

Global Cooling ***A new Climate Strategy***

World renewable energy congress

London 4th August 2014

Hans-Josef Fell
President Energy Watch Group
Ambassador 100 % Renewables
Member Bundestag (1998-2013)

Political challenges

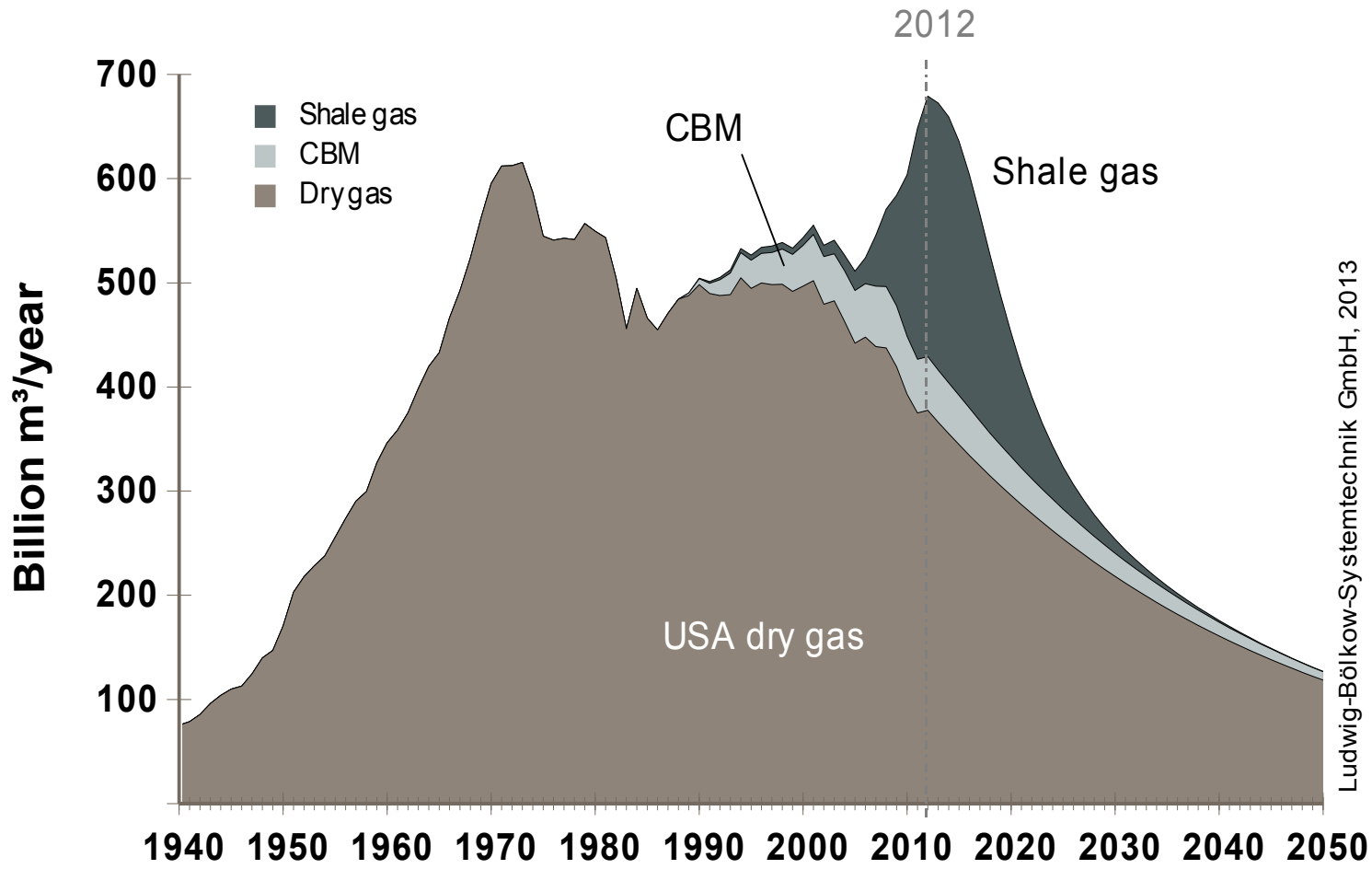
- Climate warming, loss of biodiversity
- peak oil, energy security
- nuclear and environmental disasters
- oil wars, poverty, economic crises

All these challenges are connected with fossil and nuclear Energies

Renewables will solve these problems

Ukraine-crisis is a gas and oil crisis

- Energy dependency of Ukraine and EU from Russia is self-induced and increased over years.
- Energy dependency is reason for political powerlessness for G7, EU, G.
- It is without any chance to find solutions within the fossil energy sector (diversification)
- Only the switch to renewables can bring political and energy independency.



