Hydrogen Europe

How P2G plays a key role in energy storage

Workshop on experiences and conditions for successful implementation of storage
Smart Grids Task Force (SGTF) Brussels, 1 July 2016

Jorgo Chatzimarkakis, Secretary General

Our membership:
94 companies from 16 countries

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A clear momentum for Hydrogen

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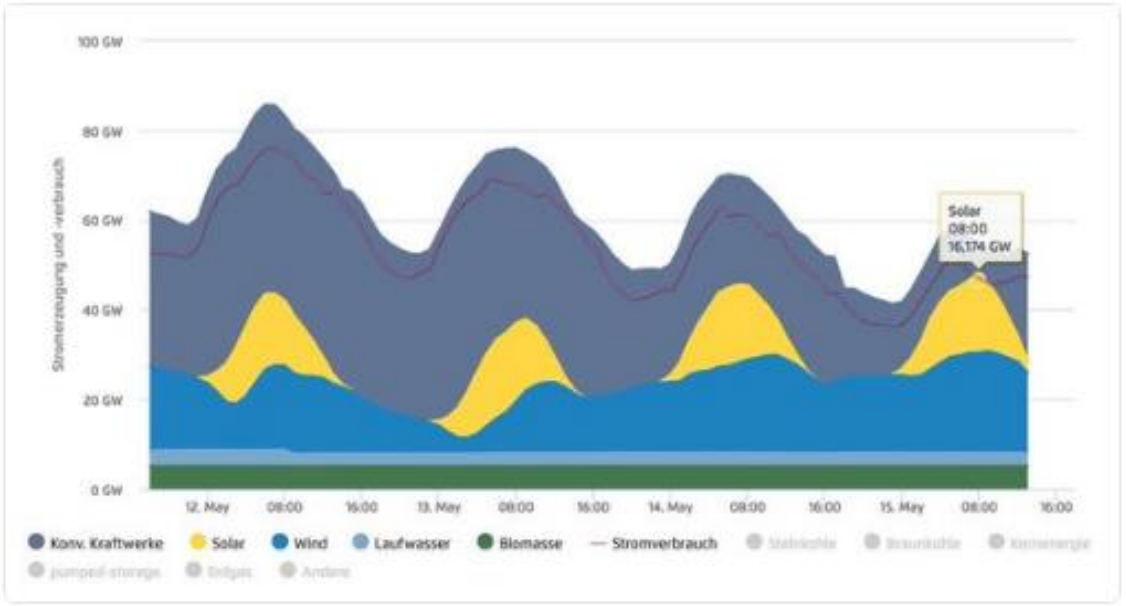
UN Climate Action @UNFCCC · May 15

Today is a historic day. Germany's electricity demand for 1st time met 100% by **#renewables**, according to @AgoraEW



