

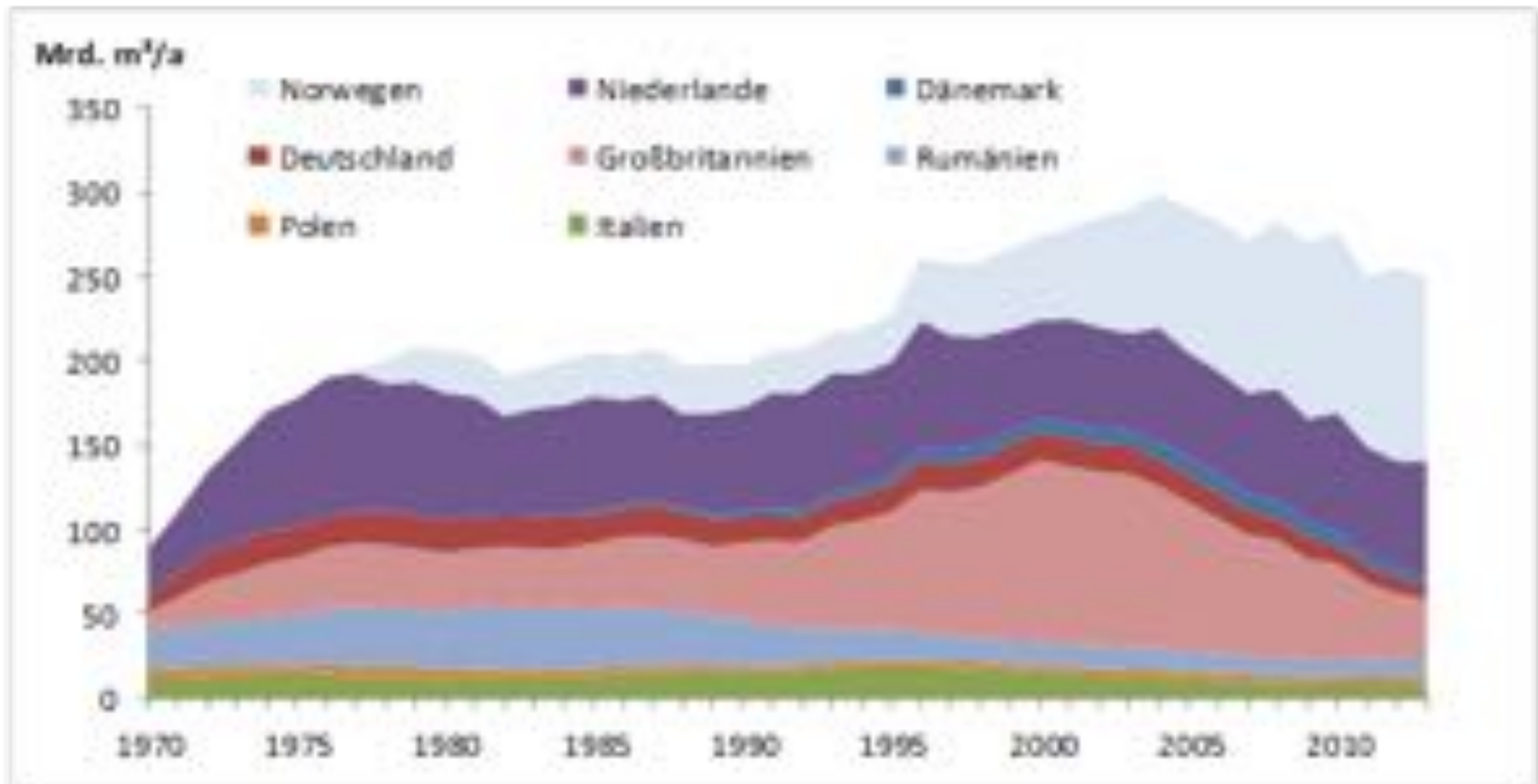
# 100% Renewable Energy Engine for Economic Growth and Imperativ for National Security in Ukraine