Oil Crises and conflicts all over world

- Oil conflicts e.g. in Sudan, Nigeria, Libya, Venezuela, Colombia (also coal) China-Japan; China-Vietnam
- IS Terrorists in Iraq, Syria are financed by oil money; also Al Quaida and others

The switch to renewables gives a chance to solve such conflicts and stops financing terrorists

Climate protection with RENEWABLES brings peace to the world

Global Warming:
Oftener and more powerfull:
aridity and forest fires, floods and storms
What will happen at 2°C global warming?



Damage Hurricane Sandy: 100 Billion US \$

The imperative for climate protection

Cooling down the earth

This is
possible!

Cooling of the global climate is possible

- First pillar:
zero emissions
 - 100% renewable energy
 - green chemistry
 - energy saving
 - substitutes for ferro-concrete
- Second pillar:
carbon purification of the earth's atmosphere
 - greenland, reforestation and organic agriculture
 - biochar, untreated vegetable oils

Goal: 330 ppm instead of 2°C global warming

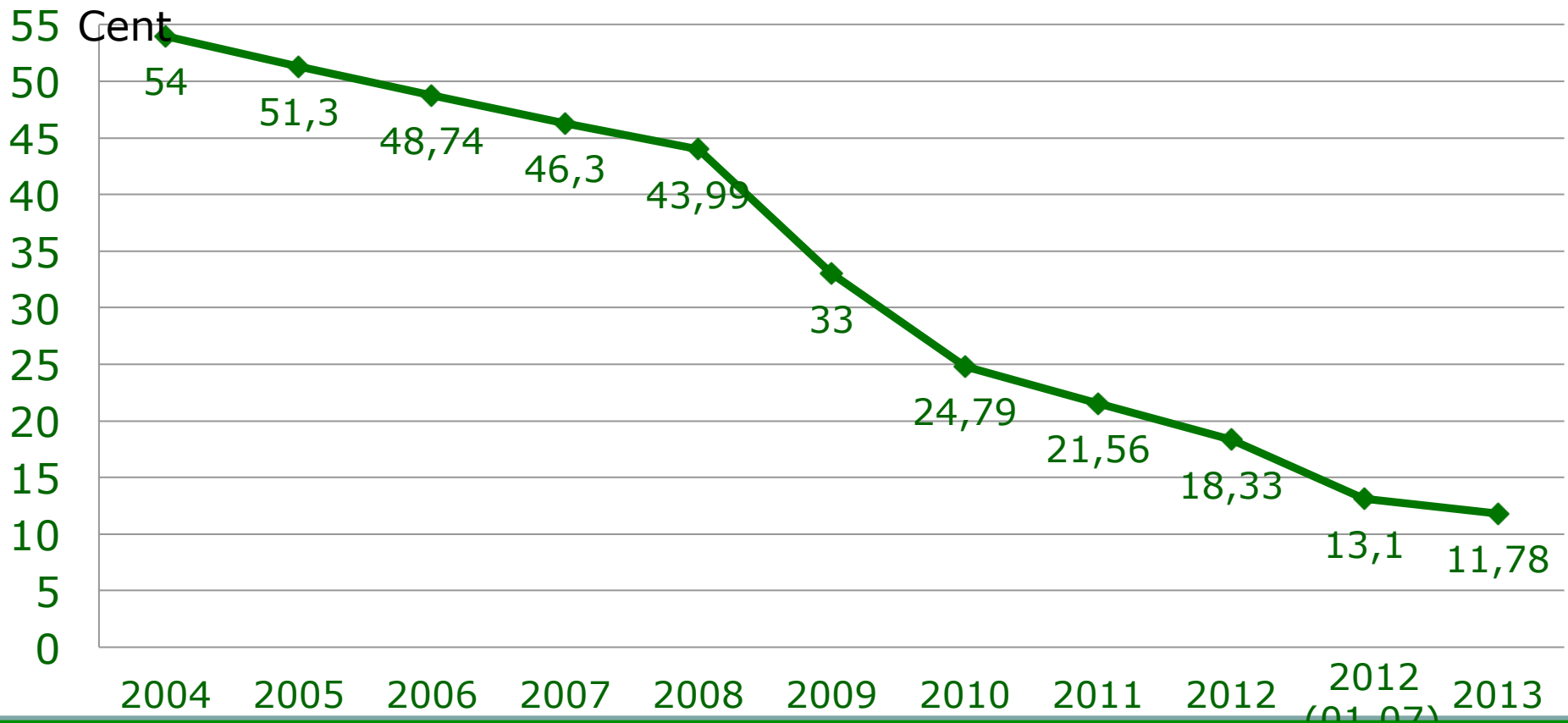
A Path to 100% renewable energy by 2030



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

(Mark Z. Jacobson & Mark A. Delucchi)

