Renewable Energies

Solution for nuclear and climate change

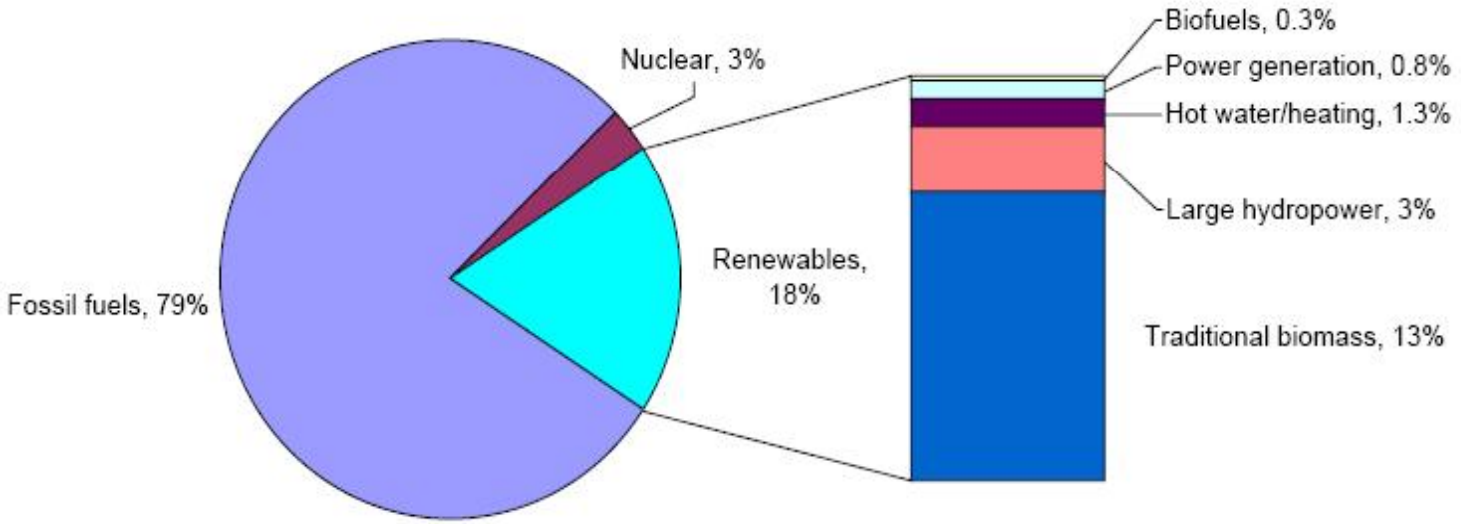
63rd World Conference against A- and H-Bombs

Hiroshima 5. 8. 2008

Hans-Josef Fell
Member of German Parliament

Renewable share of global energy consumption in 2006

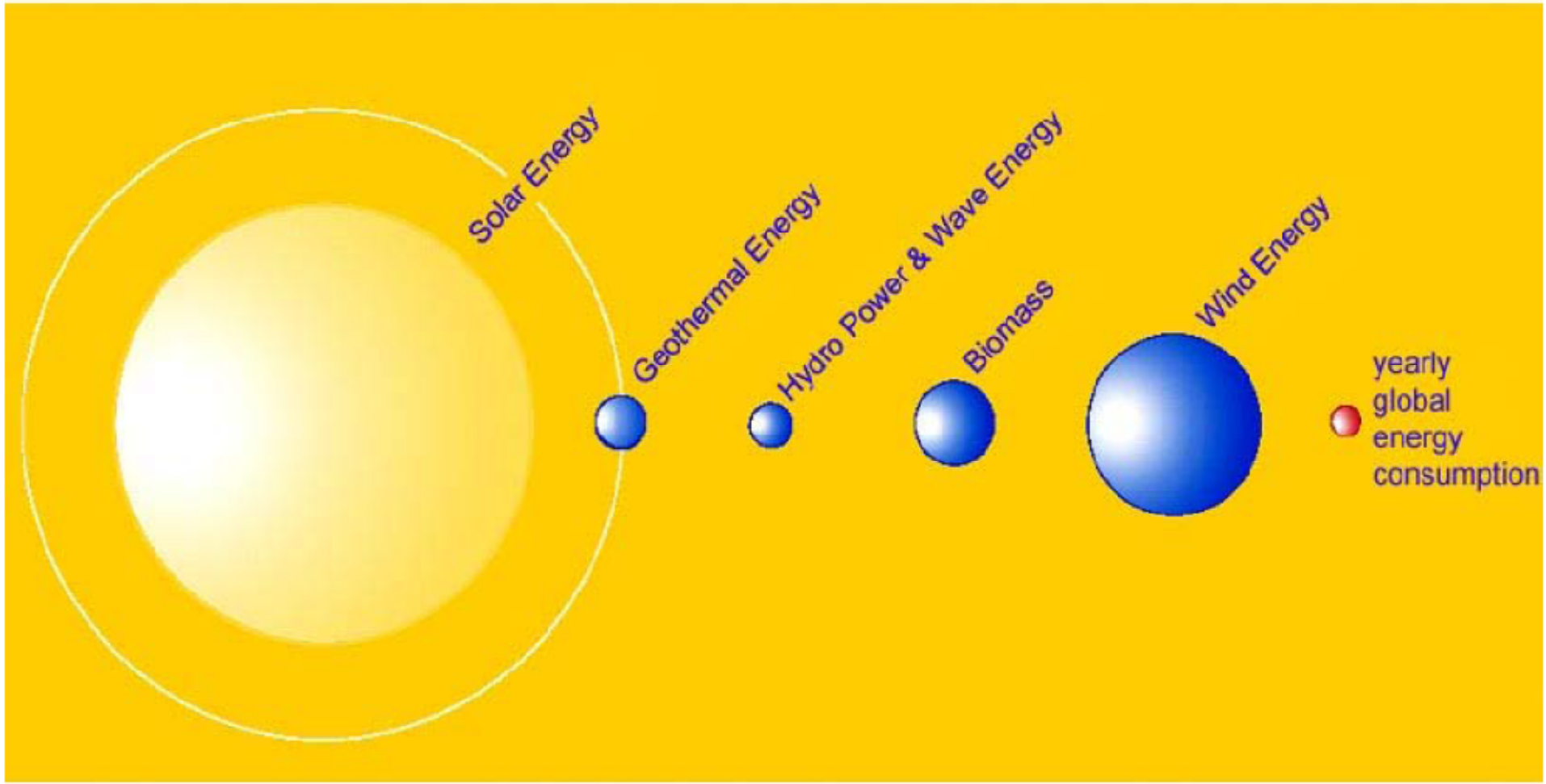
Figure 1. Renewable Energy Share of Global Final Energy Consumption, 2006



Source: REN21 Renewables 2007 Global Status Report, www.ren21.net

Quelle : REN21

Worldwide Potential Renewable Energy



CSP potential vs. electricity demand

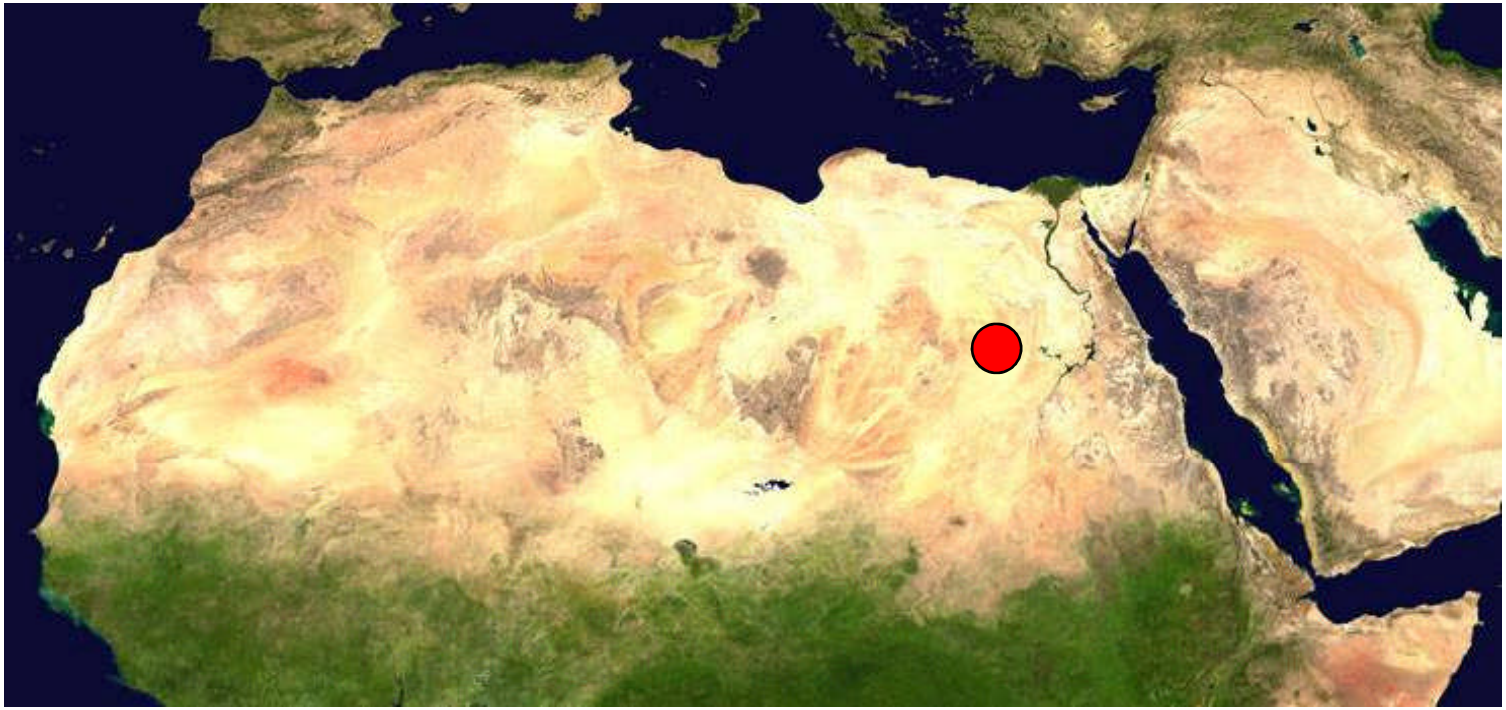
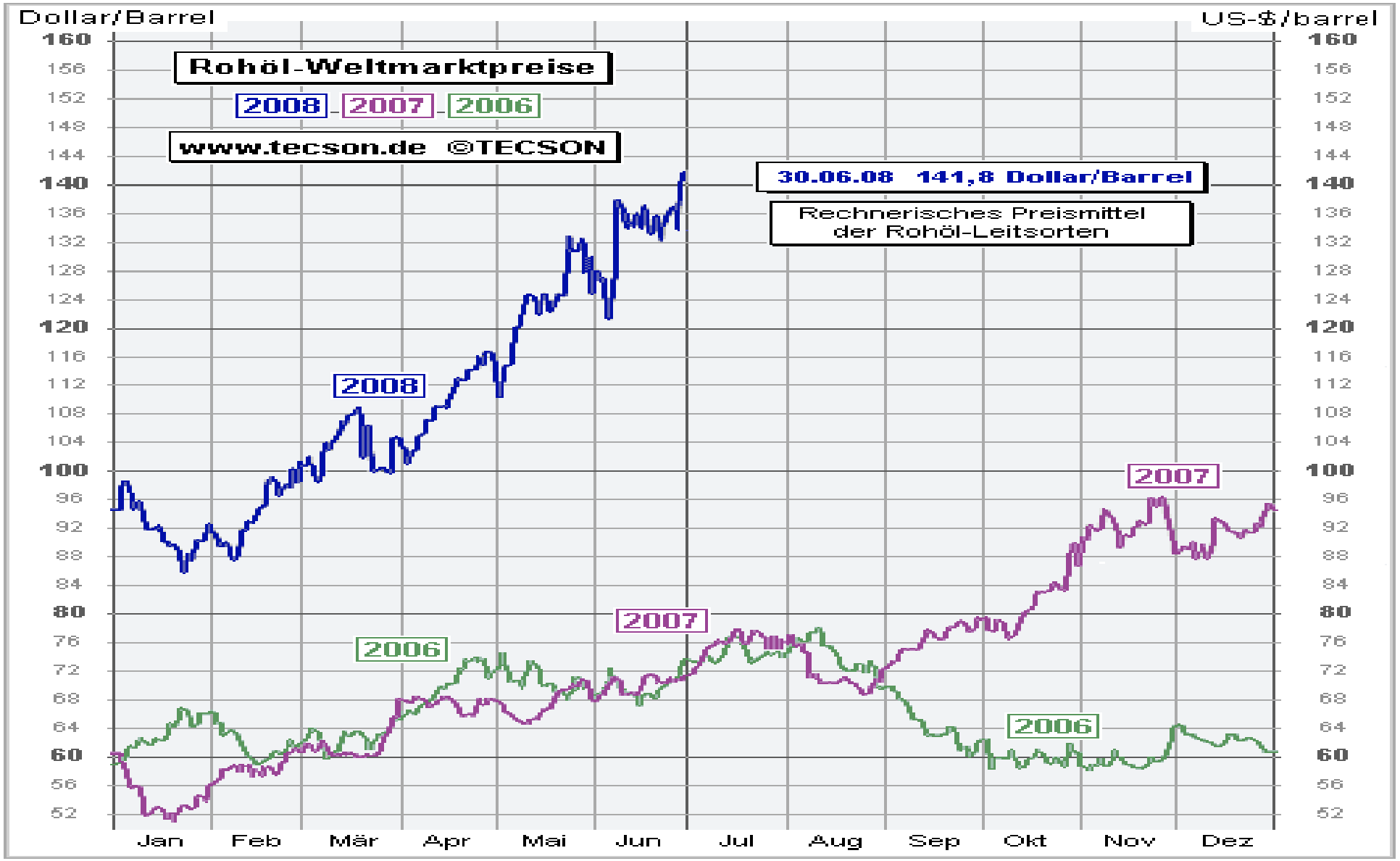


