



dena
 Deutsche Energie-Agentur

Kirsten Neumann
 Political Frameworks for Renewables – Experiences in
 Germany and MENA region
 „The future of Energy in Egypt“, Cairo, 14.-15. May 2008

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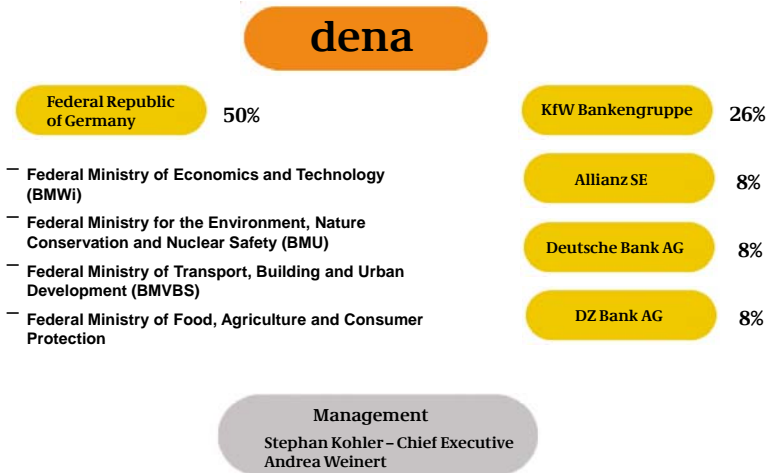
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German Energy Agency (dena):
 Who we are – shareholders and objectives

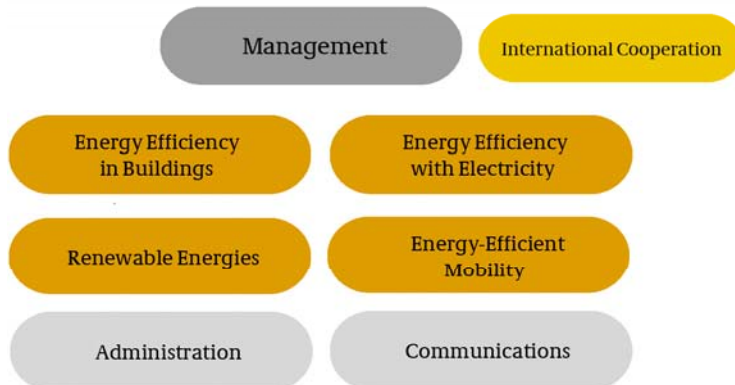
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Ownership structure of the German Energy Agency.

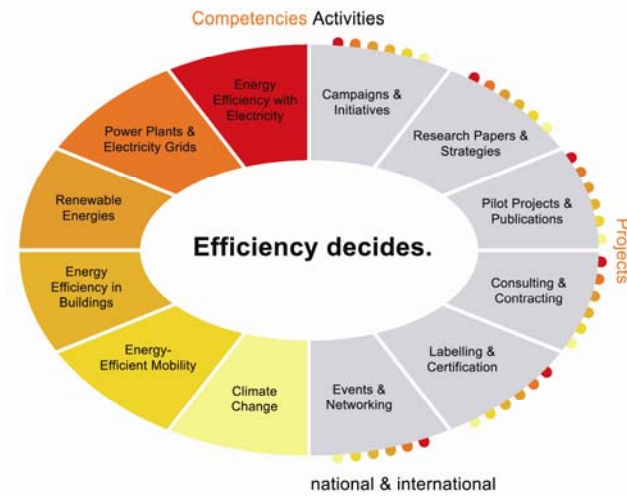


Organizational structure.





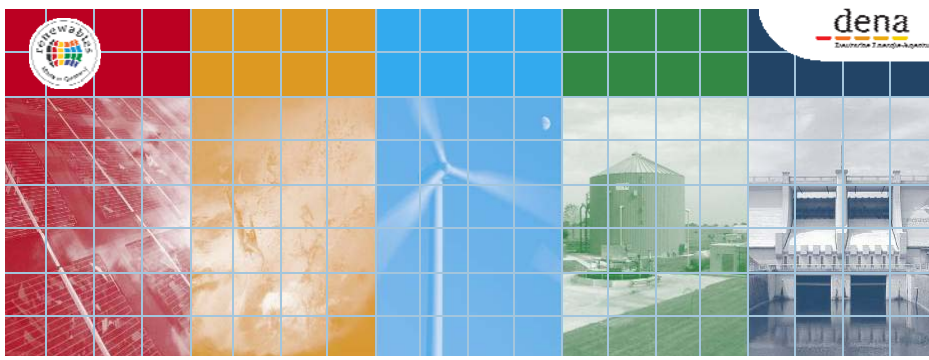
Fields of competence and activity at dena.



