

***Feed in Tariffs for Renewable
Electricity
to boost 100% renewables***

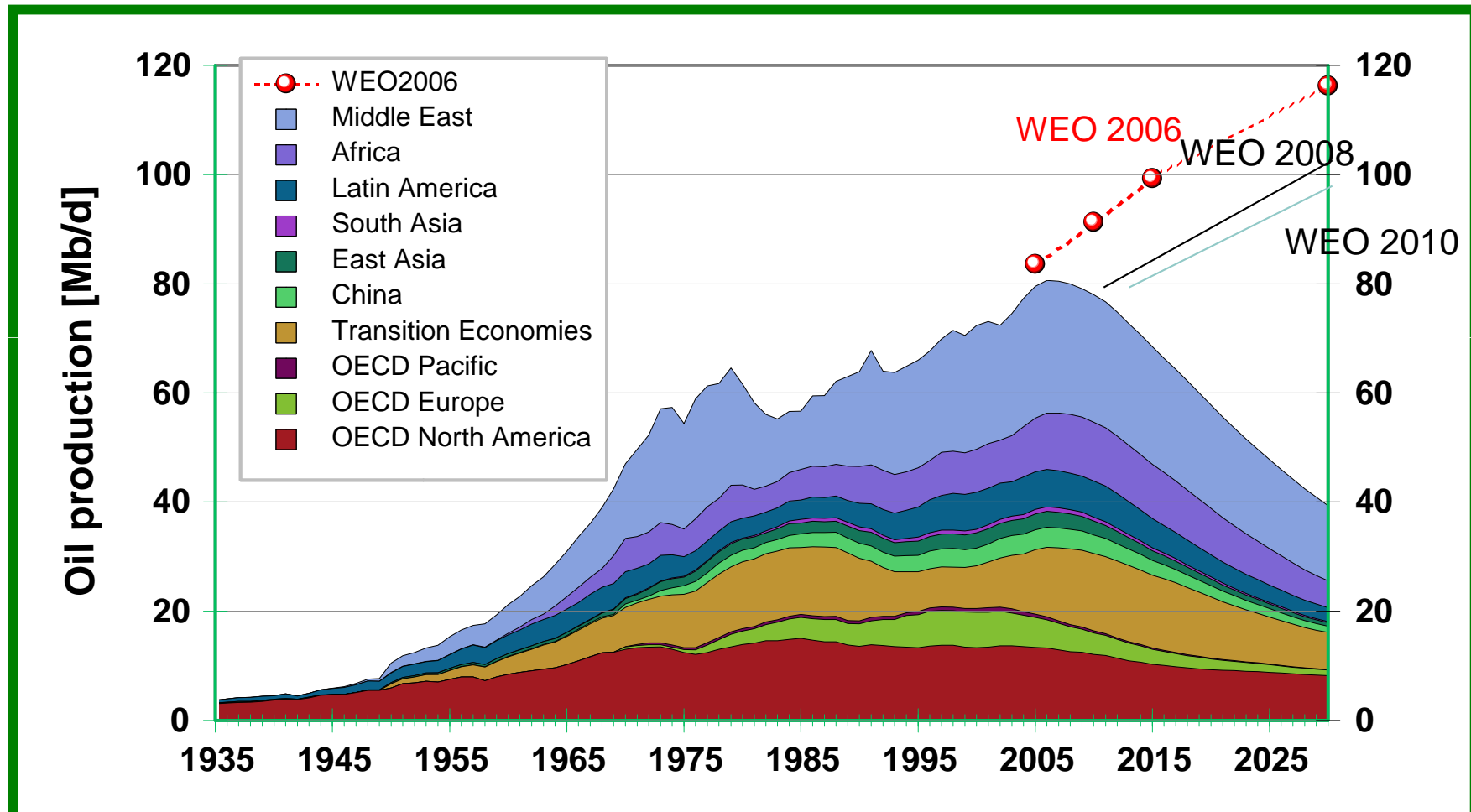
ANU, Canberra 23.Feb 2012

Hans-Josef Fell

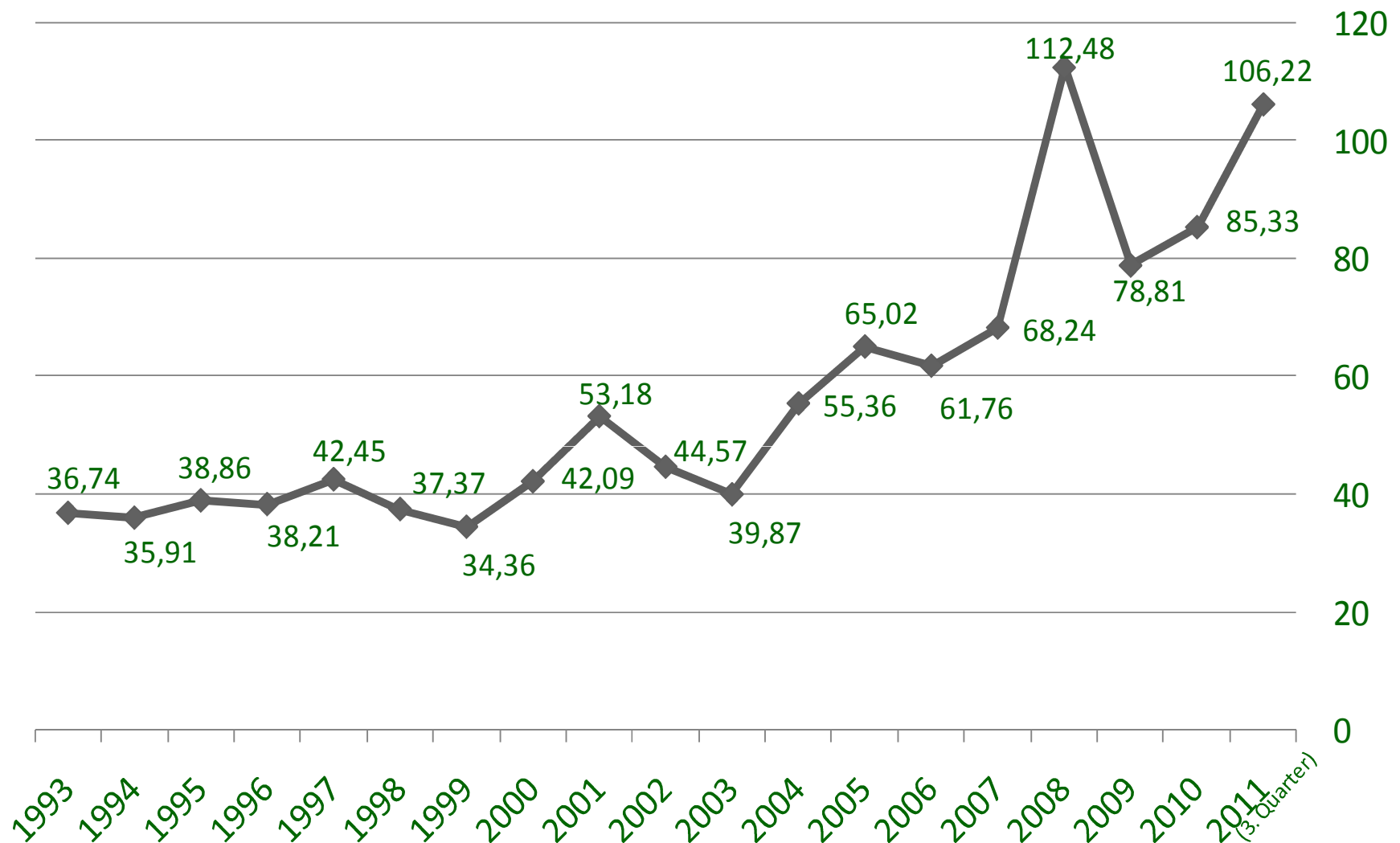
Member of German Parliament

Oil production – World Summary

Energy Watch Group: Crude oil peaked at 2006



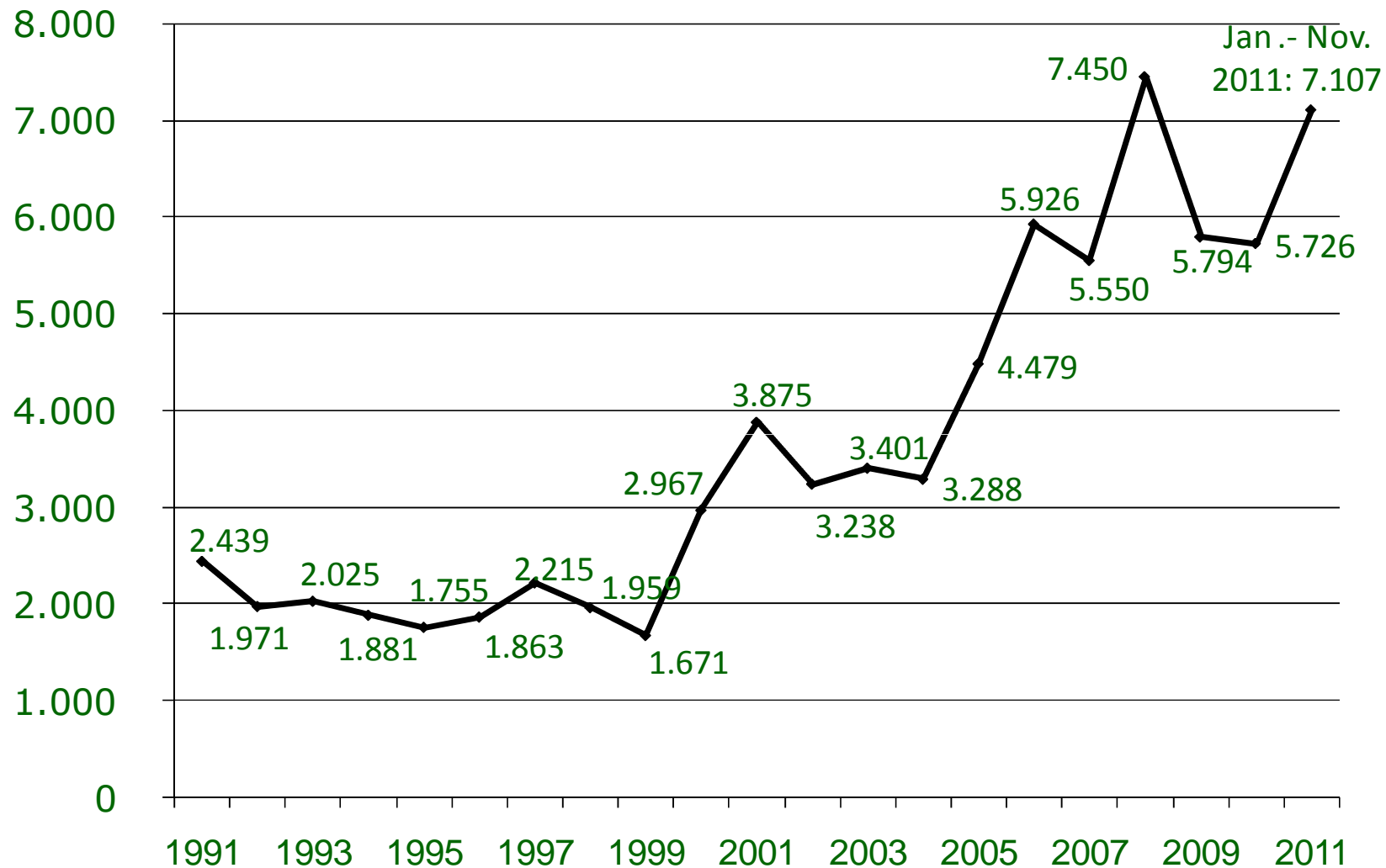
Price of Hard Coal (Euro/t Hard Coal)



Source: <http://www.bafa.de/bafa/de/energie/steinkohle/statistiken/index.html>

Hans-Josef Fell
www.hans-josef-fell.de

