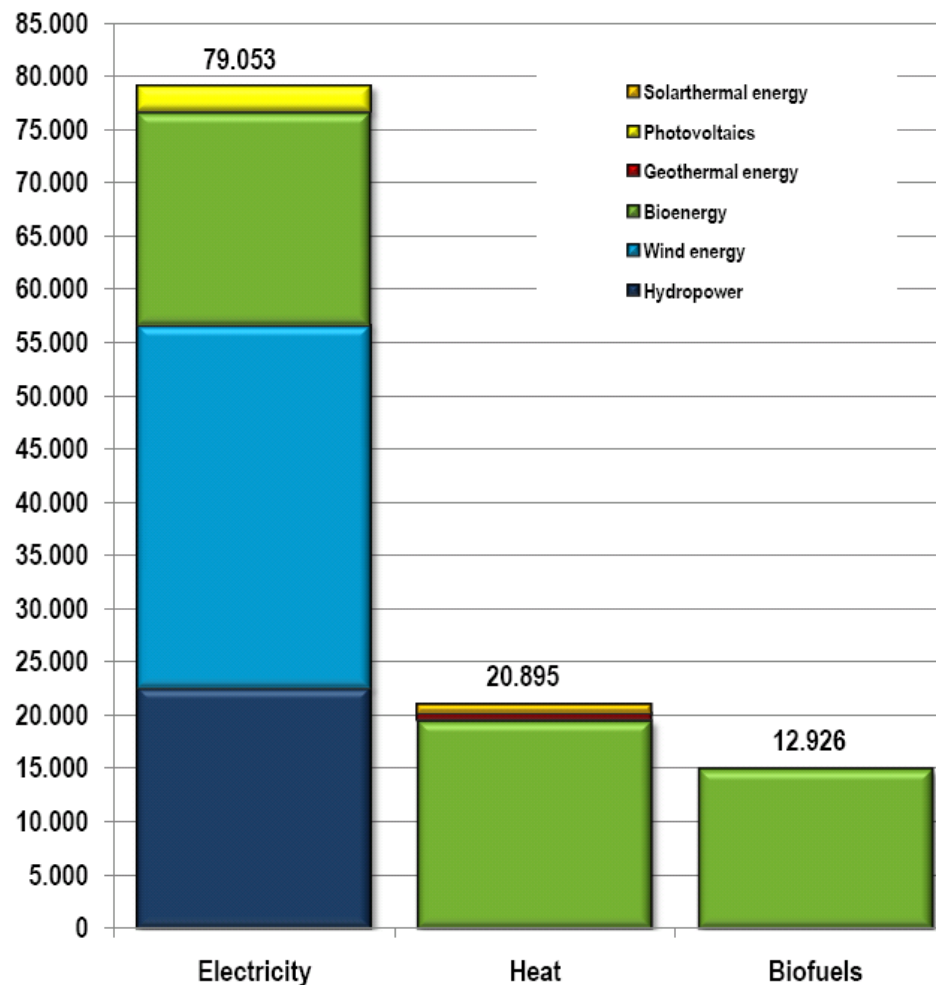
Source: BMU Januar 2008

## Structure of primary energy supply of renewable energy 2006 – Total: 833,7 PJ.



Source: BMU November 2007

# Renewable energy related reductions of CO<sub>2</sub> emissions in 1000 t in Germany.



Source: BMU, June 2008



## German RE targets 2010 already reached in 2007.

	situation 2000	situation 2007	targets 2010	targets 2020
<b>primary energy consumption</b>	2.1%	6.7%	(4.2%)	10%
<b>gross electricity consumption</b>	6.3%	14.2%	(12.5%)	25-30% (20%)
<b>heat supply*</b>	3%	6.6%	-	14% (12%)
<b>biofuels**</b>	-	6.9%	-	12-15% (17%)