Renewable Energies.

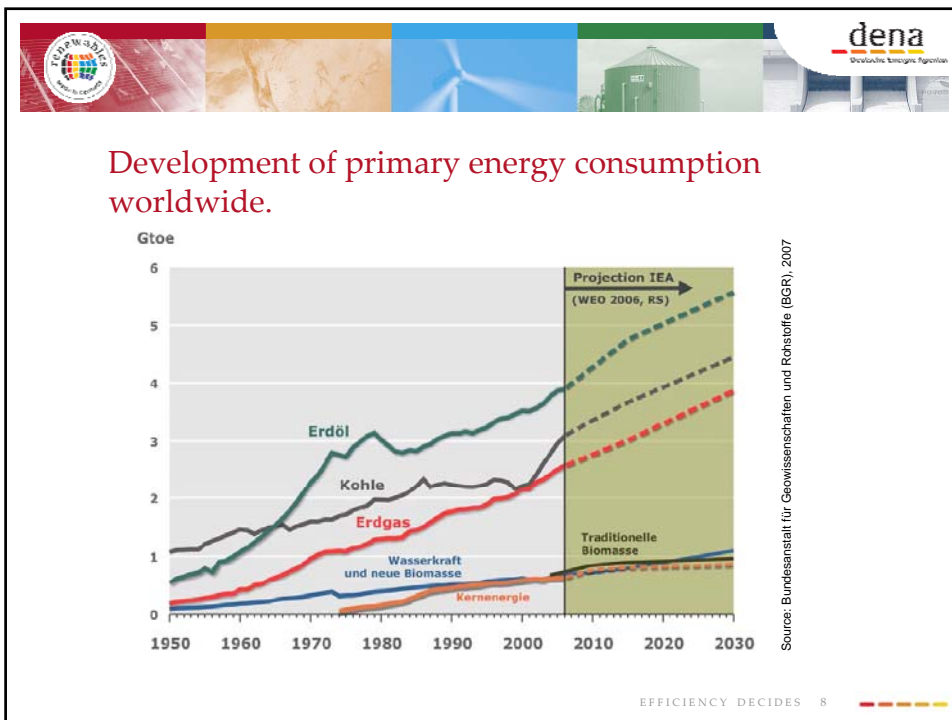
Objective: Significant increase in the contribution of renewable sources to the energy supply, improvement of their competitive position				
Internationally: Development of the market position enjoyed by renewables			Nationally: Integration of renewables into the energy infrastructure	
Renewable Energy Export Initiative Increase of the German market share of renewable energy technologies	Pilot projects abroad with systematic PR and marketing support E.g. solar roofs on German schools and institutions abroad	Political advice Creation of favourable legal and economic parameters for the development of renewables both nationally and internationally; Monitoring of the implementation of strategies and development measures	Bioenergy Resources; national biomass action plans; biogas feed-in	Electricity grid Grid extension; grid fees; intermittency; Smart Systems Competence centre for offshore wind www.offshore-wind.de

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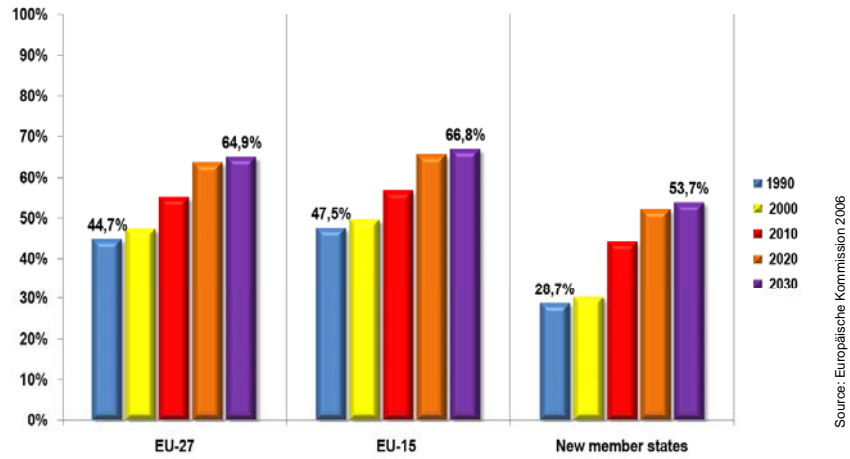