Hans-Josef Fell  
President of Energy Watch Group  
Member of German Parliament 1998-2013

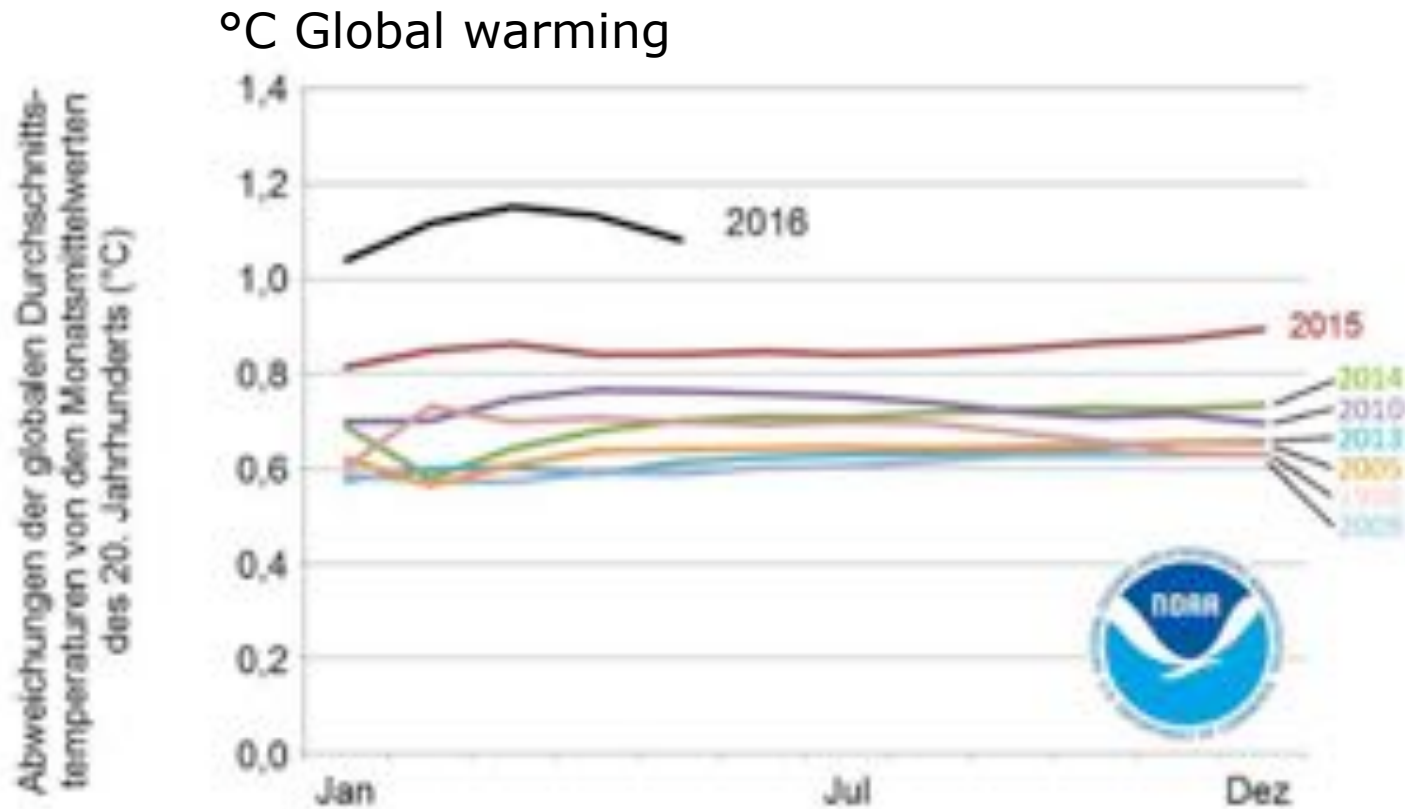
Kyiv, October 12th, 2016

# Gas Production in Europe

With european gas more energy independency from Russia?