\*share in total final energy consumption for heat

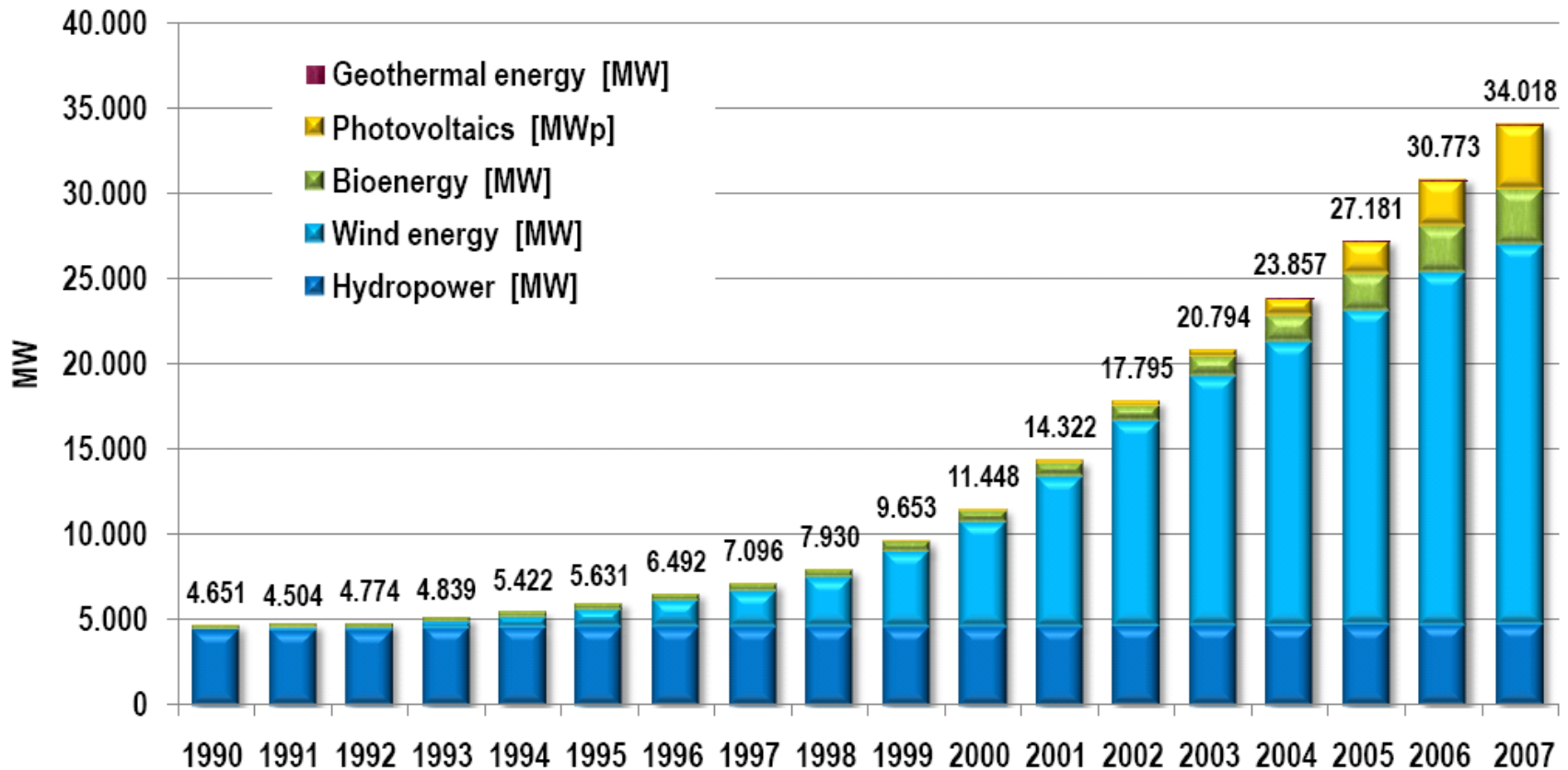
\*\* in relation to fuel consumption in road traffic

## Current German Feed-in tariffs under EEG.

	<b>Duration (yrs)</b>	<b>2008 €-Cents/kWh</b>	<b>Degression</b>
<b>Hydropower</b>	30	3.58 - 9.67	0%
<b>Biomass</b>	20	7.91 - 20.83	1.5%
<b>Geothermal energy</b>	20	7.16 - 15.00	1.0% (as of 1 Jan. 2010)
<b>Wind energy (onshore)</b>	20	5.07 - 8.03	2.0%
<b>Wind energy (offshore)</b>	20	6.07 - 8.92	2.0% (as of 1 Jan. 2008)
<b>Photovoltaic</b>	20	35.49 – 51.75	5.0 – 6.5%