Chances and Challenges in MENA:

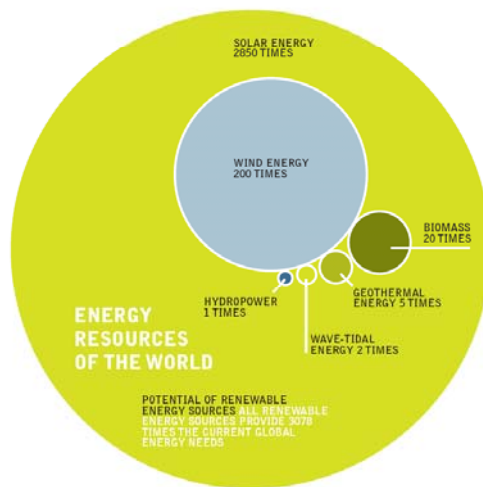
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Rising dependence on energy imports in the EU-27 (in %).

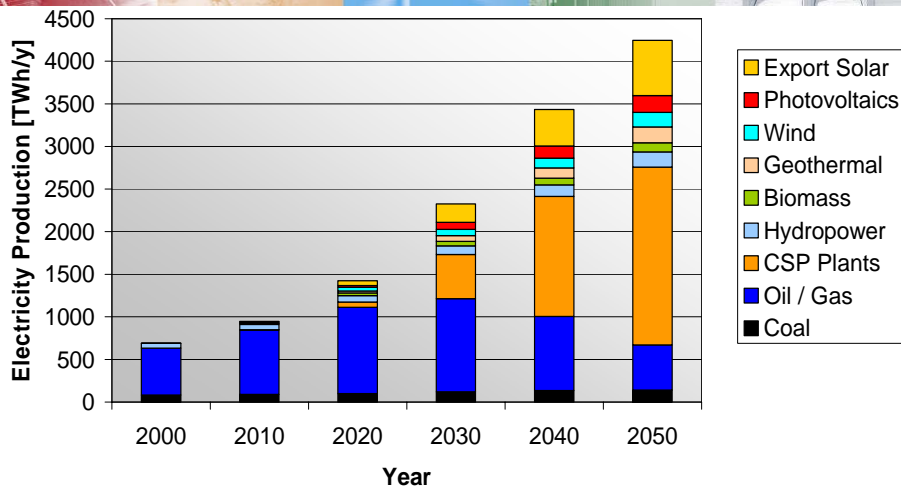
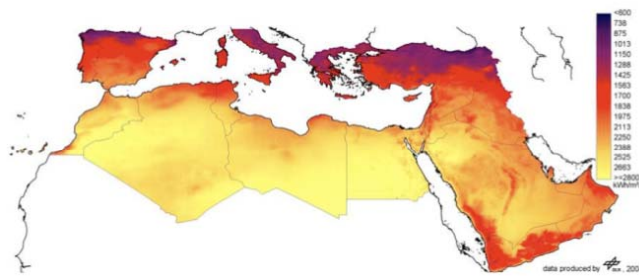


Global Energy Resources.



Source: Greenpeace, EREC

DLR Studie MED-CSP



Morocco, Algeria, Tunisia, Libya, Egypt, Turkey, Iran, Iraq, Jordan, Israel, Lebanon, Syria, Saudi Arabia, Yemen, Oman, United Arab Emirates, Kuwait, Qatar, Bahrain

Kirsten Neumann Meerwasserentsalzung in MENA





- Establish a comprehensive energy strategy
- Establish comprehensive regulatory frameworks, accompanied by:
 - Adequate funding schemes (domestic and national)
 - Favorable investment climate: Financial frameworks, like tax cuts, rebate systems, tariff cuts, customs reduction
 - Certification and quality assurance of equipment, standards
 - Training and capacity building
 - Private sector development
 - Domestic manufacturing
- Feed-in laws
- Tenders - long-term security



Reform Measures in the energy sector

Reform Measures	Tunisia	Syria	Palestine	Morocco	Lebanon	Jordan	Egypt	Algeria
Amendment of Laws	X			X	X	X	X	X
corporatization				X		X	X	X
Establishment of regulatory agency						X	X	X
Unbundling	X				X	X	X	X
Independent Power producers	X			X			X	X
Privatization of generation				X	X	X		
Privatization of distribution					X		X	

