Document 2

DIW BERLIN

Video Presentation

3rd Round Table for Studying Energy Situations

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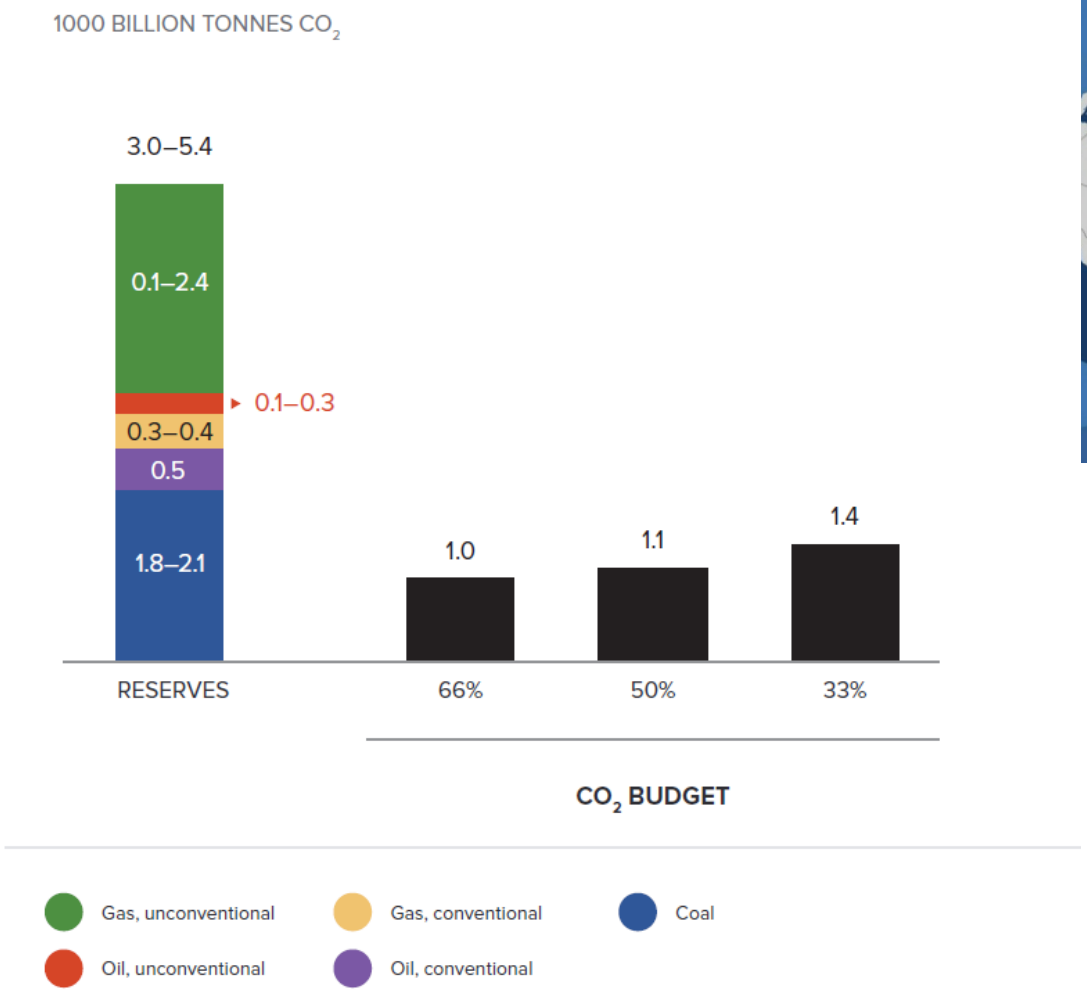
Long term Policy for International Global Warming Measures

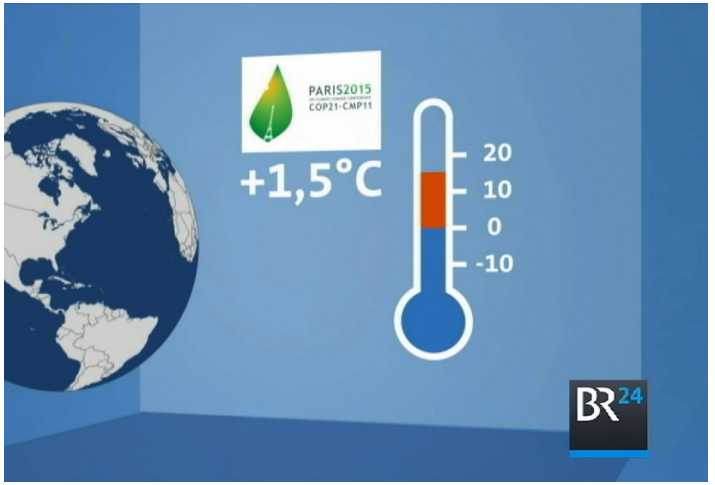
USA withdrawal impact on global emissions

Important initiatives for GHG reduction

Paris Goal: 10 years left not too overshoot CO_2 budget

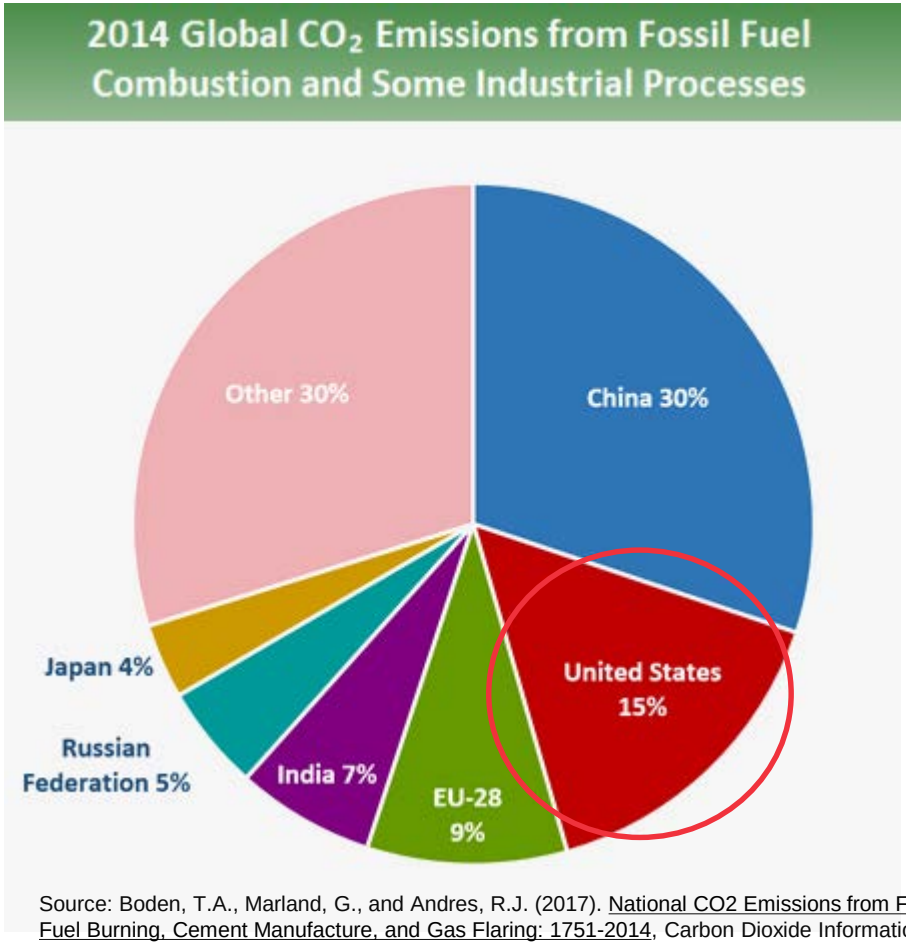
Implied CO_2 emissions of fossil fuel reserves vs. remaining CO_2 budgets for a 2°C pathway





