

Photovoltaics: funding schemes and success factors in Germany

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deENet | Competence Network Distributed Energy Technologies





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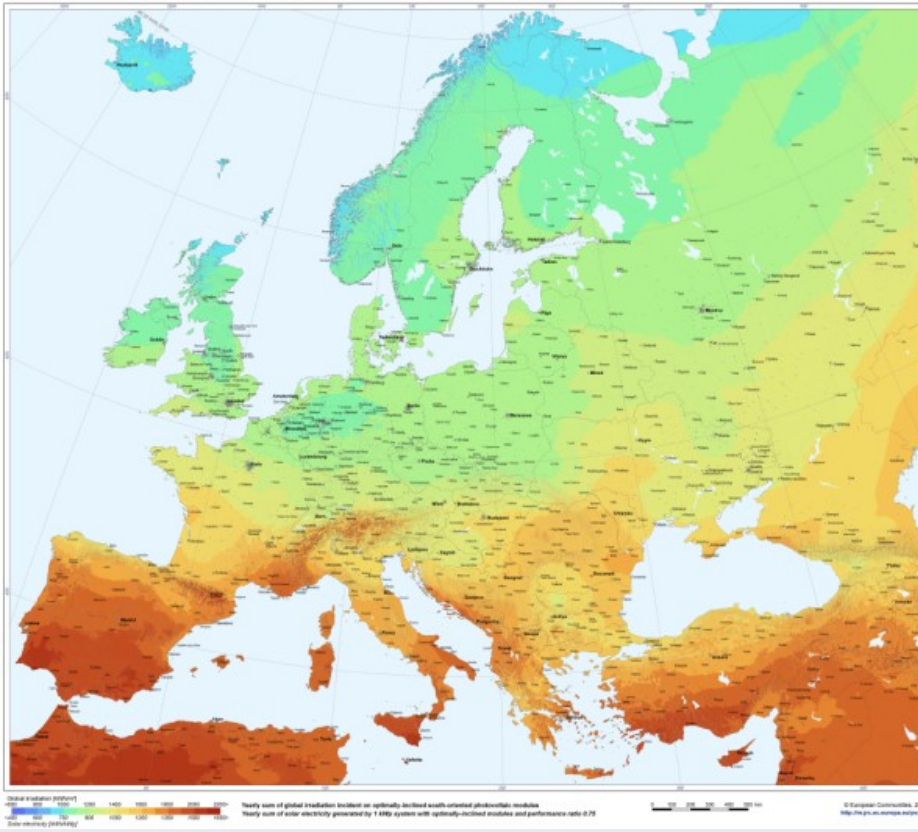
3. Economical outcome of funding



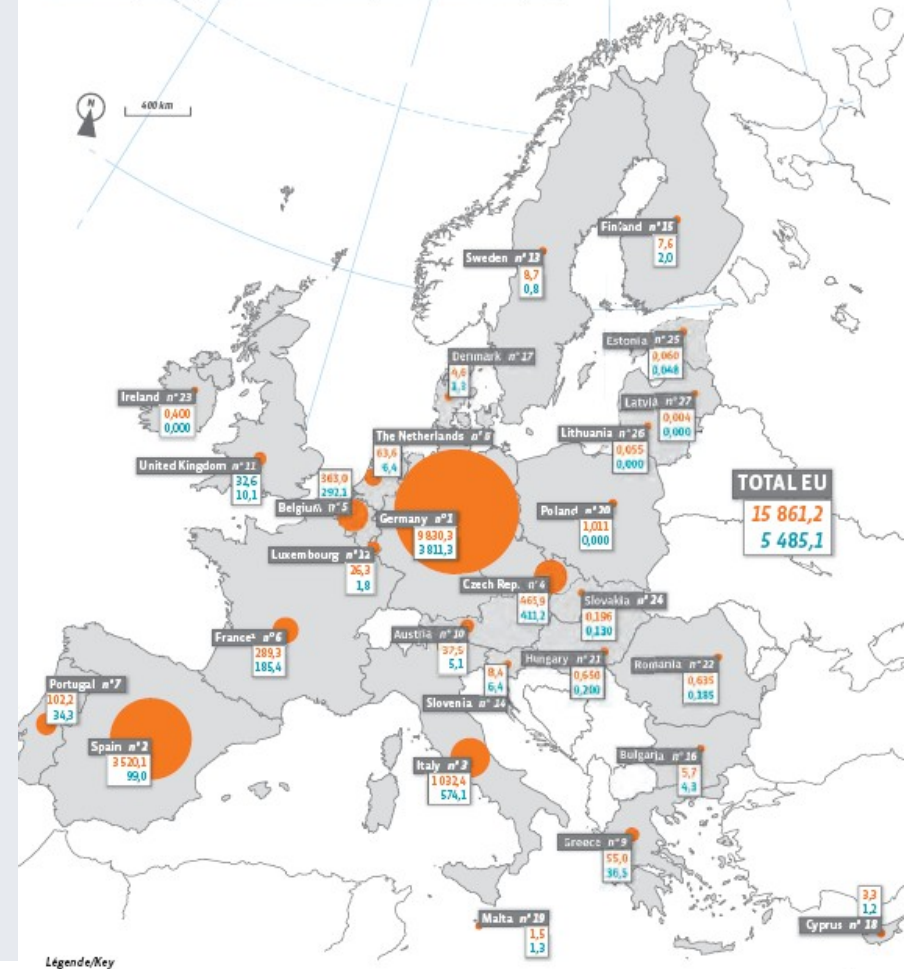
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Photovoltaic potential and capacity in Europe