	Algeria	Egypt	Jordan	Lebanon	Morocco	Palestine	Syria	Tunisia
Renewable energy specific law	X	XX	XX	XX	XX			
Feed-in tariff	X							
Energy Building code		X			XX	XX		
Renewable energy fund		XX	XX		XX			X
Reduction of import duties					X			X
subsidies								X
Tax credits					X			X
Fossil Fuel Taxes					X			
Public investments/ loans /financing		X	XX		X			
Education, training, and public awareness	X	X	X	X	X		X	X

Support for RE
 X= Existant
 XX= Planned

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Political Frameworks:
 targets and incentives

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Current EU Renewable Energy Targets.

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



German Targets for Renewable Energy.

	Situation 2000	Situation 2006	Targets 2010	Targets 2020
Primary energy	2.1%	5.6%	4.2%	10% (20%)
Power supply	6.3%	11.6%	12.5%	20% (25-30%)
Heat	3.0%	6%	-	12% (14%)
Biofuels	-	1.0%	-	20% (volume)



The Most Important Instruments of Public Funding for the Energy and Heat Sector.

- The Renewable Energy Sources Act (EEG)
- Market incentive programmes for heat production
 - ➔ in the future Renewable Energies Heat Act



EEG: Legal Framework I.

- Federal Act
- Priority for feed-in of renewable energies
- Extensive regulation of grid access
- Purchase price regulated by law



EEG: Legal Framework II.

- Reduction of EEG levy for energy intensive industries
- Tariffs measured according to competitiveness of each technology

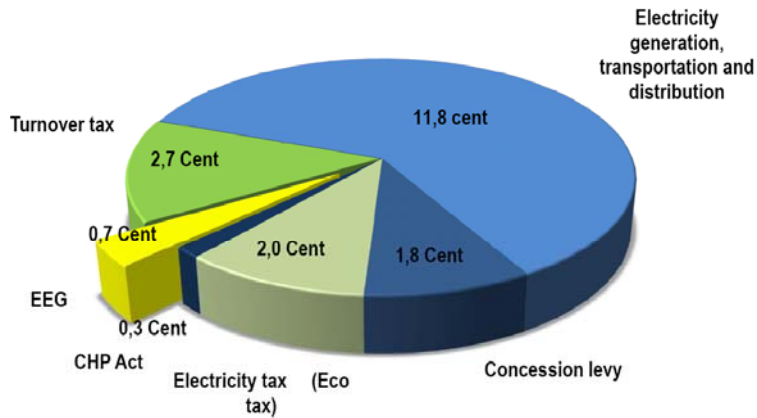


Feed-in tariffs under the EEG for 2008.

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



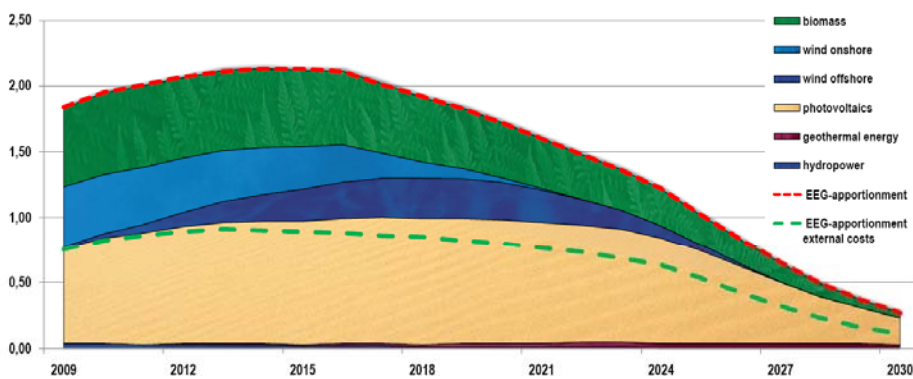
Breakdown of costs for one kWh of electricity for household customers (€-Cents 19.5), 2006.