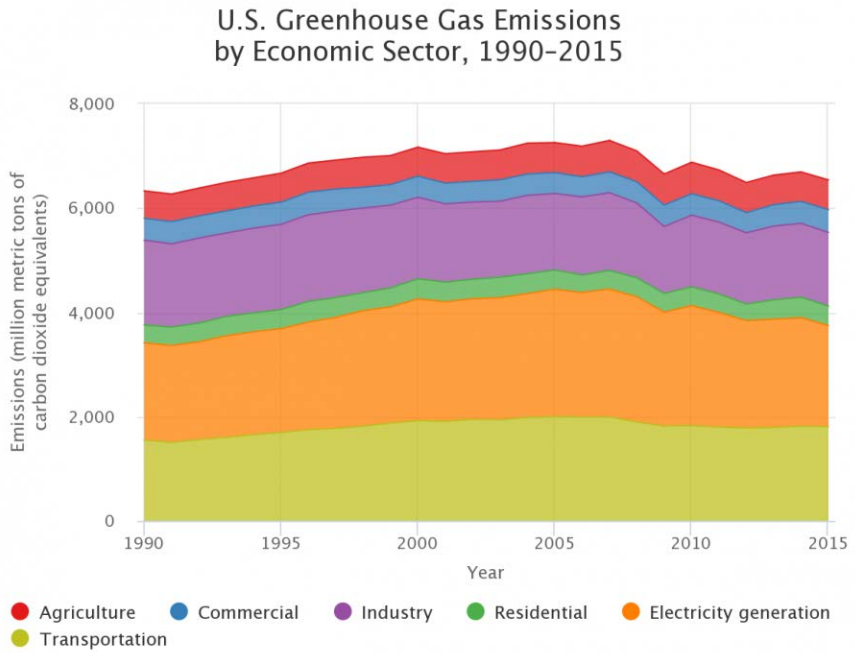
All nations need to reduce emissions:
Investment into energy efficiency and renewable energy
And electric mobility

USA Climate Deal Withdrawal



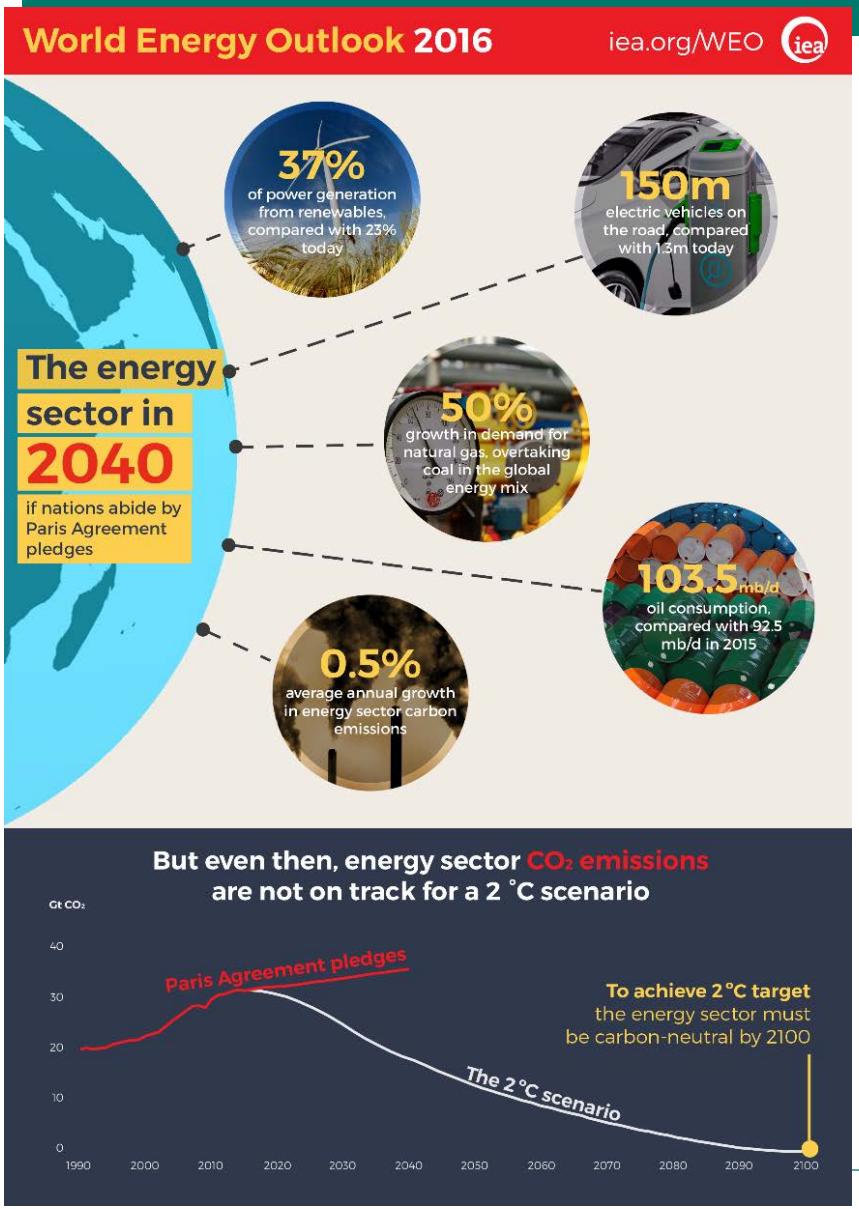
Source: Boden, T.A., Marland, G., and Andres, R.J. (2017). National CO2 Emissions from Foss Fuel Burning, Cement Manufacture, and Gas Flaring: 1751-2014, Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, doi 10.3334/CDIAC/00001_V2017.