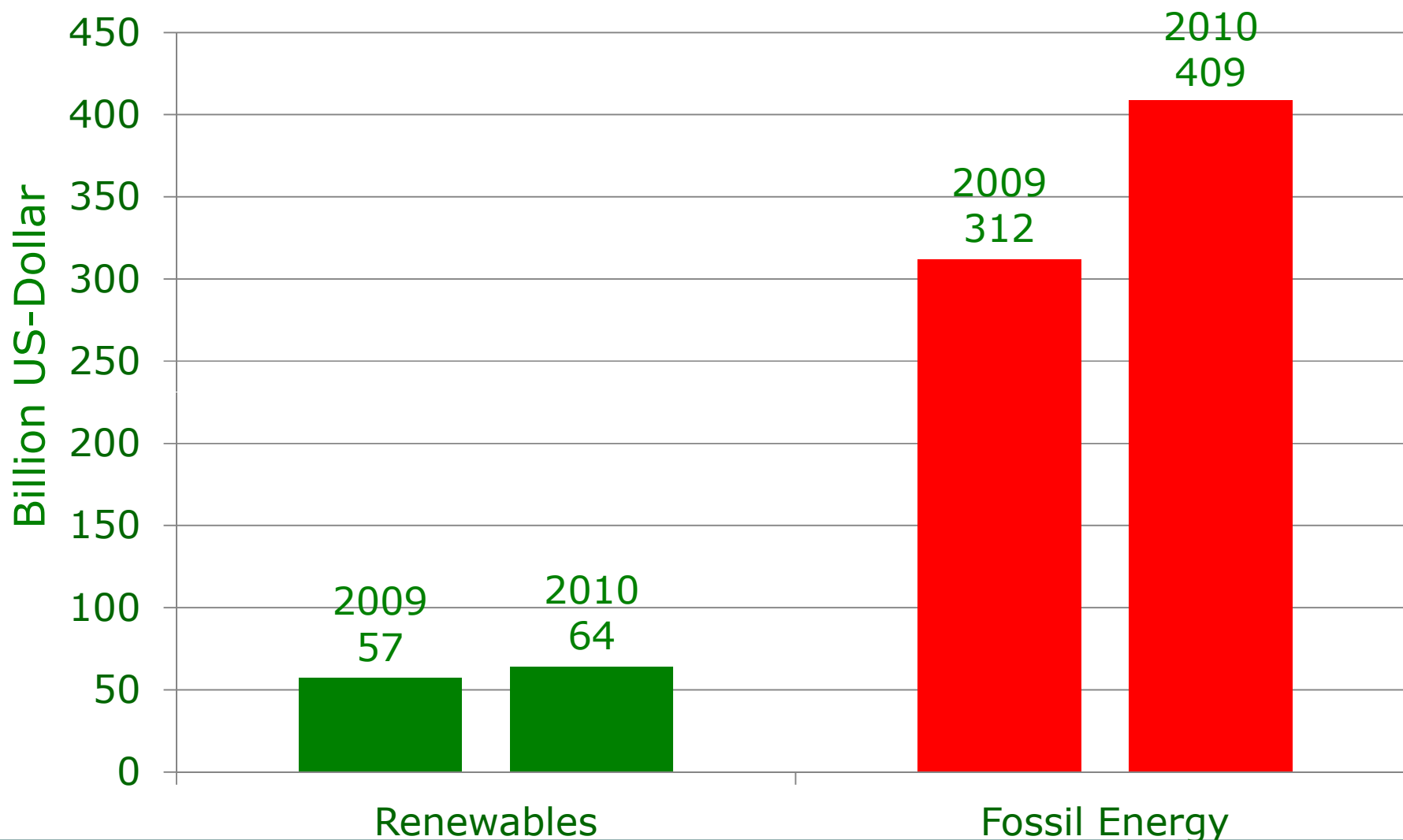
Price of Natural Gas (Euro/TJ)



Source: BMWI, <http://www.bmwi.de/BMWi/Navigation/Energie/>

Hans-Josef Fell
www.hans-josef-fell.de

Global Subsidies for Renewable Energies and Fossil Fuels 2009 and 2010



Sources: OECD/IEA/bearb. VDI nachrichten 45/10; International Energy Agency: WEO 2011

Hans-Josef Fell
www.hans-josef-fell.de

Oil Spill Disaster in the Gulf of Mexico



- Damage caused so far: US \$ 100 Bil. (estimated by the State of Louisiana)
- BP is willing to pay US \$ 20 Bil.