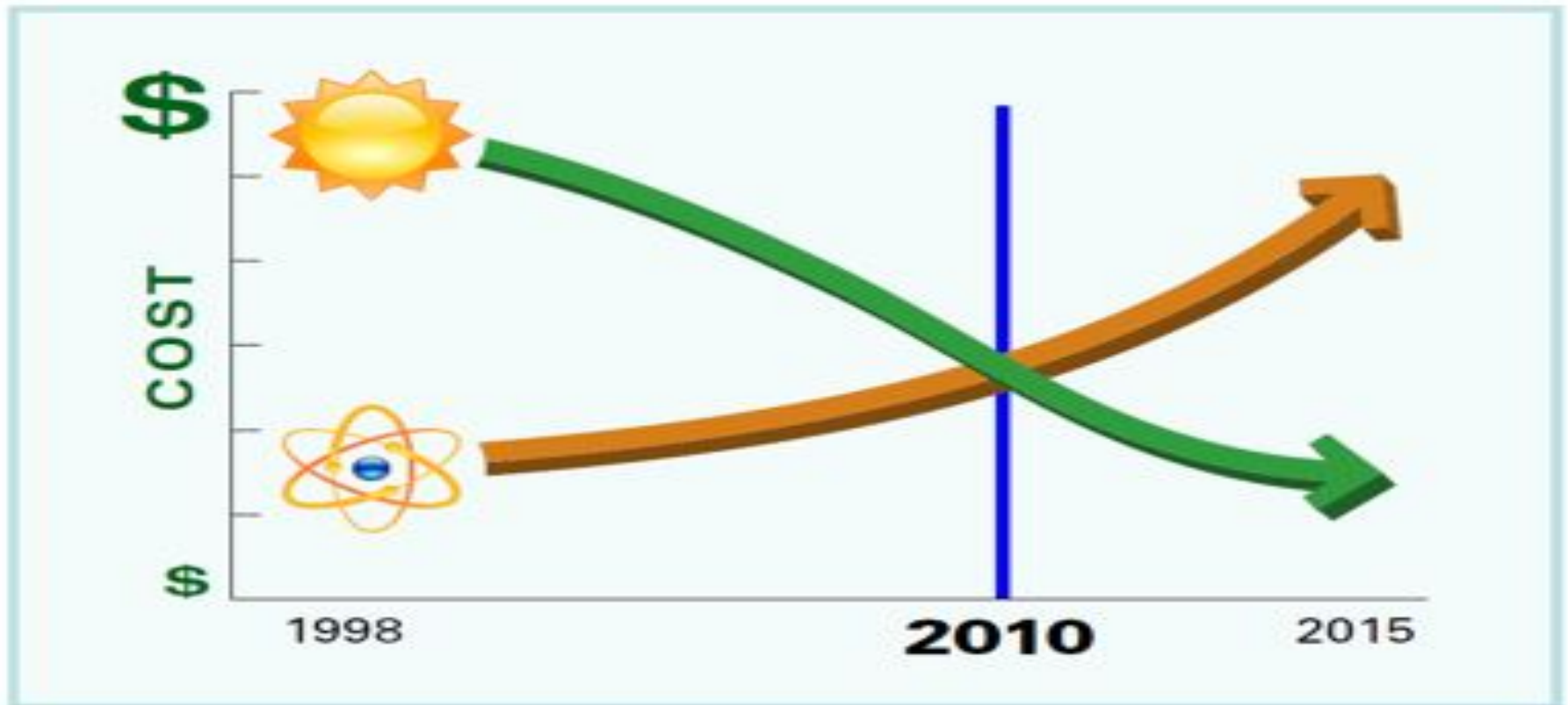
PV becomes cheaper and cheaper: Feed-in Tariffs in G for PV roof systems above 1 MW