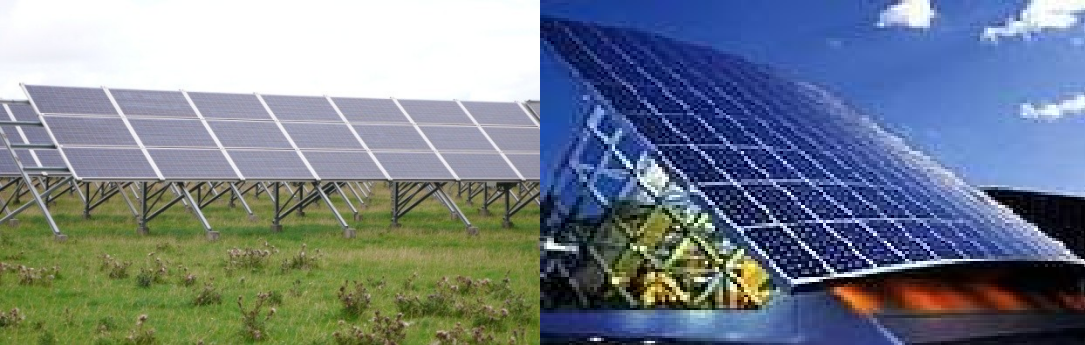
Photovoltaic Solar Electricity Potential in European Countries



Puissance photovoltaïque installée dans l'Union européenne fin 2009*.
 Photovoltaic power capacity installed in the European Union at the end of 2009*.



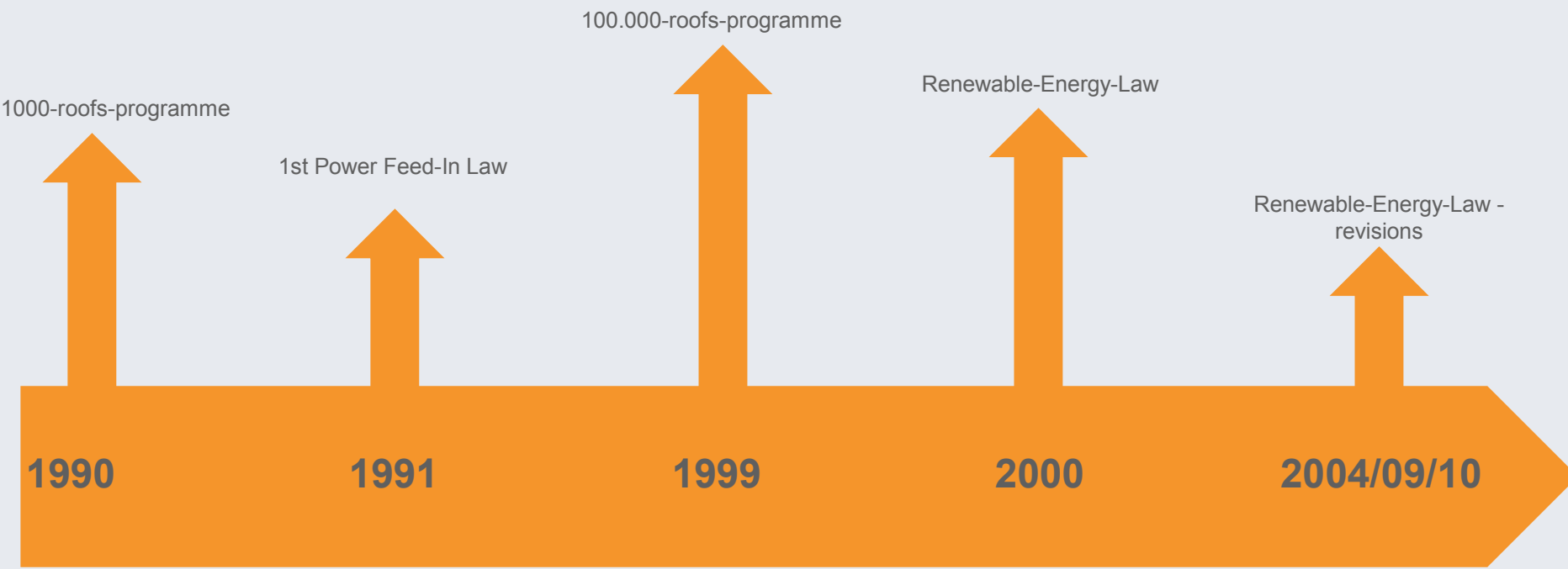
Source: Eurobserv



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Historic development of PV-funding in Germany





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1990: 1000-Roofs-programme

- First funding programme for PV
- target: evaluating the technical possibility
- funded: grid-integrated, rooftop-PV for small houses; 1-5 kWp
- 70% of facility and installation costs co-funded





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1999: 100.000-Roofs-programme

- based on 1990-idea
- funding of private households, SME
- credits with reduced interest rates
- stopped in 2003, because final target of 350 MWp has been reached





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1991: First Power-Feed-In-Tariff

- background: nearly complete focus on coal and nuclear power
- Grid providers agree to pay a fixed price to private power producers
- max. size of facility: 5 MW
- covered: water power, bioenergy (appr. 7 ct/kWh); wind and solar energy (8 ct/kWh)
- „ancestor“ of feed-in-tariff-laws



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2000: German Renewable Energy Law

- strict force on energy suppliers to connect new facilities to grid and to buy power
- financing model by levy of end consumers` fees
- no more limit in size
- including Geothermal energy
- 20 years guarantee with degressive prices





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2004/09/10: German Renewable Energy Law - revisions