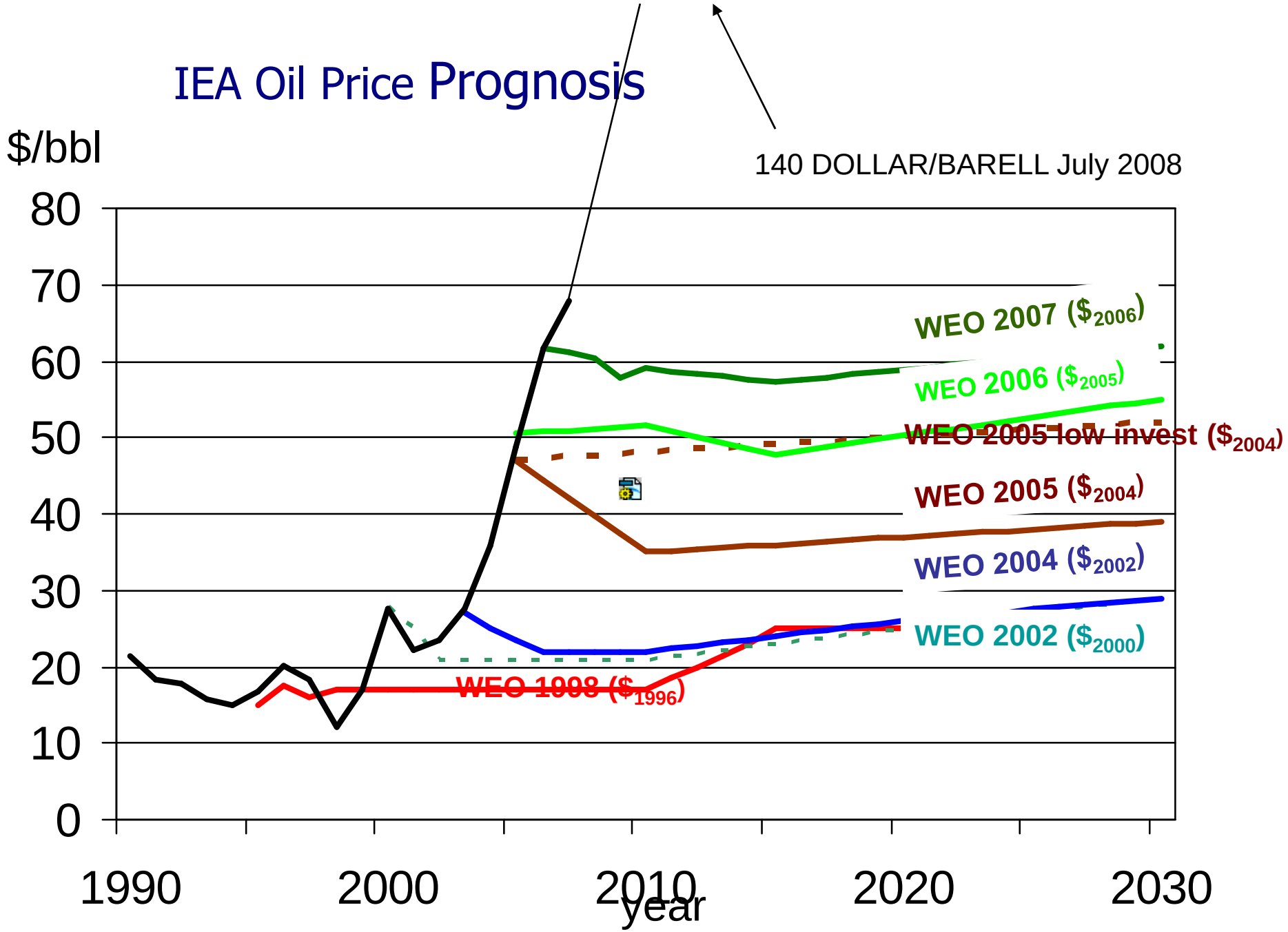
Foto: NASA

One percent (●) of the Sahara's surface is enough to meet the world's entire electricity demand using CSP technologies.

Prof. Dr. Volker Quaschning [5]

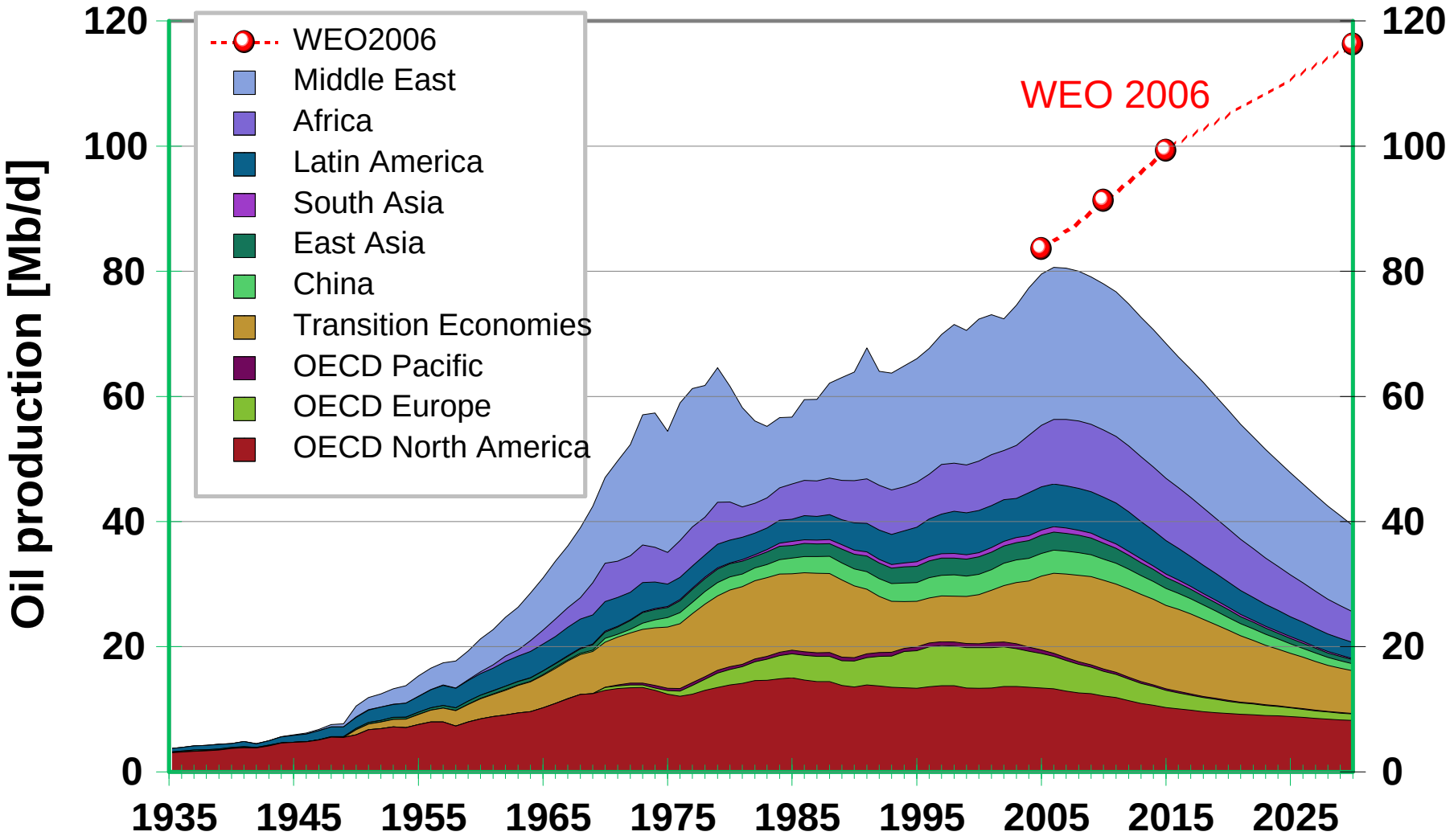
Oil world prices




IEA Oil Price Prognosis
$/bbl
140 DOLLAR/BARELL July 2008
80
70
60
50
40
30
20
10
0
1990
2000
2010
2020
2030
year
WEO 2007 ($2006)
WEO 2006 ($2005)
WEO 2005 low invest ($2004)
WEO 2005 ($2004)
WEO 2004 ($2002)
WEO 2002 ($2000)
WEO 1998 ($1996)

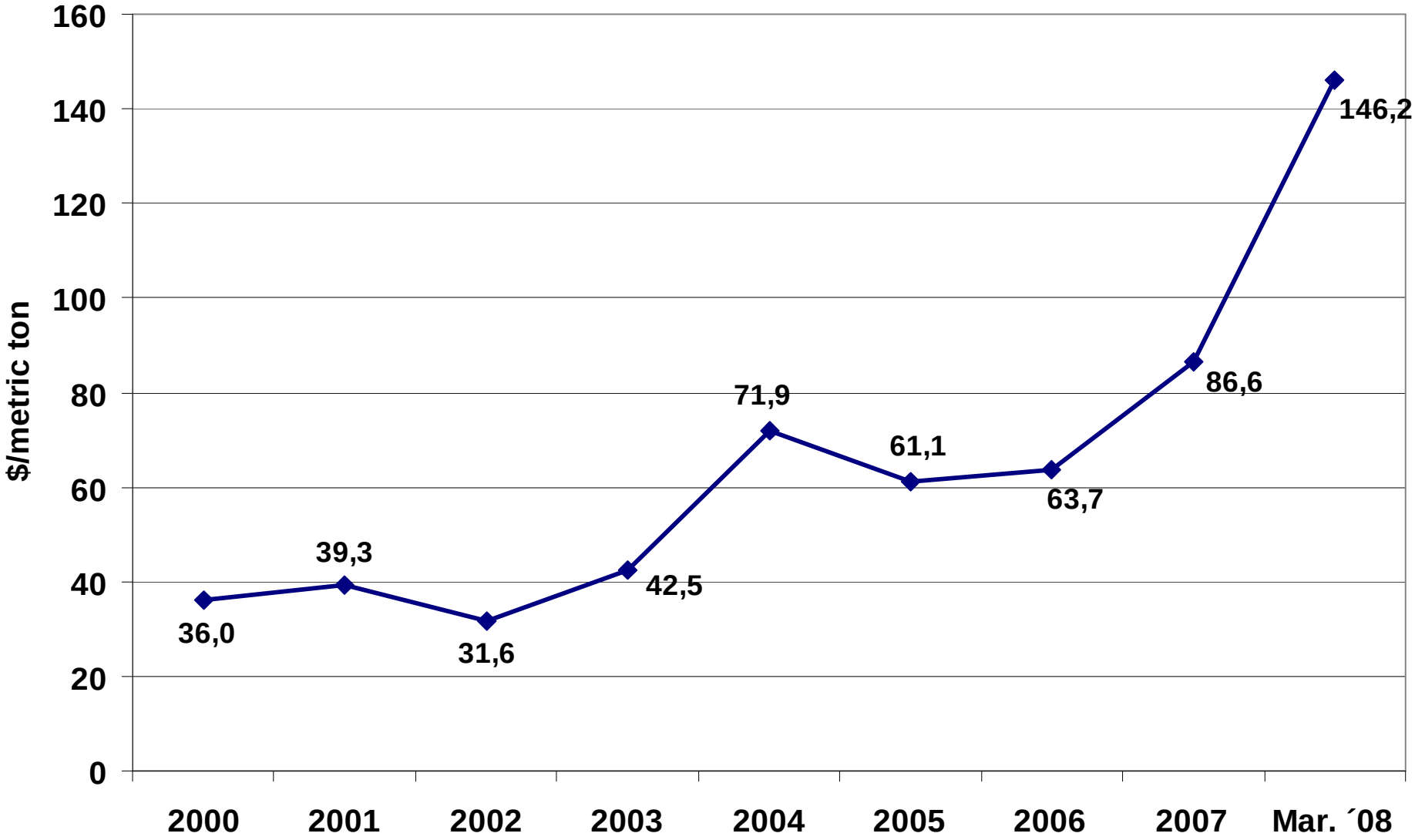
Oil production world summary

Energy Watch Group



Price for Hard Coal

(MCIS Steam Coal Marker Price, first price calculated each month)



Source : Verein Deutsche Kohleimporteure e.V.

