Experience on “Power to gas” in Germany and the future steps

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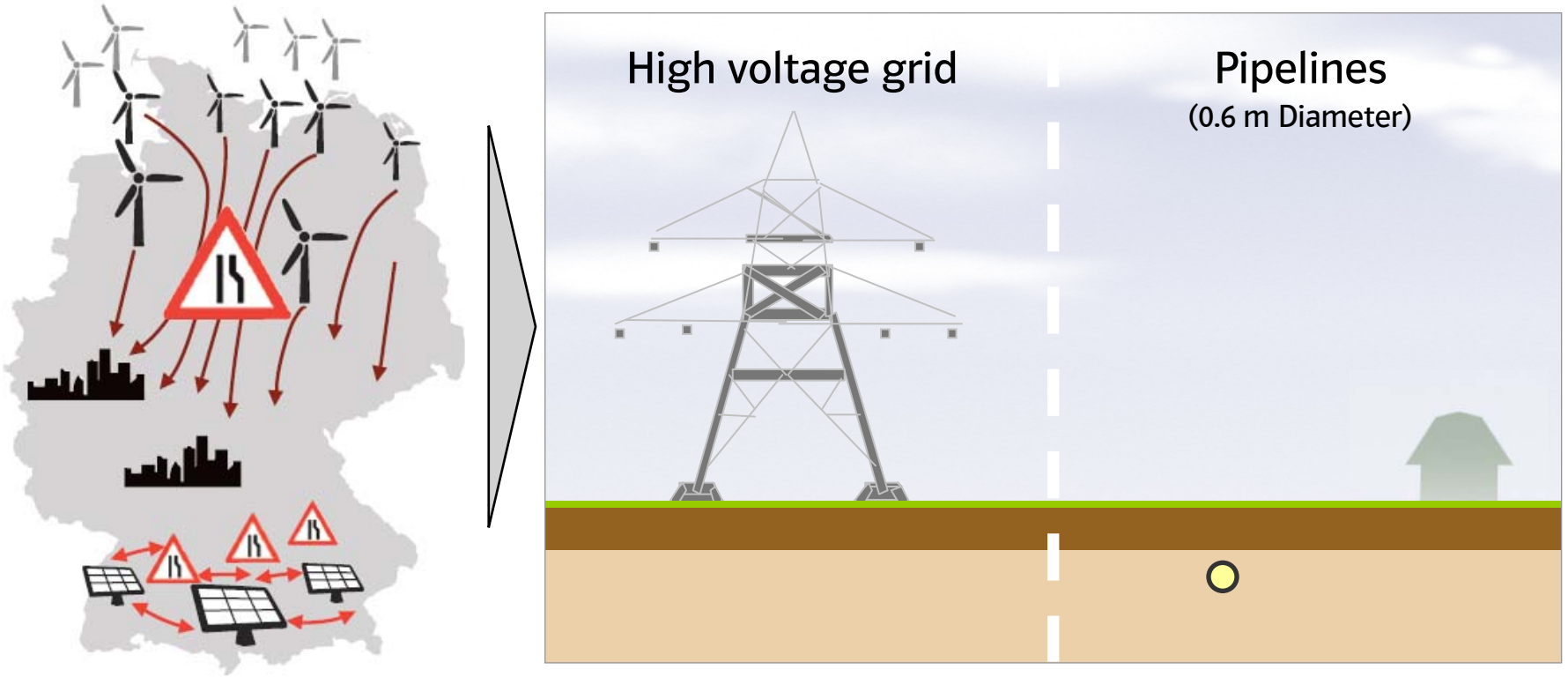
Policy Debate, Committee of the Regions, 26 June 2013, Brussels