- US emissions declined but still high
- No climate action might increase emissions in the next years



Source: U.S. EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2015. http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html

Renewable Energy and Gas dominant Energy Sources



Until 2040:

- +37 % Growth **renewable energy**
- 150 Mio **Electric Vehicles**

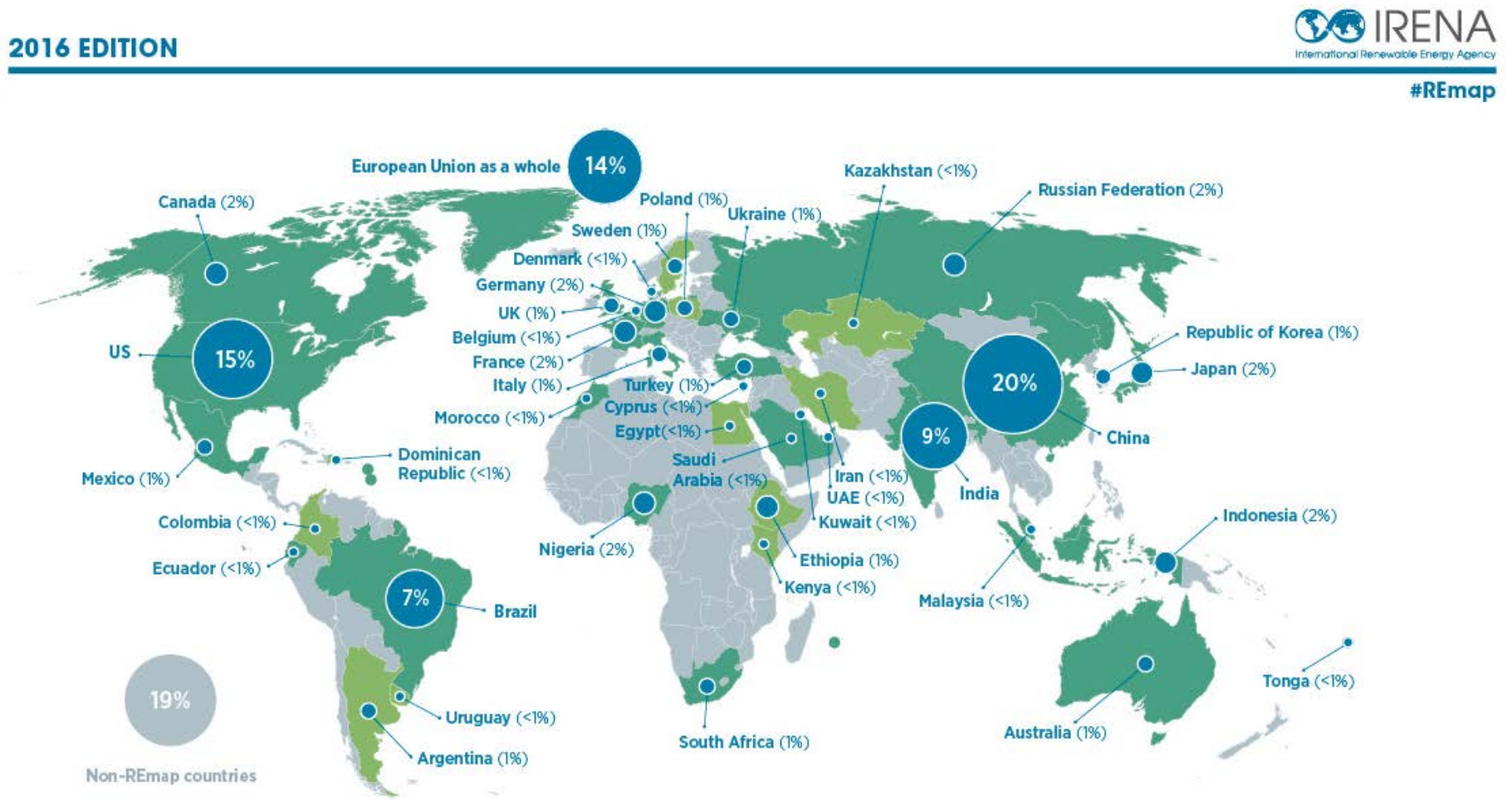
Source: International Energy Agency 2016