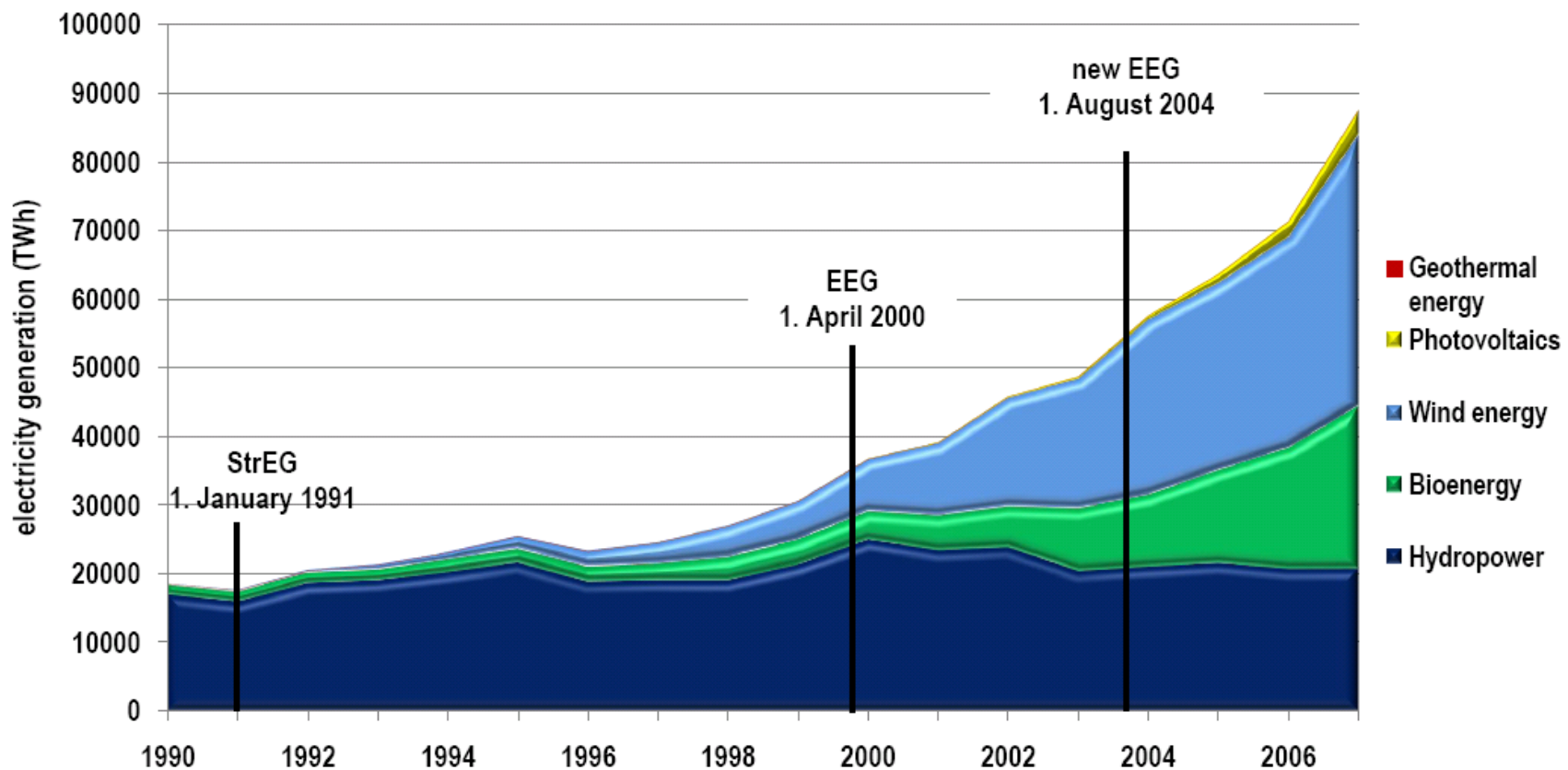


## Effect of the German feed in tariffs on the installed renewable capacity for electricity generation, 2000-2007.



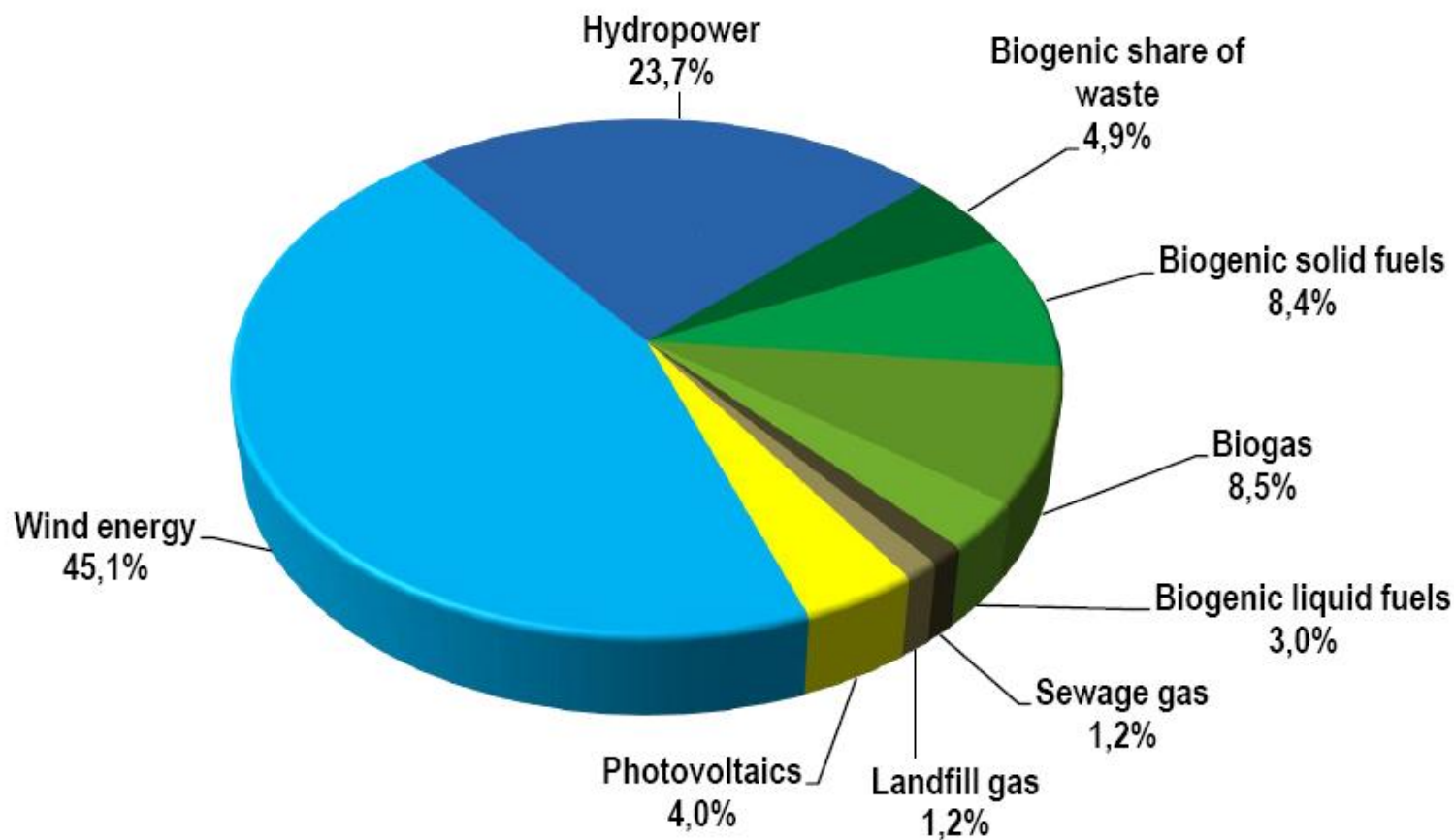