# Global warming increase dramatically in 2016



The Paris Agreement target of 1,5 °C will be reached in 2020 !!

# Ukraine supports the Paris Climate Agreement

- 1,5°C means all GHG emissions need to be stopped latest by 2030: 100% Renewables
- 100% Renewables means energy autonomy; no energy dependency from Russia, Europe and others

# The crises of climate warming & energy dependency can only be solved by two parallel strategies:

## **1. Stop greenhouse gas emissions**

(not only a reduction of emissions)

- switch to 100% renewables
- completely stop the use of fossil and nuclear energies in energy, chemistry, transport, agriculture

## **2. Take out carbon from the atmosphere**

- convert plants to humus soil (biocoal)
- reforest big areas, green the deserts
- organic agriculture

**The Target must be 330 ppm CO<sub>2</sub>**

**This leads to global cooling, instead of global warming**

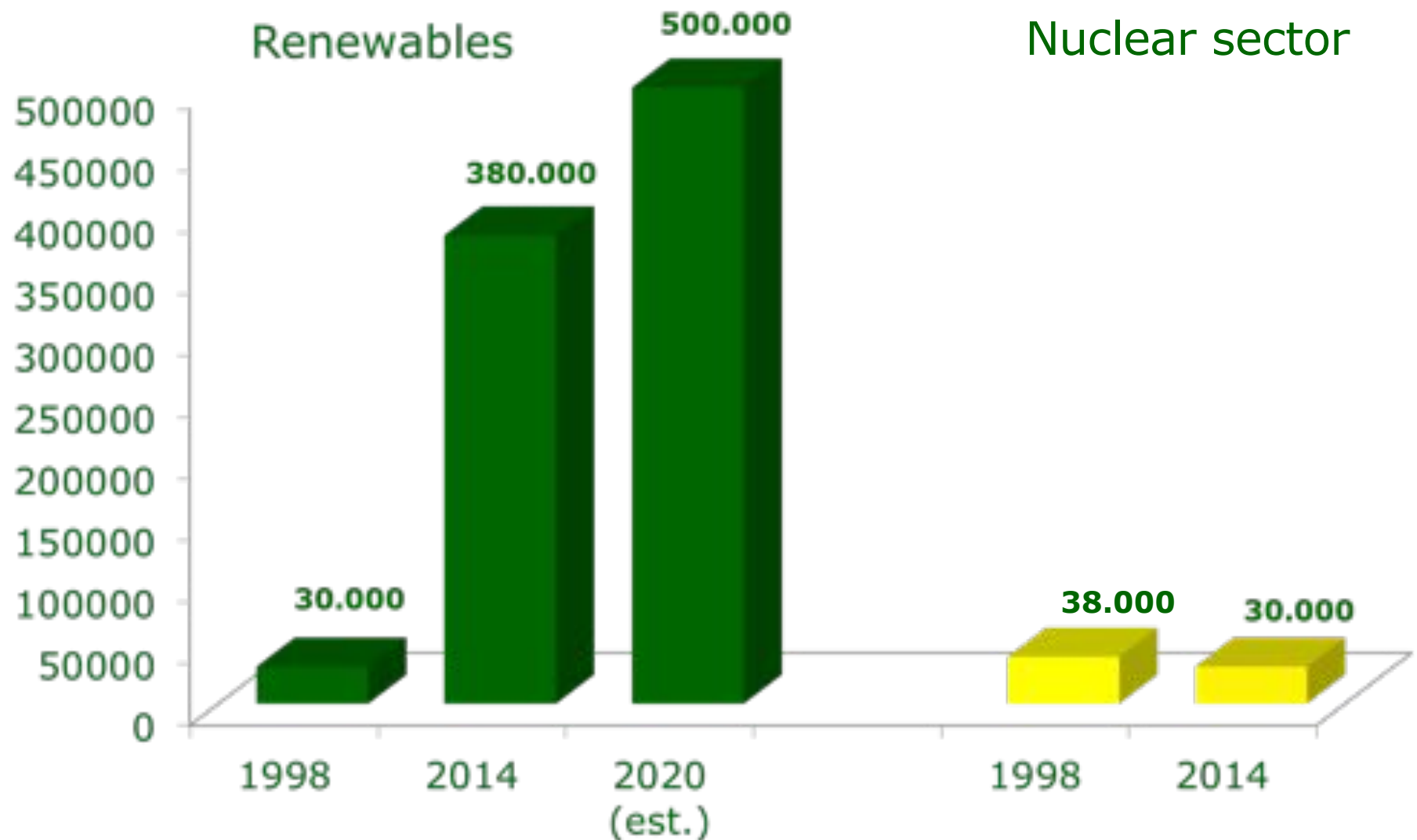
# Renewables conquer German Energy

In the background:  
**nuclear power plant  
Grafenrheinfeld  
shut off in June 2015**

In the foreground:  
**Windpower named  
„Hans-Josef Fell“  
PV and  
biogas farmland**



# Renewable Energy as a Job Engine in Germany



Source: BEE /BMU 2011

Hans-Josef Fell  
Member of German Parliament (1998-2013)  
President of Energy Watch Group

# Renewables lower the German exchange electricity price (Baseload) since 2010

€/MWh



source: EEX(2015);  
<http://www.finanzen.net/rohstoffe/eex-strom-phelix-baseload-year-future/Chart>

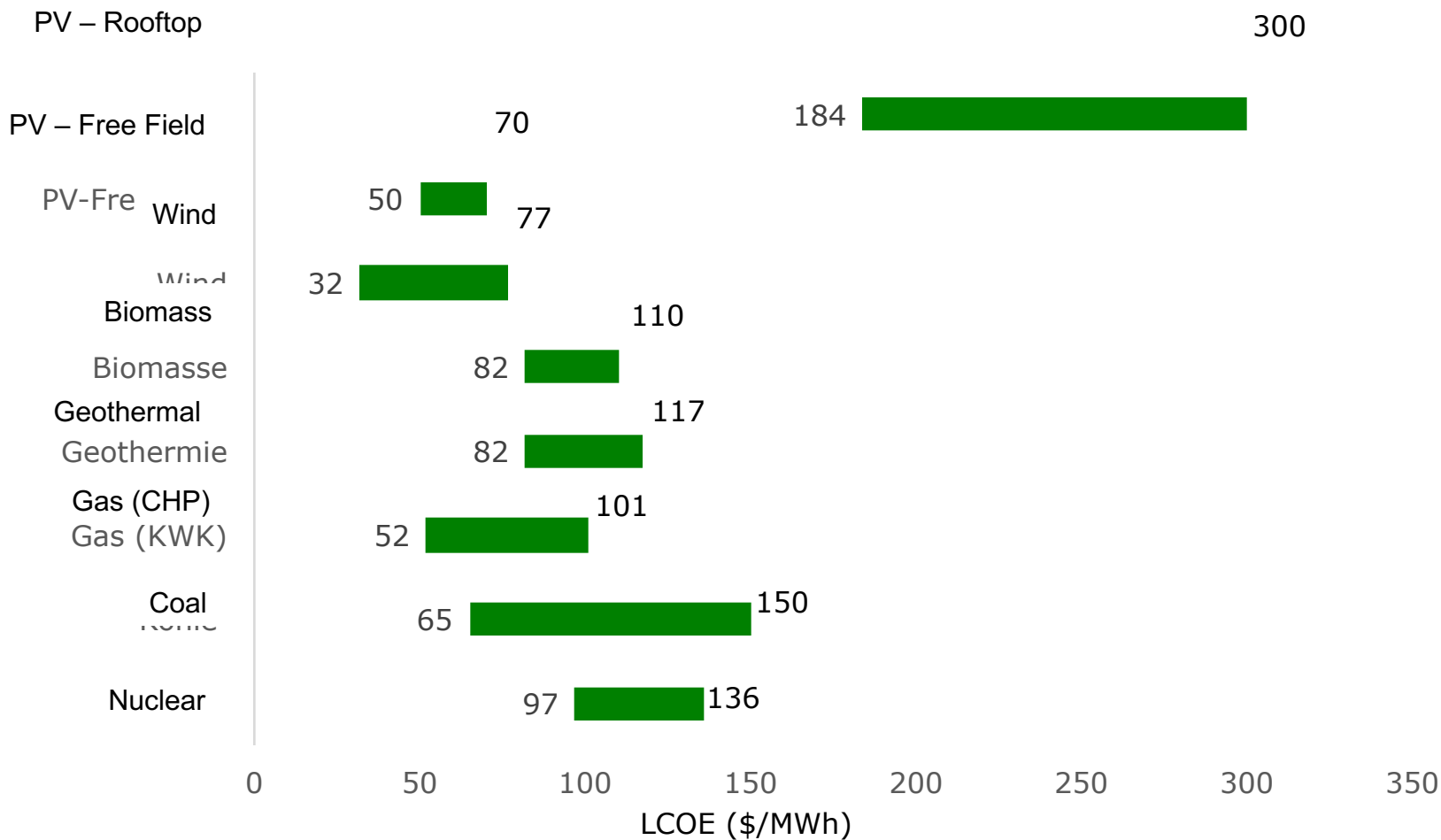
Hans-Josef Fell  
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# Solar & wind are the cheapest energy option now