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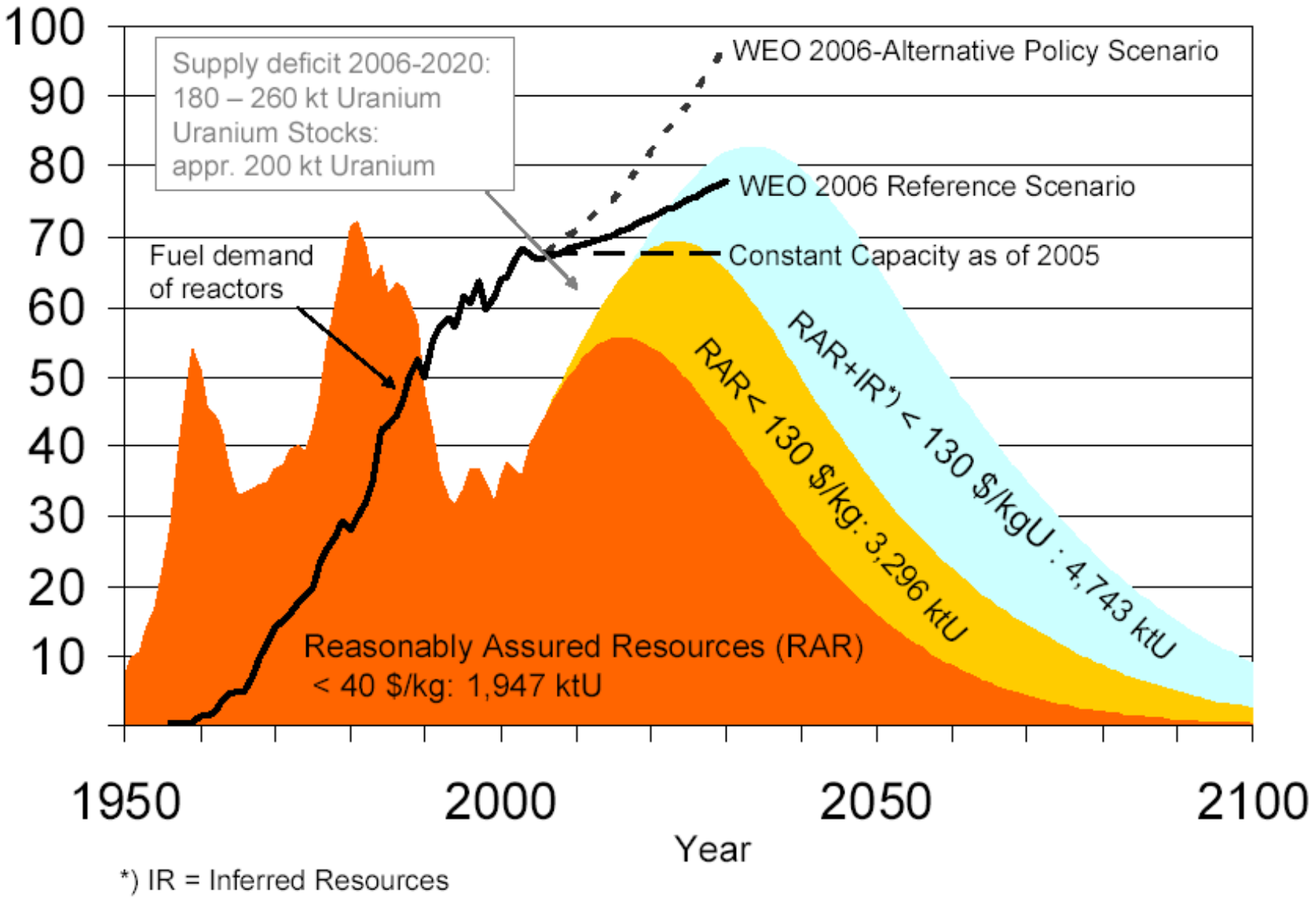
Uranium demand according to IEA scenarios and possible supply from known resources



*) IR = Inferred Resources

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Hiroshima after A-Bomb

Pripjat Towncenter, April 2006

20 years after Tchernobyl nuclear accident

Climate problems can be solved only by two strategies:

1. **Stop greenhouse gas emission**
   (not only to reduce the emmission)
- promote cero emission technologies
- completly canceling the use of fossile and nuclear energies

2. **Taking out carbon from athmosphere**
- convert plants to humus soil
- refforesting big areas

Climate-protection policies

Promoting renewable energy and chemistry:

- Laws for feed-in tariffs
- tax exemption for renewables
- canceling subsidies for fossil and nuclear
- research offensive for renewables
- reduce the approval obstacles

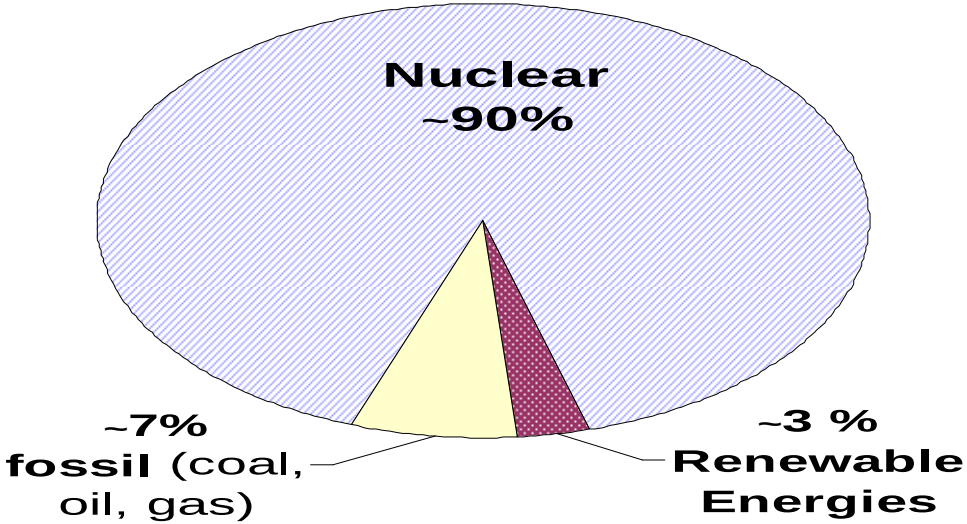
No: quota or certificate systems

both are unable to promote the renewables fast

Renewables (REN) have only benefits and nearly no burden

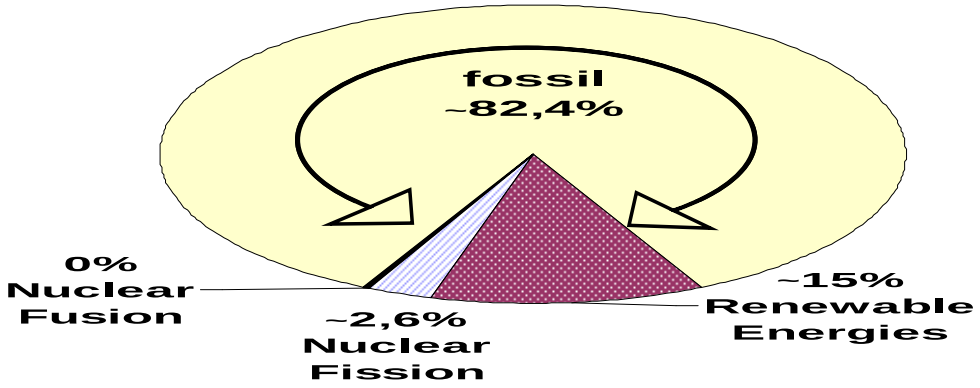
- REN bring New Jobs
- REN decrease the energy costs
- REN bring independence from rising oil, gas, coal and uranium prices
- REN bring energy security; mostly by domestic energies
- REN solve the problem of the pollution of air, water, soil
- REN solve the problem of oil wars
- Ren solve from new nuclear problems

Energy research budget (OECD) 1950-2005



Result of energy research budget :

Percentage of energy demand 2005 (geschätzt)



Nuclear research is the biggest research flop worldwide

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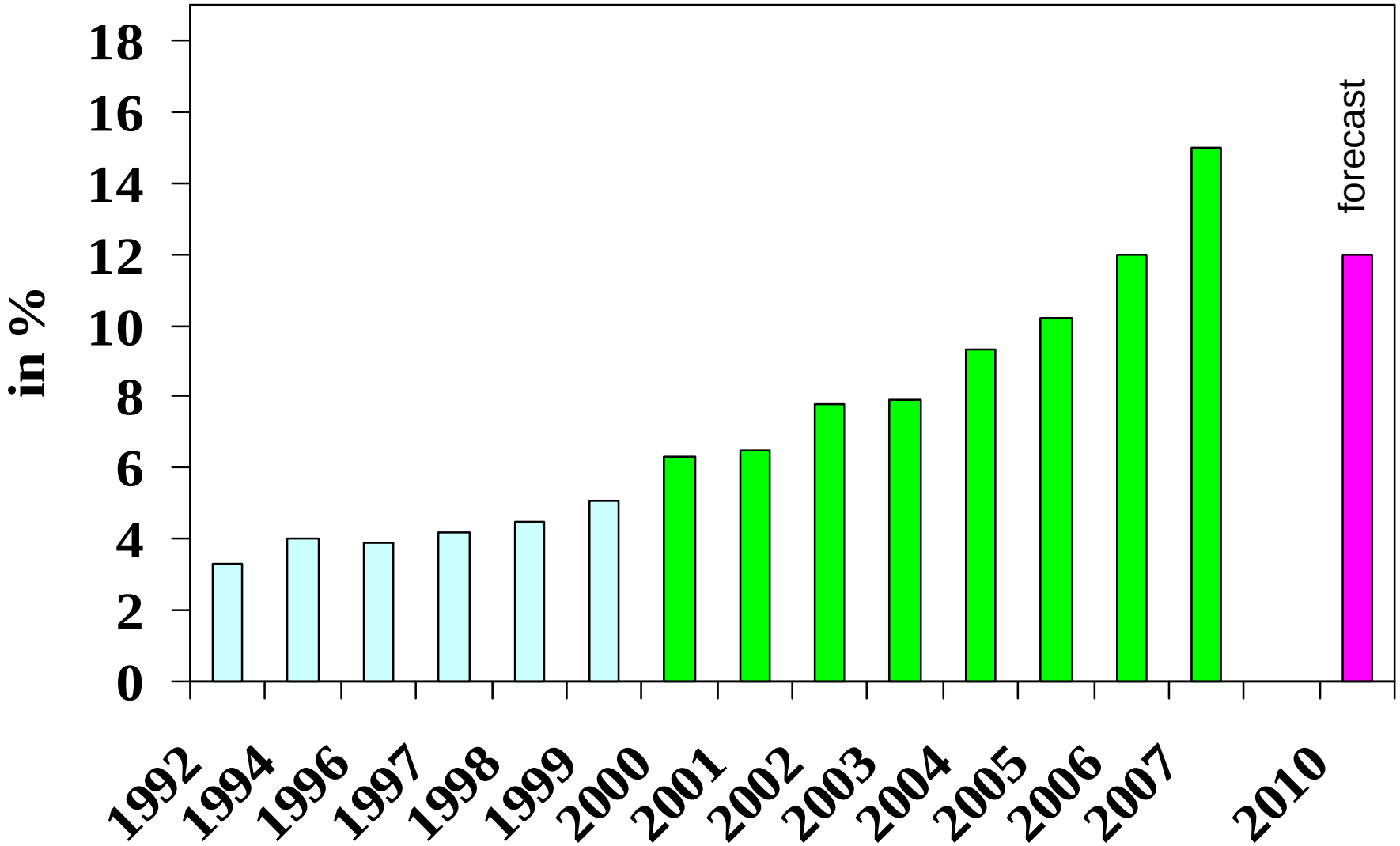
Share of Renewables in the German Gross Electricity Consumption