Global Warming

Oftener and more powerful:
Aridity and Forest Fires; Floods and Storms



The imperative for climate protection

Cooling down the
earth

This possible !

Climate Issues and Peak Oil Can Only Be Solved By Two Strategies:

1. Stop greenhouse gas emission
(not only a reduction of emissions)
 - switch to 100% Renewables
 - completely cancel the use of fossil and nuclear energies
2. Take out carbon from atmosphere
 - convert plants to humus soil
 - afforesting big areas, greening the deserts

The Target must be: **330 ppm CO₂**

Greening the Deserts



3.3 Jatropha Plantation in the Egyptian Desert
(Source: Jatrosolutions)

A Path to Sustainable Energy by 2030



'Wind, water and solar technologies can provide 100 percent of the world's energy, eliminating all fossil fuels.'

(Mark Z. Jacobson & Mark A. Delucchi)

Costs of Renewable Energy vs. Cost of Continued Use of Fossil Fuels

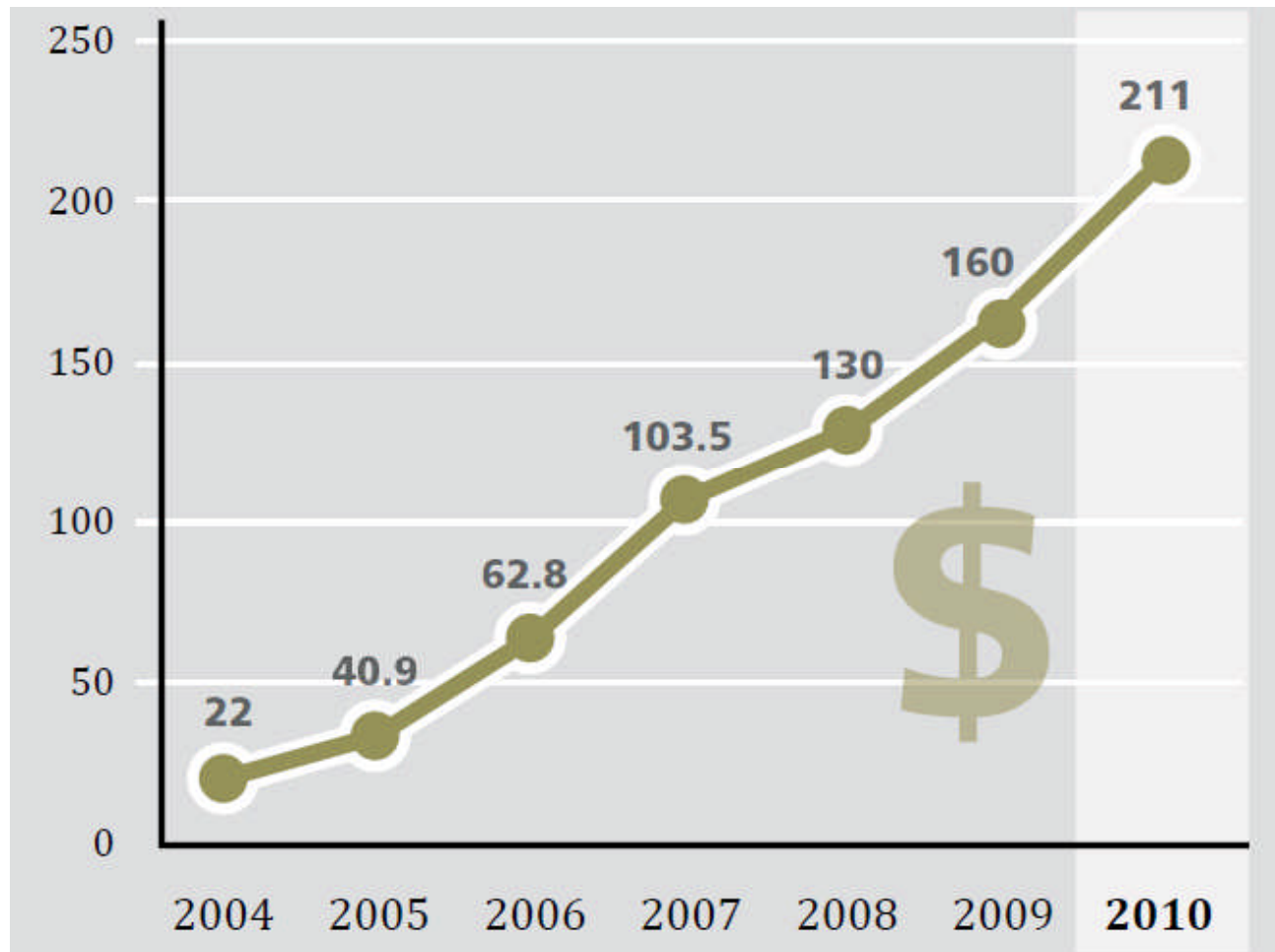
Estimated costs fossil, nuclear energies (US \$)	
Petroleum	3350-4475 Bil.
Natural Gas	550-830 Bil.
Coal	150-300 Bil.
Electricity	1490-2150 Bil.
Sum per year (without external costs!)	5000-7750 Bil.
Sum 2010-2030 (+ 20% rise)	200 000 Bil.
Sum to replace world's energy with 100 % renewable energies by 2030	100 000 Bil.

Sources:

Mark Z. Jacobson/ Mark DeLucchi 2009, A plan for a sustainable future, in: Scientific American Nov. 2009
 Dr. Werner Zittel 2010, Worldwide Estimated Yearly Energy Costs (EWG 2010)