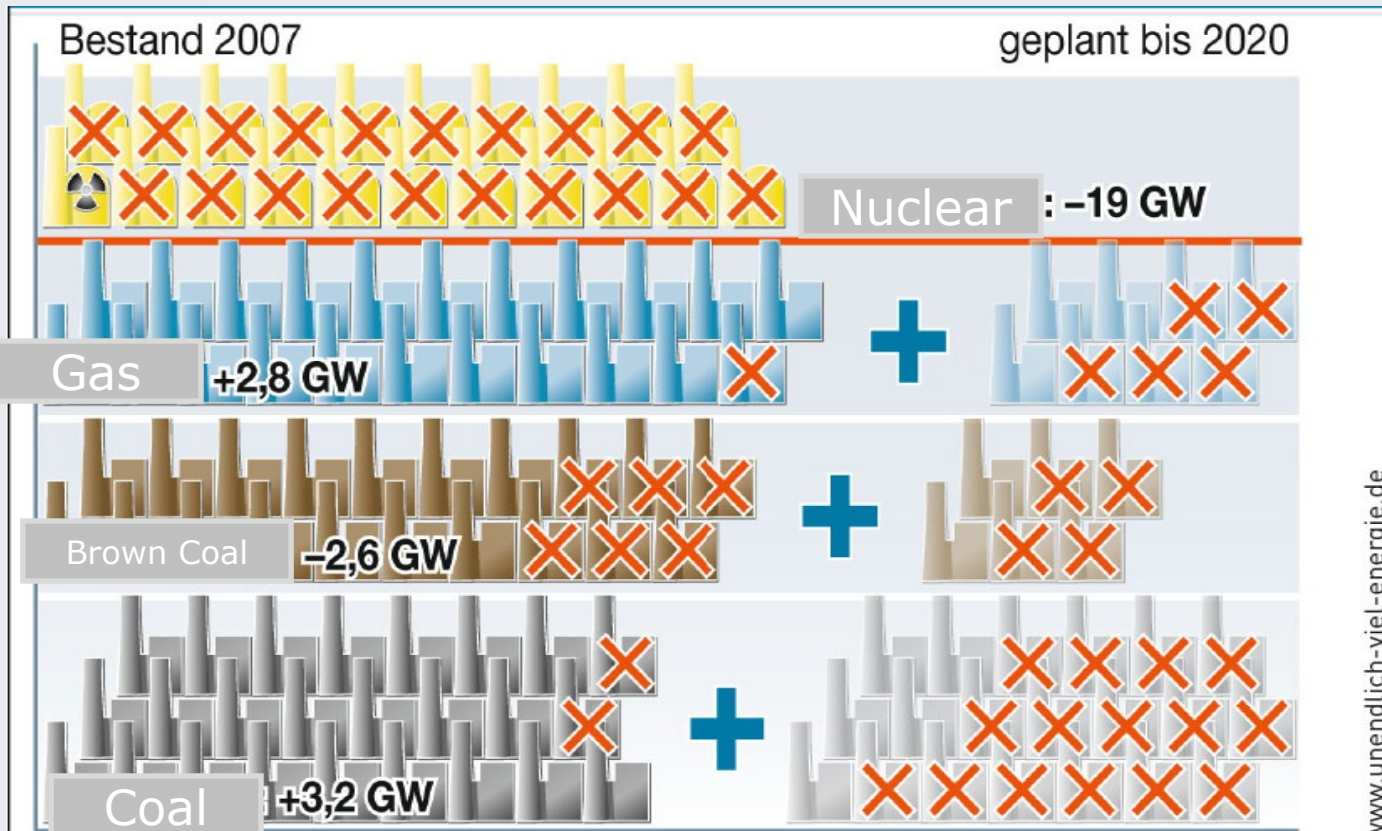


- 2004: legal matters, new tariffs (especially higher PV-rates)
- 2009: more complex law, fix goal (30% until 2020), covers thermal energy, „sliding depression“ for PV
- 2010 (planned): lower tariffs
for PV: no funding for agrarian areas, higher depression



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Renewable-Energy-Law - Background