Reference: BEE

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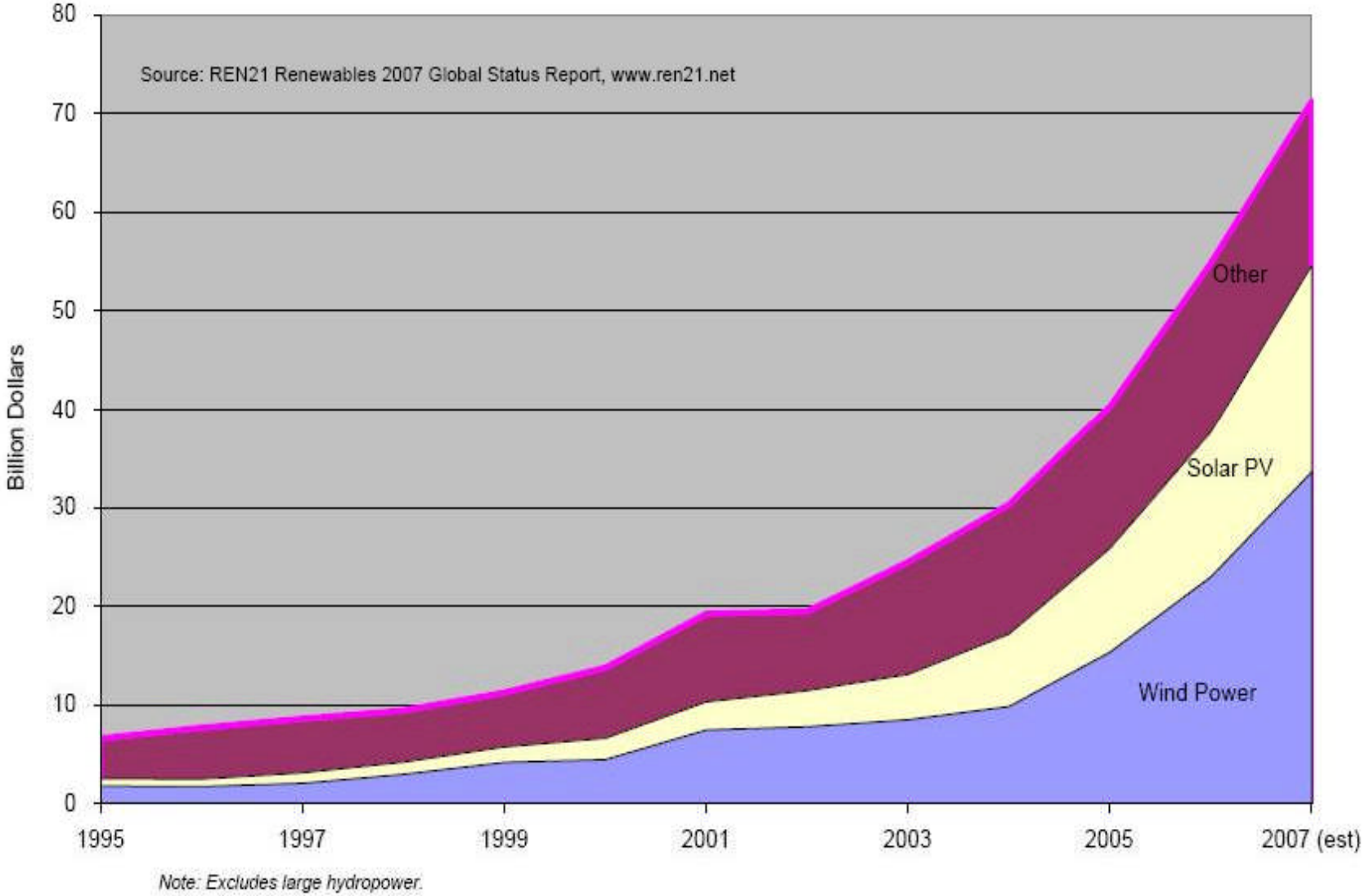
Figure 11. Annual Investment in New Renewable Energy Capacity, 1995–2007



Quelle : REN21

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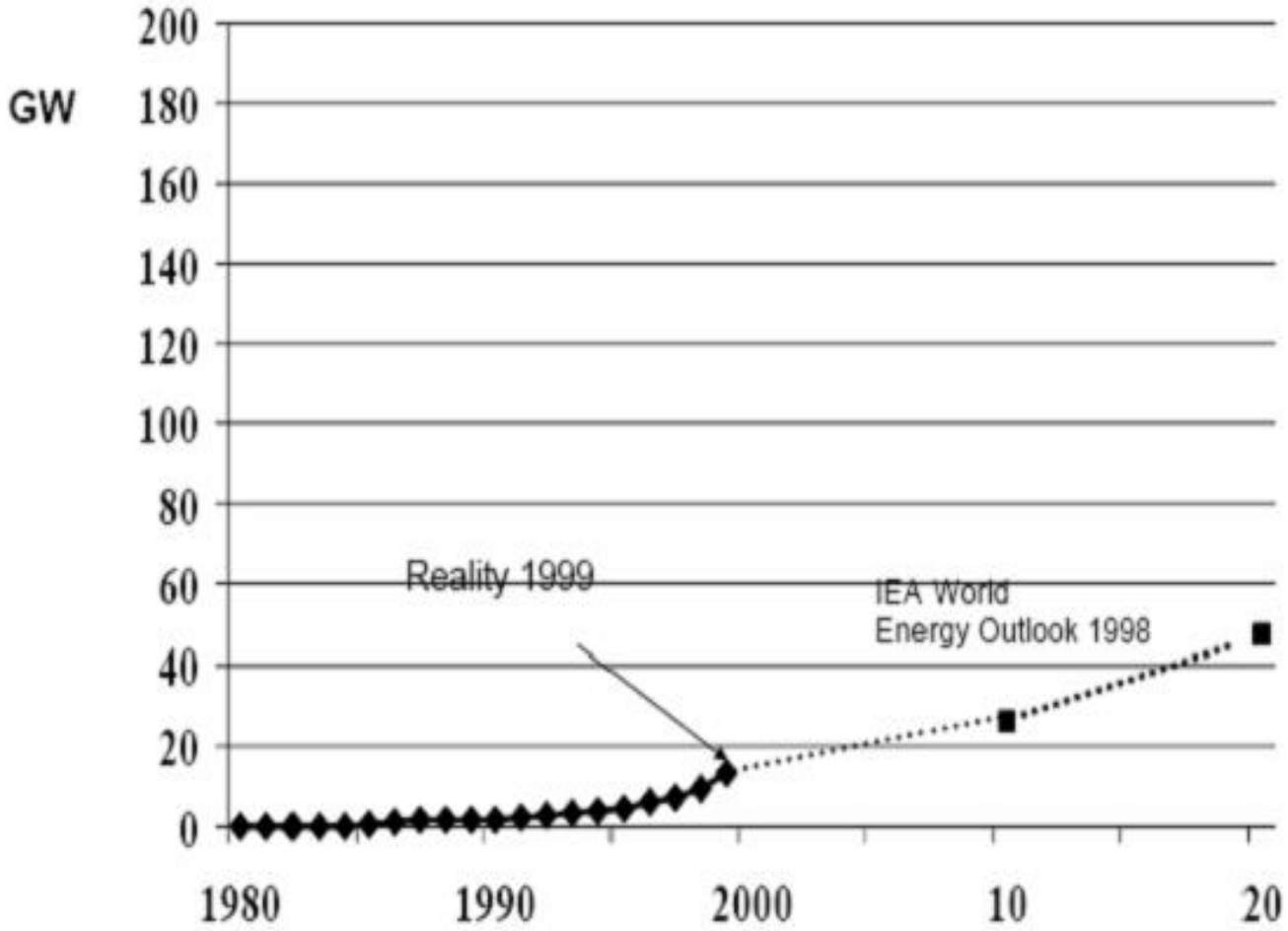
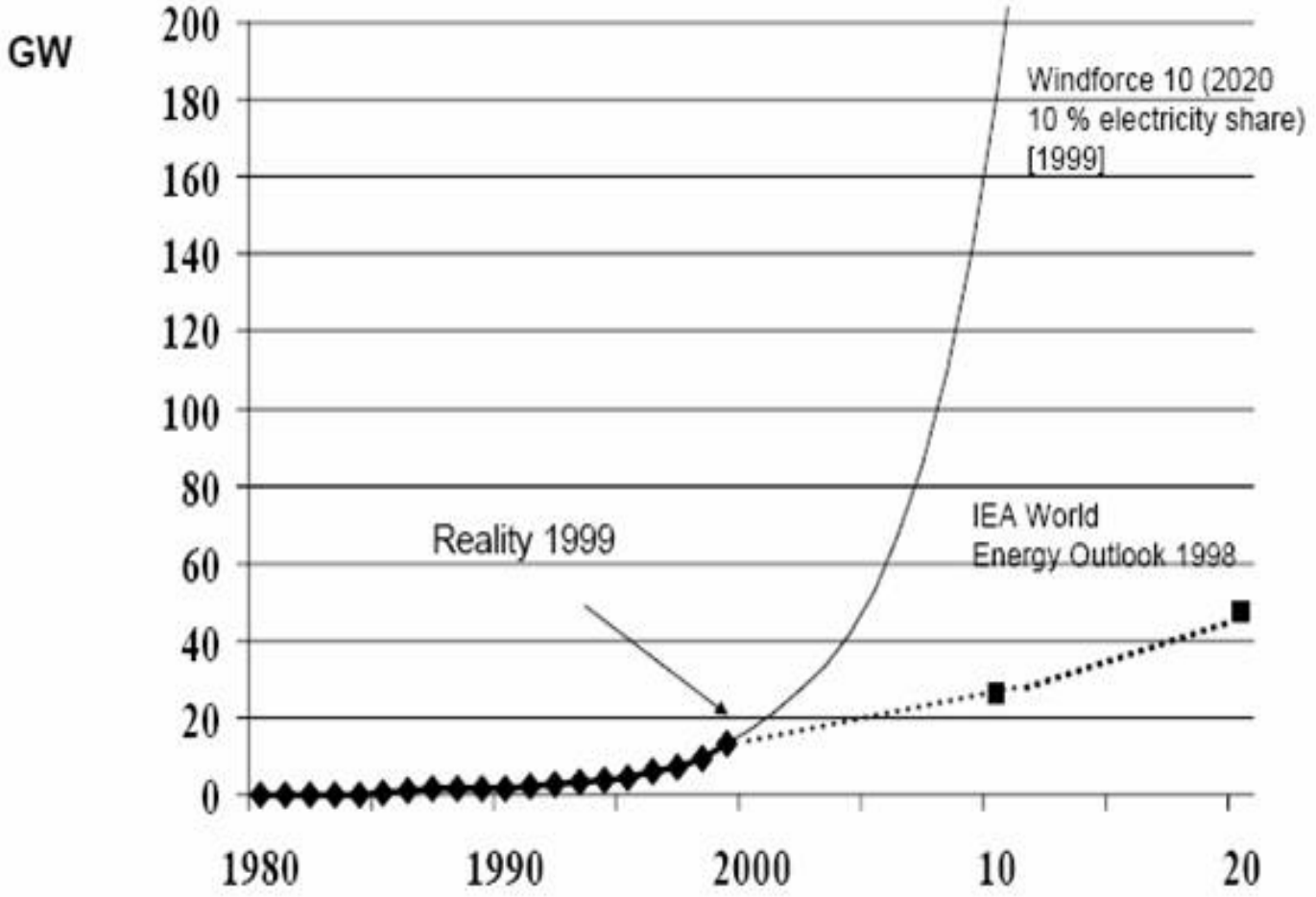
Wind Energy
IEA-outlook and reality