Hans-Josef Fell
www.hans-josef-fell.de

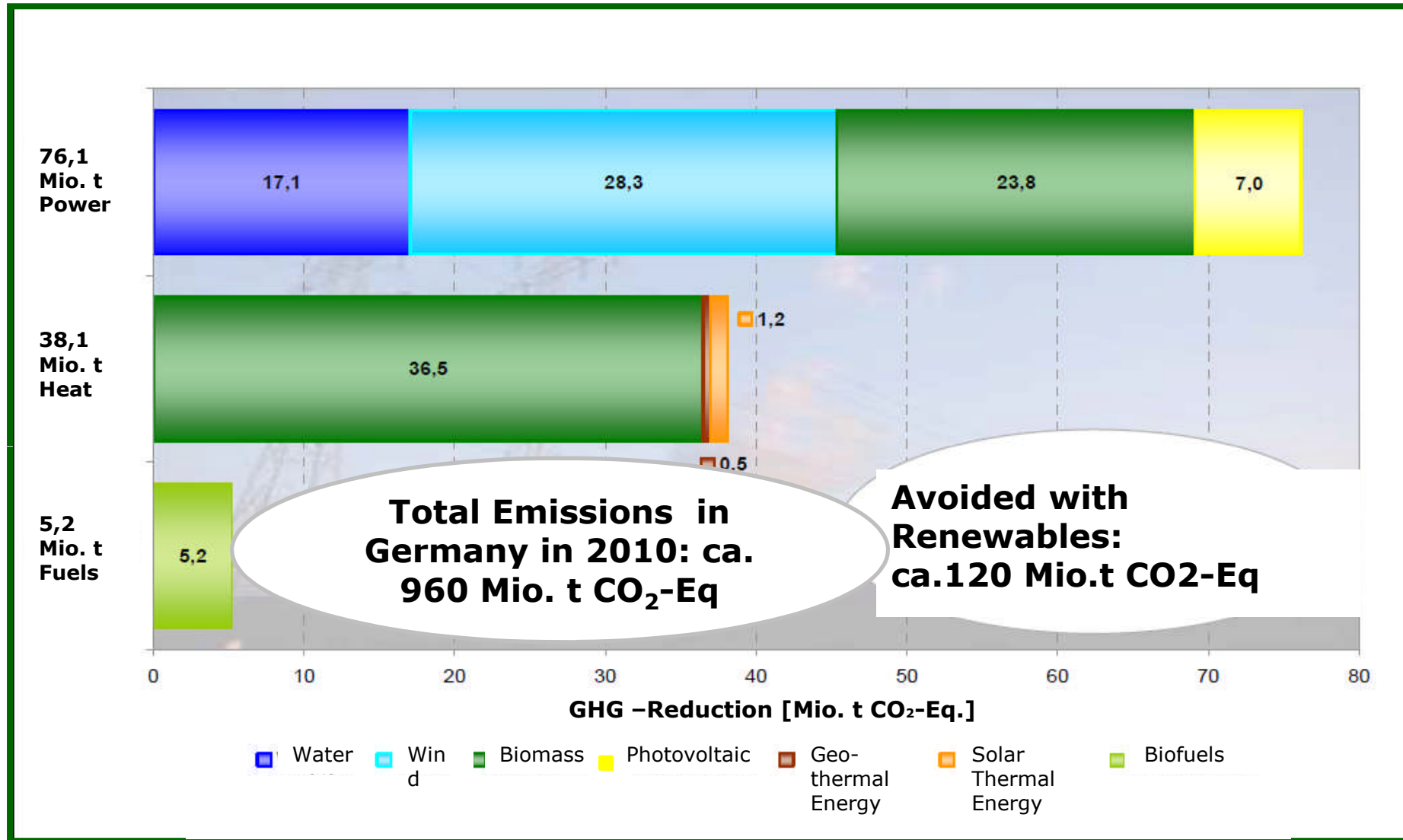
Total global investment in renewable energies in 2010 (Billion US Dollars)



Source: REN21

Hans-Josef Fell
www.hans-josef-fell.de

Emissions avoided with Renewables 2010 in G

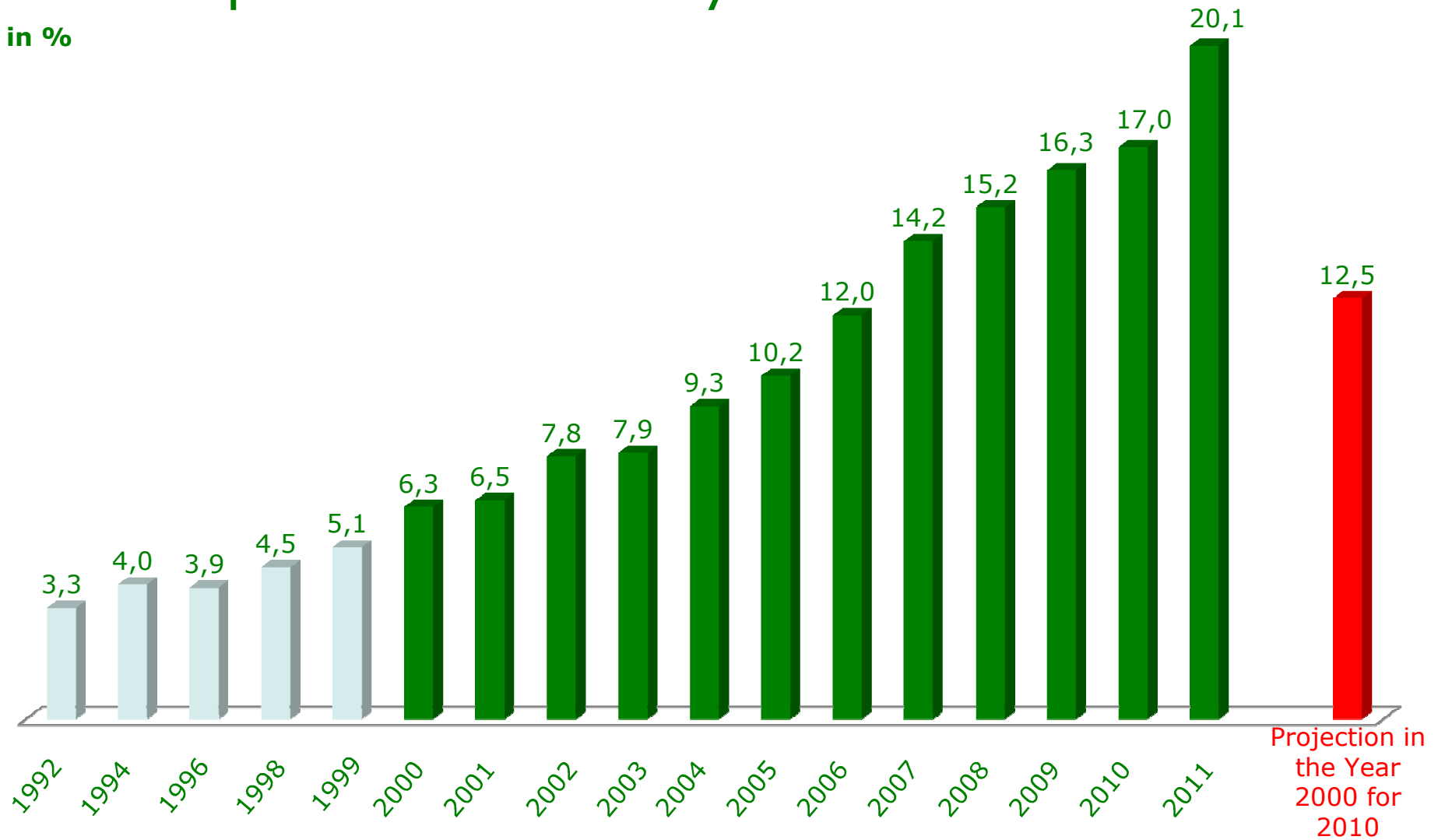


Source: BMU, Renewable Energy 2010
 * own calculation according to BUA 2010 and AGEb