## Levelized Cost of Energy Comparison

### US Minimum and Maximum Price in March 2015



Source: Lazard's LCOE Analysis, Version 9.0 (2015)

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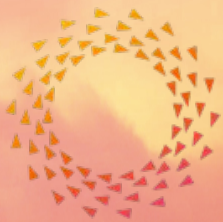


**Countries with a 100% RE target**  
*Denmark; Sweden; Costa Rica;  
Island; Scotland; Upper Austria*

**Cities with 100% RE target**  
*Barcelona; Masdar City; Munich;  
Msheireb Downtown Doha; Vancouver;  
San Francisco; Copenhagen; Sydney;*

**Small Island States with 100%  
RE target**  
*Islands of Tuvalu; Maldives; Cook  
Islands*

# TRANSITION TOWARDS A 100% RENEWABLE ENERGY SYSTEM BY 2050 FOR UKRAINE



**NEO  
CARBON  
ENERGY**

**Michael Child, Dmitrii Bogdanov and Christian Breyer**  
**Lappeenranta University of Technology, Finland**  
**Sustainable Energy Forum and Exhibition**  
**Kiev, Ukraine, 12 October, 2016**



# Agro-PV in Italy

Yields: Solar electricity, biofuels, food



4 GW Solar in Tschernobyl, best option:  
AGRO-PV for Food (or biofuels, when radioactive polluted)

# Water Snail:

High efficient hydropower; zero fish mortality;

$$Q = 3 * 8.00 \text{ m}^3/\text{s}$$

$$H = 3.30 \text{ m}$$

$$P = 3 * 220 \text{ kW}$$



Ukraine Government  
27.12.2008:

**Flood protection with hydro power:**

Dnjestr, Prut, Siret, Tis

Electricity by 3 Cent/kWh

# Climate Protection and Energy Security Policies

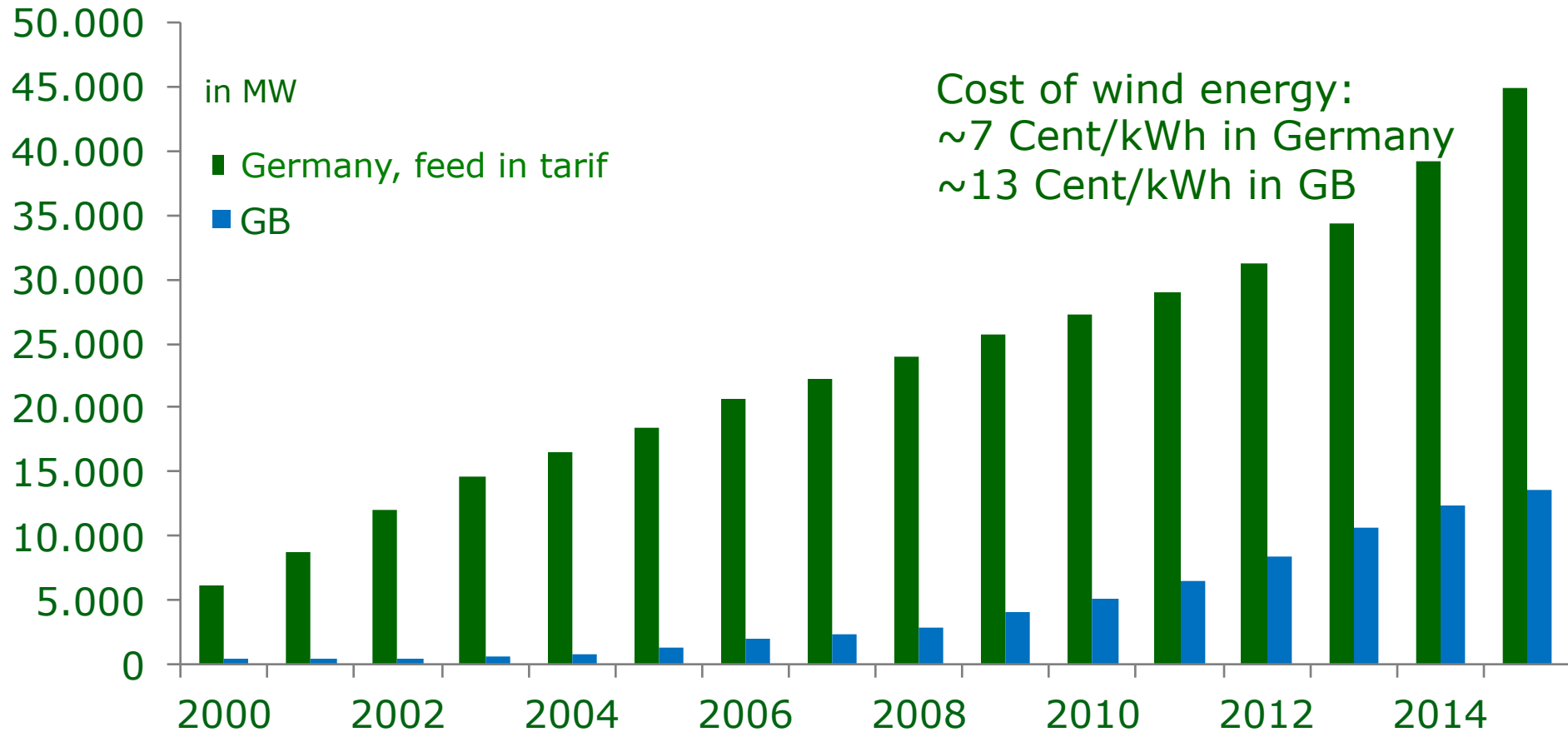
Promoting Renewable Energy and Chemistry & Organic Farming:

- **Climate protection into national constitution**
- **Laws for feed-in-tariffs** (GET FIT for developing countries)
- **Tax relief** for renewables
- **Carbon tax**
- **Canceling subsidies** for fossil and nuclear energy, fossil chemistry and intensive agriculture
- **Research and education** for renewables and organic farming
- **Reducing obstacles** for approval
- Dispose big areas for reforesting and regreening