Quelle: Rechsteiner

Wind Energy
IEA-outlook and reality



Quelle: Rechsteiner

Wind Energy
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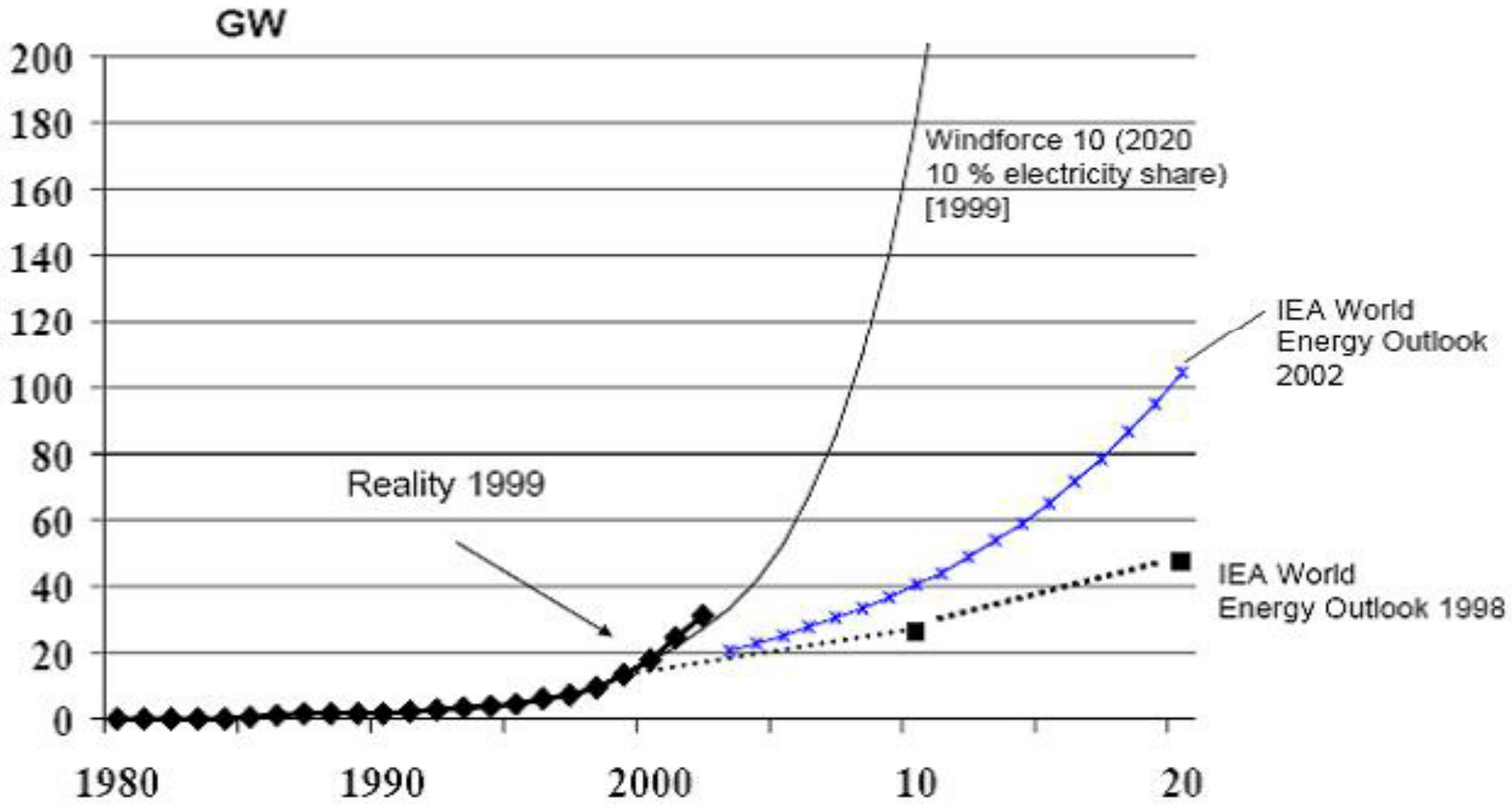
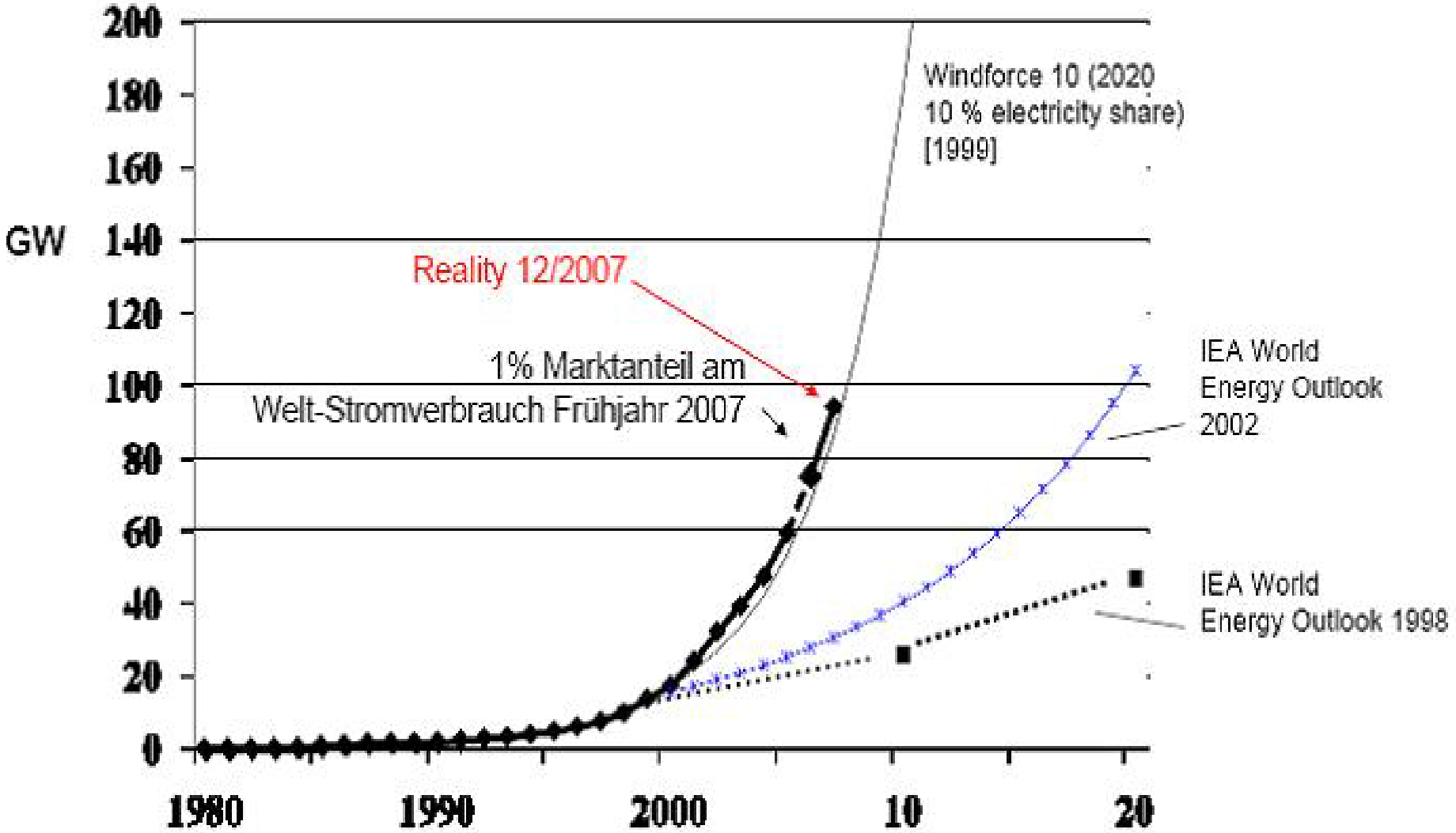


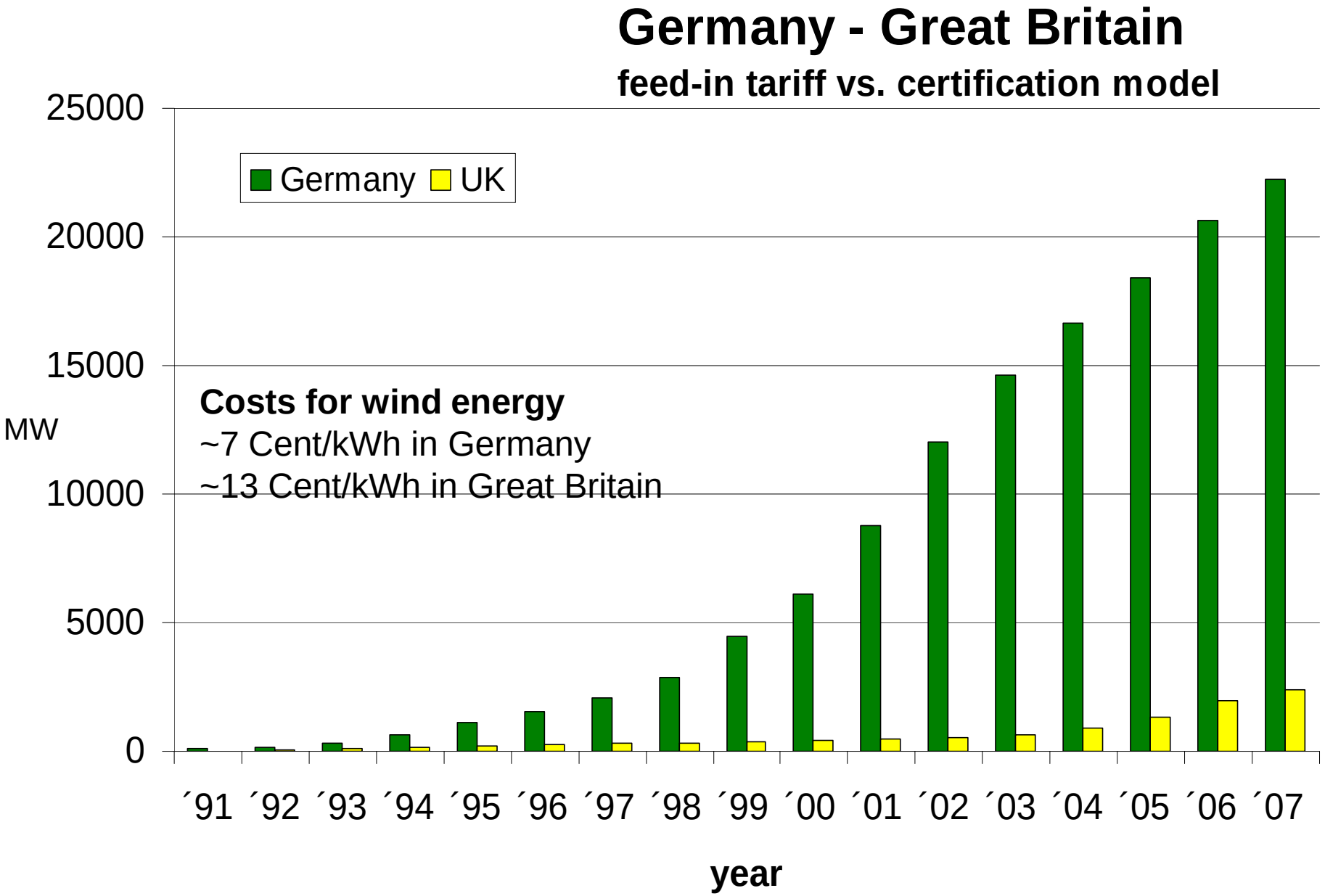
Quelle: Rechsteiner

IEA-outlook and reality



Quelle: Rechsteiner

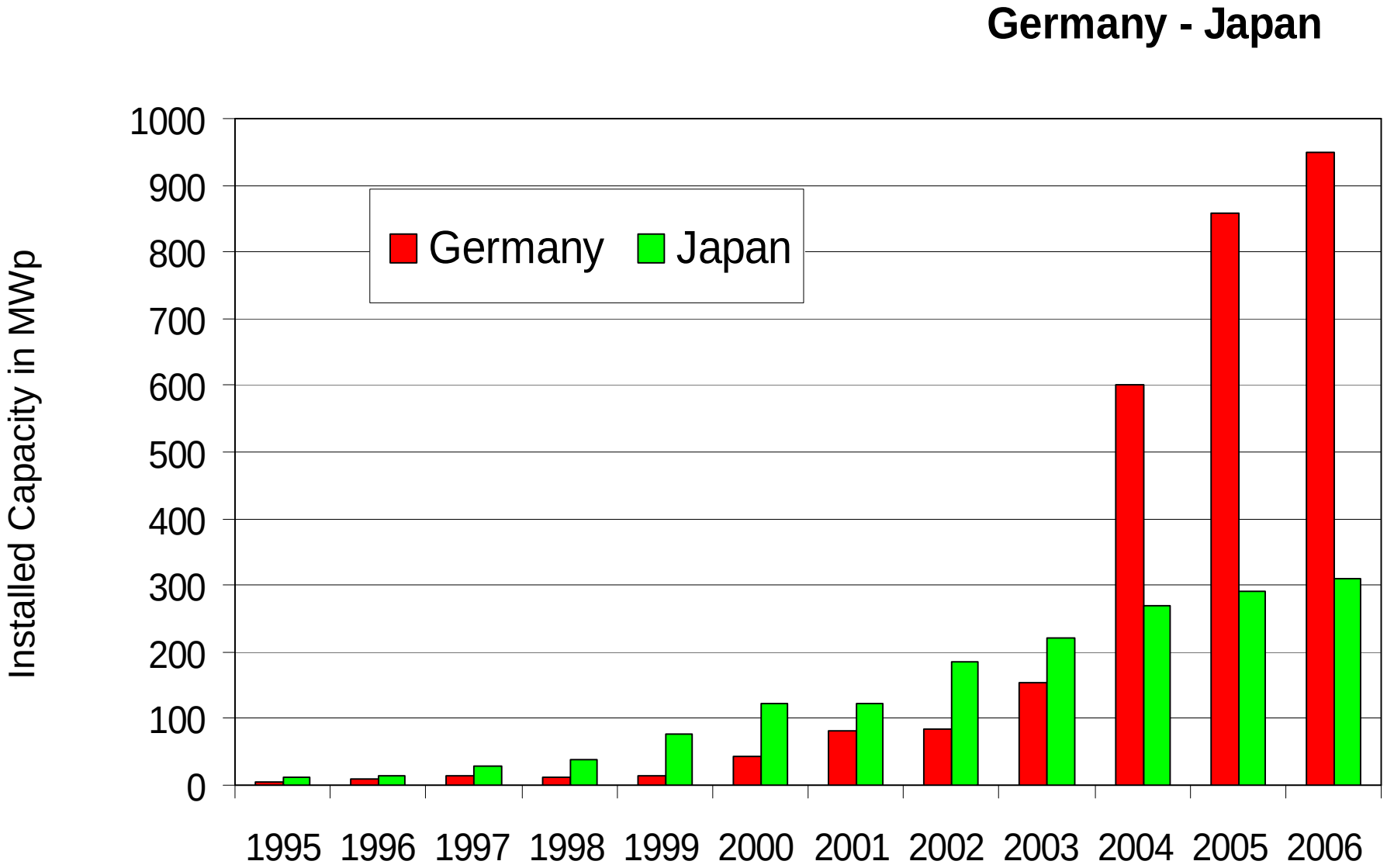
Wind power – Increase & Costs



Quelle:http://www.ewea.org & Hans-Josef Fell

www.hans-josef-fell.de

increase of photovoltaics



Quelle:http://www.epia.org; BSW, bmu_erfahrungsbericht_eeg_2007.pdf
& Hans-Josef Fell