Source: BMU June 2008

## Effect of the German feed in tariffs on electricity generation from Renewable Energies, 2000-2007.



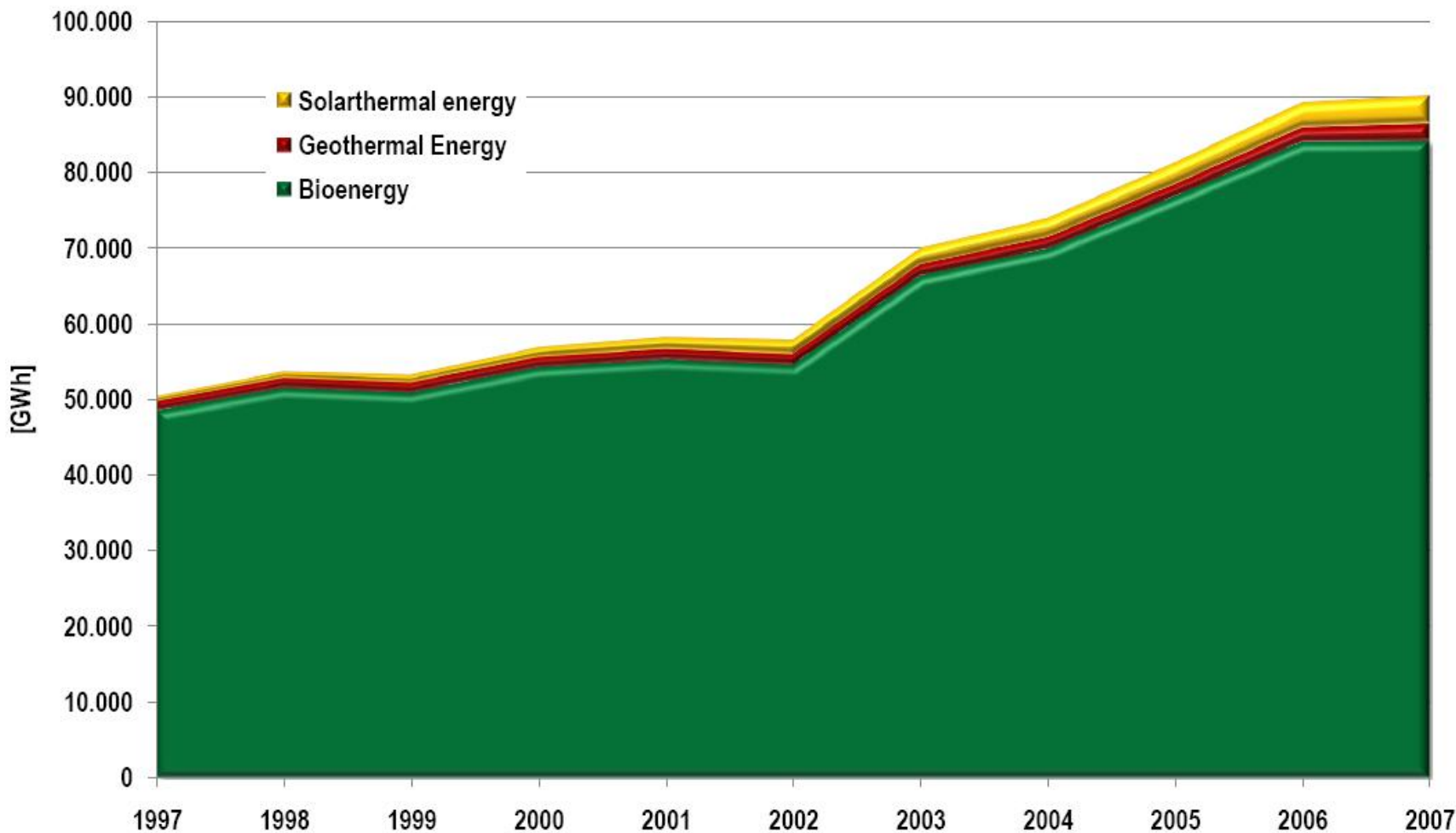
Source: BMU June 2008