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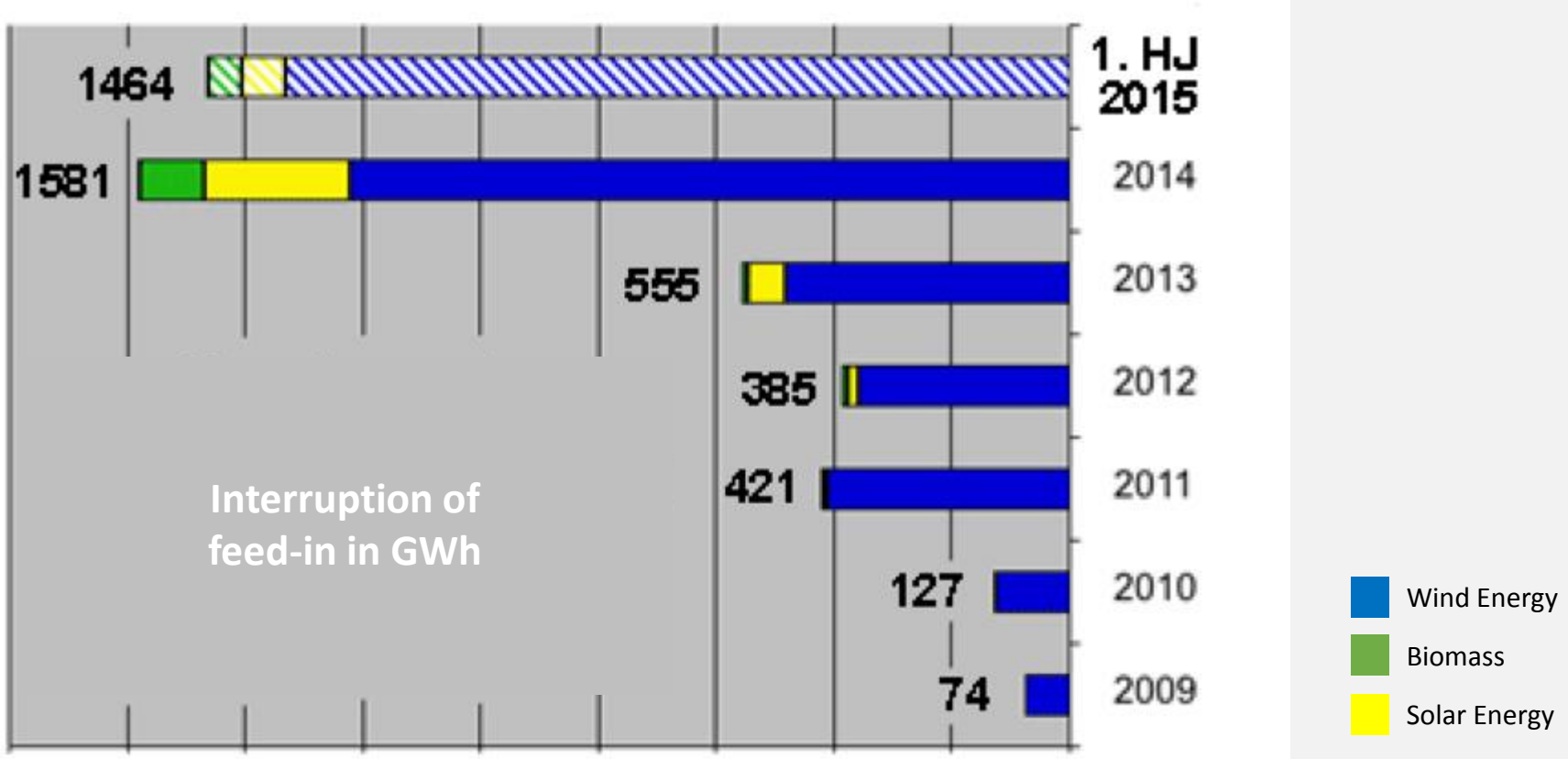