Renewable Energy

Phase 1: Feed in Tariffs, Financial Promotion

Phase 2: Market driven; Energy Security; Storage

Share of renewables in global energy use by country

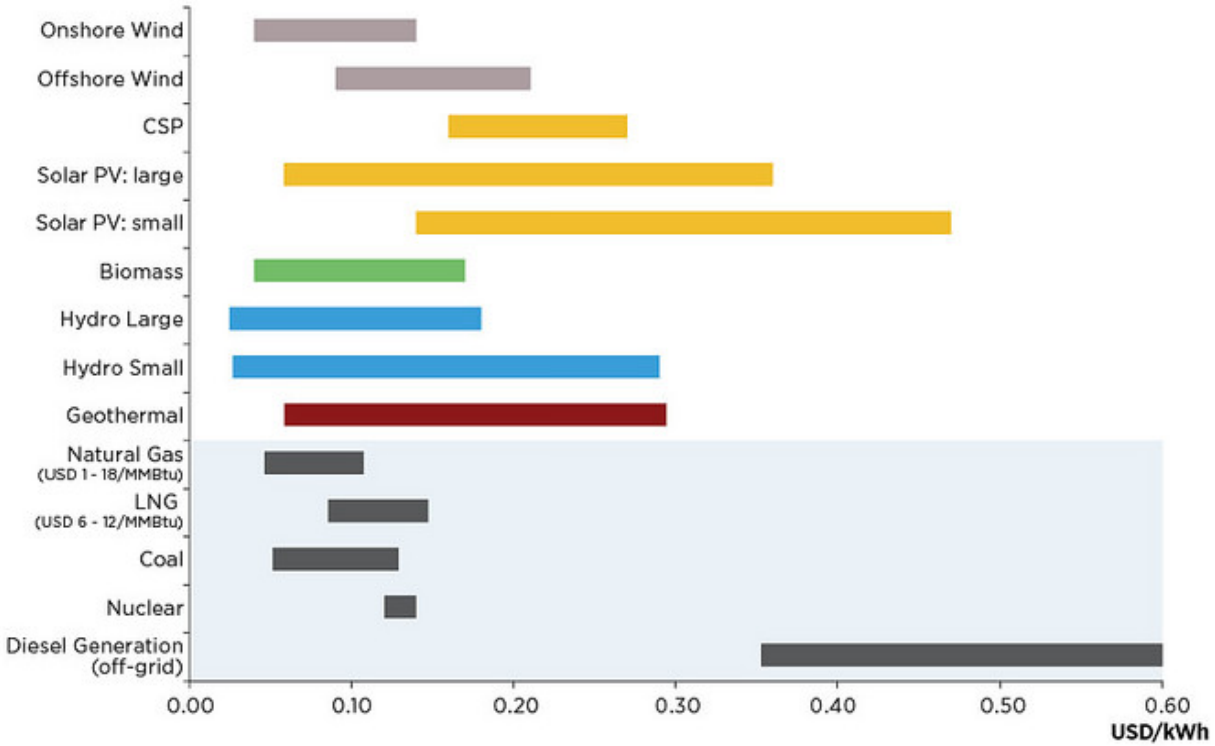


Note: Percentages indicate how much renewable energy each country consumes of the global total in 2030 if the REmap Options are deployed.