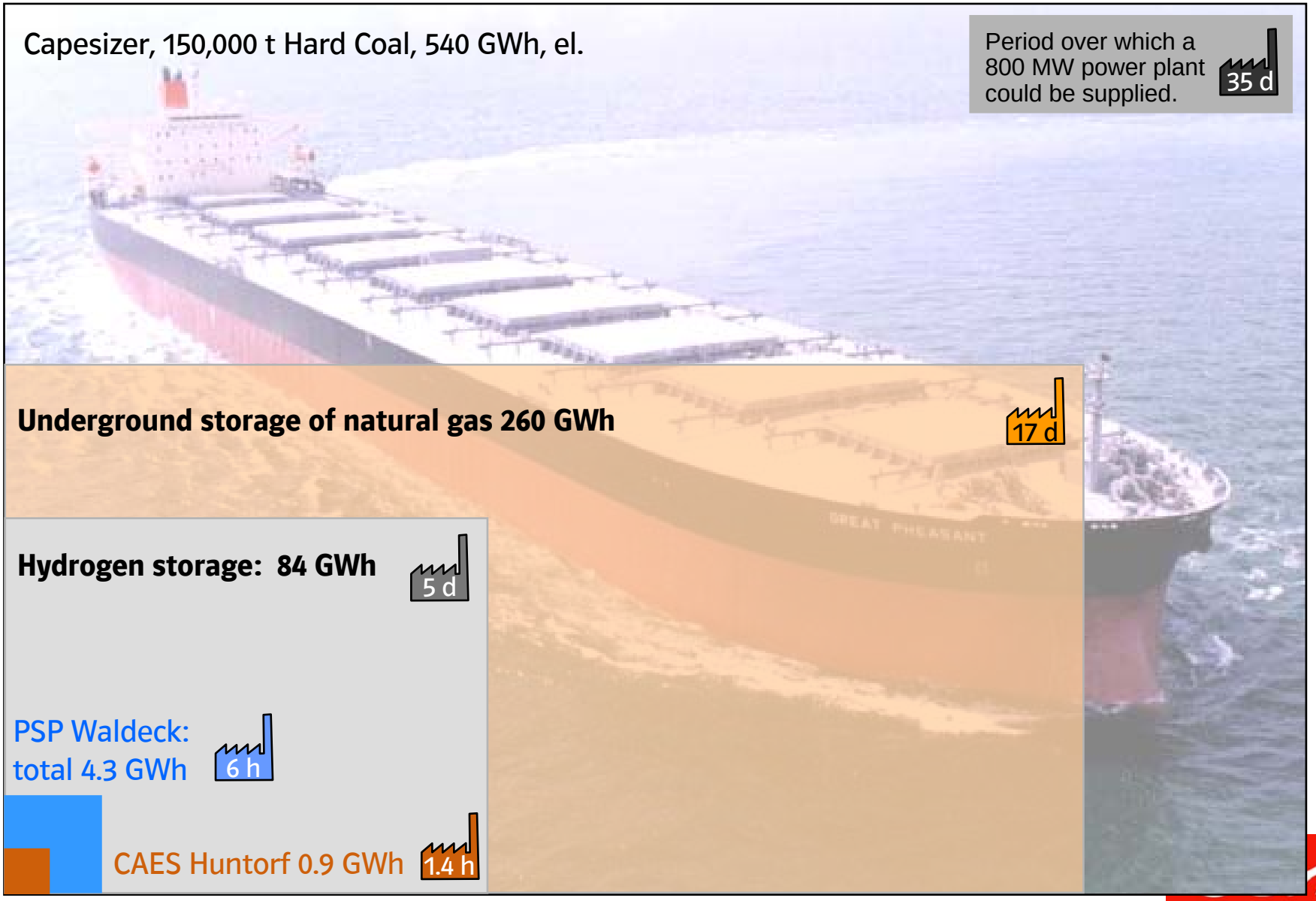
Why Power to Gas?

Transportation of 1 GW (1000 MW)

Equivalent to the power of one large scale power plant or 200 wind turbines



Storage capacities



How does it work?