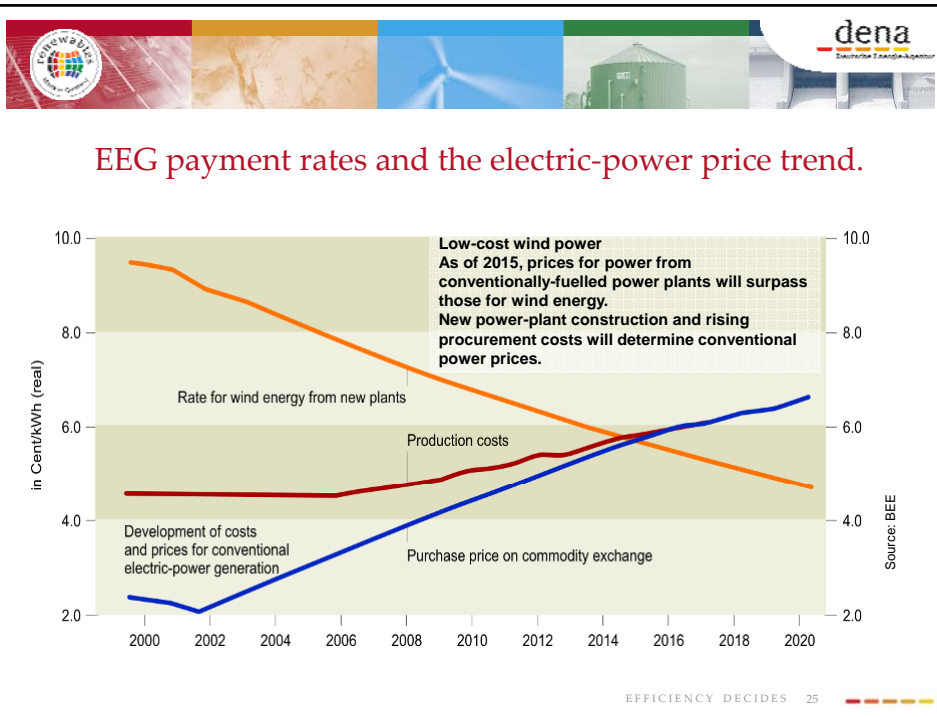
Source: BMU November 2007



Anticipated development in the monthly EEG apportionment of an average household (3500 kWh/year).



Source: BMU November 2007



-
- The Market Incentive Programme – Outline.**
- **Instruments** subsidies for solar panels, small biomass boilers and heat pumps

 Incentive loans for bigger systems for the use of solid biomass, biogas and geothermal power
 - **Financing** revenue from ecological tax reform and auctioning of emission trades
 - **Beneficiaries** private households
 smaller businesses
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Outline of the Renewable Energy Heat Act (EEWärmeG).

Objective

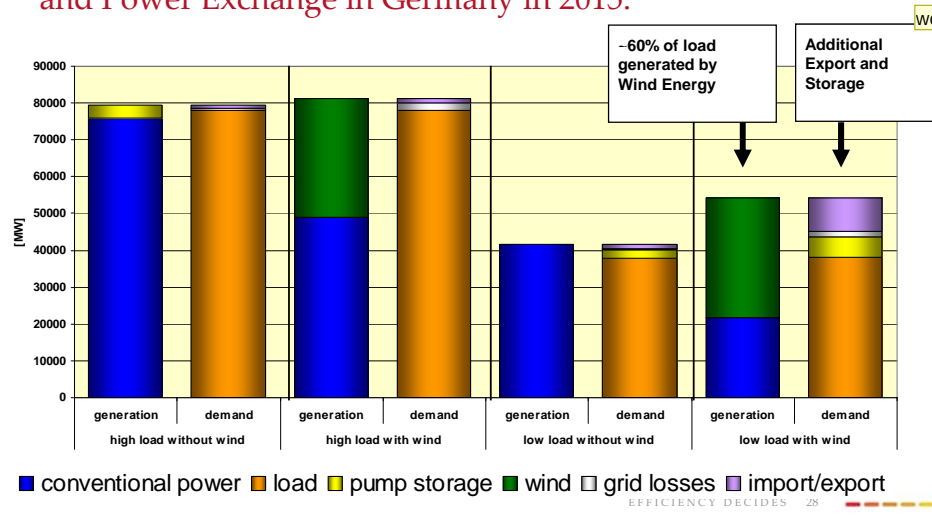
- ➔ 14% share of renewable energy in heat production

Three Pillars

- Obligation to use renewable energy in new buildings
- Financial support – market incentive programme receives more money
- Facilitation of heating grid expansion



Comparisons of Generation, Grid Load, Losses, Storage and Power Exchange in Germany in 2015.



woer1 Woher kommt der conv Socket?
Wörlen, Christine; 16.06.2007

Management of Surplus of Electric-Power Generation.