Hans-Josef Fell
www.hans-josef-fell.de

Share of the Renewables in the gross electricity consumption in Germany

in %

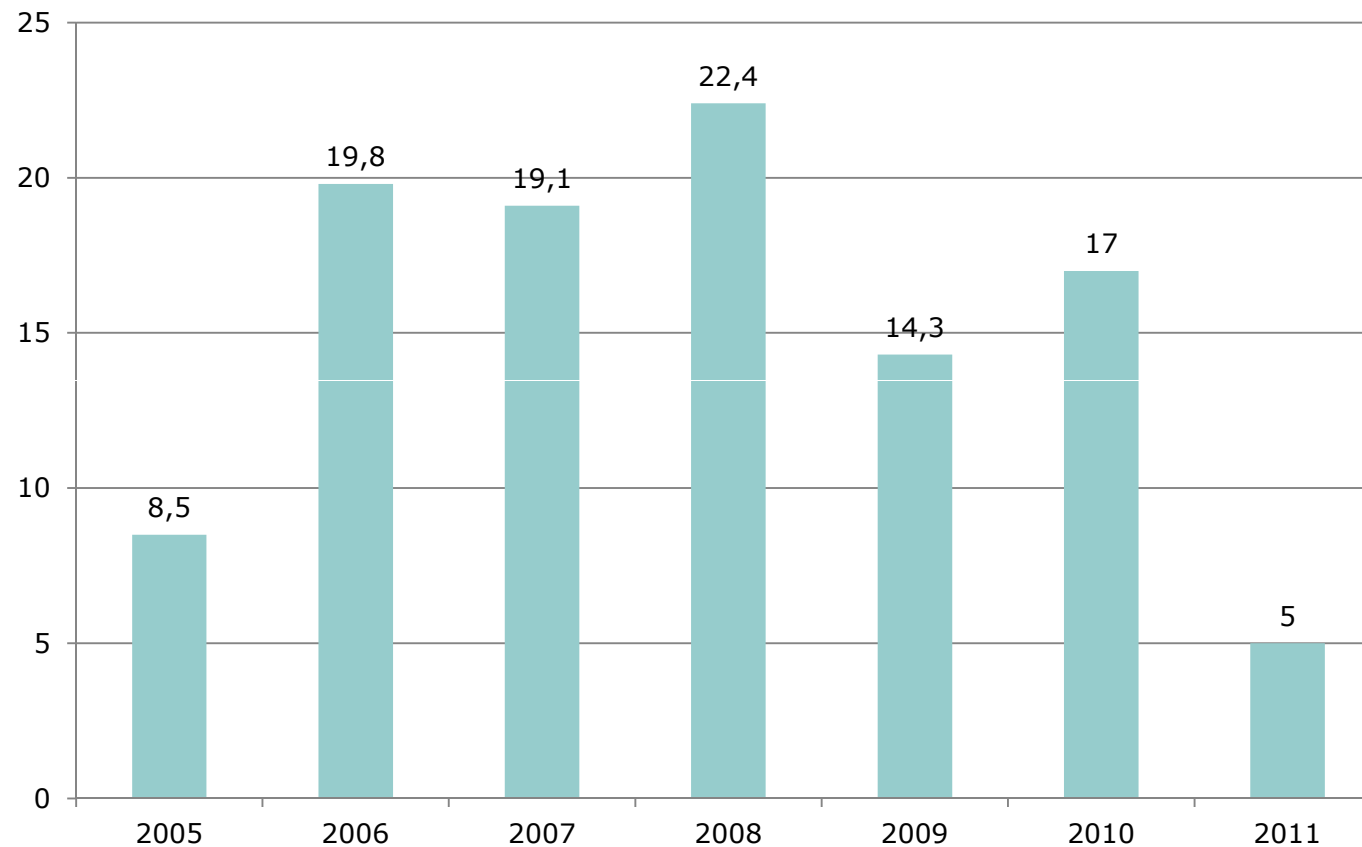


Source: BMU, BEE, bdew

Hans-Josef Fell
www.hans-josef-fell.de

Germany continues Power-Exporter

Power Balance Import-Export 2005 – 2011 (in Bill. kWh)



Germany 's high ecopower production
displace nuclear and coal power and
reduce stock market electricity price

- STEAG Announcement:

(Coal Power Operater in NRW)

- power down of some coal power plants;
- change of business strategy to REN

- Netherlands:

Stop new nuclear plans.

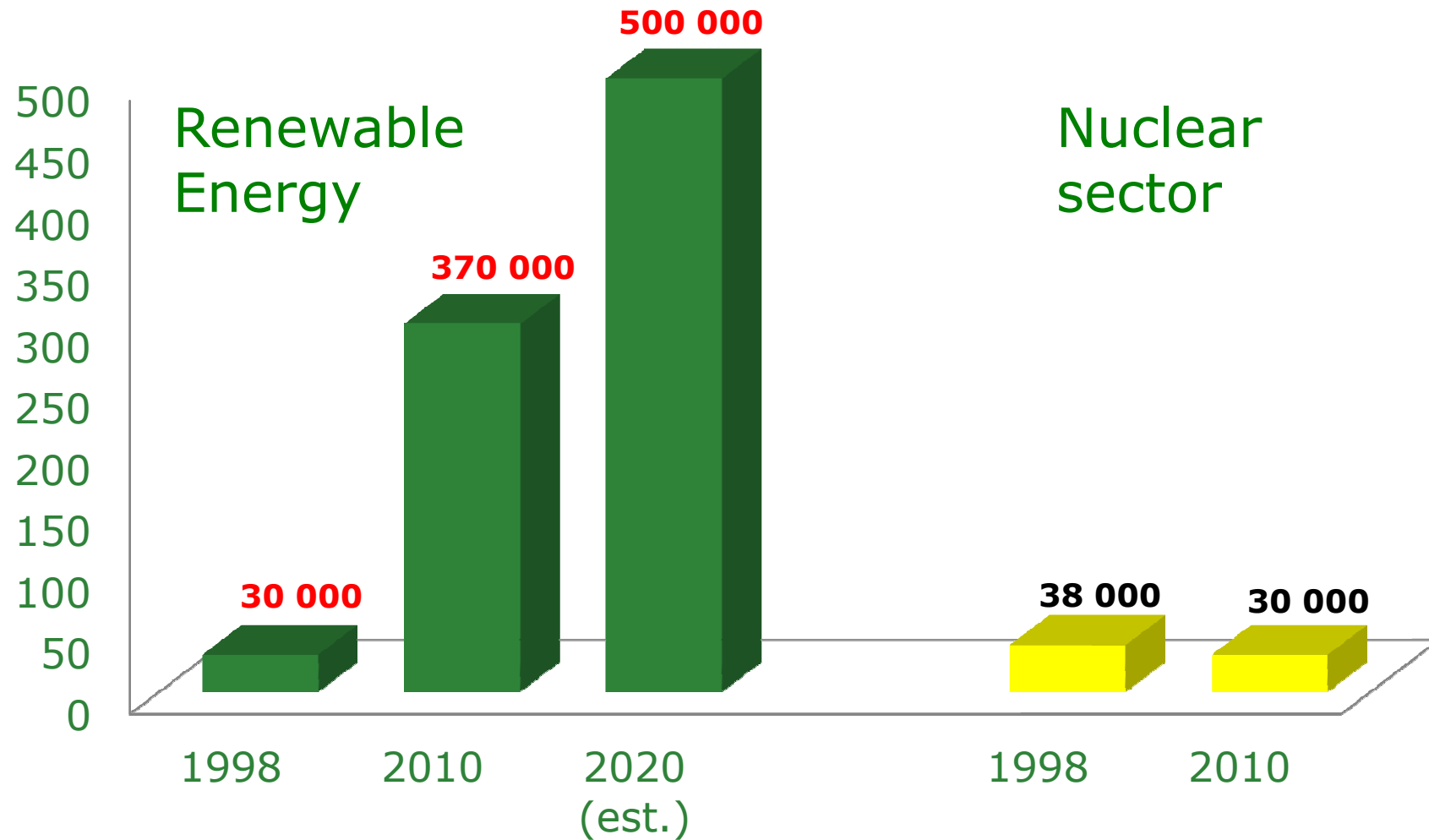
cause: to much electricity in european grid
and REN lower the electricity prices

Electricity price on german stock market drops due to renewables

Reason:

- When a lot of wind blows and solar shines, the most expensive oil, gas, coal power plants are powered down. This lowers the average electricity price.