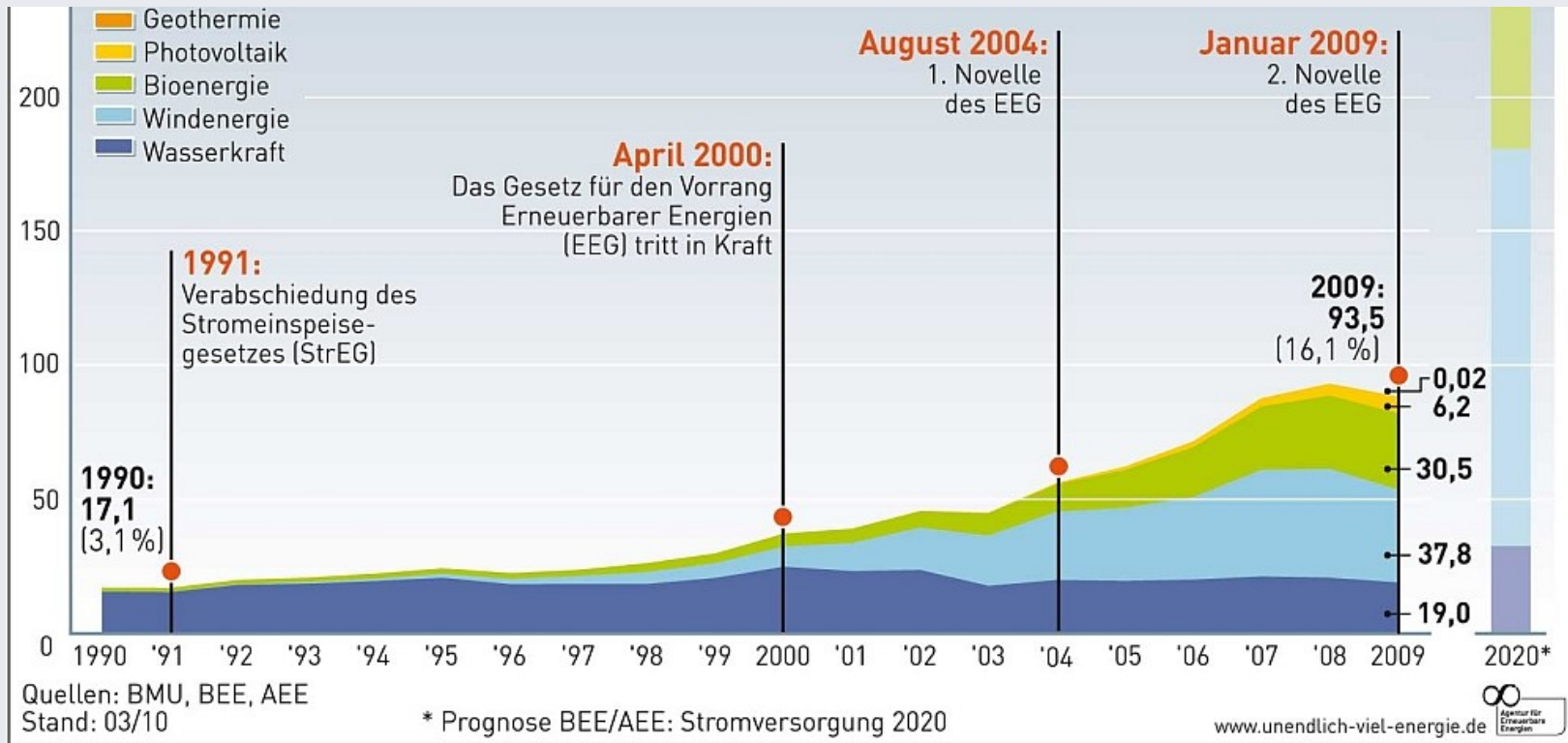
www.unendlich-viel-energie.de

Quelle für Bestand, Neubaupläne und Außerbetriebnahmen:
BNetzA 2008; Stand: 1/2009



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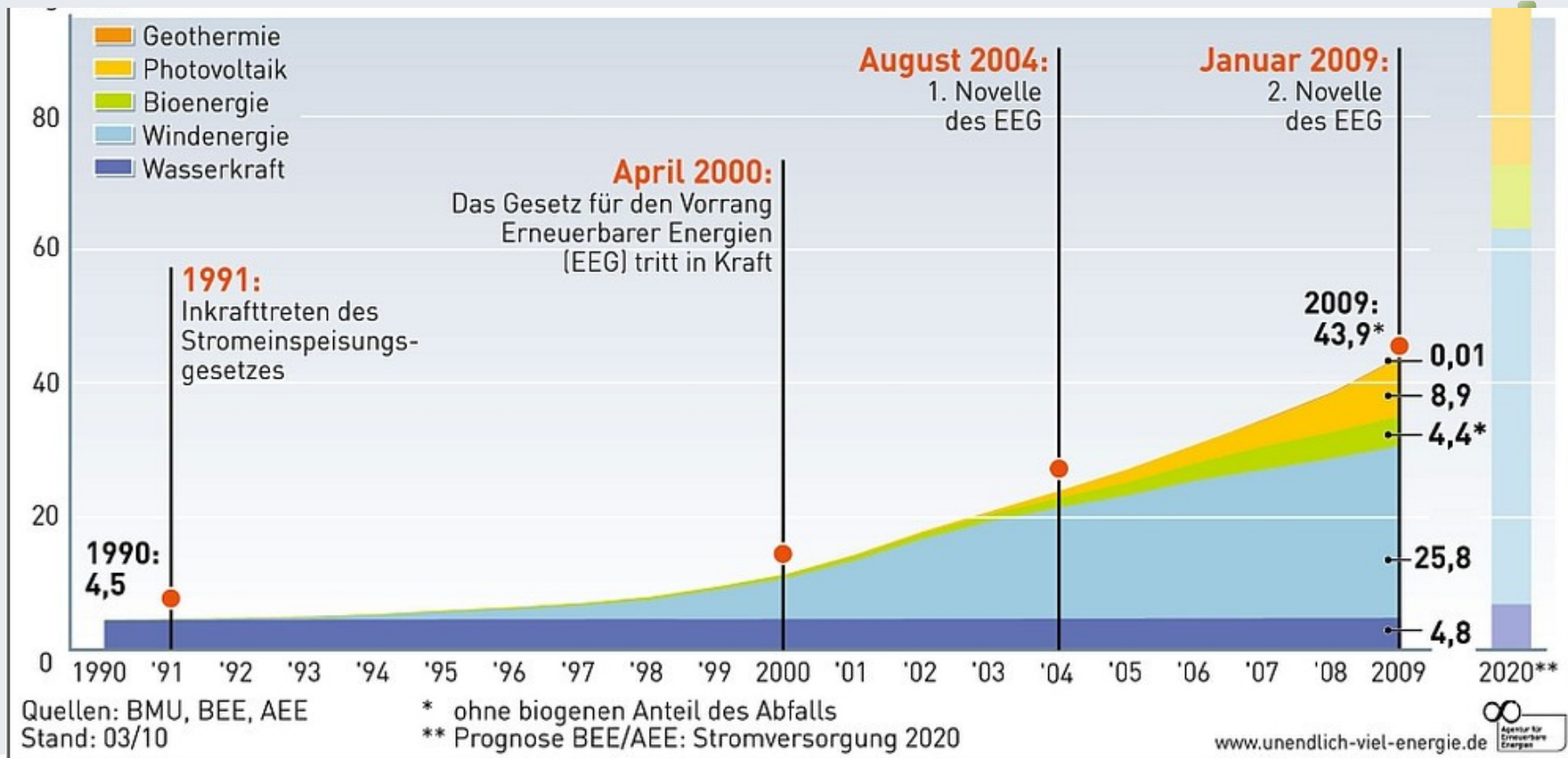
Energy production from RES in Germany





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Installed capacity of RES in Germany





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Renewable-Energy-Law - financing