Quellen: EEG 2004, EEG 2009, EEG 2013

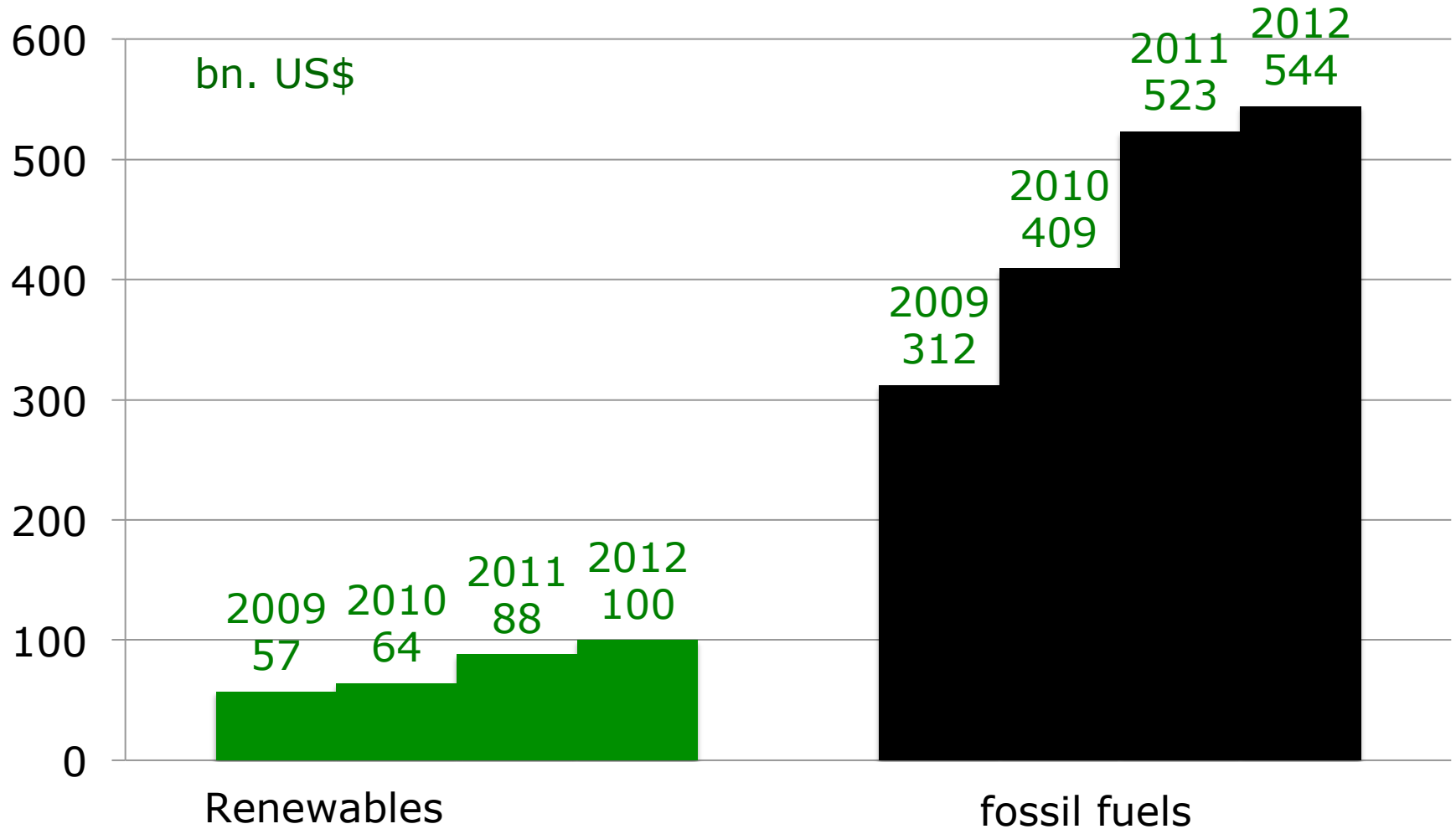
Solar and Nuclear Costs – The Historic Crossover