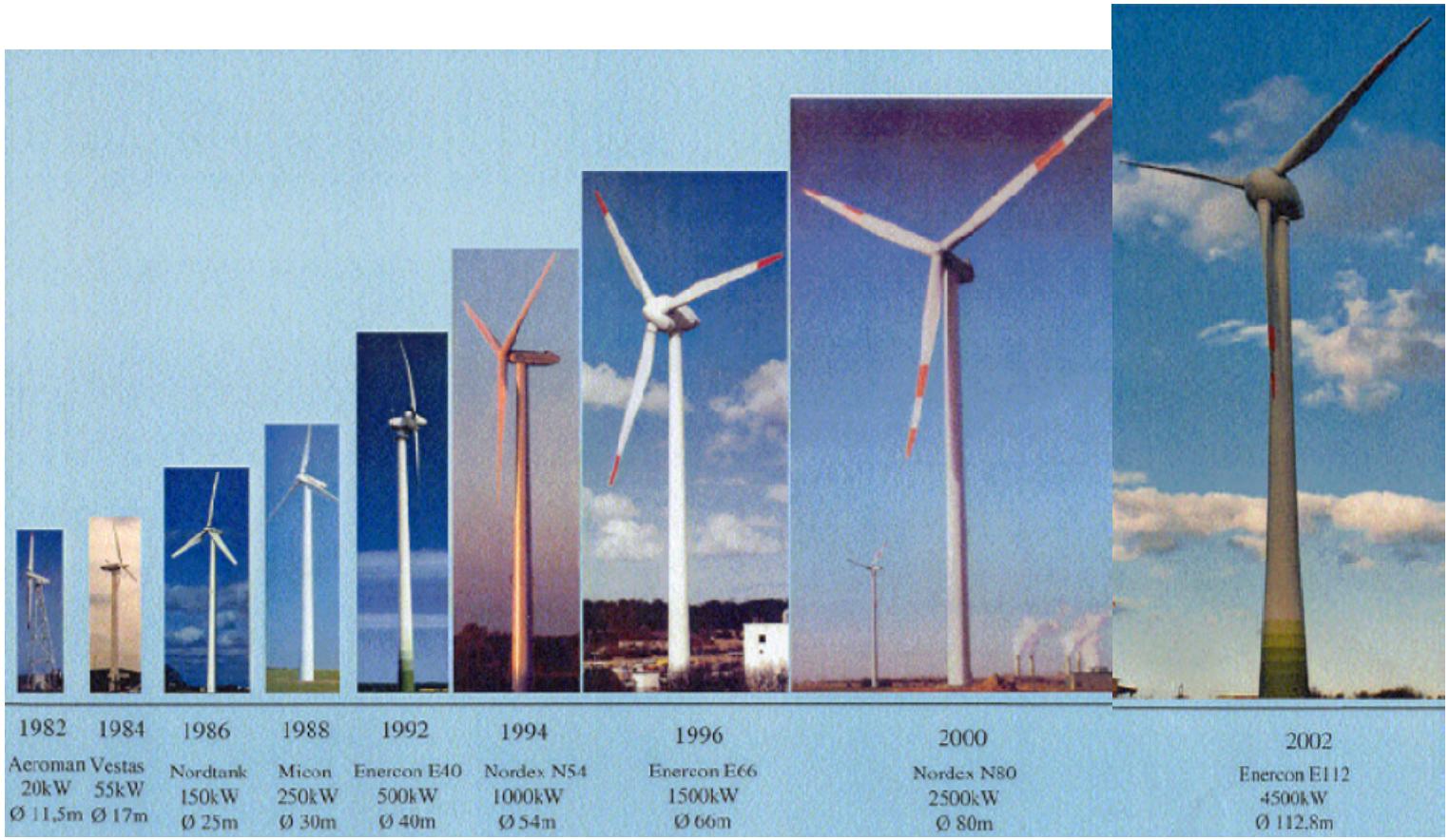
Key components of a successfull feed-in law

- Privileged grid access
- Attractive feed-in tariff for each RE technology (must be high enough for cost-effective RE power production)
- Feed-in cost distributed via electricity price
- No cap on total amount of generated RE power
- Guaranteed feed-in period
- No Cap

- Also important: No obstacles through approval procedures in practice

Innovation of Wind Power Technology

20 Years Development of Wind Power Technology (20 kW to 6 MW)



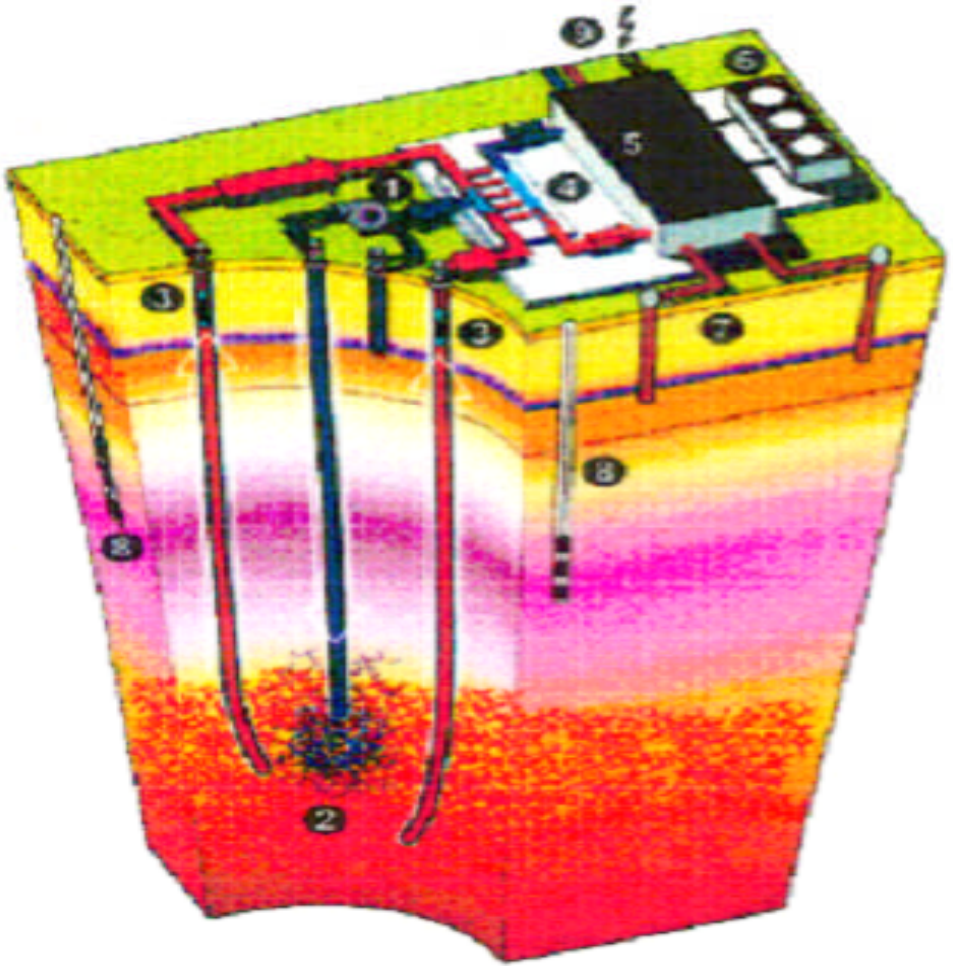
Quelle: www.ventoex.umsicht.eu, Zugriff 19.09.2007