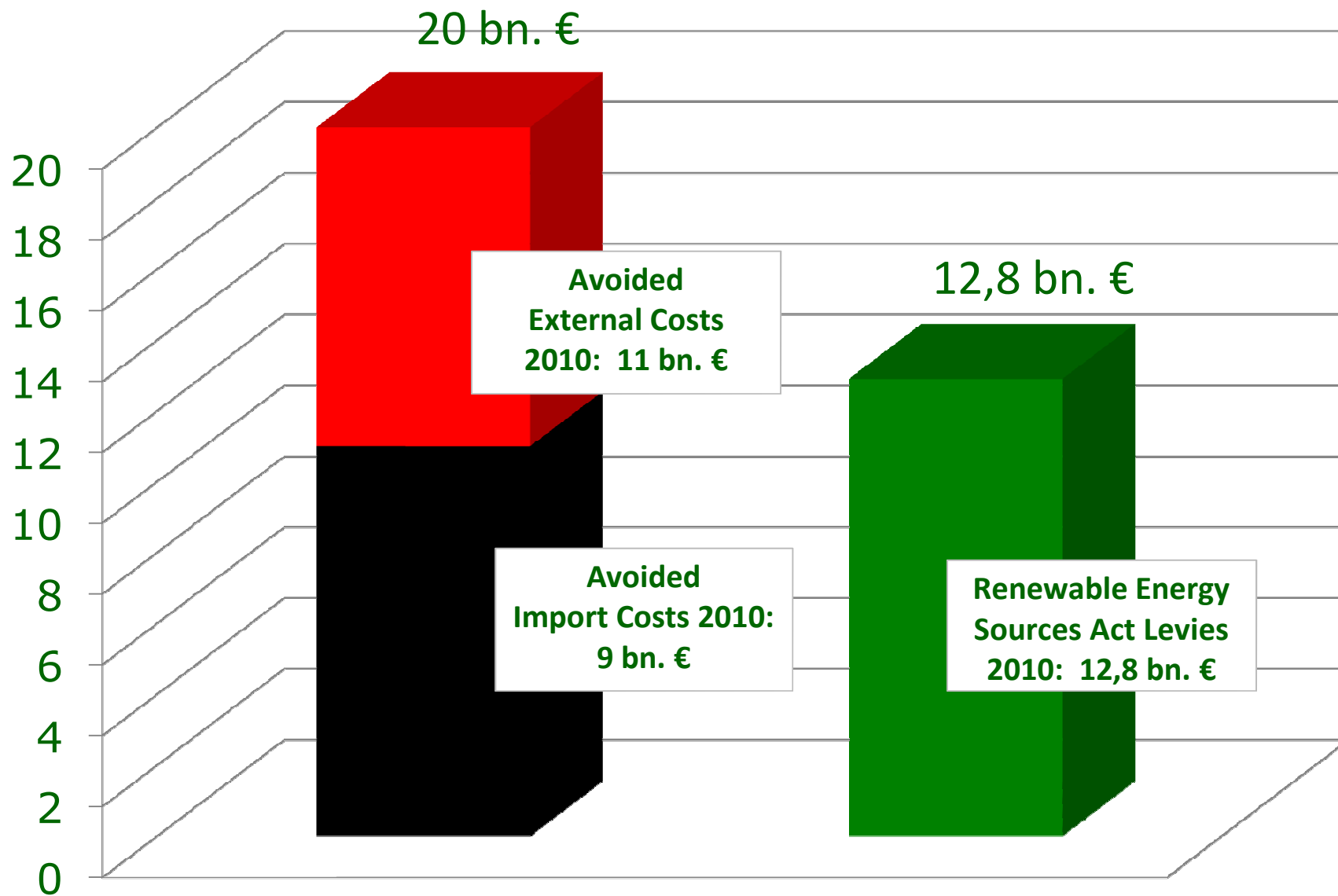
Renewable Energy as a Job Engine in Germany



Source: BEE /BMU 2011

Hans-Josef Fell
www.hans-josef-fell.de

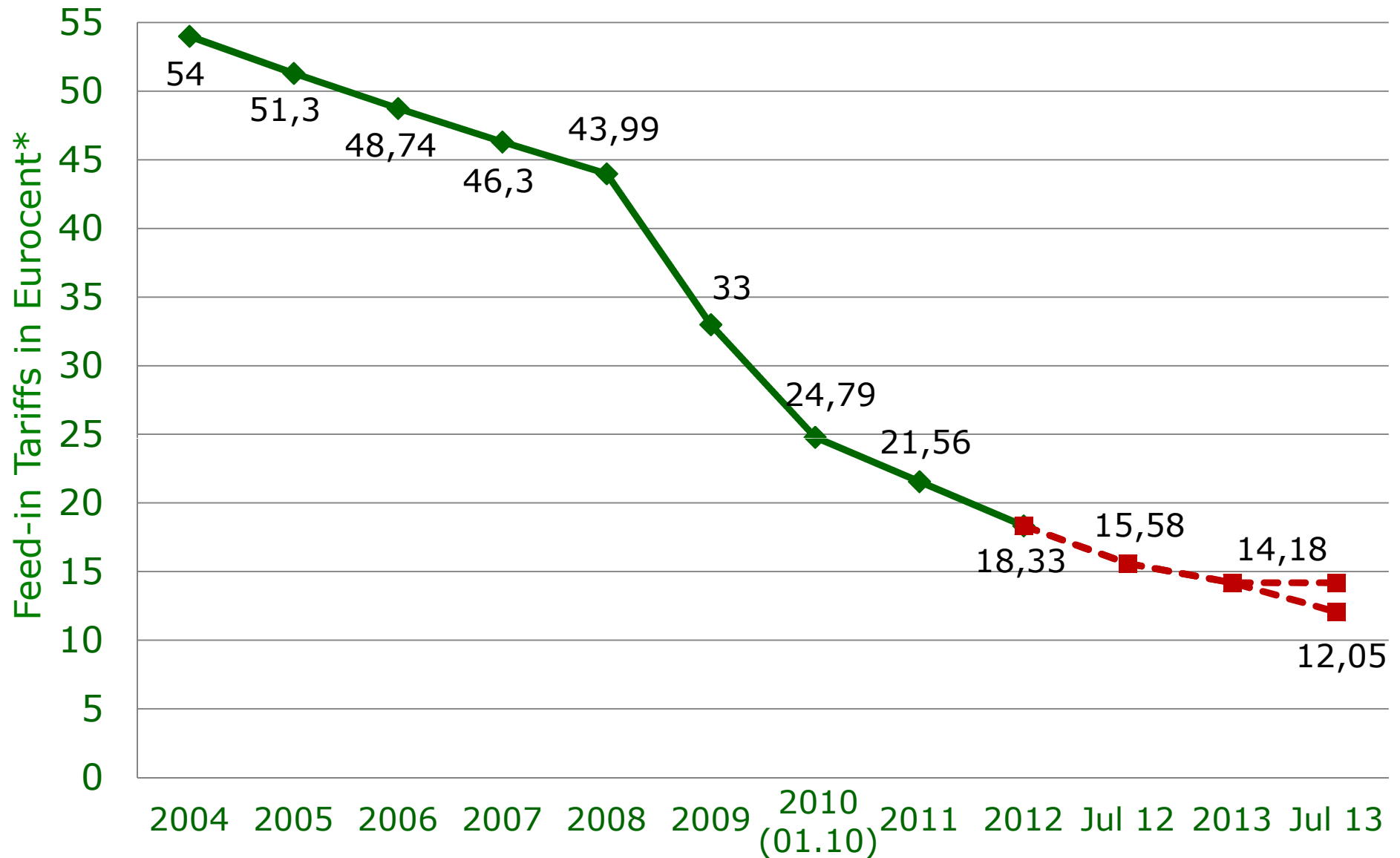
Avoided Costs by Renewables in G in 2011



Source: BEE

Hans-Josef Fell
www.hans-josef-fell.de

Development of Feed-in Tariffs for Photovoltaic Roof Systems above 1 MW



Feed-in Tarriffs for PV Systems in 2013 according to own calculation on Basis of the minimum respectively maximum Degression;
Sources: Solarenergie-Förderverein Deutschland e.V. , EEG 2004, EEG 2009, EEG 2012