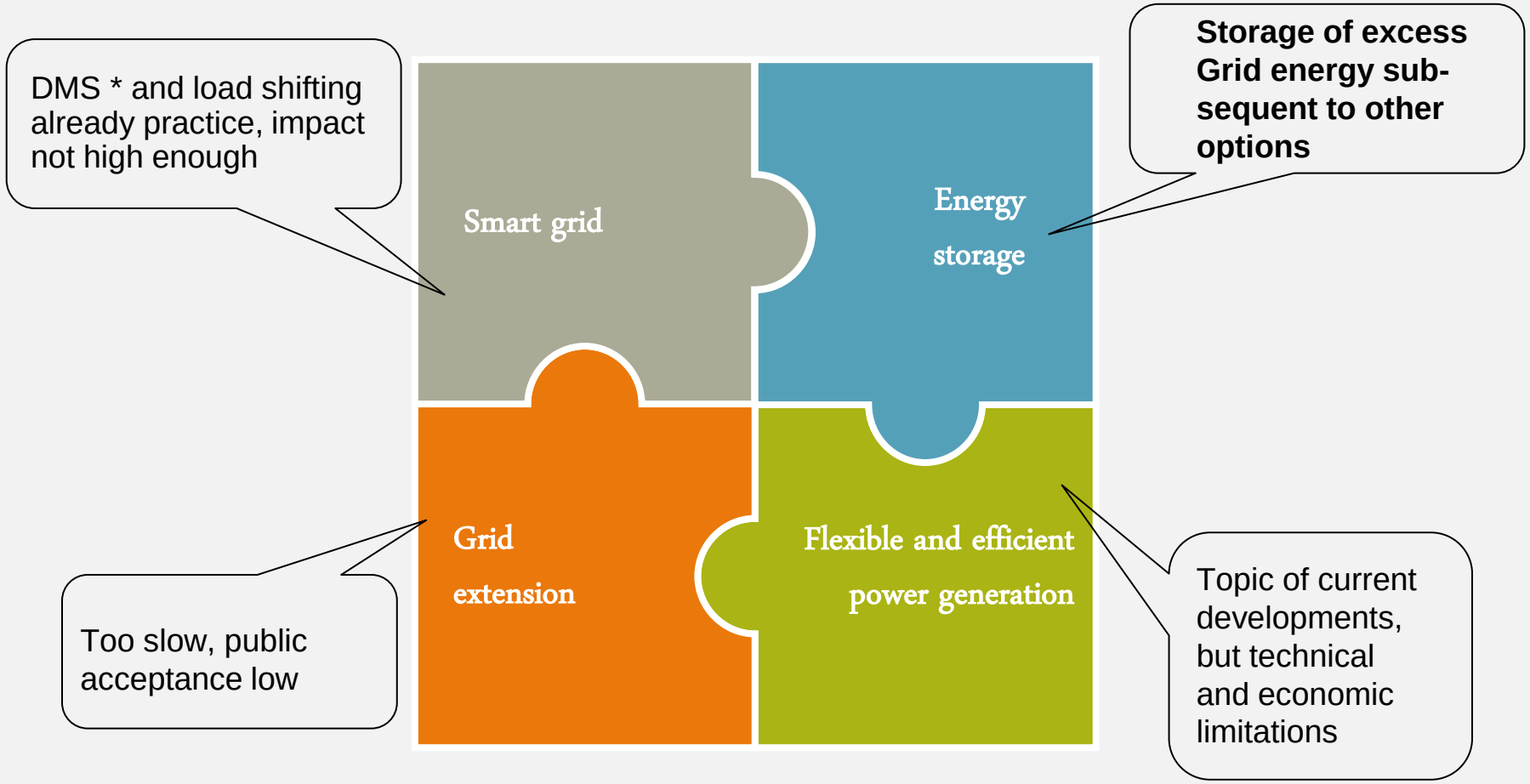
Why are we currently extremely inefficient?