Solar Energy is Now the Better Buy



Global subsidies: renewables/fossil fuels

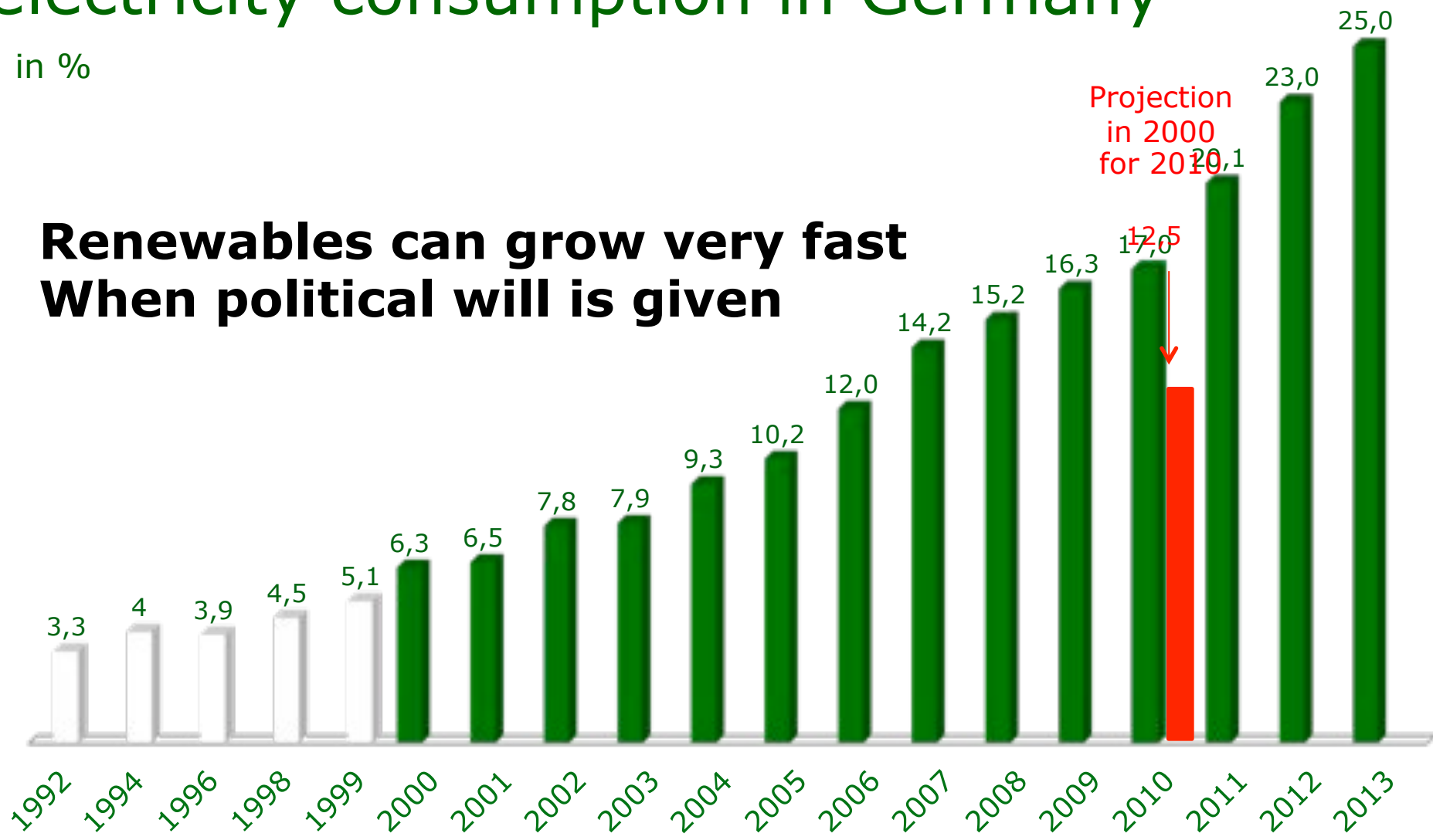
Global warming subsidies: 100 US\$/t CO₂



Share of renewables in the gross electricity consumption in Germany

in %

**Renewables can grow very fast
When political will is given**



Source: BMU, BEE, bdew

7 Years Energywende in Großbardorf



Power



475%

Jahresverbrauch Strom 2011

ca. 1.600.000 kWh

Jahreserzeugung in EE-Anlagen:

ca. 7.600.000 kWh



Heat



90%

Jahresverbrauch Wärme 2011

ca. 3.200.000 kWh

Jahreserzeugung in EE-Anlagen:

ca. 2.880.000 kWh

100% RE is already reality today



Germany

Countries with a 100% RE target

*Denmark; Costa Rica; Island;
Scotland; Upper Austria*

Cities with 100% RE target

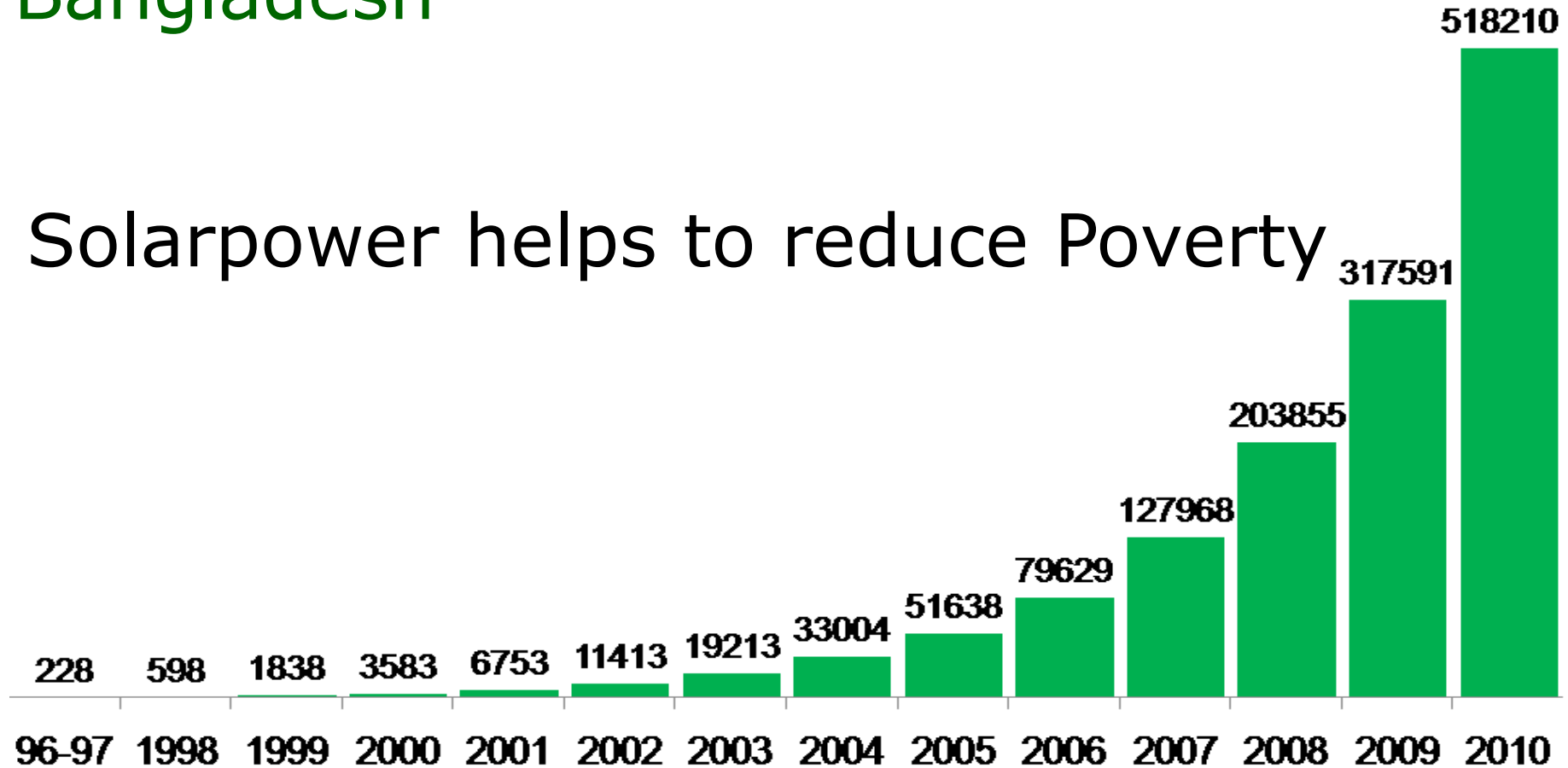
*Barcelona, Spain; Masdar City UAE;
Munich, Germany; Msheireb Downtown
Doha, Qatar; San Francisco, USA*