## Structure of electricity generation from renewable energy sources in Germany in 2007 – Total: 87,5 TWh.



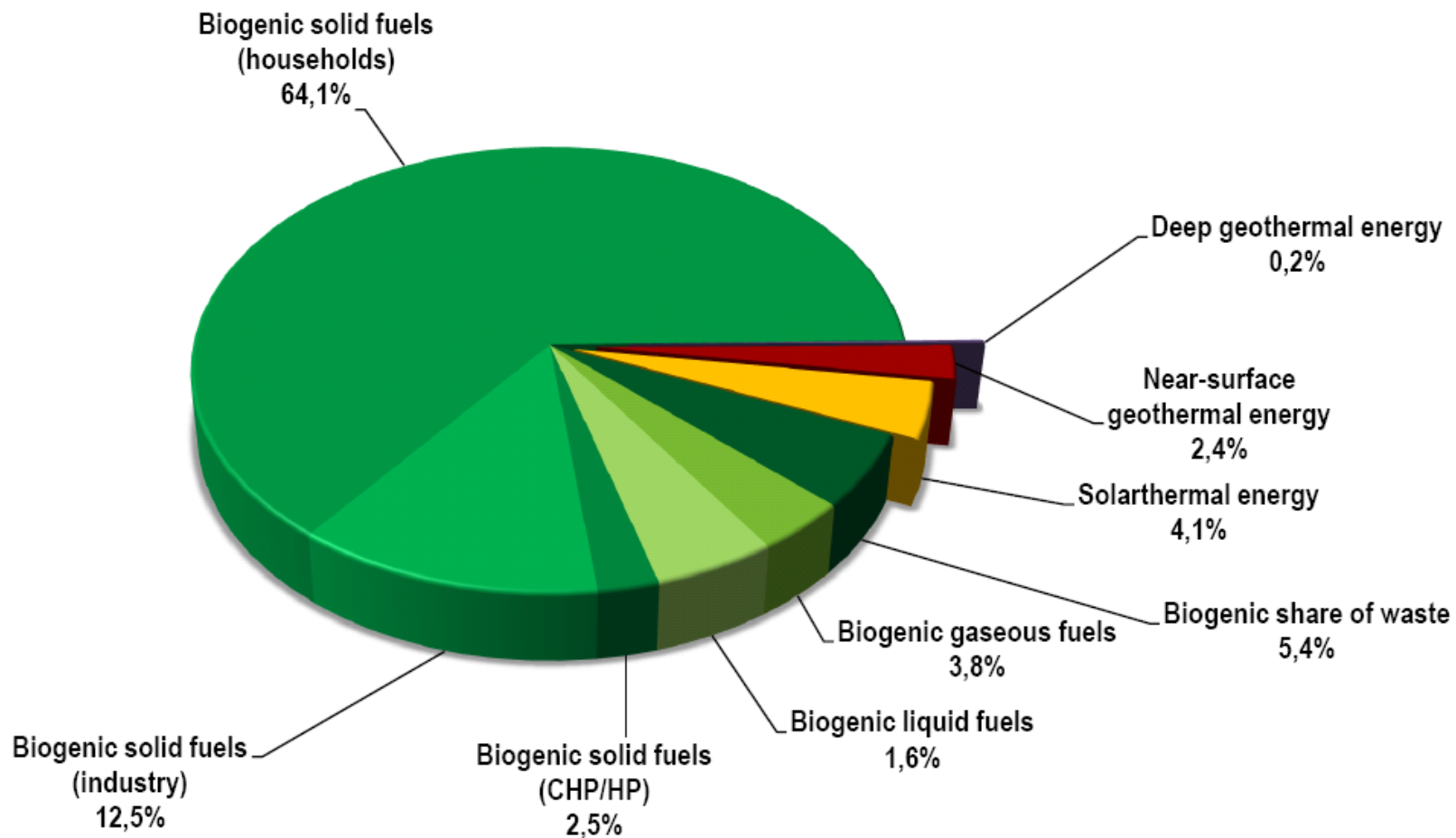
Source: BMU June 2008