Curtailment of Renewable Power Generation



Source: Siemens

Methods for Grid Stabilisation



* DMS = demand side management

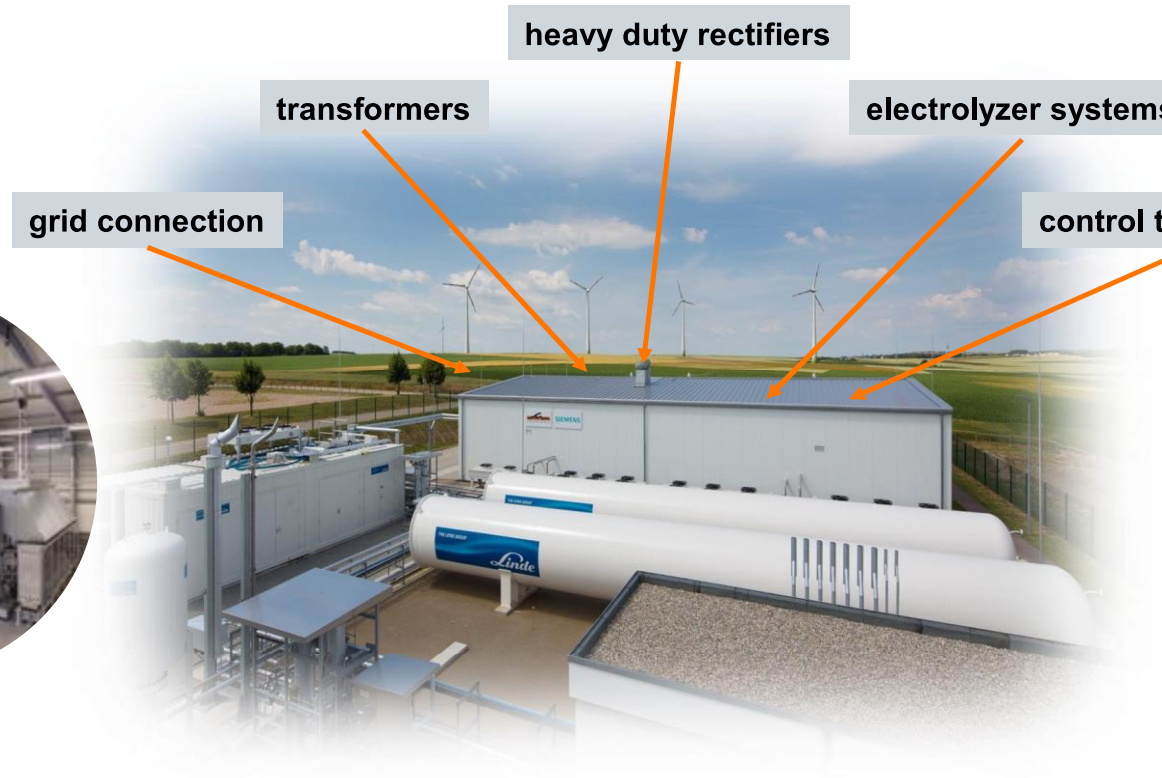
Definition of „Storage“

- Energy storage in the electricity system would be defined as the **act of deferring an amount of the energy** that was generated to the monment of use, either as final energy or **converted into another energy carrier.**

(European Commission, DG ENER, draft in June 2016)

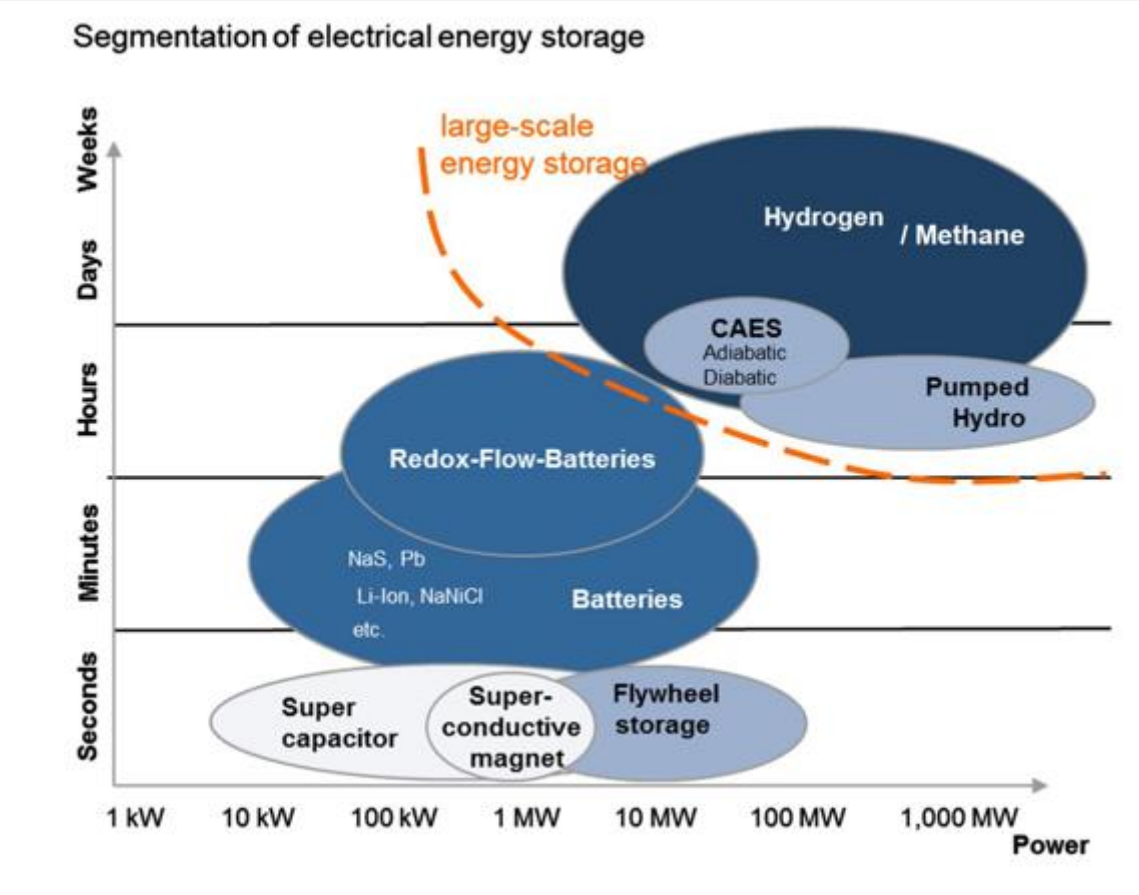
How does this work in reality?