Small Island States with 100% RE target

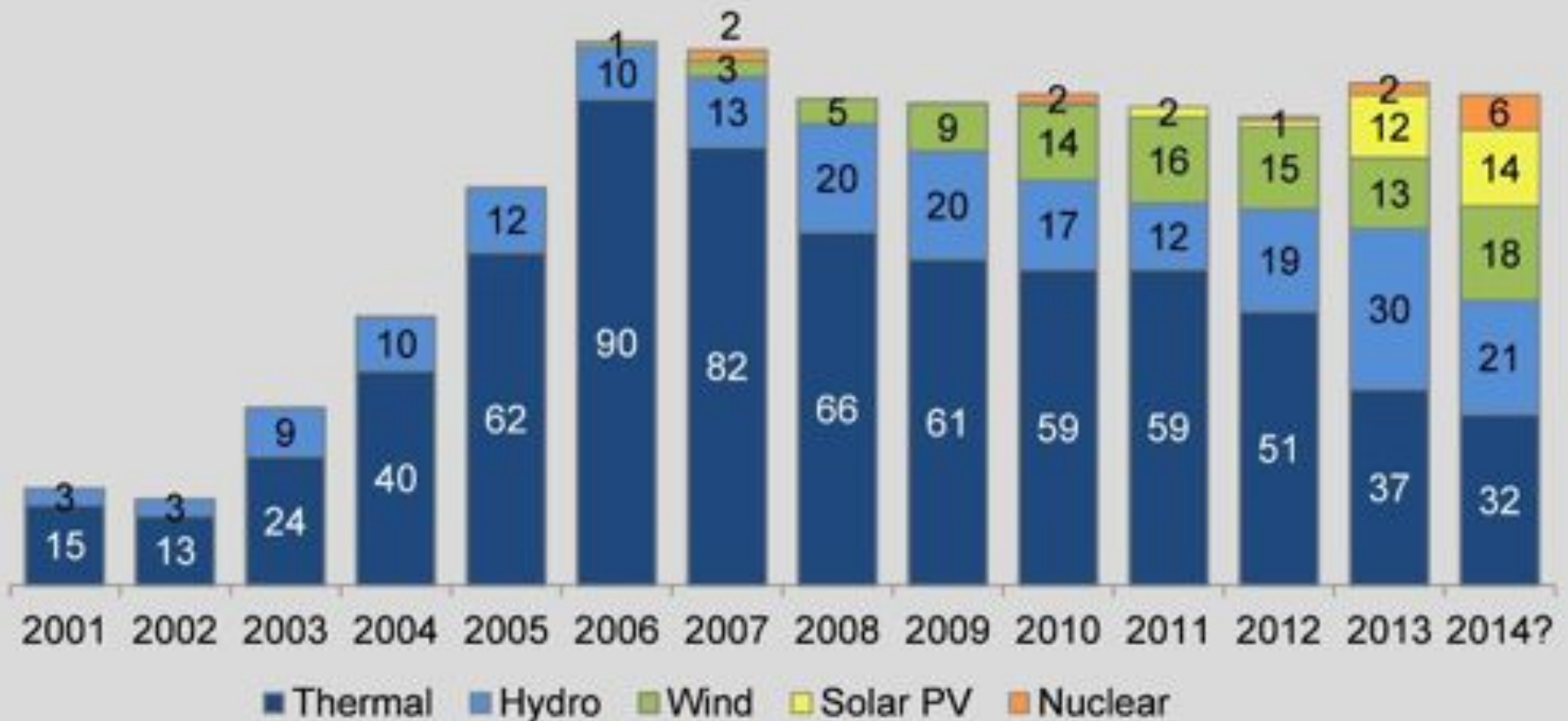
*Islands of Tuvalu; Maledives; Cook
Islands*

Amount of the installed solar home systems by the Grameen Bank in Bangladesh

Solarpower helps to reduce Poverty



China annual power grid capacity additions (GW)