## Development of renewable heat supply, 1997-2007.



Source: BMU June 2008

## Structure of renewable heat supply 2007– Total: 90,2 TWh.

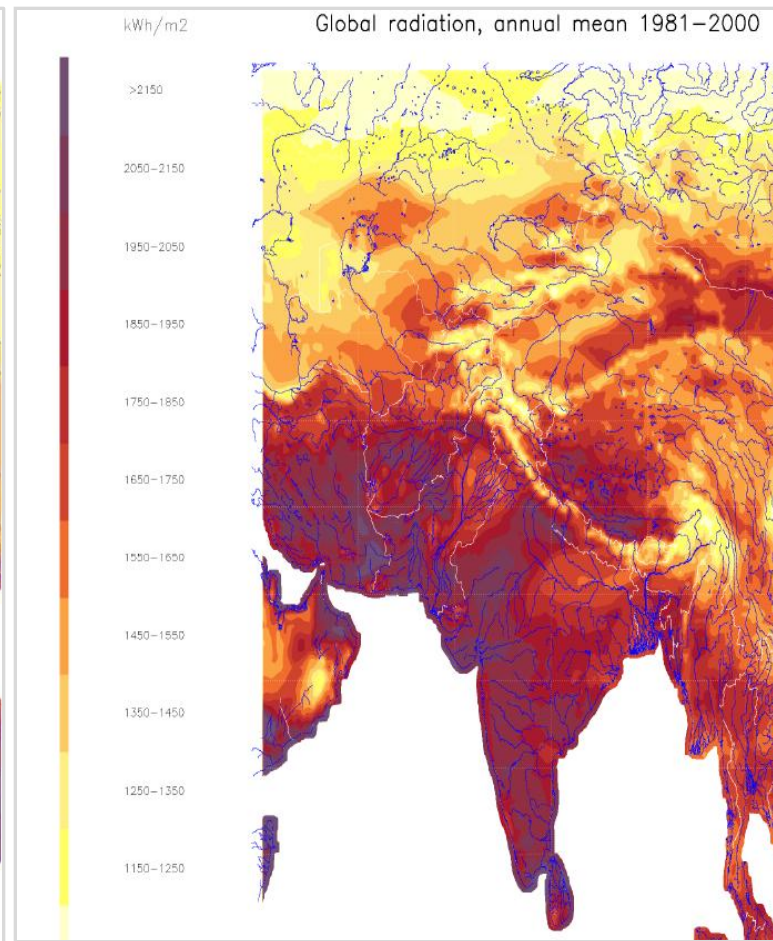
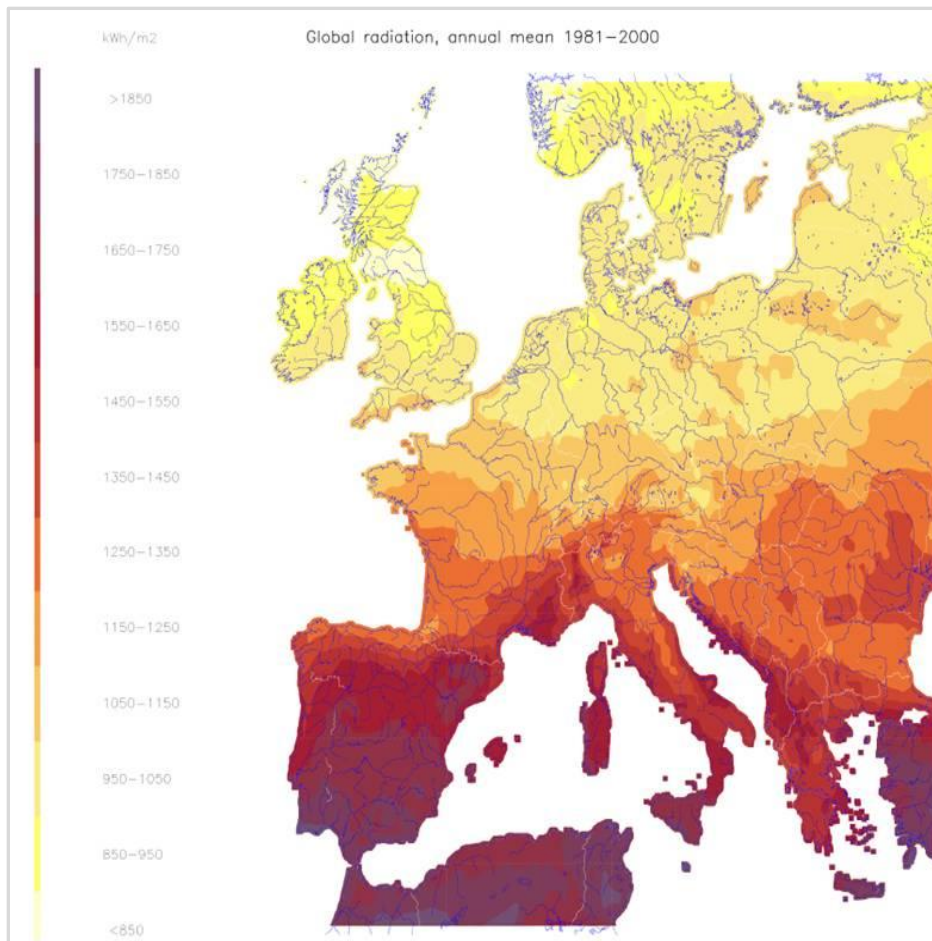