RES-producers





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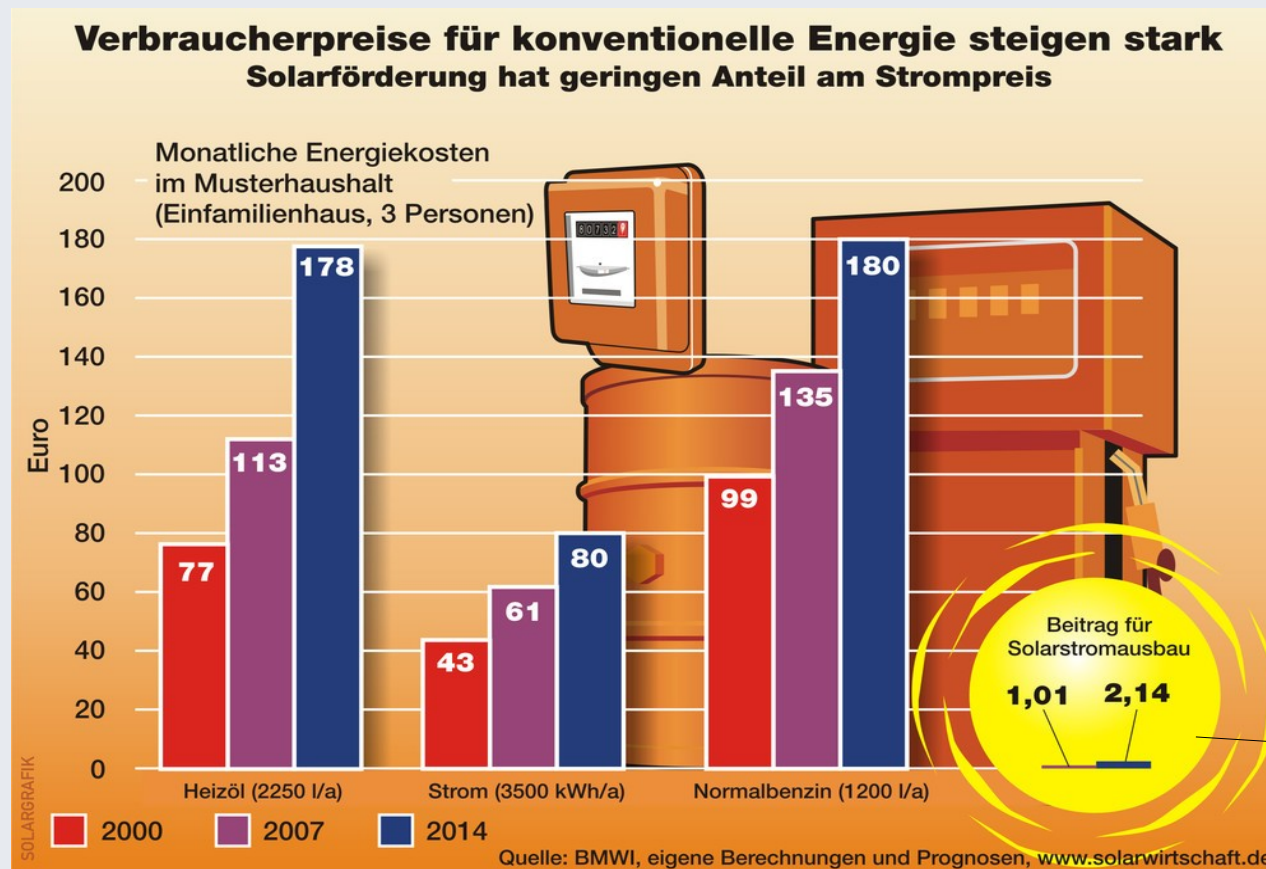
Estimated cost and benefit of EEG

Cost	Additional cost for procurement mainly	3,3 Bio. €
Benefit	Merit-order-effect; less energy imports, less external costs	9,3 Bio. €



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PV-share in consumer's power price per month (one family house - 3 persons)





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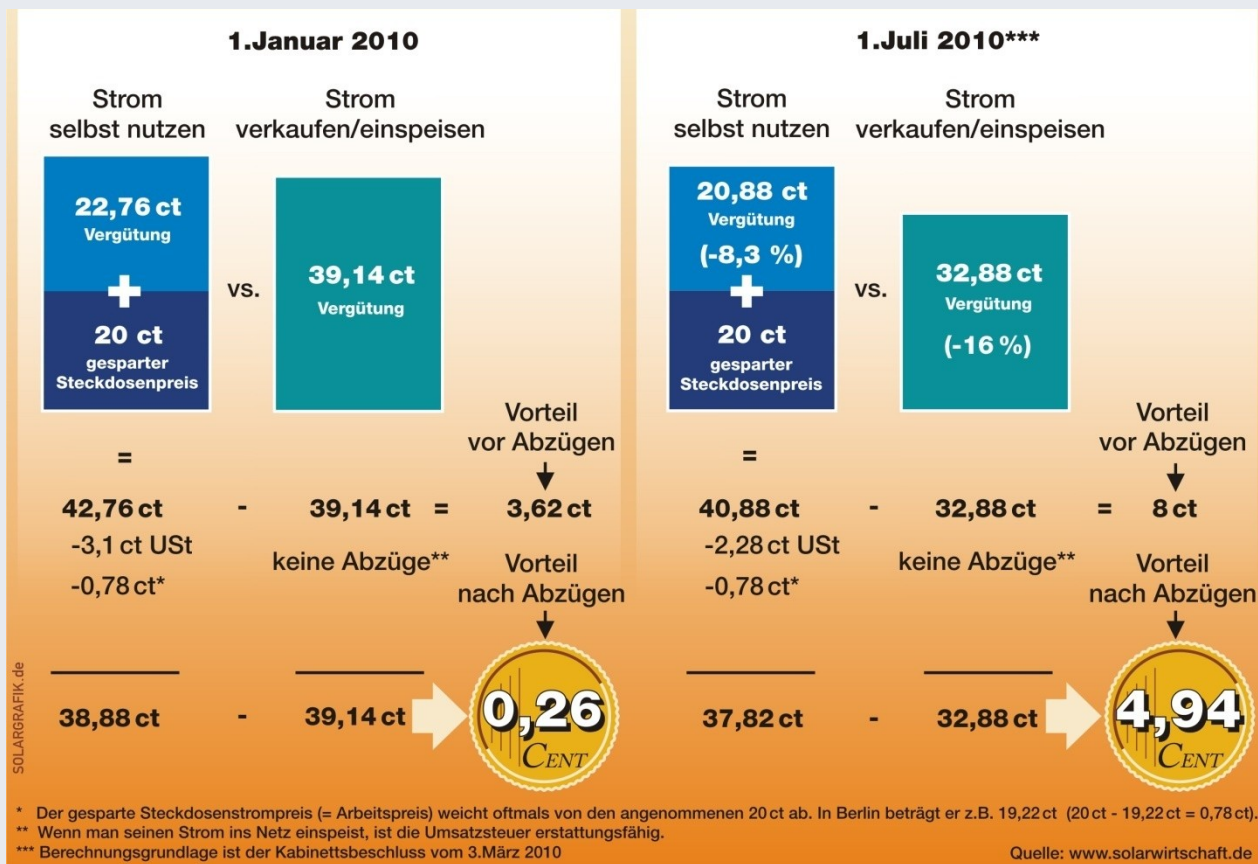
Development of PV-funding in ct/kWh since 2004