## **Not successful:**

- Tendering or certificate systems
- Emission trading

# Installed Wind Capacity – EEG vs Tendering



# Key Points of an Effective Renewable Energy Act (Feed-in Law; EEG)

- Privileged grid access
- Feed-in tariff have to be sufficient for an economic operation, differentiated through technologies and size
- Funding of the feed-in tariff via electricity rate
- No cap for feed-in of renewable energies
- Guaranteed period of remuneration
  
- Also: no obstructions by a restrictive permission policy



# GET FiT

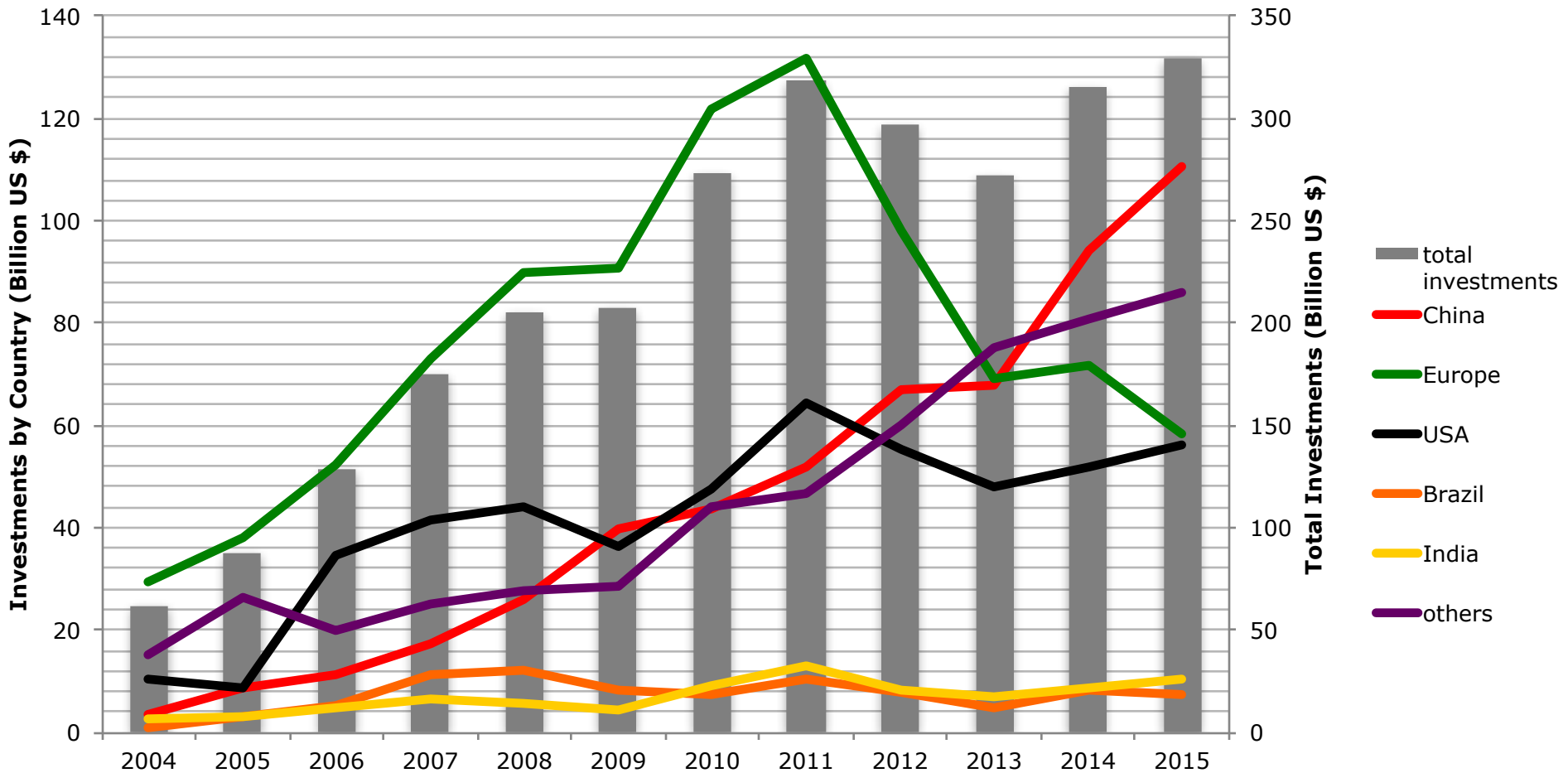
- GET FiT is the abbreviation of Global Energy Transfer Feed-in Tariffs for developing countries
- It is a concept for facilitating private sector investments in renewable energies in developing countries
- Grants are used to supplement the existing FiT mechanism for the first five years
  