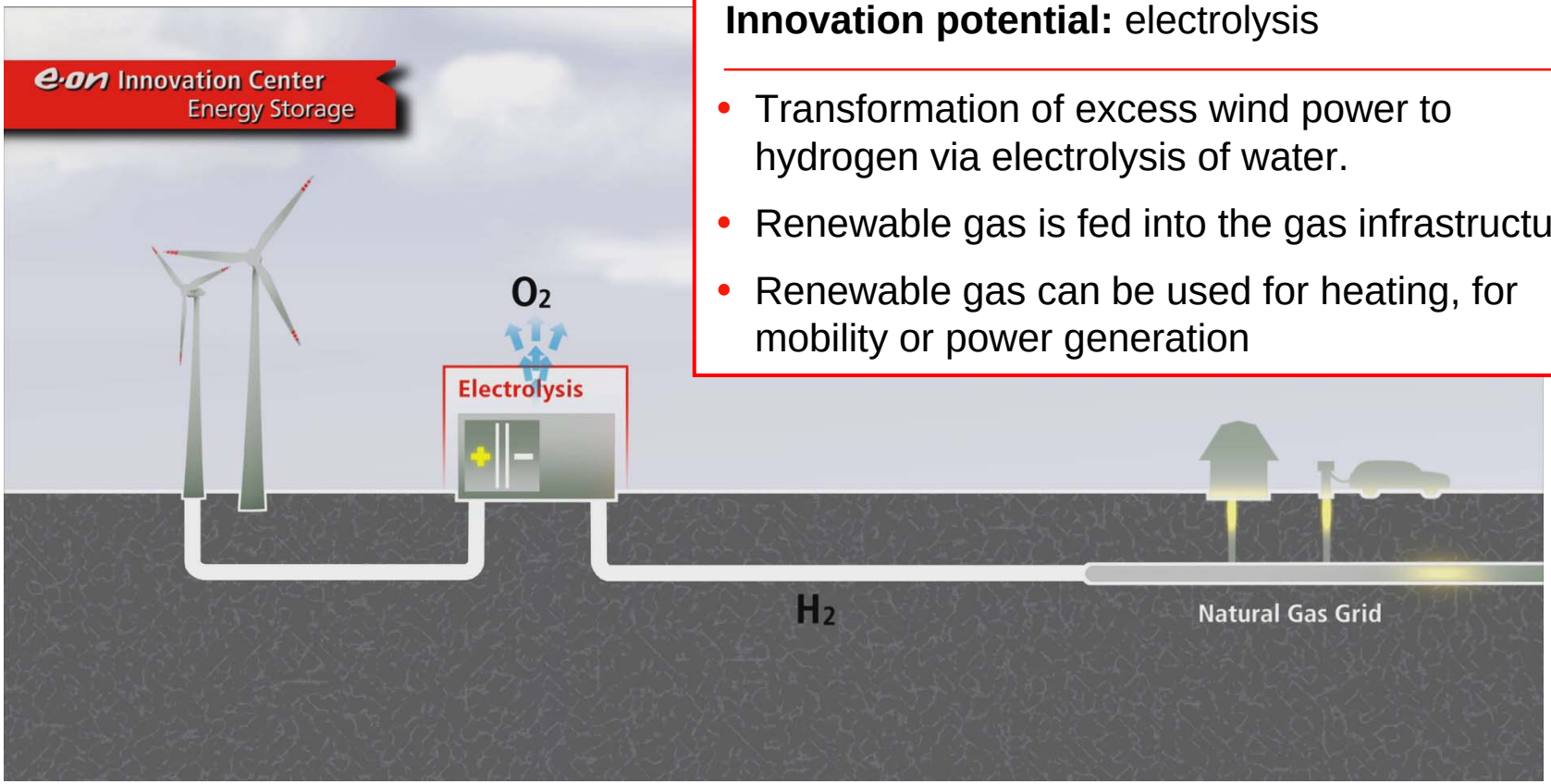
Power to Gas

Chemical Storage

Efficiency: 50-70% (Power to Gas)
Life-time: midterm
Potential: big, if technical restrictions are solved

Innovation potential: electrolysis

- Transformation of excess wind power to hydrogen via electrolysis of water.
- Renewable gas is fed into the gas infrastructure
- Renewable gas can be used for heating, for mobility or power generation