Kind of facility	2004	2005	2006	2007	2008	2009	2010	Planned for July 2010
Building-integrated								
<i>Until 30 kW</i>	57,4	54,53	51,80	49,21	46,75	43,01	39,14	32,88
<i>30 kW to 100 kW</i>	54,6	51,87	49,28	46,82	44,48	40,91	37,23	31,27
<i>from 100 kW</i>	54,0	51,30	48,74	46,30	43,99	39,58	35,23	29,59
<i>from 1000 kW</i>	54,0	51,30	48,74	46,30	43,99	33,00	29,37	26,14
Open space-based								
<i>Polluted areas</i>	45,7	43,4	40,6	37,96	35,49	31,94	28,43	25,30
<i>Agrarial areas</i>	45,7	43,4	40,6	37,96	35,49	31,94	28,43	-
<i>Benefit for own use</i>	-	-	-	-	-	25,01	22,76	20,88-17,59
<i>Adding for facade-integrated PV</i>	5,00	5,00	5,00	5,00	5,00	-	-	-



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Advantage of own consumption





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Photovoltaic - financing of facilities

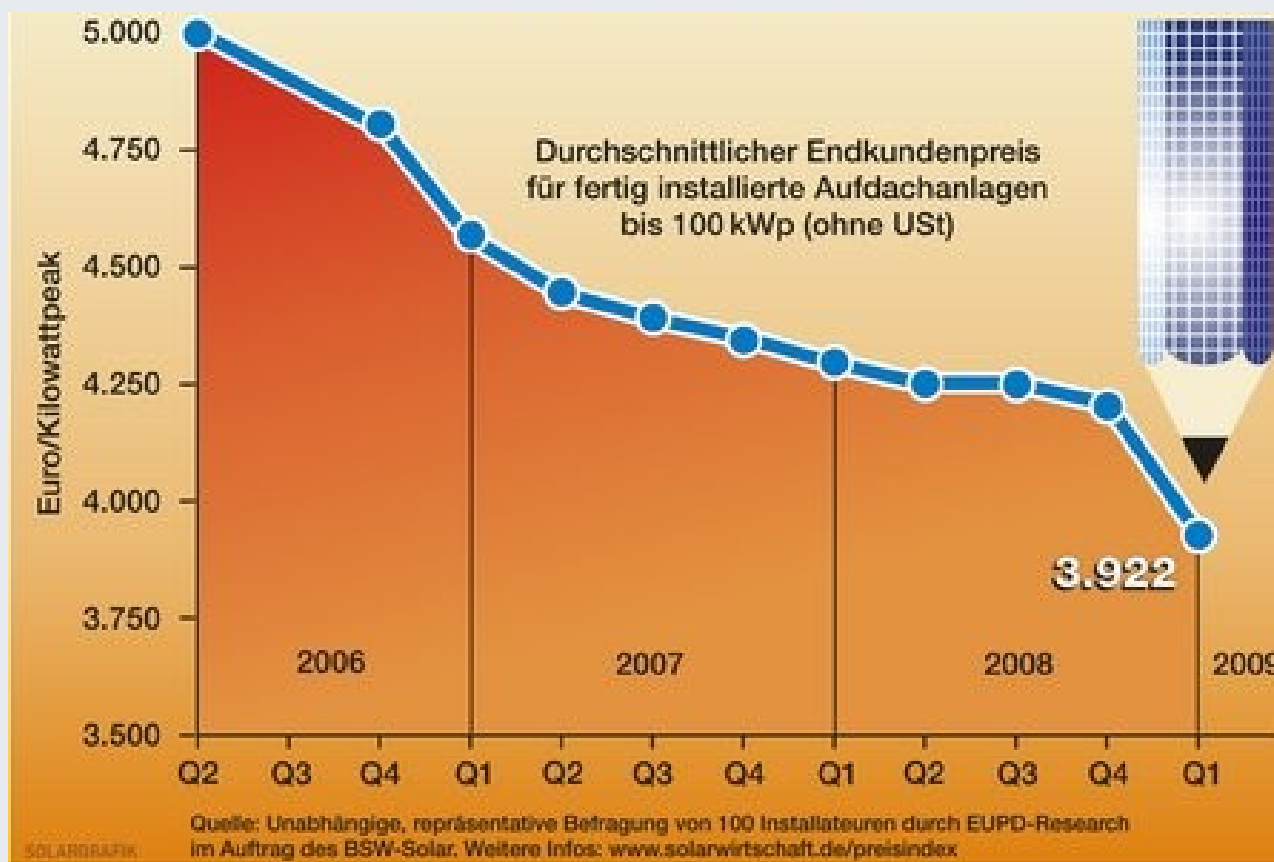
- at the KfW for purchase and installation of solarthermal and PV-modules are available :
 - „standard“: up to 100% (10 Mio €) funding of investments for new facilities
 - individual credit rates
 - funding of facilities in other countries/ next to the borderline possible, if they also protect Germany`s environment
 - „premium“: up to 100% (10 Mio €) funding of investments for new facilities
 - only for own use
 - better conditions