Small Hydropower

Sources: Badenova

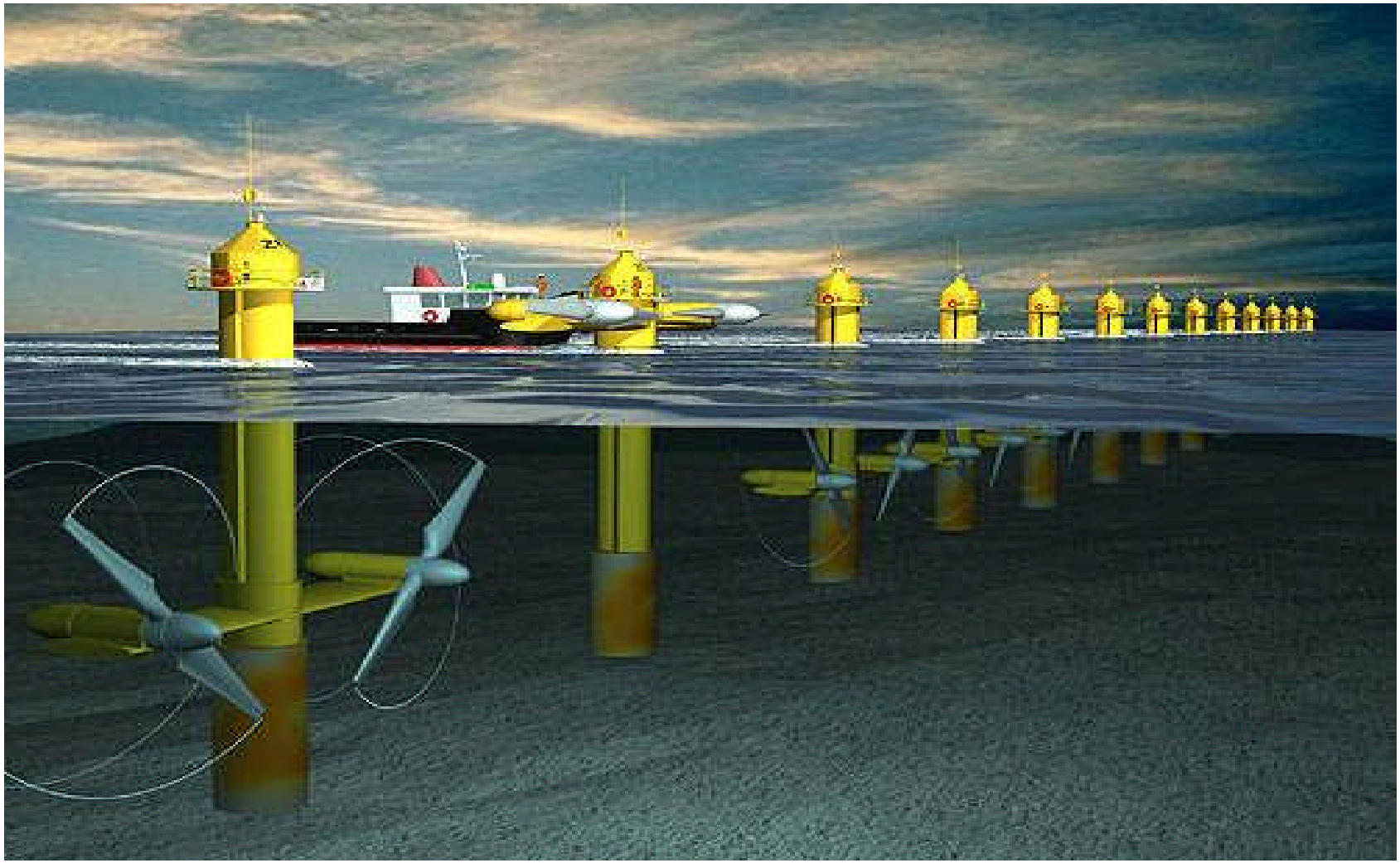
Biogas

Geothermal Energy



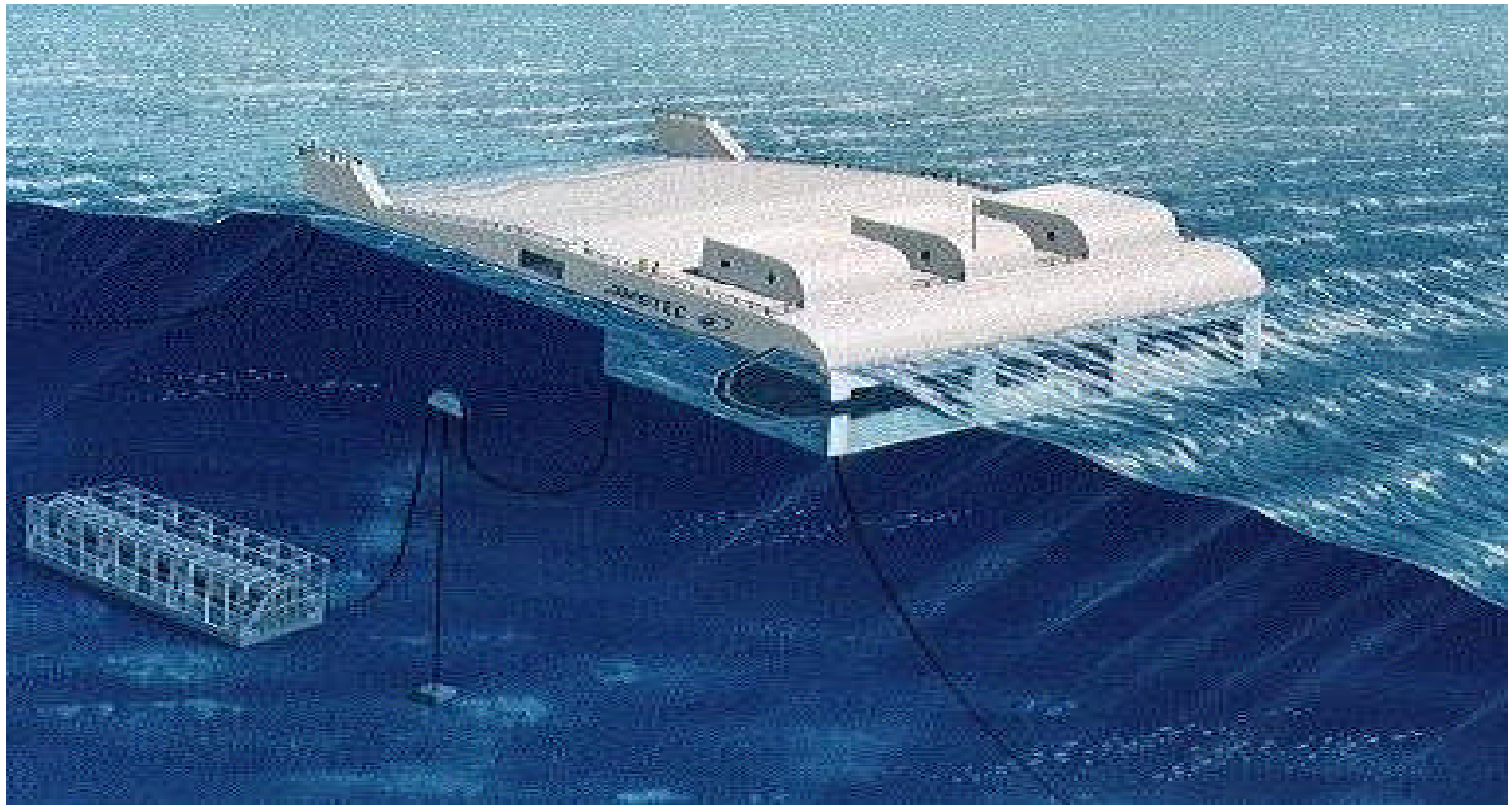
Hot-Dry-Rock Method

Sea current - Seaflow



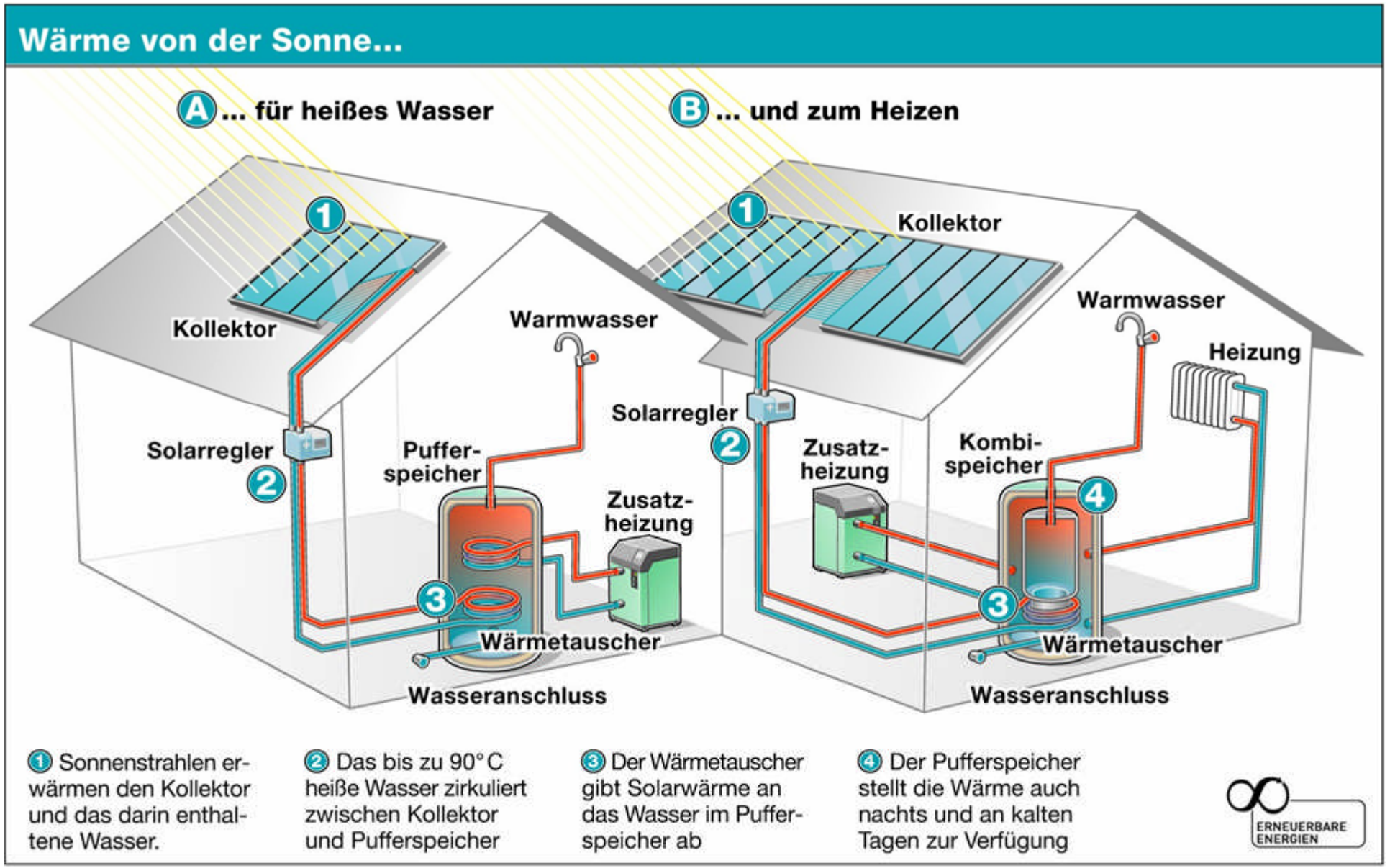
Wave Energy

Swimming OWC-Breakwater – Japanese plant "Mighty-Whale"



Soucre: University Leipzig

Solarthermal collectors



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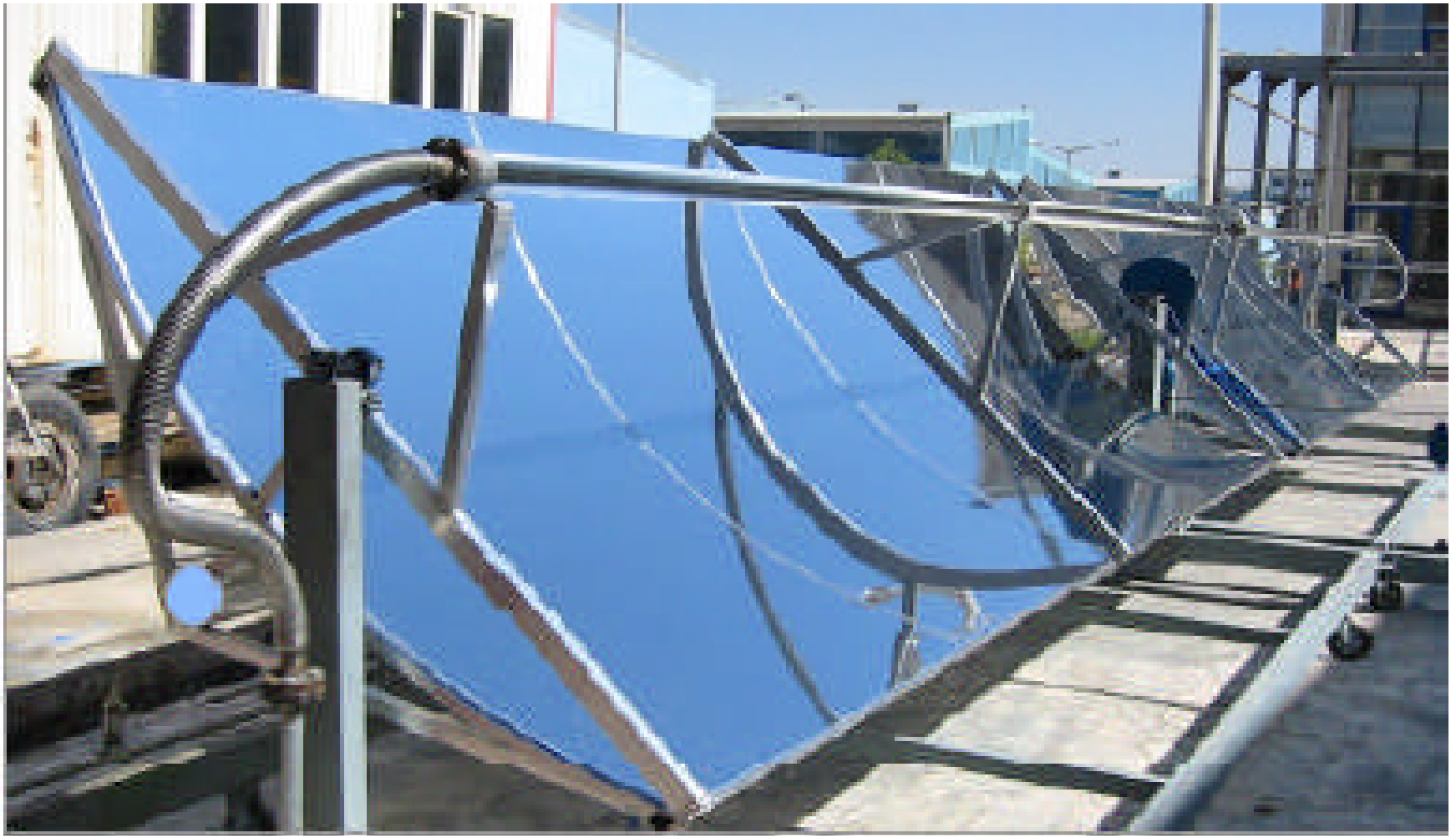
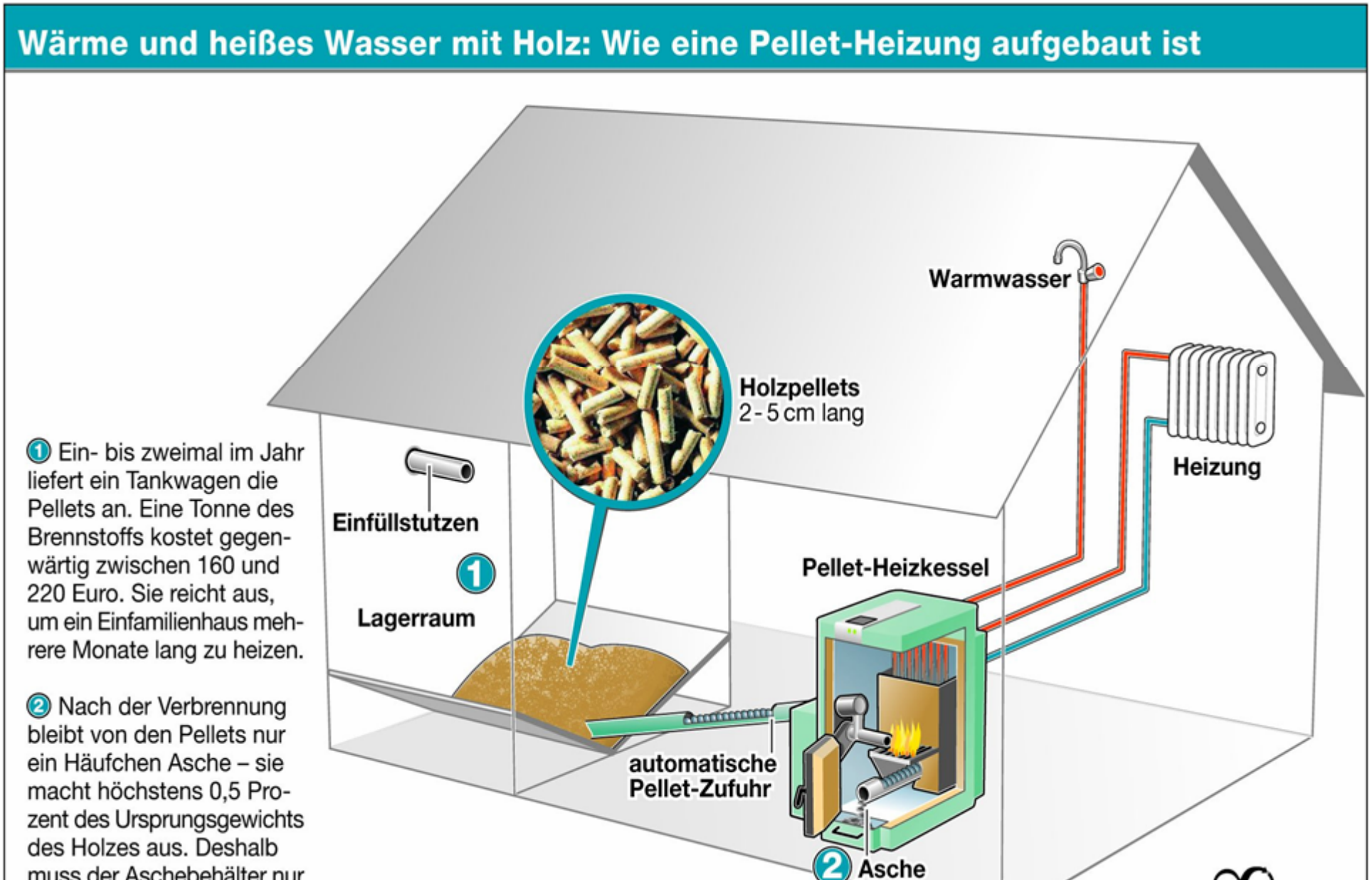
Solar Cooling