- In certain load situations (e.g. at light load and strong wind), Germany will, on a few days per year, have a power-generation surplus
- Solution approaches
 - Additional storage of mass energy (central system or close to location of wind farm)
 - Feed-in management for wind power (exemption from priority access of renewables to the grid)
 - Load management (e.g. off-peak heating, compressed air for industrial users, cooling)
 - Export of power

Necessary Expansion of the 220/380 kV Interconnected Grid.



Netzverstärkungen und Netzausbau im Höchstspannungsübertragungsnetz bis zum Jahr 2015 (Quelle: dena-Netzstudie)

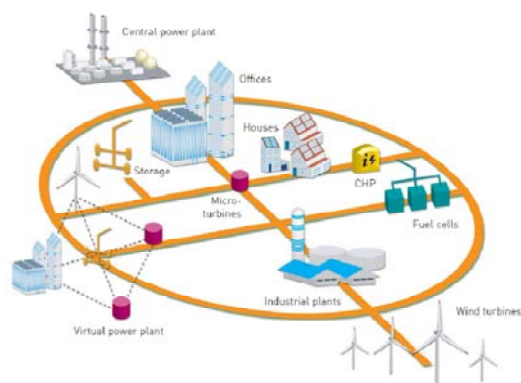
Bis zum Jahr 2010:	461 km
1. Hamburg/Nord-Dollern	45 km
2. Ganderkesee-Wehrendorf	80 km
3. Neuenhagen-Bertikow/Vierraden	110 km
4. Lauchstädt-Vieselbach	80 km
5. Vieselbach-Altenfeld	80 km
6. Altenfeld-Redwitz	60 km
7. Franken (179 km Netzverstärkung)	6 km
8. Thüringen (187 km Netzverstärkung)	
Bis zum Jahr 2015:	Zusätzliche 390 km
9. Diele-Niederrhein	200 km
10. Walle-Mecklar	190 km

— 380 kV
— 220 kV
— HGÜ Freileitung/Kabel
||| Ausbaustrecken

● Städte
○ Umspannwerke
○ Stromrichterstationen



Technical Approaches: Smart Grids.



Shift in paradigm towards a transmission and switching grid that meets new challenges such as decentralised production and energy efficiency

Quelle: European Technology Platform, 2006

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Success Story:
Development of renewable energy in Germany

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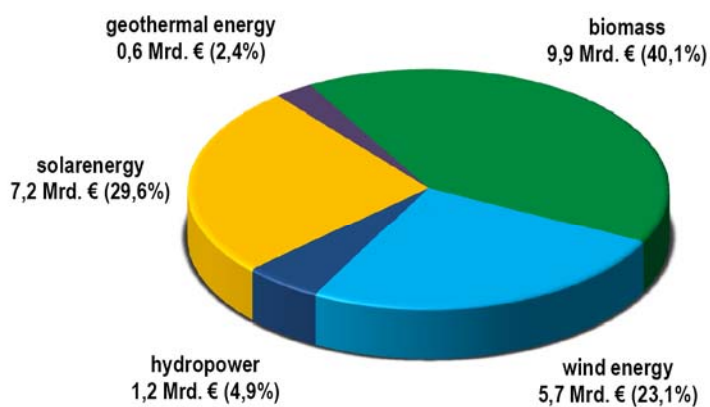


The German RE Experience.

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



Total turnover with renewable energy sources in Germany in 2007 (approx. € 24,6 billion).



Source: BMU, March 2008



German Exports of Renewable Energy.

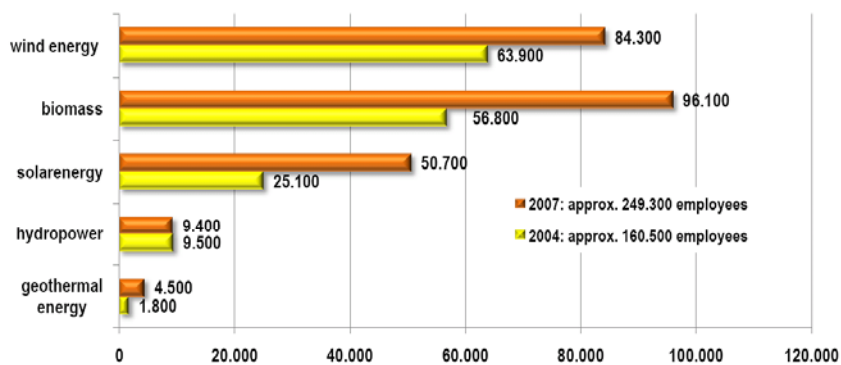
- **Wind energy**
 - export quota: 71%
 - world market share: 38%