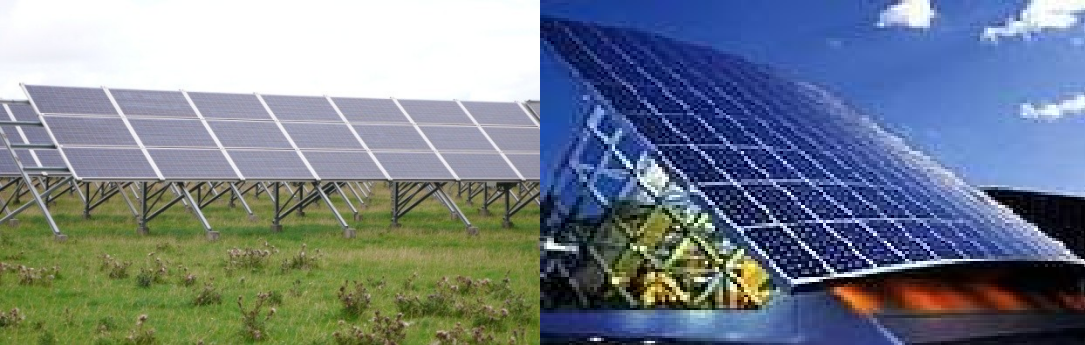


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Sinking prices of small solar roof panels

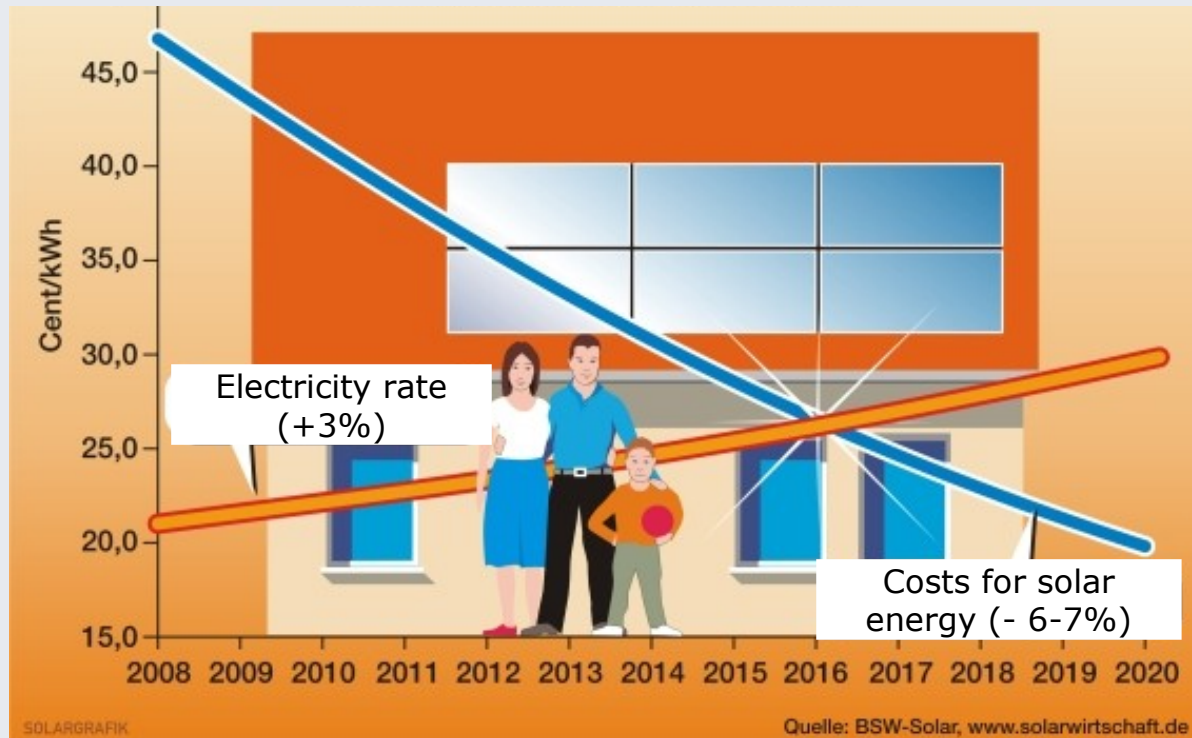




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Reaching out for Grid parity