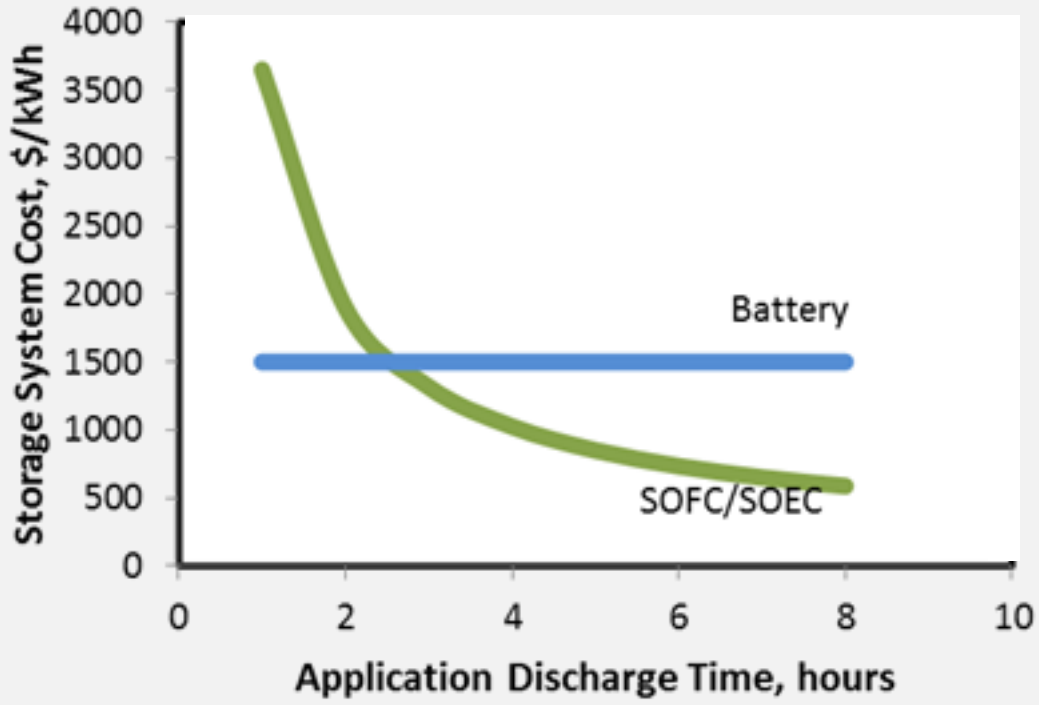
ENERGIE PARK MAINZ



Source: Siemens

Hydrogen compared to other technologies





Hydrogen via Power to Gas is the only viable approach to store electrical energy >10 GWh