- **Energy from photovoltaic sources**
 - export quota: 38%
 - world market share: 25%

- **Hydropower**
 - export quota: > 80%
 - world market share: 37%

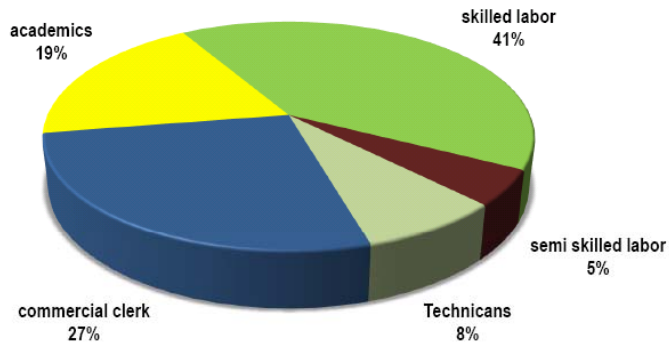


Jobs in the renewable energy sector in Germany in 2007.



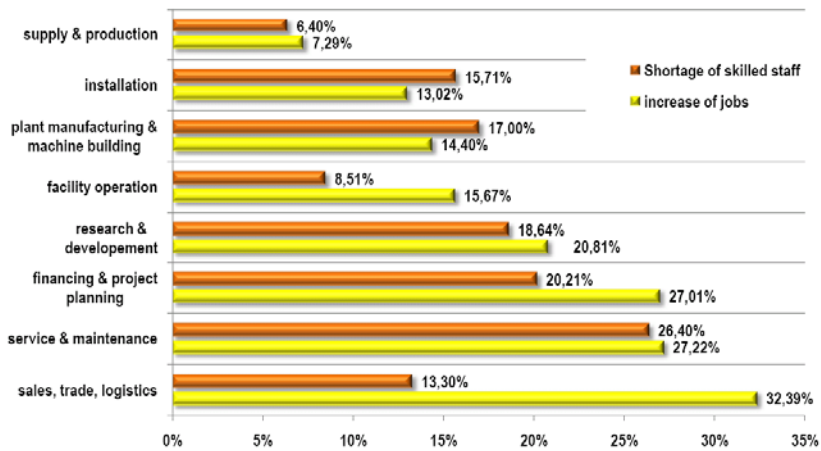
Source: BMU March 2008

Qualification of employees.



Source: Wirtschaftsklagen Bonn 2007

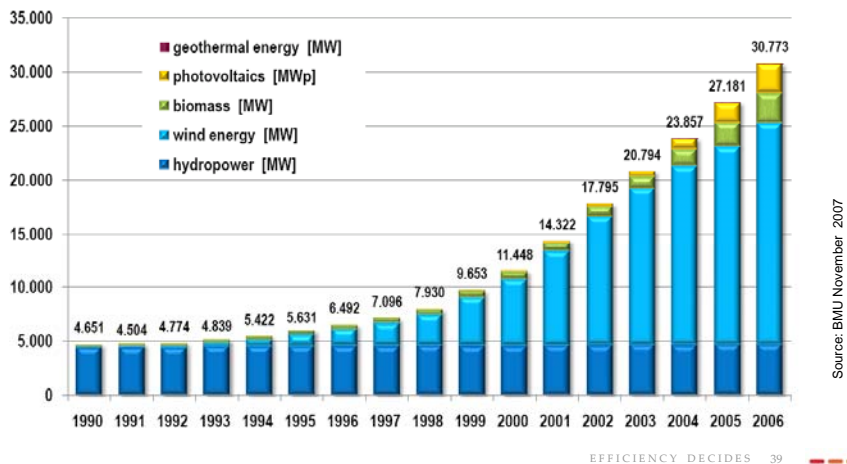
Shortage of skilled staff & increase of jobs expected by German companies.