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Solar profit

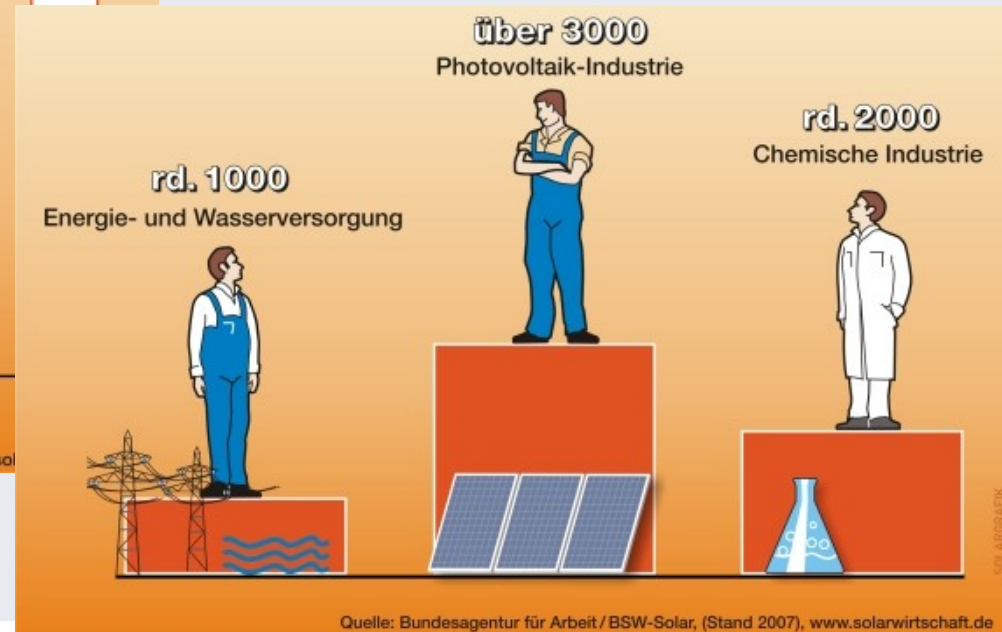
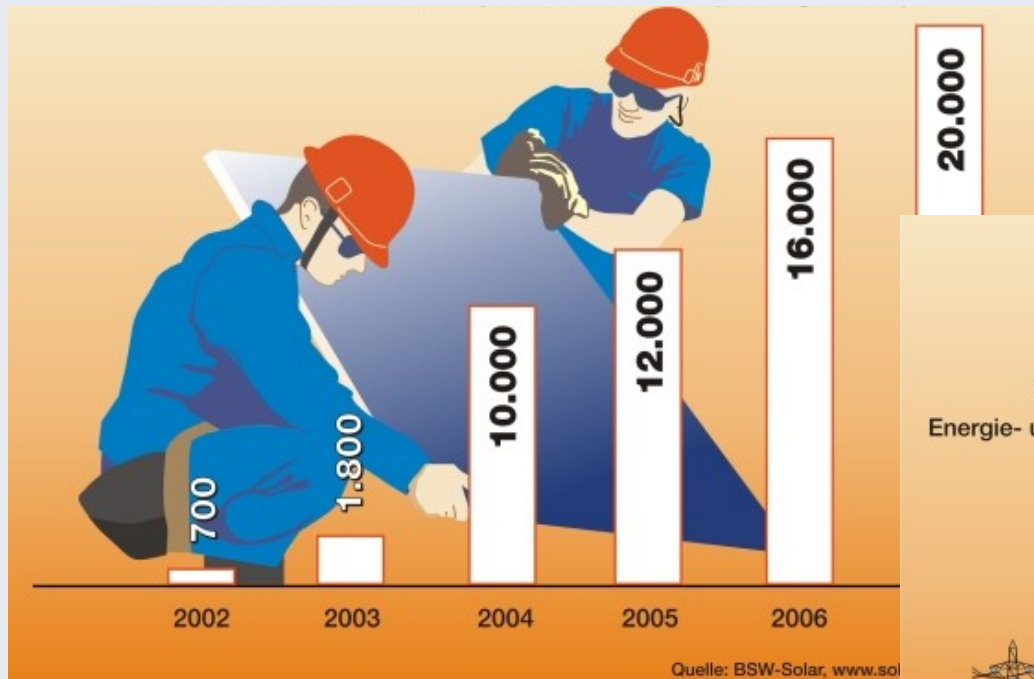




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PV-Jobs in Germany's economically weak regions

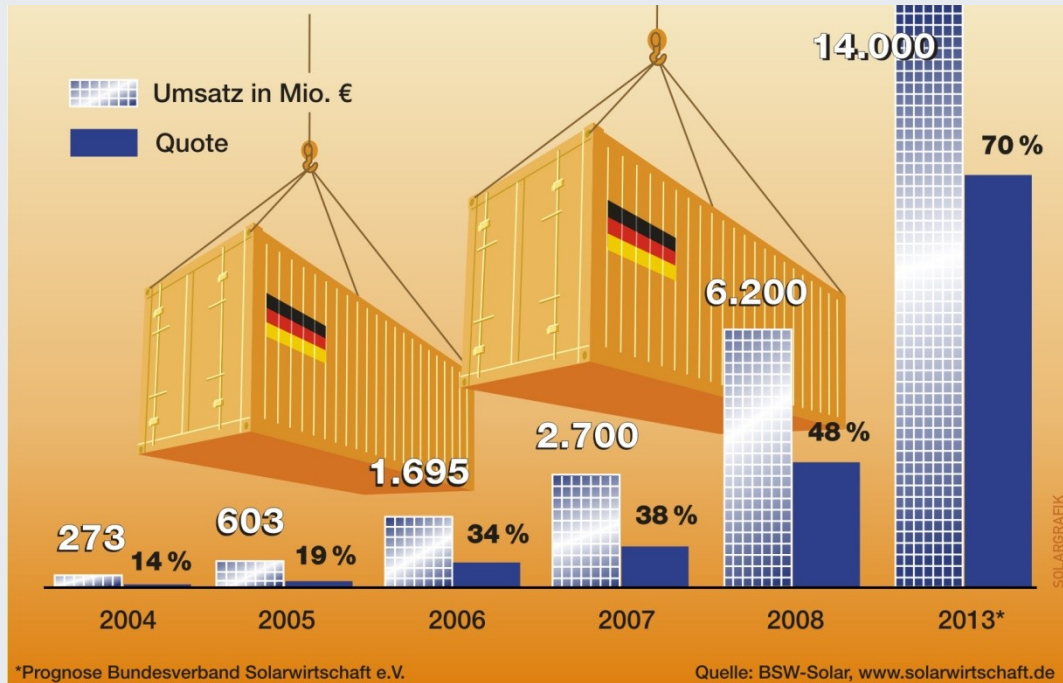




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RES & PV Export in Germany



Quelle: Branchenangaben.
© Agentur für Erneuerbare Energien 2009





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Image of Solar Energy



- in Germany:
 - Solar-Bundesliga: contest for regions, municipalities, neighbourhoods
 - registry for solar potential in more and more places
- in other countries:
 - feed-in-tariffs existant in more than 60 countries worldwide



Thank you for your attention!



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