Costs for renewables are falling

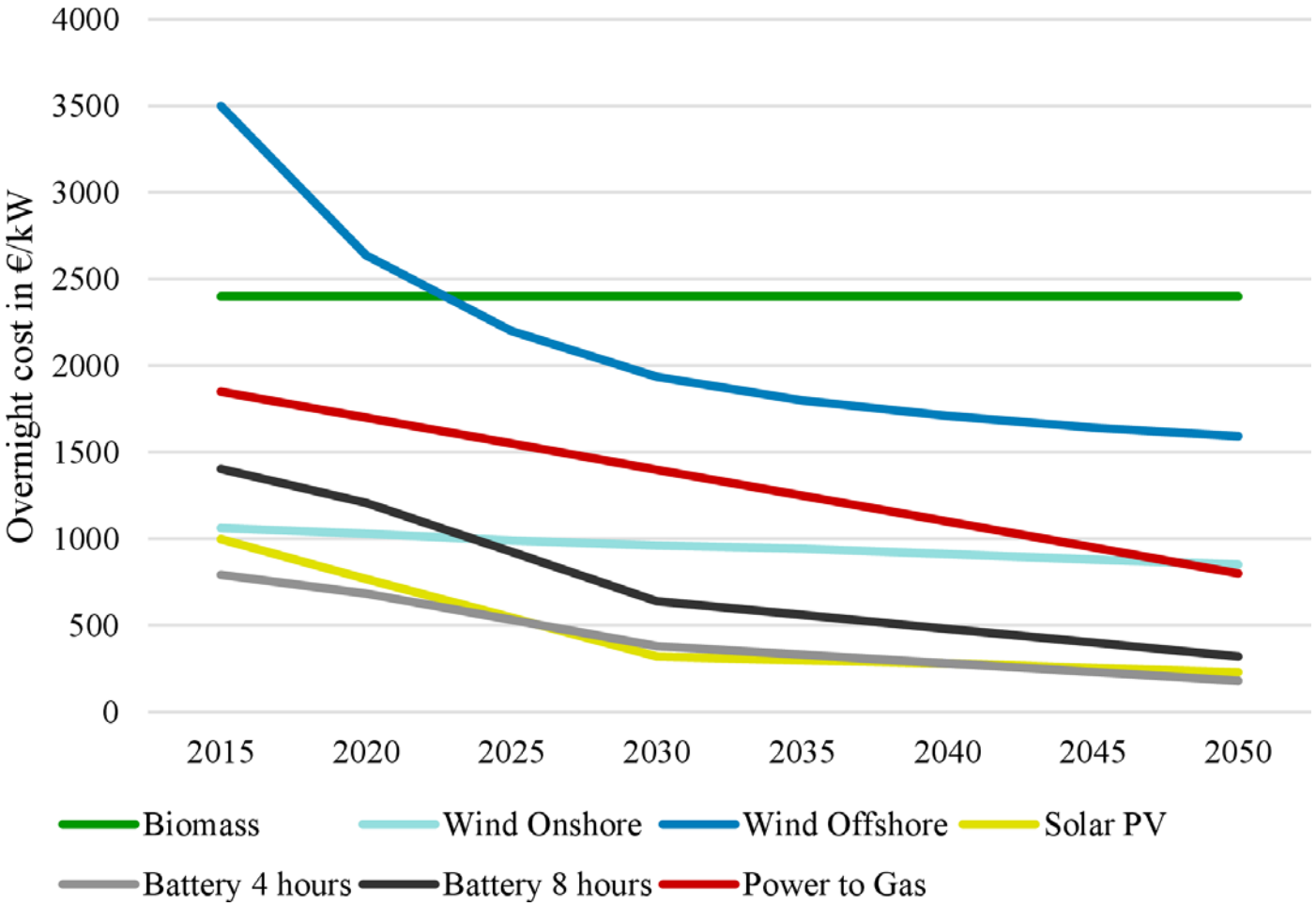
IRENA 2014-2015: AT A GLANCE

IRENA
International Renewable Energy Agency

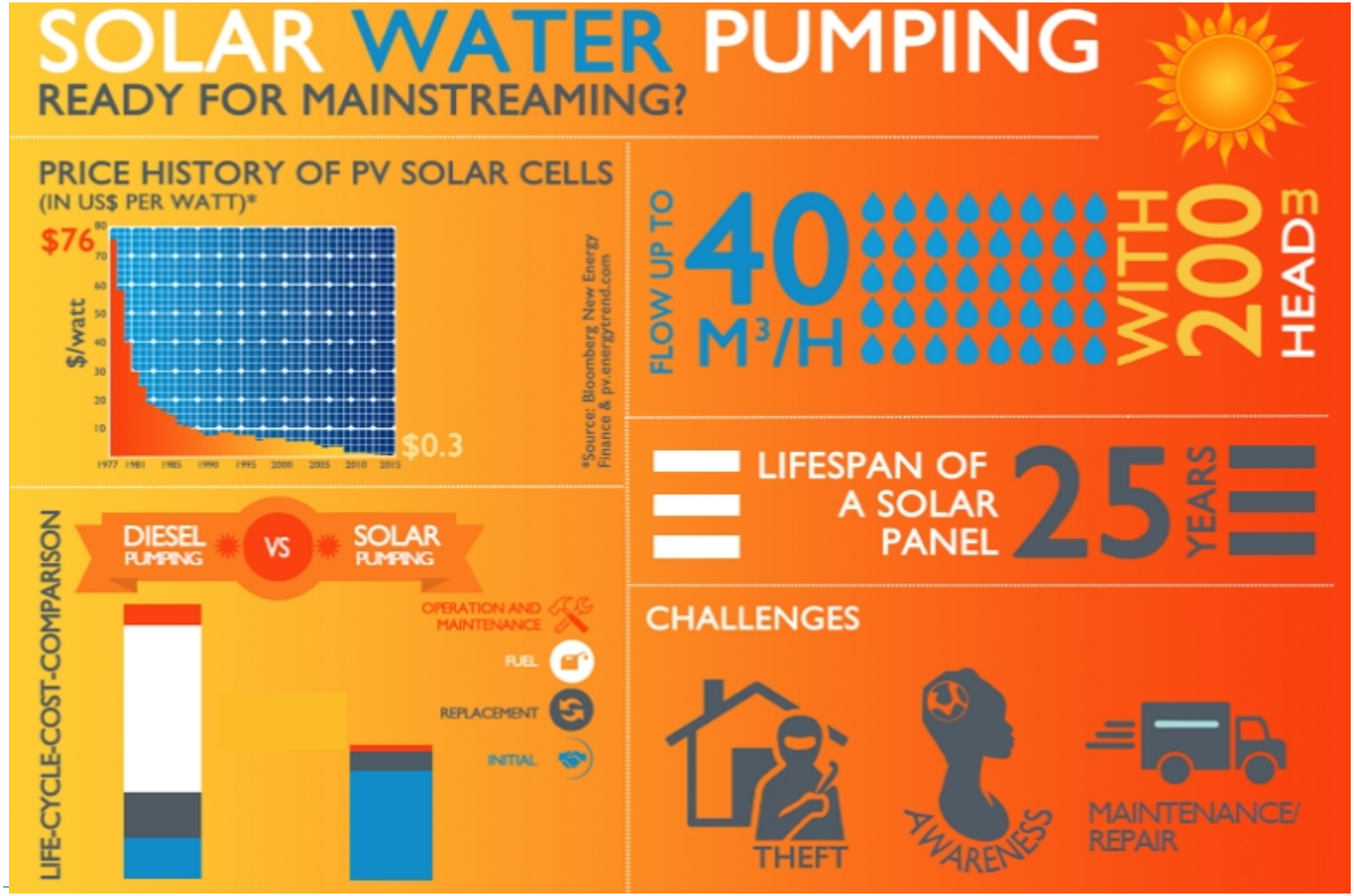


Falling Costs of Renewables

Investment cost pathway for selected technologies (Nuclear 6000€/kW)

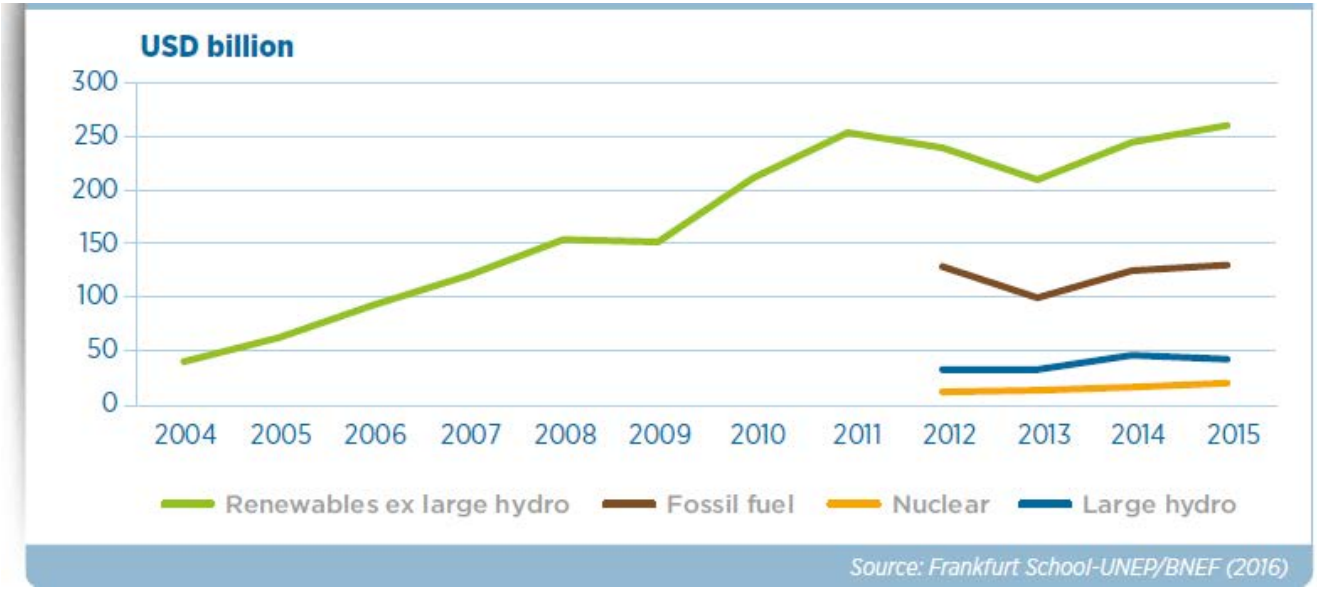


Source: Schröder et al (2014) and Gerbaulet and Lorenz (2017)



Source: IRENA

Global Energy Transition not stoppable



- **Globally more investment in renewables than in fossil fuels**
- **Fossil Fuel companies are going bankrupt**

- Initiatives to support renewables
- Priority access to grid
- Climate Goals: emission reduction goals
- CO_2 Prices /Emissions trading
- Promotion of storage, smart decentralized grids
- Sector coupling: energy efficiency of buildings and sustainable transportation