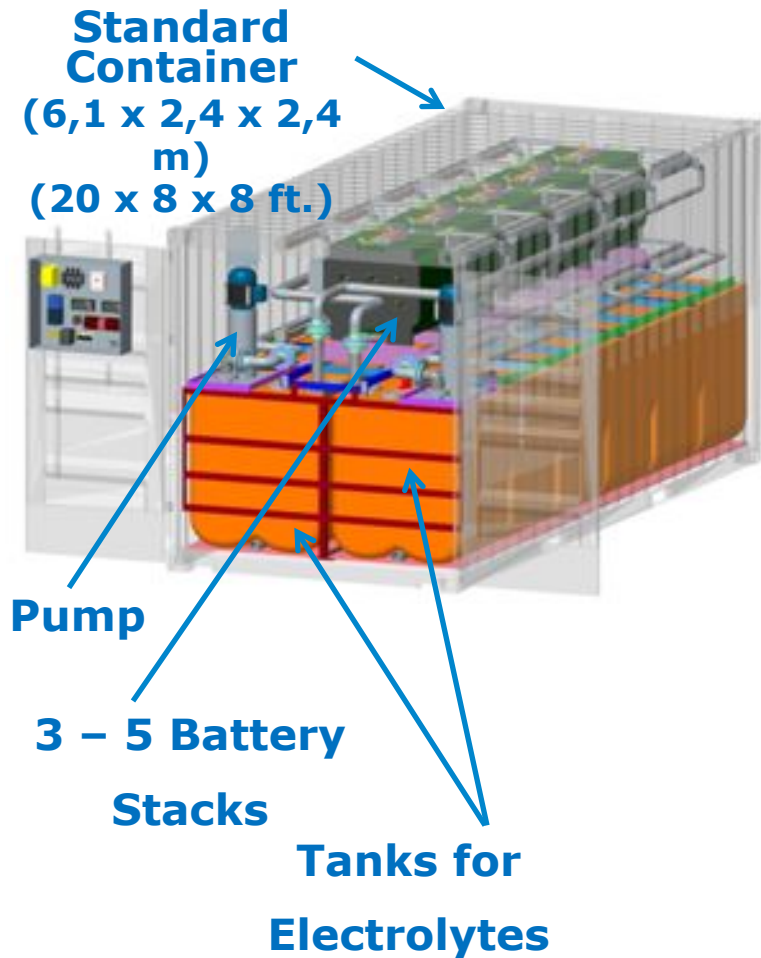


Note: 2014 is CEC projection. Thermal figures are mostly coal but also include a small amount of gas and biomass-fired power plants; Source: China Electricity Council, Global Wind Energy Council

3 MW Solar hybrid power plant Belectric



Z20 – Energy-/Electrical Power Storage from BlueSky Energy



- ✓ **Technology:** Zinc-Iron Redox-Flow-Battery
- ✓ **Application:** PV-systems and wind parks
- ✓ **Green Technology:** contaminant-free, non-toxic, non-flammable, non-explosive
- ✓ **Sustainability:** Raw material worldwide „unlimited“ and inexpensive available
- ✓ **Scalability:** One Battery (container) contains 48 – 80 kW power → 120 – 160 kWh energy; scalable up to multiple MWh
- ✓ **Cost effectiveness:** most cost-effective and safest technology of all large energy storage systems. Cost per kWh: currently 0,10 €/kWh; with decreasing tendency. ROI approx. 7 years
- ✓ **Life time:** 20+ year life at 7000 cycles

Batterie Storage Tinningstedt



First wind park in Germany with Vanadium Redoxflow storage. Wind power surplus is used in times of lacking wind.

Projected by Plan 8 GmbH.

www.plan-8.de



Hydrothermal Carbonisation (HTC)



Process:

Input: Plants, Agriculture and Municipal Waste;

Output: Biocoal;

Usage of biocoal:

- Fuel: 8 €/MWh (Mineral Coal 22 €/MWh)
- Chemical base (oil substitute)
- Fertiliser (carbon binding in soil)

With biochar rapid greening for eroded and degraded areas

July 2010

August 2011



For 60 years it looked like this

Now it looks like this

Slag heap of a US coal mine

Greening Deserts: 20% plant greenery in desert areas with oil-bearing plants will cover whole oil demand in the world



Green Egyptian desert near Luxor with jatropha

Climate protection and energy security policies

Promoting renewable energy, chemistry & organic farming:

- laws for feed-in-tariffs
- tax relief for renewables
- carbon tax
- canceling subsidies for intensive agriculture, for fossil and nuclear energy and chemistry
- research and education offensive for renewables and organic farming
- reducing obstacles for approval
- dispose big areas for reforestation

not suitable for promoting climate protection:

- quota or certificate systems, emission trading

Installed windpower – EEG-apportionment vs. quota system



Sources: Deutsche Windguard GmbH, 2012; Volker Quaschning, 2013: <http://www.volker-quaschning.de/datserv/windinst/index.php>

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www.hans-josef-fell.de

Book about Global Cooling



**SUSTAINABLE ENERGY
BOOK SERIES**

Series editor: Jochen
Bundschuh

VOLUME 1

**Global Cooling:
Strategies for
Climate Protection**

Hans-Josef Fell

Member of the German
Parliament, Berlin, Germany

published in summer
2012.

paperback edition for
19 €.

German version
available

www.globalcooling-climateprotection.net

European Energy Security Forum

Reducing energy dependency of Europe

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SEF-2014

26 September
Brussels
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***Thank You Very
Much for Your
Attention!***

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