## German RE Experiences.

- Largest installed wind energy capacity in the world
- Largest photovoltaic market in the world
- Largest solar thermal market in Europe
- Pioneer in the field of biofuels and hydrogen

# Challenges and conditions for renewable energy use in India.

## Solar Radiation Germany vs. India



Source: Meteotest September 2008



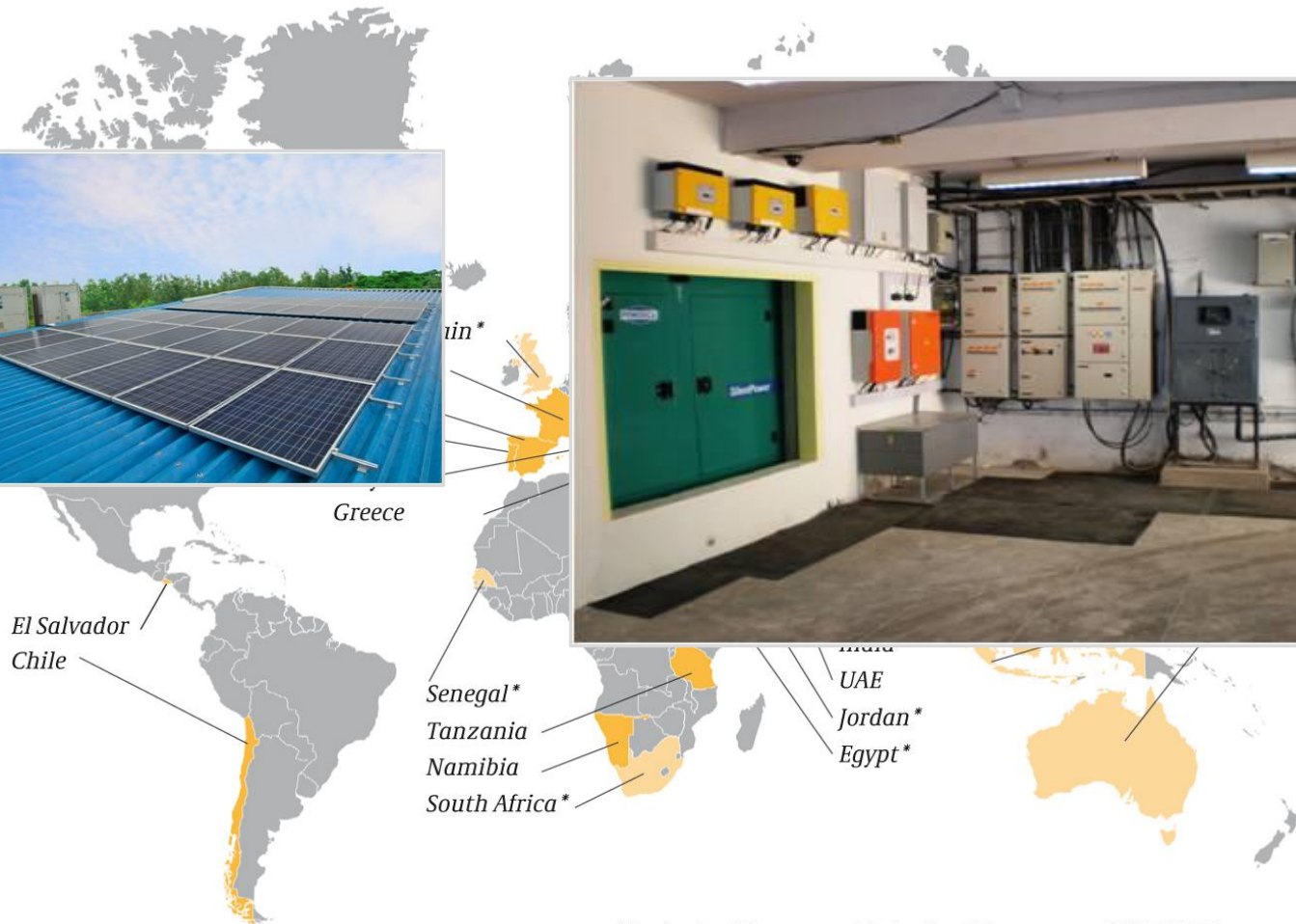


dena-activities concerning India.

## activities dena is involved.

- Purchase Business trip from India to Germany
  - solar energy and bio energy (05.10.-10.10.2008) - German Office for Foreign Trade (bfai)
- Business trip from Germany to West India (Pune)
  - solar energy (03.11.-7.11.2008) - German Chambers of Commerce Abroad (AHK) / The German Chamber of Industry and Commerce (DIHK)

# dena- solar roof programme – a project in bangalore.



*\* Projects of the current Solar Roof Programme 2007/2008*



# Renewables Made in Germany.

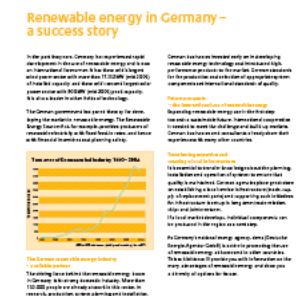
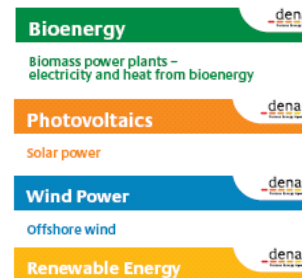
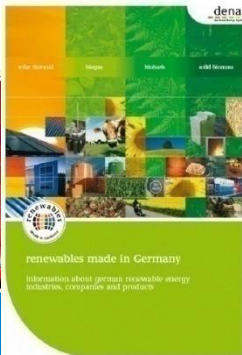
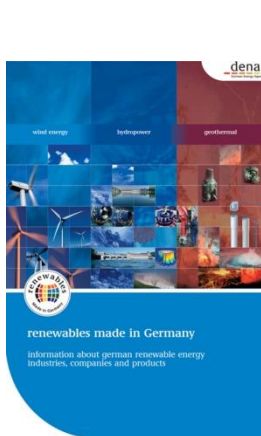
- Catalogues
- Exhibition
- Film
- Website: **www.renewables-made-in-germany.com**
- Online forum: **www.renewables-forum.com**
- Newsletter



Gefördert durch das



Bundesministerium  
für Wirtschaft  
und Technologie



## International Newsletter.

- Target group: businesses and clients abroad
- 5,500 subscribers worldwide
- Provides information on German technologies and businesses
- Provides information on activities of German businesses abroad

Subscription:

[www.renewables-made-in-germany.com](http://www.renewables-made-in-germany.com)

Category "Newsletter".



The screenshot shows the header of the "renewables made in Germany" newsletter, which is published by dena (Deutsche Energie-Agentur). The header includes the dena logo and the text "renewables made in Germany" with the subtitle "information about german renewable energy industries, companies and products". Below the header, the newsletter title is "renewables made in Germany" Newsletter 2006-12-06. The main body of the newsletter starts with a greeting "Dear Mr/Ms," and a welcome message. It lists the topics covered in the issue: current developments in renewable energy around the world, interesting projects and applications in renewable energy, state-of-the-art German technologies and services for using renewable energy sources, and opportunities and events that let you find out more and get in touch with German companies. The newsletter is published by the Renewable Energy Division of dena. It provides a link to recommend the newsletter to someone else and a link to cancel the subscription. The content table of contents lists 13 items, including a study by the German Ministry for the Environment, a worldwide boom of renewable energy technologies, a short introduction to photovoltaics, a focus on German renewable energy sources in Greece, best practices in Tanzania, products and services, new solar roofs, biodiesel, international networking exchange, business trips, and an exhibition about the potential of renewable energy technologies.



Efficiency decides.

Thank you.

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