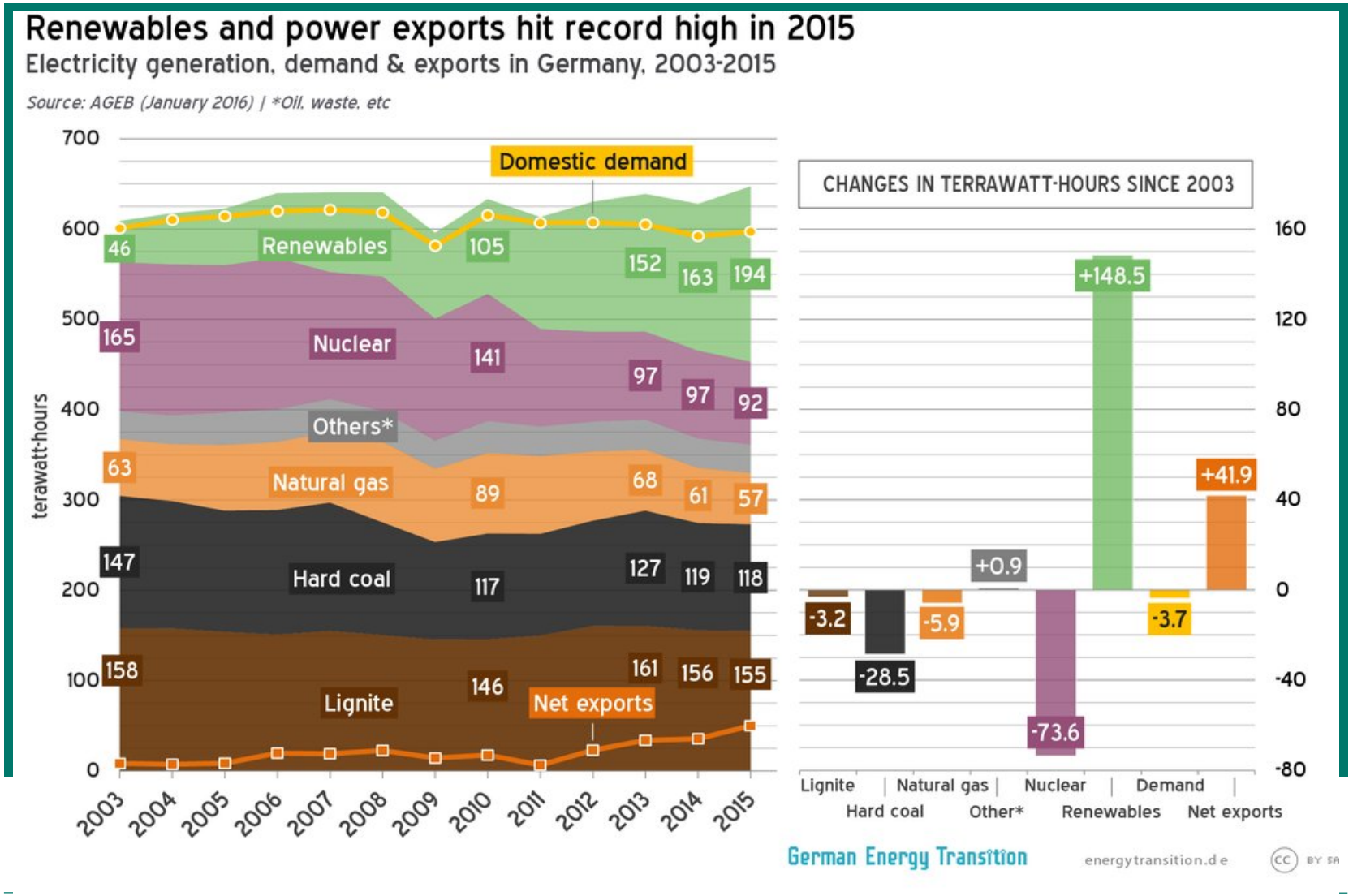
Advancement of electrification & possibilities of low carbon technology

Energy transition in Germany

No nuclear power by 2022

Increase of renewables by 80 % by 2050

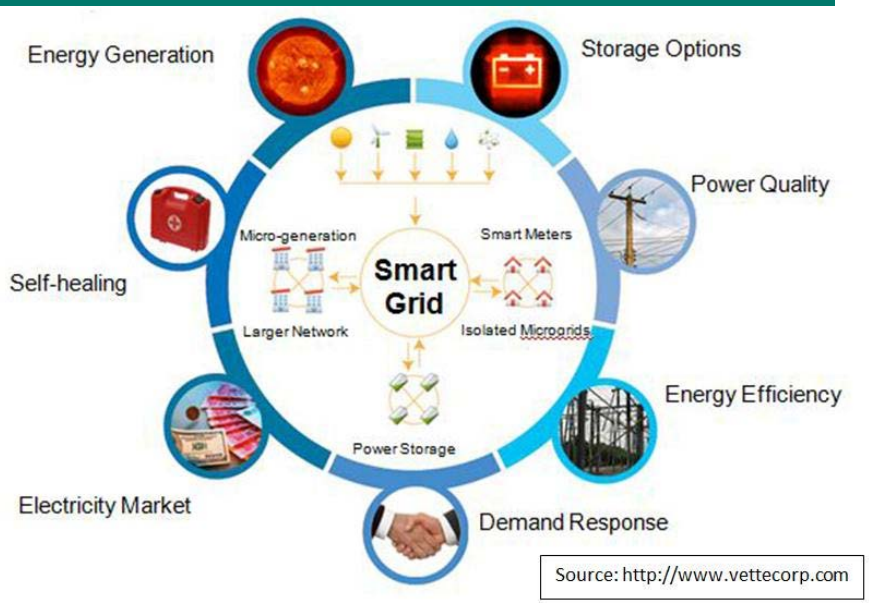
What happened before…



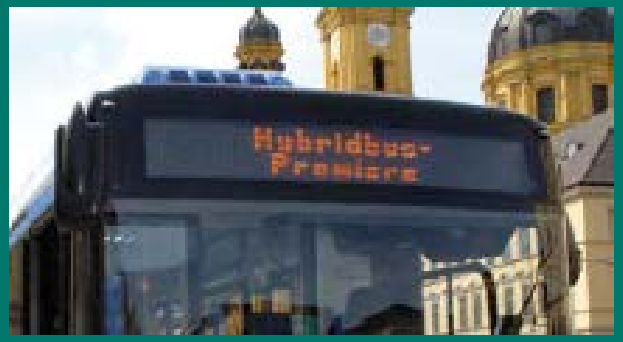
Energy Transitions changes all sectors

The Energiewende in Germany: different solutions needed

- Load management
- CHPs: Electricity and Heat
- Expanding renewable energy
- Smart Grids
- Storage
- Grid Extension to Scandinavia
- „Virtual Power Plant“