with Parabol Channel Collectors

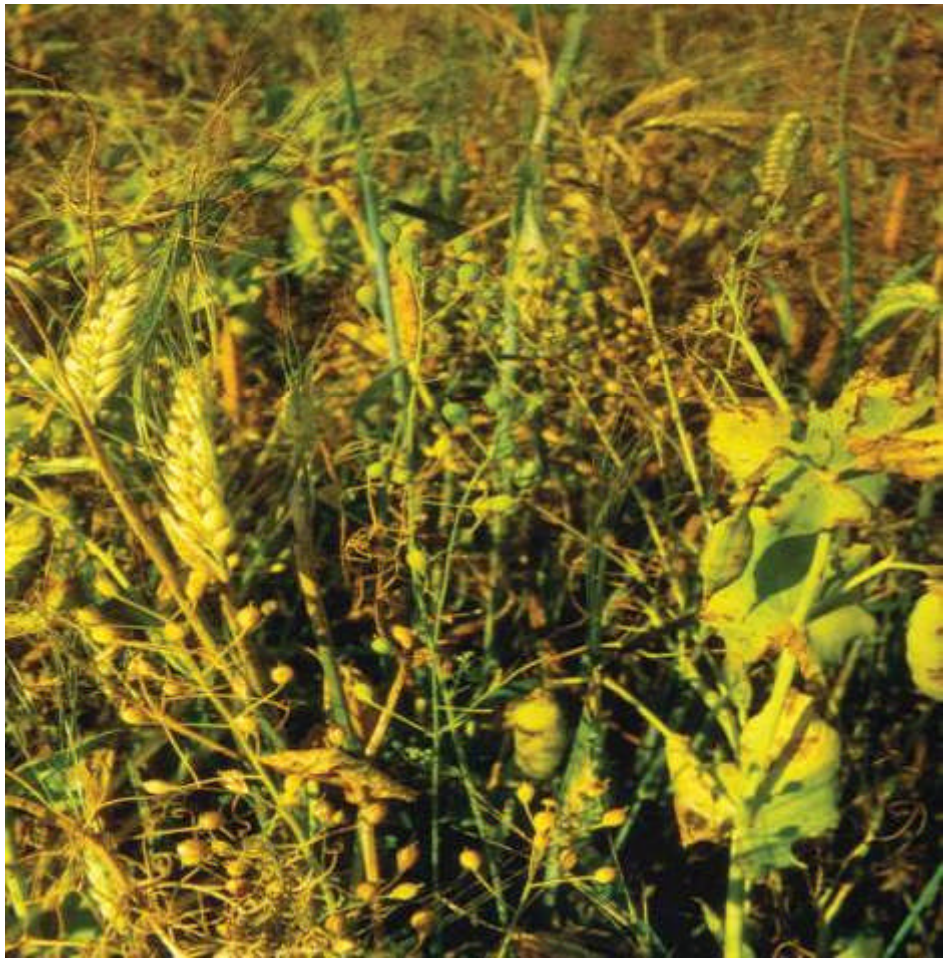


Heating with Wood Pelllets



Mixed Cropping

- Oil plants can be plant together with other field crops
- Particularly suitable oil plant: Gold of pleasure
- The gained vegetable oil is more than suffice for the sowing
- Mixed cropping leads into ecological cropping with significant higher total returns



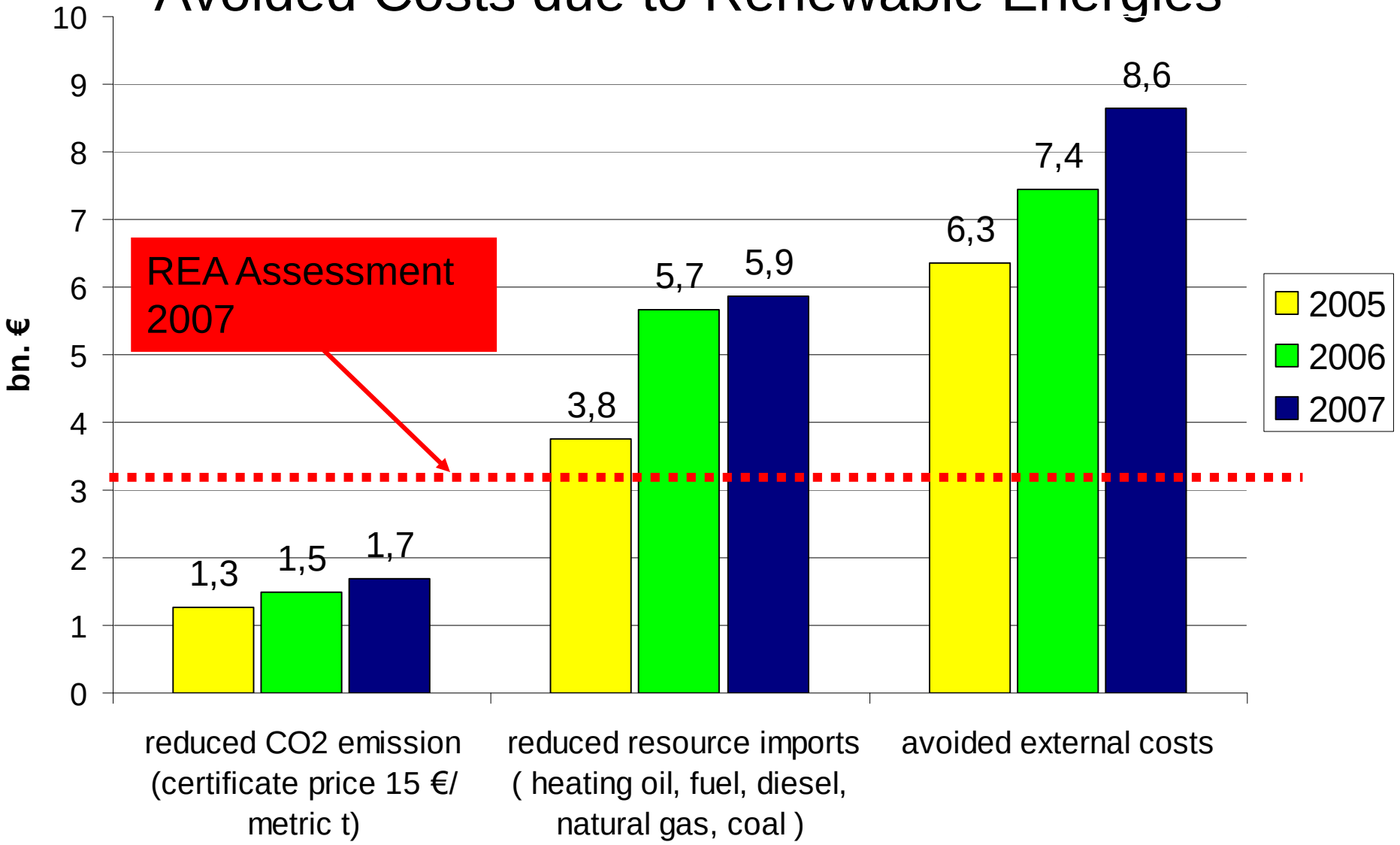
Field with Barley, Gold of Plaesure, Pea

Sustainable Biomass

Good practice: Agroforestry in Southern Ruanda – food, fibre and fuel from integrated systems

Solar Car (Twike) in front of Solar Park

Avoided Costs due to Renewable Energies



source : BEE

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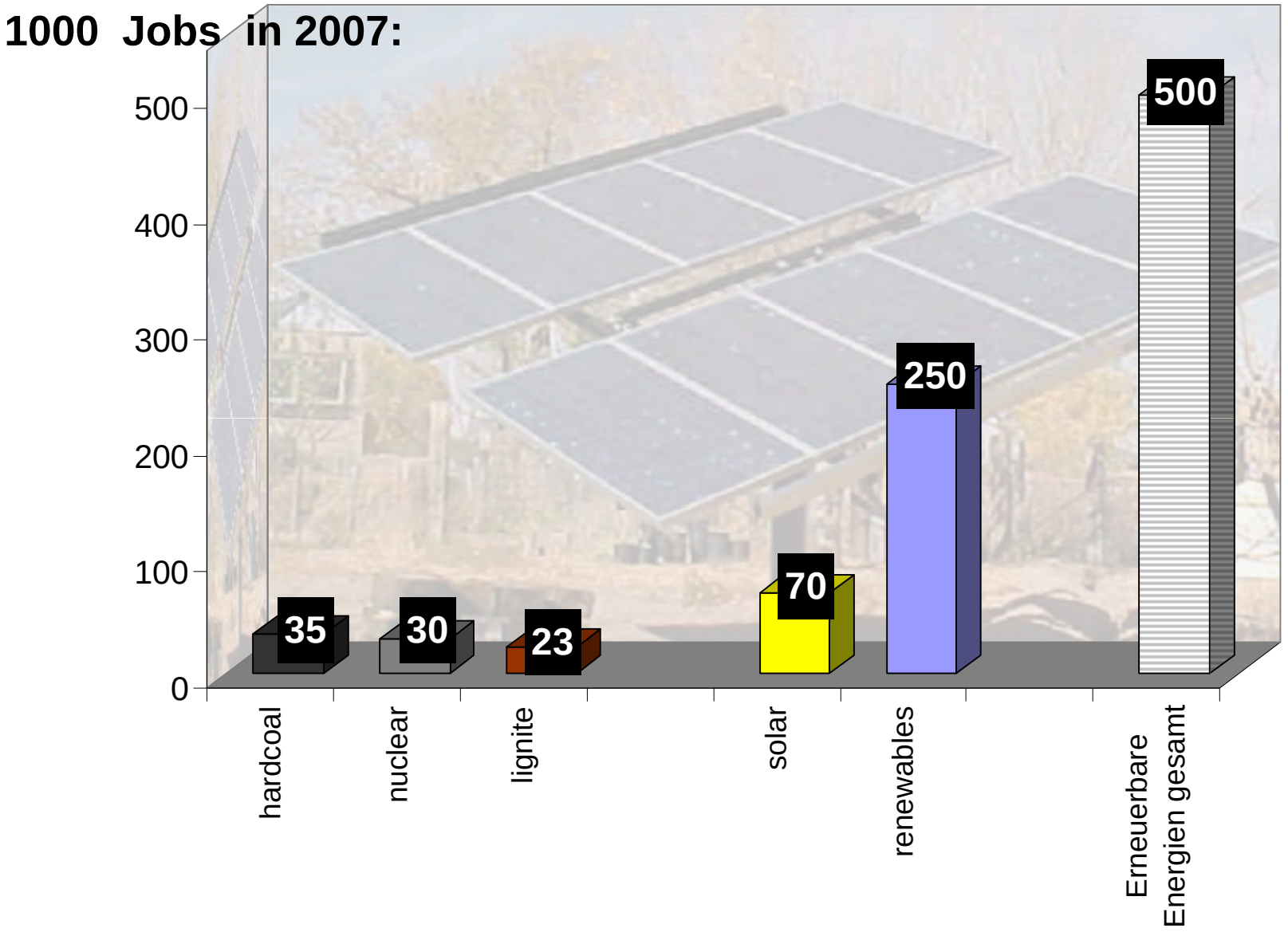
Job engine renewable energies

Prognosis 2020



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Many thanks for your Attention!

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