Current activities

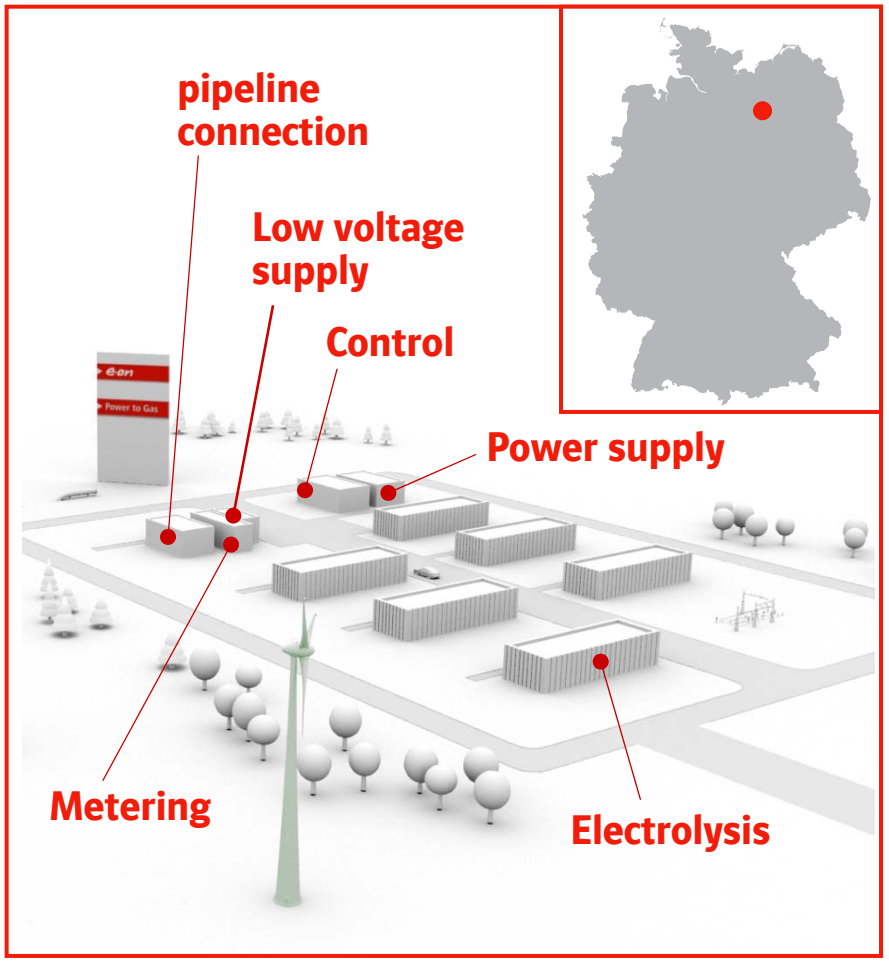
Example: E.ON PtG-Pilot "Falkenhagen"

Key Parameters

- Power: 2 MW_{el}
- Hydrogen production: 360 m^3/h
- Fed into the local gas grid (ONTRAS)
- Planned start of operation Q3/2013
- Owner is E.ON Gas Storage