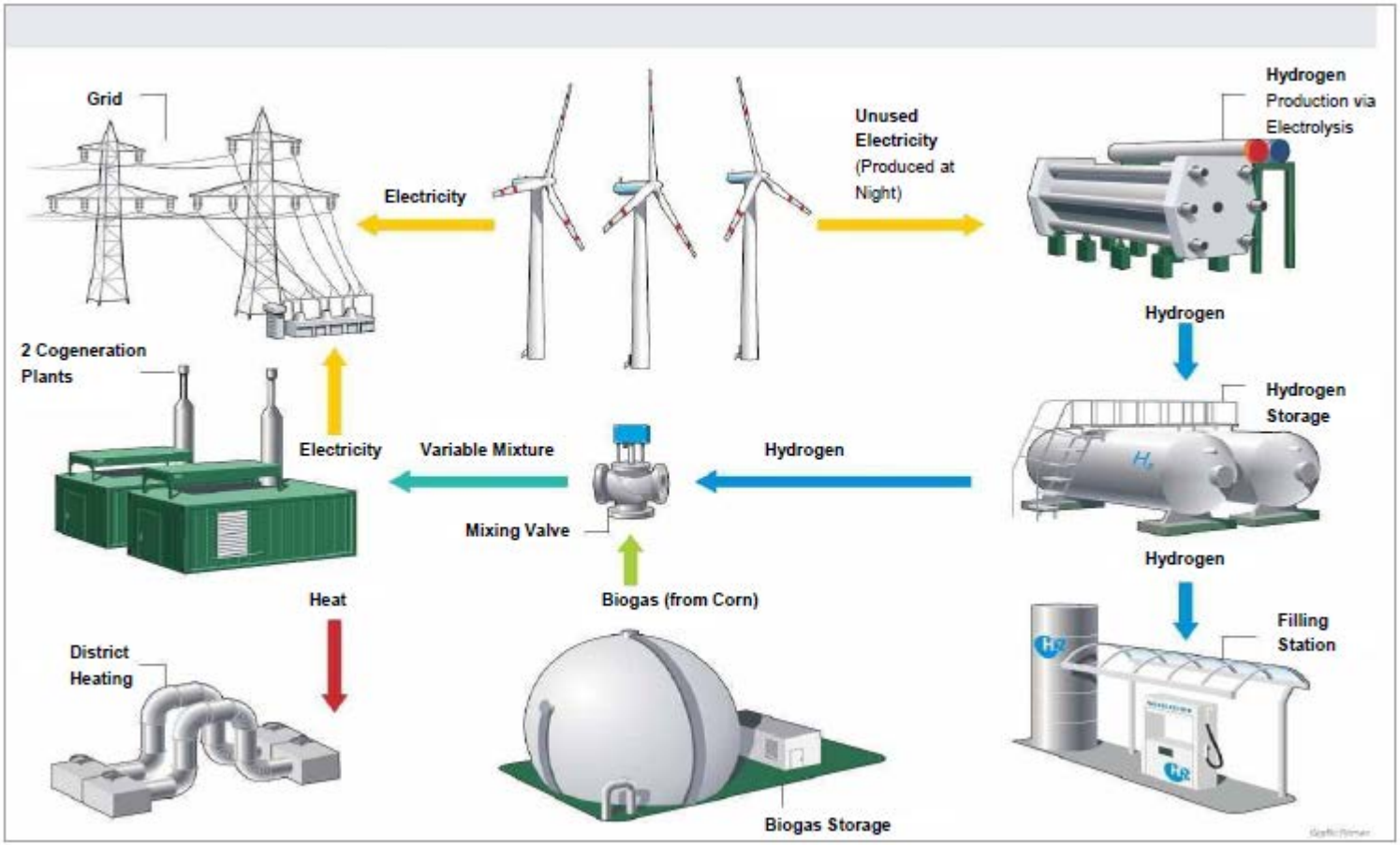


Quelle: Stadtwerke München




SUSTAINABLE TRANSPORTATION AND BUILDINGS

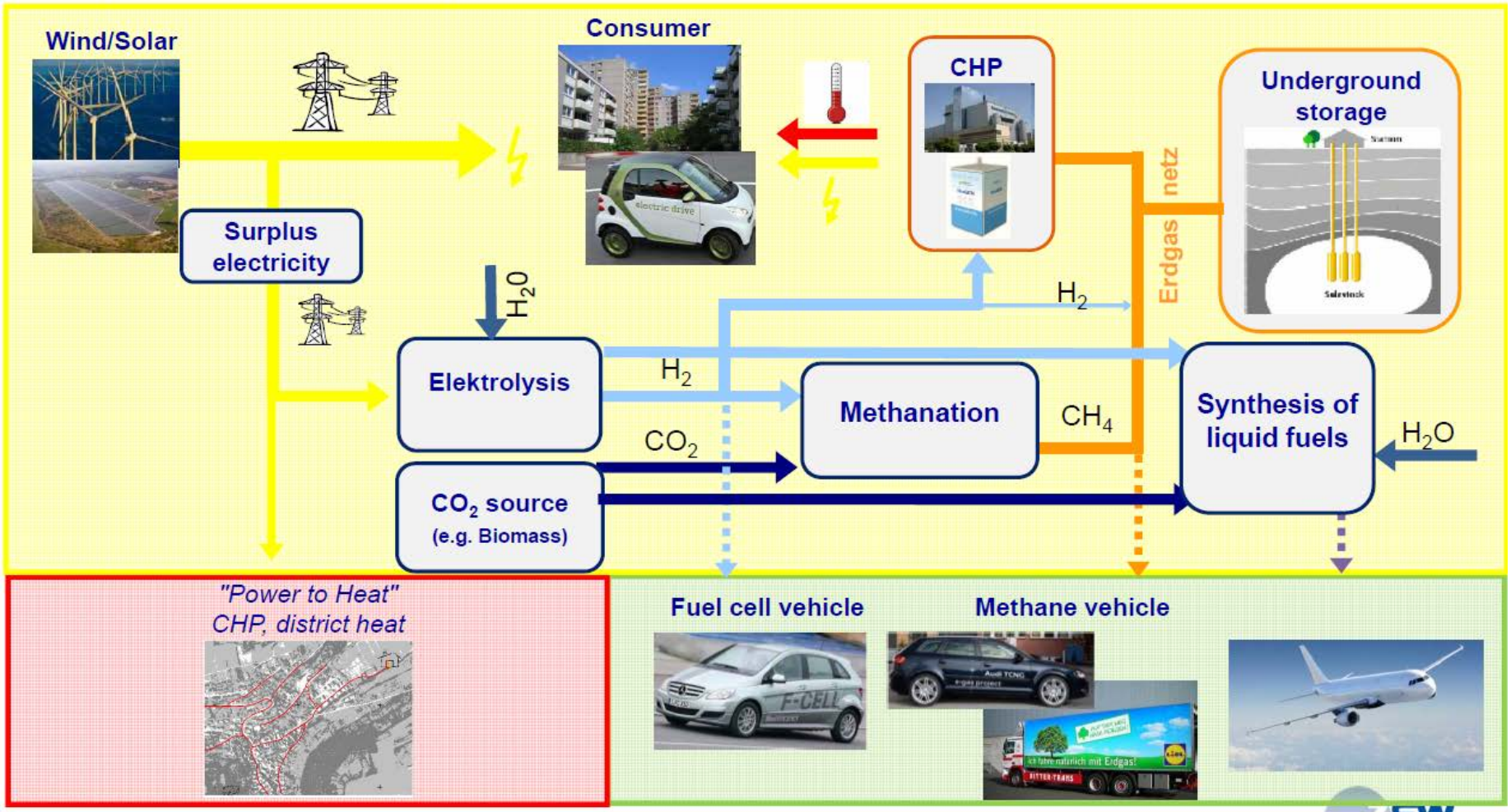
Energy Transition: Sector Coupling



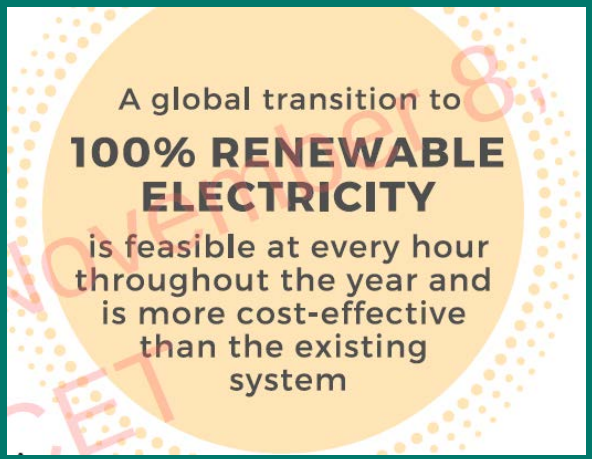
Source: http://www.bi-bigben.de/elements/hybridkraftwerk1.jpg

„We need a more integrated approach.“
Connecting the Energy Sectors

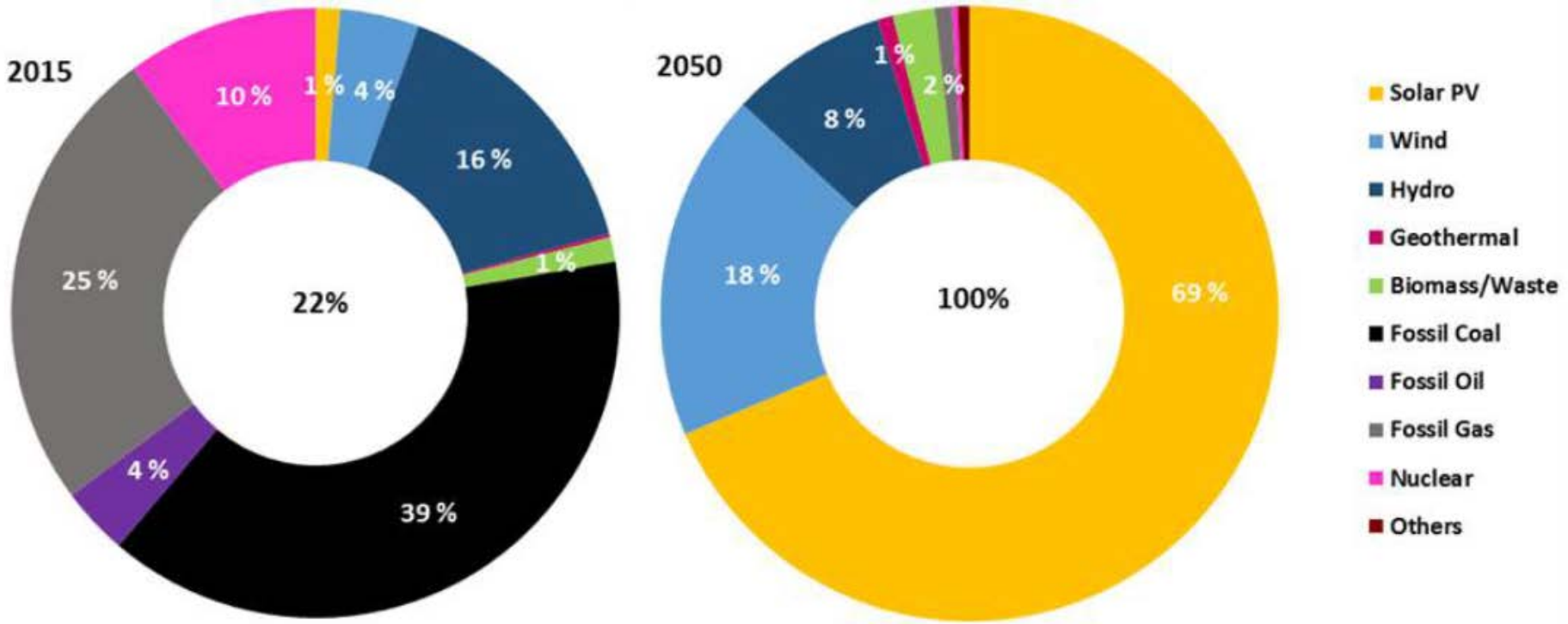
Example: Power to Heat, Power to Gas, Power to Liquids (Power to Chemicals)



100 % renewable energy system for all sectors feasible , economically and technically efficient



Energy Watch Group Study 100 % Renewable Energy



100% renewables bring GHG emissions in the electricity sector down to zero, drastically reduce total losses in power generation and create 36 million jobs by 2050

Thank you for your attention!

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