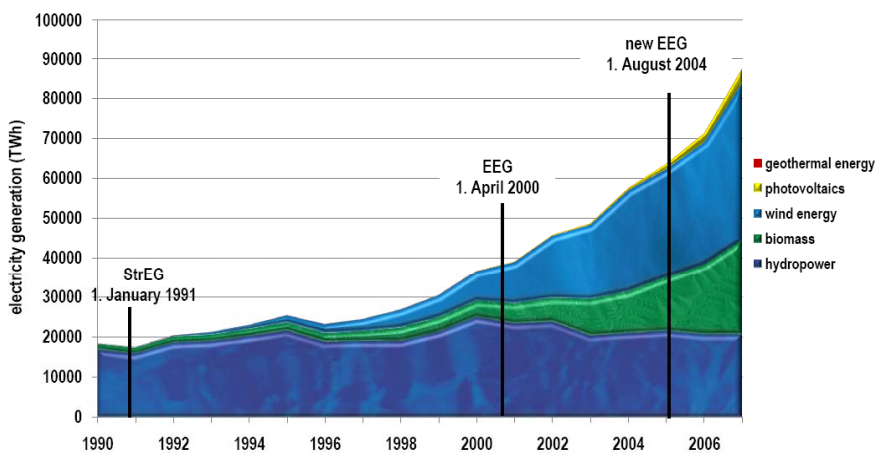
Source: Wirtschaftsklagen Bonn 2007



Development of the installed renewable capacity for electricity generation 1990-2006.

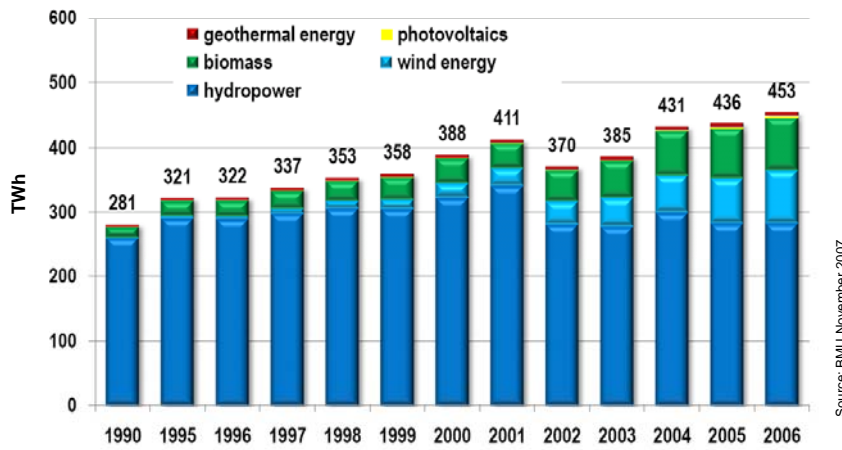


Development of electricity generation from RE, 1990-2007.





Development of renewable energy electricity supply in the EU-27.



Source: BMU November 2007



Renewables made in Germany: Services



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






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Public Relations: Press Releases and Technical Articles.

At home and abroad










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Business Trips.

- German Office for Foreign Trade (bfai): Information trips abroad
 - On the spot insight into overall situation of RE in target countries
 - Talks with Administration, Institutions, Associations and Businesses
- German Chambers of Commerce Abroad (AHK) business trips (The German Chamber of Industry and Commerce (DIHK), dena, AHKs)
 - More than 150 business trips to more than 50 target markets since 2004
 - Over 1000 participants
 - Events with multipliers and policy makers
 - Individually customized
- German Agency for Technical Cooperation (GTZ) trip to Senegal
 - Rural electrification



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

Category "Newsletter".







Pilot Projects: Solar Roofs.



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Online Forum.



- International forum for network building in the field of renewable energies

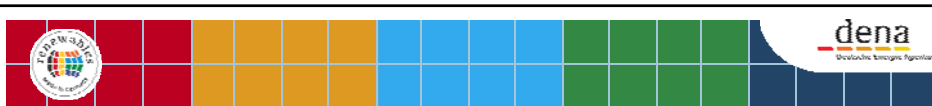
www.renewables-forum.com

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Efficiency decides.

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Thank you.

Deutsche Energie-Agentur GmbH (dena)
German Energy Agency
Chausseestr. 128a
10115 Berlin
Germany

Tel: +49 (0)30 72 61 65 - 600
Fax: +49 (0)30 72 61 65 - 699

www.dena.de

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