100% Renewables is the Peace Strategy for Korean Peninsula

Seoul, 30th October 2018

Hans-Josef Fell
President Energy Watch Group
Member German Parliament 1998-2013
Current political challenges

- Global warming, loss of biodiversity
- Peak oil, energy security
- Nuclear and environmental disasters
- Oil wars, poverty, refugees, economic crises

All these challenges are associated with fossil and nuclear energies

**Good news: Renewables will solve these problems!**
Where oil is, is often war

Nuclear power is the source for nuclear disasters and nuclear weapons

Sources:
1) 2) BFlickr/Oldmaison, Tepco, 7.11.2012, Pripjat 2006
Radioactive water in the pacific ocean

Fukushima nuclear radiation spread throughout Pacific Ocean

COP21 target: Stop climate warming at 1,5° C

But today’s warming of +1,3° C is already unacceptable: aridity and wild fires, floods and storms, sea level rising

The better choice is: Global Cooling
Natural gas more climate-damaging than coal
Climate impact of different power sources, as in „A Bridge to Nowhere“, Howarth 2014

Source: Howarth, R. W., A bridge to nowhere: methane emissions and the greenhouse gas footprint of natural gas, Cornell University, 2014
Crises of climate warming and peak oil can only be solved with 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 CO₂**

   **This leads to global cooling, instead of global warming**
Hydrothermal carbonization (HTC)

**Input:** plants, organic agriculture and municipal waste

**Output:** biochar

**Usage of biocoal**

Fuel (e.g. in coal power)

Chemical base (oil substitute)

Fertiliser (carbon binding)

Source: Ava GmbH
Agroforestry systems in Spain, UK, France and Italy

- oak-wheat (E)
- poplar-barley (GB)
- poplar-wheat (F)
- walnut-lucerne (I)
Afforestation at Mount Kundudu, Ethiopia by “Menschen für Menschen” Foundation

2013

10 million trees create habitat for 55,000 people at Kundudo Plateau, East Ethiopia

2016

Double yield from one field: crops and solar electricity
Nov 2016, COP22, Marrakesh: 48 countries (Climate Vulnerable Forum) decided for 100% RE target

More Countries e.g.: Denmark; Sweden; Costa Rica; Iceland; Cape Verde

Cities with 100% RE target e.g.: Barcelona; Masdar City; Munich; Msheireb; Downtown Doha; Vancouver; San Francisco; Copenhagen; Sydney; Lemberg

Companies with 100% RE target e.g.: Google, Coca-Cola, Ikea, Walmart

Source: 100% Renewables, 2018: Available from: http://www.go100re.net/
100% Renewable Energy for Korea
Basis for peace, prosperity, green growth

EWG/LUT/GGGI offer a scientific simulation for 100% RE in Korea

Sponsors are welcome!

Renewables are energy for peace!

Hans-Josef Fell
Member of German Parliament (1998-2013)
President of Energy Watch Group
PV and wind power = cheapest energy in G20 States by 2030

Renewable energy jobs reach 10.3 million worldwide in 2017, with most jobs in Asia

**Key numbers:**

- **10.3** million jobs in 2017
- **5.3%** growth (vs. 2016)
- **43%** of all RE jobs in China

Global Energy System Based on 100% Renewable Energy - Power Sector

Study funded by the German Federal Environmental Foundation (DBU) and Stiftung Mercator GmbH

Source: http://energywatchgroup.org/studies/

Hans-Josef Fell
Member of German Parliament (1998-2013)
President of Energy Watch Group
Electricity Generation 2015 and 2050

In 2050:
- **Solar PV 69%, wind 18%, hydropower 8%, bioenergy 2%** of total electricity mix globally
- Gas generation is only from renewable energy-based gas
- Nuclear power still accounts for negligible 0.3% of the total electricity generation, due to the end of its assumed technical life, but could be phased out earlier

Renewable electricity is cost-efficient

- Total levelized cost of electricity (LCOE) on a global average for 100% renewable electricity is **€52/MWh in 2050** (incl. curtailment, storage and some grid costs), compared to **€70/MWh in 2015**.

100% Renewable Electricity Simulation Northeast Asia by Lappeenranta University, Finland

Global 100% RE System: Northeast Asia

North Korea
https://www.researchgate.net/publication/320755773_Global_100_RE_System_Northeast_Asia_-_Korea_North

South Korea
https://www.researchgate.net/publication/320755587_Global_100_RE_System_Northeast_Asia_-_Korea_South

Hans-Josef Fell
Member of German Parliament (1998-2013)
President of Energy Watch Group
Republic of Korea - Power Plant Infrastructure

Key insights:
- Historically, a significant share of fossil power plants in the generation mix is observed.
- Recent growth in RE installed capacity is observed.
- However, fossil power plants capacity increased more than RE capacity from 2010 to 2014.

source: Farfan J. and Breyer Ch., 2017. Structural changes of global power generation capacity towards sustainability and the risk of stranded investments supported by a sustainability indicator; J of Cleaner Production, 141, 370-384
DPR of Korea - Power Plant Infrastructure

Key insights:
Historically, a significant share of coal power plants in the generation mix is observed
Solar PV is growing, but slowly

source:
Farfan J. and Breyer Ch., 2017. Structural changes of global power generation capacity towards sustainability and the risk of stranded investments supported by a sustainability indicator; J of Cleaner Production, 141, 370-384
LCOE for electricity with 100% Renewables in South and North Korea

North Korea

South Korea
CO2 emissions in the power sector will decrease to zero by 2050

North Korea

South Korea

Hans-Josef Fell
Member of German Parliament (1998-2013)
President of Energy Watch Group
Overall concepts for 100% renewables

- Renewable energy (wind, solar, hydro, waves, bioenergy, geothermal power) for: heating, cooling, mobility, electricity, industry
- Storage: hydro pump; batteries; power to gas; ice (heat) storage
- Big data; smart homes; smart cities
Policy recommendations

- Instruments, enabling direct private investments in renewable energy and other zero-emission technologies.
  - The German Renewable Energy Sources Act (EEG) with a fixed feed-in-tariff
  - Hybrid renewable power plant remuneration
  - Tenders only for capacities above 40MW
- Phasing-out all state subsidies to fossil fuel and nuclear energy generation
- Tax exemptions for investments in renewable energy
- Replacement of emission trading system with carbon & radioactivity taxes
- Research and education
Global fossil fuel divestment movement

As of September 2018, $6.24 trillion fossil fuel assets flagged for divestment

- 985 institutions
- >5,800 individuals
- Major actors: religious organizations, municipalities, universities, large pension funds & insurance companies

Growth in Divestment Commitments

Leonardo di Caprio 17.4.2017 in Shanghai at presentation of new BYD e-cars: Global Cooling by 1°C
International campaign for 100% renewables

Promotion of benevolence, harmony and peace, transcending all boundaries of nations – as advocated by Dr. Lui Che Woo – “energizing the people”

More prominent figures and celebrities are invited to join our international campaign for 100% renewables!

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

Ruslana
- Winner of Eurovision Song Contest 2004 for Ukraine
- Lady Maidan 2013, Kyiv
- Former Member of Ukrainian Parliament
Thank you very much for your attention!

www.hans-josef-fell.de

www.energywatchgroup.org