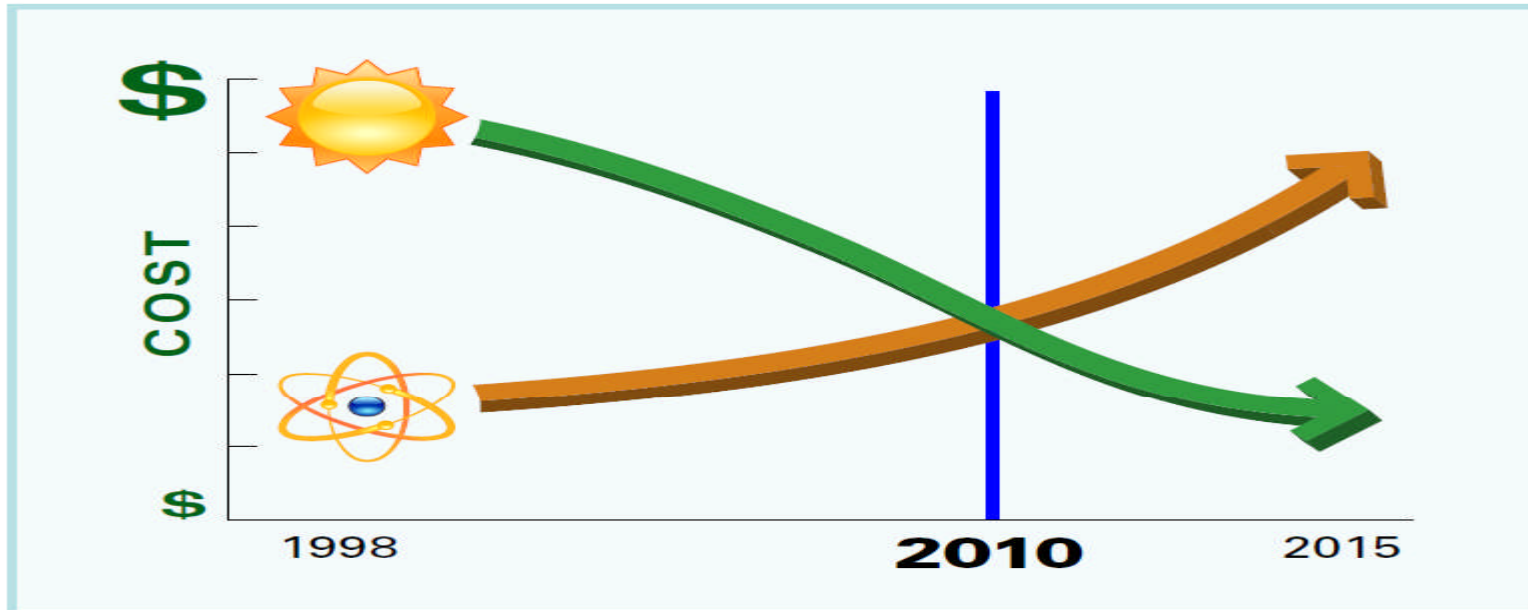
PV-Converters can help to manage Grid Stability

Reactive Current to organize

- Voltage Stability
 - Frequency Stability
 - Grid Support during Failures
-
- Batteries can balance fluctuations

Solar and Nuclear Costs — The Historic Crossover

Solar Energy is Now the Better Buy

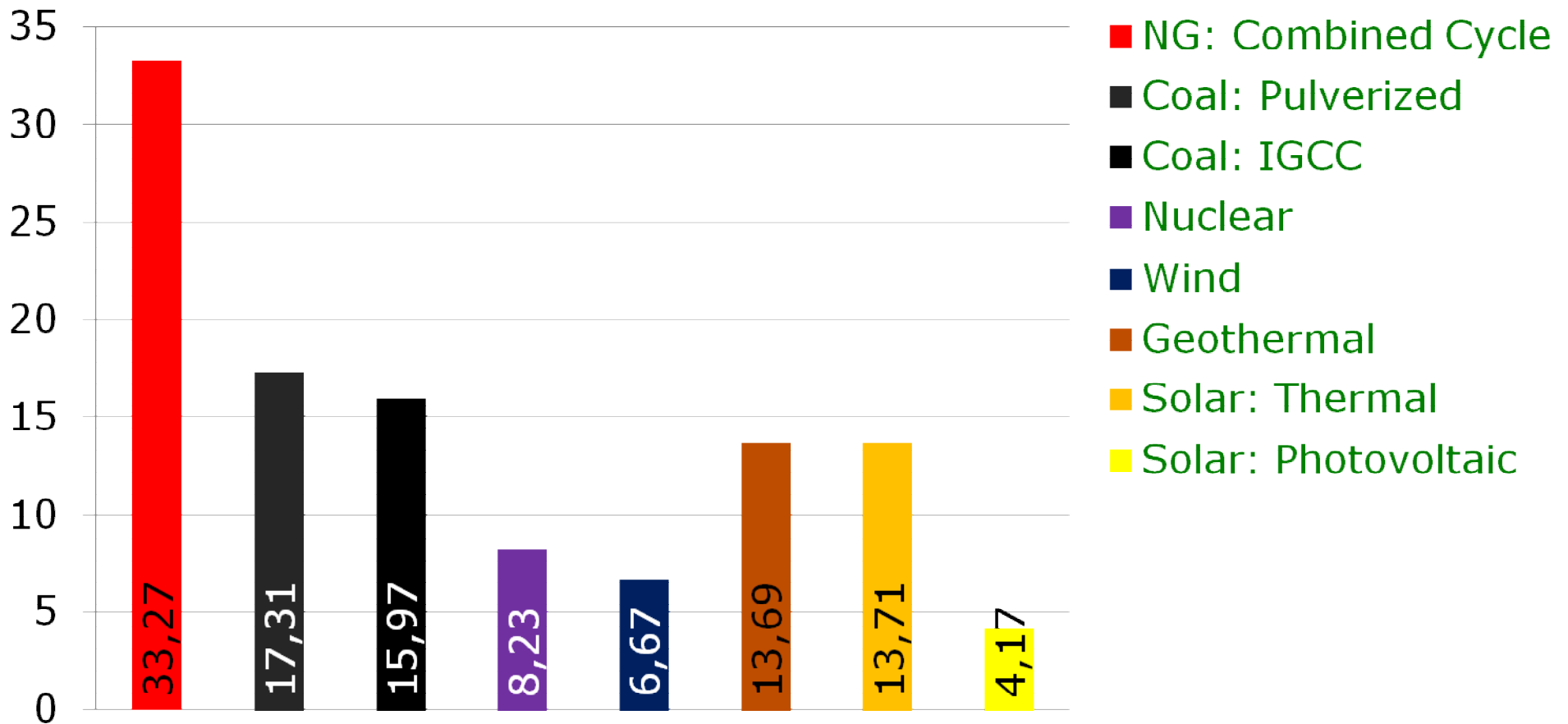


John O. Blackburn
Sam Cunningham
July 2010

Prepared for **NC WARN** 

Variable Costs of Powergeneration without CO2 Costs

Costs in US-Dollar per MWh



Source: Congressional Research Service: Power Plants: Characteristics and Costs (2008)

Hans-Josef Fell
www.hans-josef-fell.de

Climate- Protection and Energy Security Policies Promoting Renewable Energy, Chemistry & Organic Farming:

- Laws for feed-in-tariffs
- tax relief for renewables
- canceling subsidies for intensive agriculture, for fossil and nuclear energy and chemistry (Carbon Tax)
- research and education offensive for renewables and organic farming
- reducing obstacles for approval
- dispose big areas for reforesting

not successful:

quota or certificate systems, emission trading

(unable to promote fast climate protection)