Goals

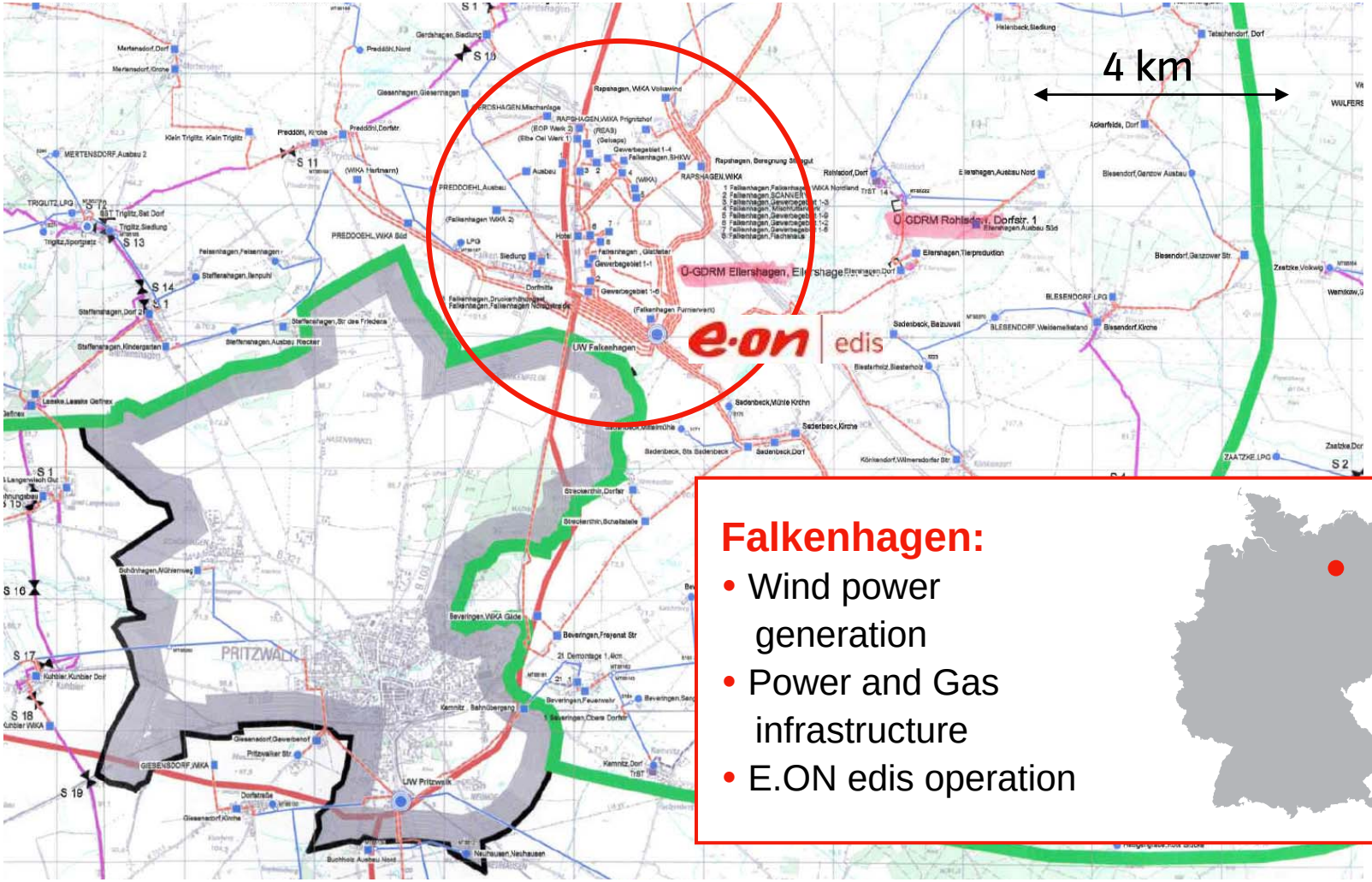
- Demonstration of the process chain
- Optimize operational concept (fluctuating power from wind vs. changing gas feed)
- Gain experience in technology, costs, consenting



Example of an electrolysis container

Photo & Technology: Hydrogenics

Site Falkenhagen



Falkenhagen:

- Wind power generation
- Power and Gas infrastructure
- E.ON edis operation

Building the plant

Groundbreaking ceremony, 16th October 2012

Building the plant

Next Steps

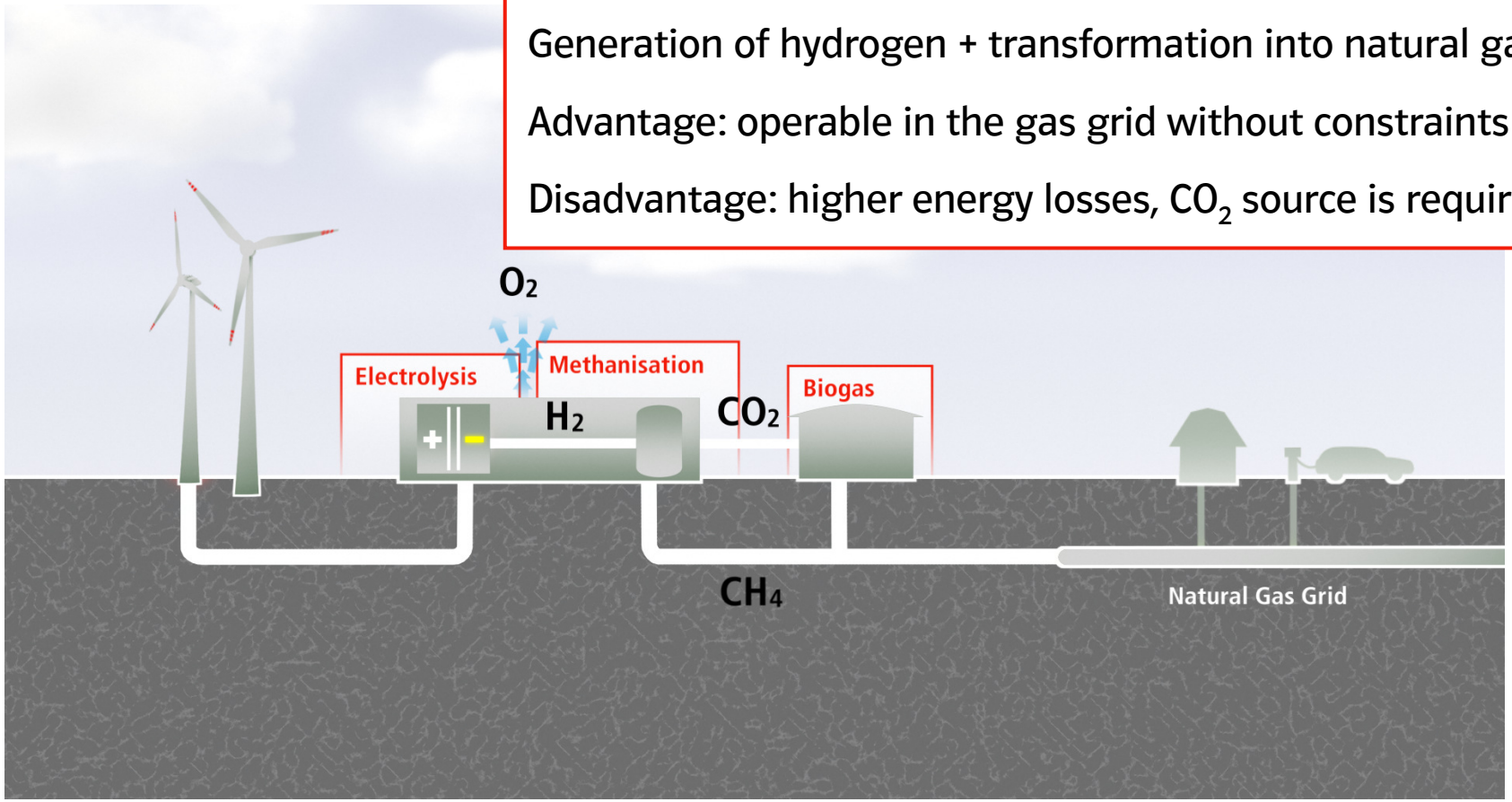
Power to Gas including methanisation

Chemical Storage

Generation of hydrogen + transformation into natural gas

Advantage: operable in the gas grid without constraints

Disadvantage: higher energy losses, CO_2 source is required

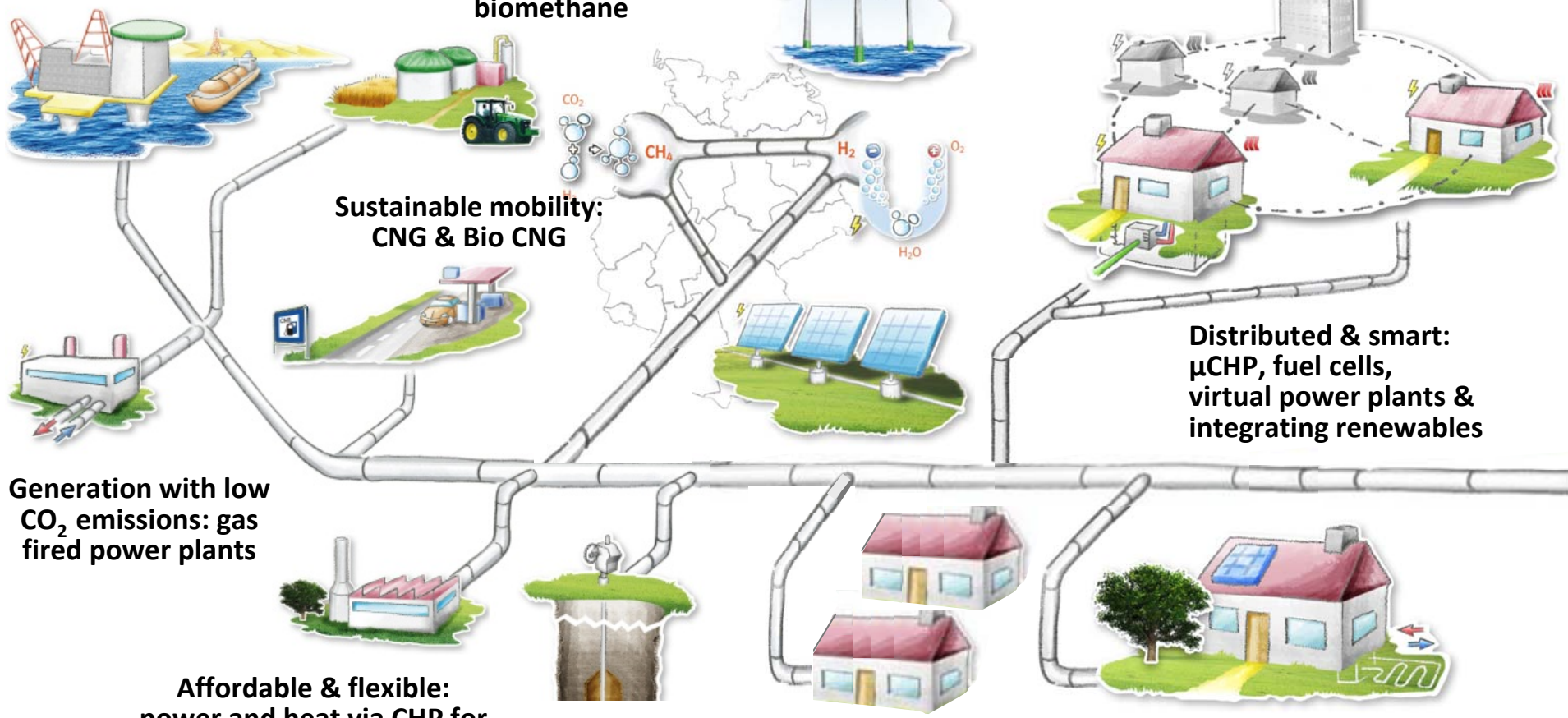


Outlook

Long-range resources: ensuring security of supply (for more than 250 years)

Future option: natural gas to store excess wind power

100% compatible renewable: biomethane



Sustainable mobility: CNG & Bio CNG

Distributed & smart: µCHP, fuel cells, virtual power plants & integrating renewables

Generation with low CO_2 emissions: gas fired power plants

Affordable & flexible: power and heat via CHP for commerce and industry

Matching supply and demand: huge energy storages

Domestic appliances: comfortable heating & cooking

Summary

The PtG-Falkenhagen project will demonstrate the technology to the public and identify hurdles for the implementation of power to gas.

Key learnings will be in the area of technology, consenting and market design.

PtG is only one solution in the merit order of flexibility to integrate fluctuating renewable power. But, unlike other storage technology PtG provides renewable gas …

Innovation Energy storage

E.ON Innovation Center Energy Storage