- First project in Uganda (launch in 2013):
  - 90 mio. US\$ over a five year period
  - 125 MW of renewable energies
  - Financed by Deutsche Bank, KfW, Great Britain

# Carbon Bubble

## Fossil/nuclear investments turn into stranded investment

- Coal/gaspower, nuclear is already stranded investment:
  - **E.ON; RWE** now will swap out coal and nuclear business and concentrate on Renewables and distribution
  - **AREVA** french nuclear company: 35 bn. € debts
  - **Peabody**: biggest coal company: bankruptcy in April 2016
- China partly begins to ban use of coal (Beijing 2020)
- GB ends the use of coal by 2025
- New nuclear plants in EU, USA: financial flops
- New drilling for deep sea oil in Brasil and shale gas in USA are not economically viable
- Bank of England, HSBC warn about fossil investment
- Big funds leave fossil shares (3.4 Bill. US Dollar)

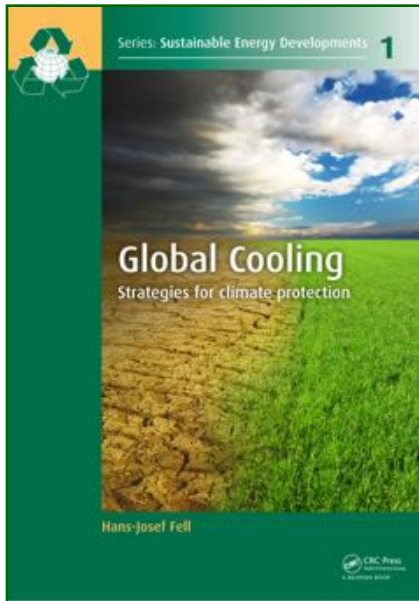
# Investment in Renewables since 2004



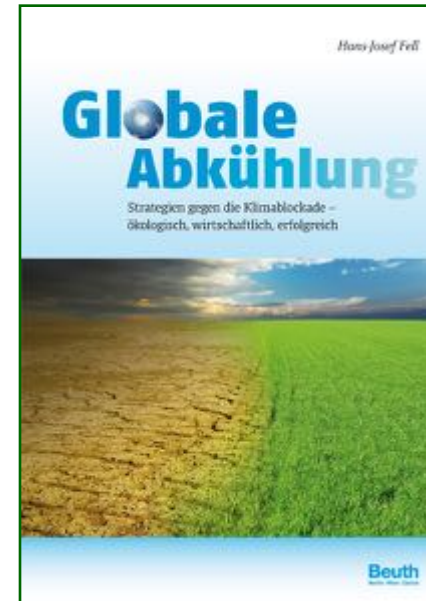
source: Bloomberg, Clean Energy Investment in Numbers, 2016  
Own presentation

# Global Cooling/Globale Abkühlung

Strategies for Climate Protection/Strategien gegen die Klimaschutzblockade



[www.globalcooling-climateprotection.net](http://www.globalcooling-climateprotection.net)



<http://www.beuth.de/de/artikel/globale-abkuehlung>

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

[www.hans-josef-fell.de](http://www.hans-josef-fell.de)