Installed PV-Capacity in MWp in Australia, Japan and Germany



Source: IEA-PVPS, EPIA Global Market Report 2011

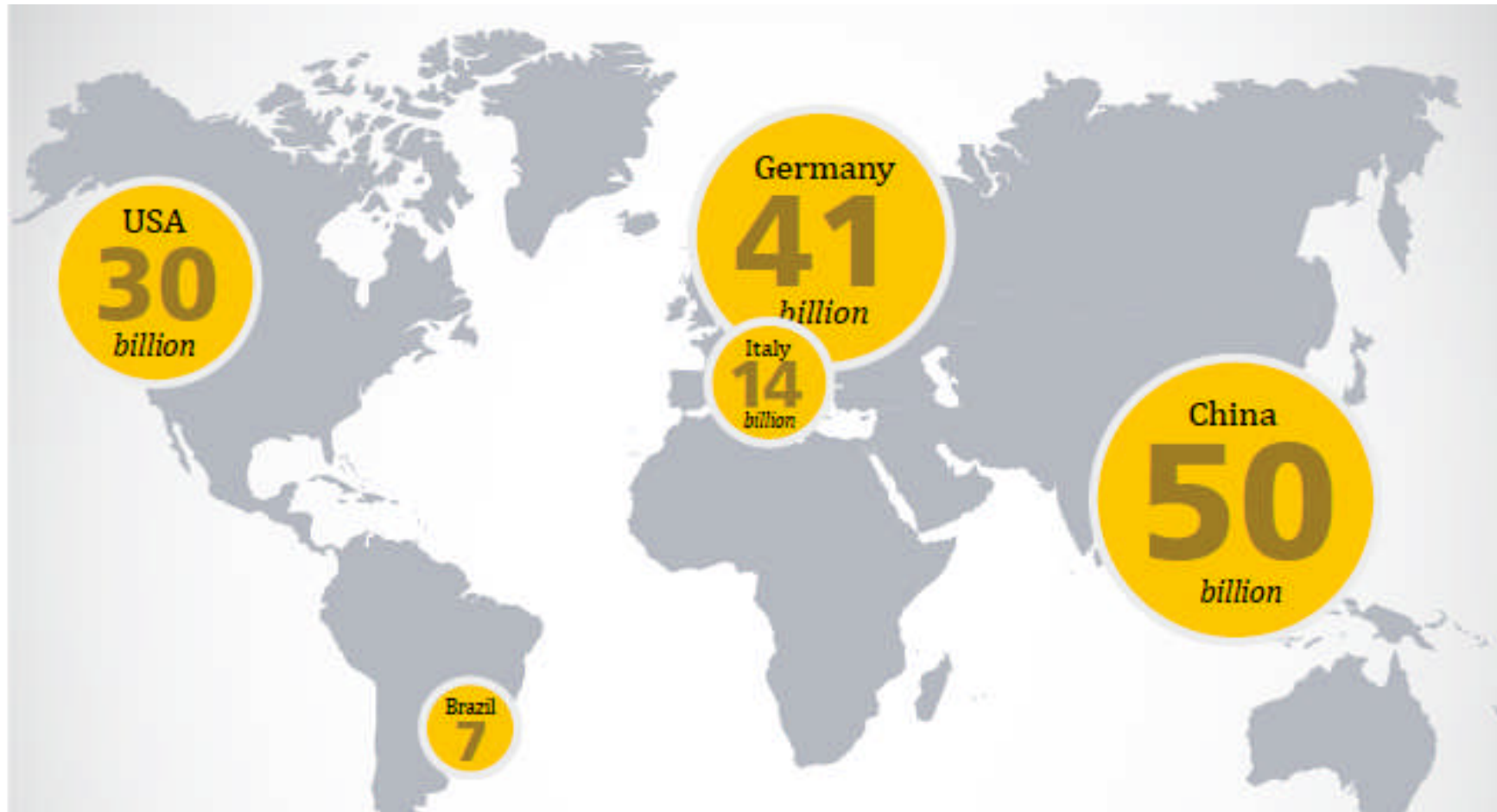
Hans-Josef Fell
www.hans-josef-fell.de

Key Points of an effective Feed in Tariff Law

- Privileged grid access
- Feed-in tariff have to be sufficient for an economic operation
- Funding of the feed-in tariff via electricity rate
- No cap for feed-in of Renewable Energies
- Garanted peroid of remuneration

- Furthermore: no obstructions by a restrictive permission policy

Investment Flows 2010 in Renewable Energies



Source: REN21

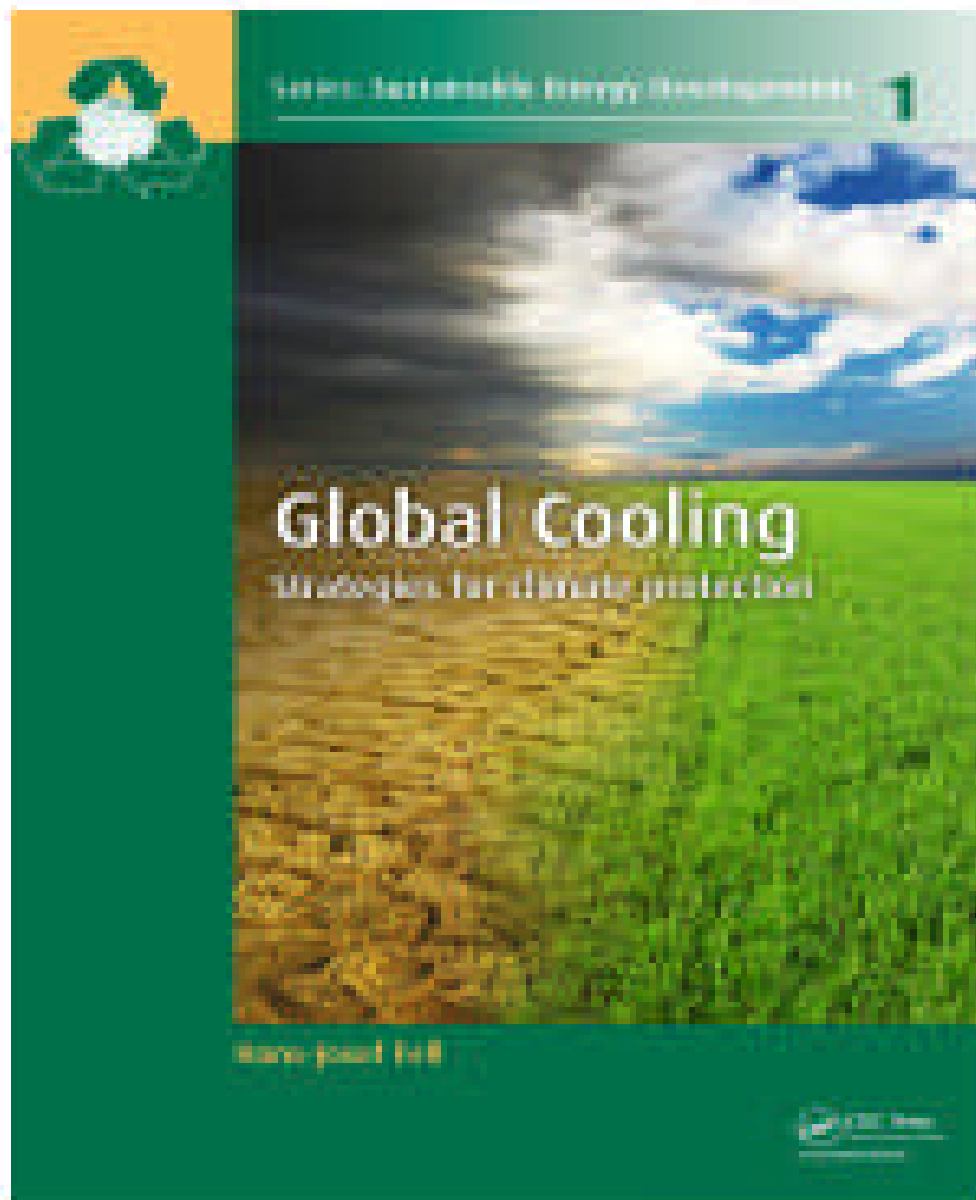
Hans-Josef Fell
www.hans-josef-fell.de

A new Alliance for climate protection Finance industry (political actor and financier)

- Make money with climate protection and not climate pollution
- Switch energy investment from fossil/nuclear to renewables
- Promote for political strategies
- You can join this new Alliance

Tomorrow's Energy Production





SUSTAINABLE ENERGY BOOK SERIES

**Series editor: Jochen
Bundschuh**

VOLUME I

Global Cooling: Strategies for Climate Protection

Hans-Josef Fell

*Member of the German
Parliament, Berlin, Germany*

***Thank You Very
Much for Your
Attention!***

www.hans-josef-fell.de