Source: Siemens

Scenario Germany 2040 – 100% Renewables

capacity of electrolysers: 79,2 GW.
windgas can use the existing gas grid up to 337 TWh
(=energy supply for up to 3 months)

Hydrogen as a flexible game changer

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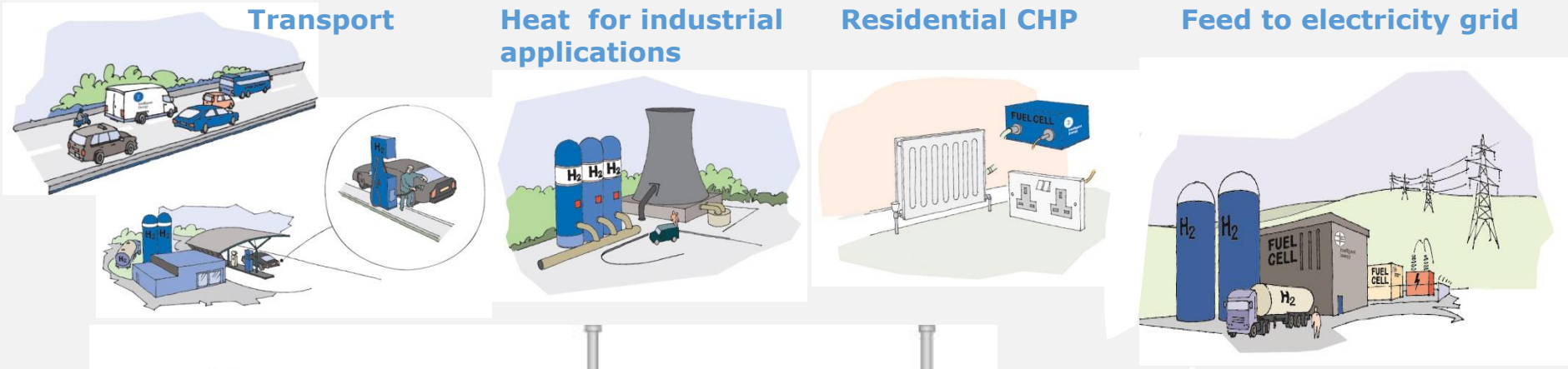
Transport

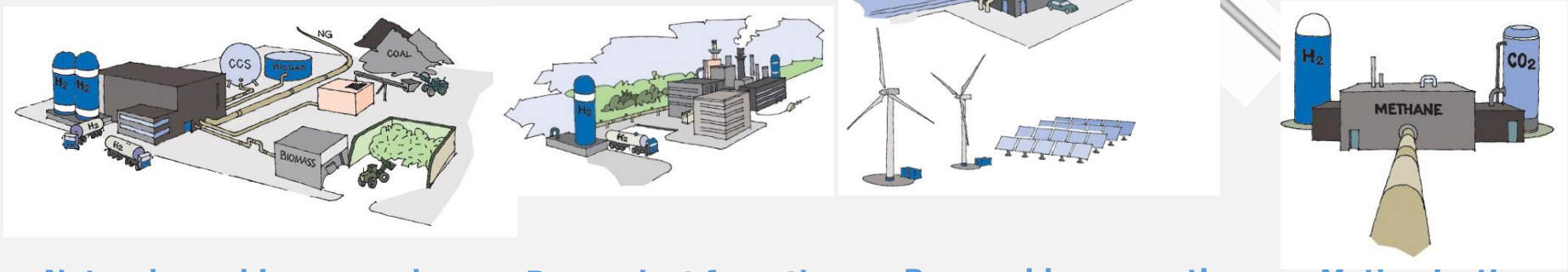
Heat for industrial applications

Residential CHP

Feed to electricity grid



Existing natural gas, electricity and transport infrastructures



Natural gas, biogas, coal, biomass

By-product from the Chemical Industry

Renewable generation, storage and 'buffering'

Methanisation feed to natural gas grid

Why is there no market for storage?

- **No final definition (only draft)**
- **No incentives**
- **Inefficiency is paid for right now (Curtailment)**

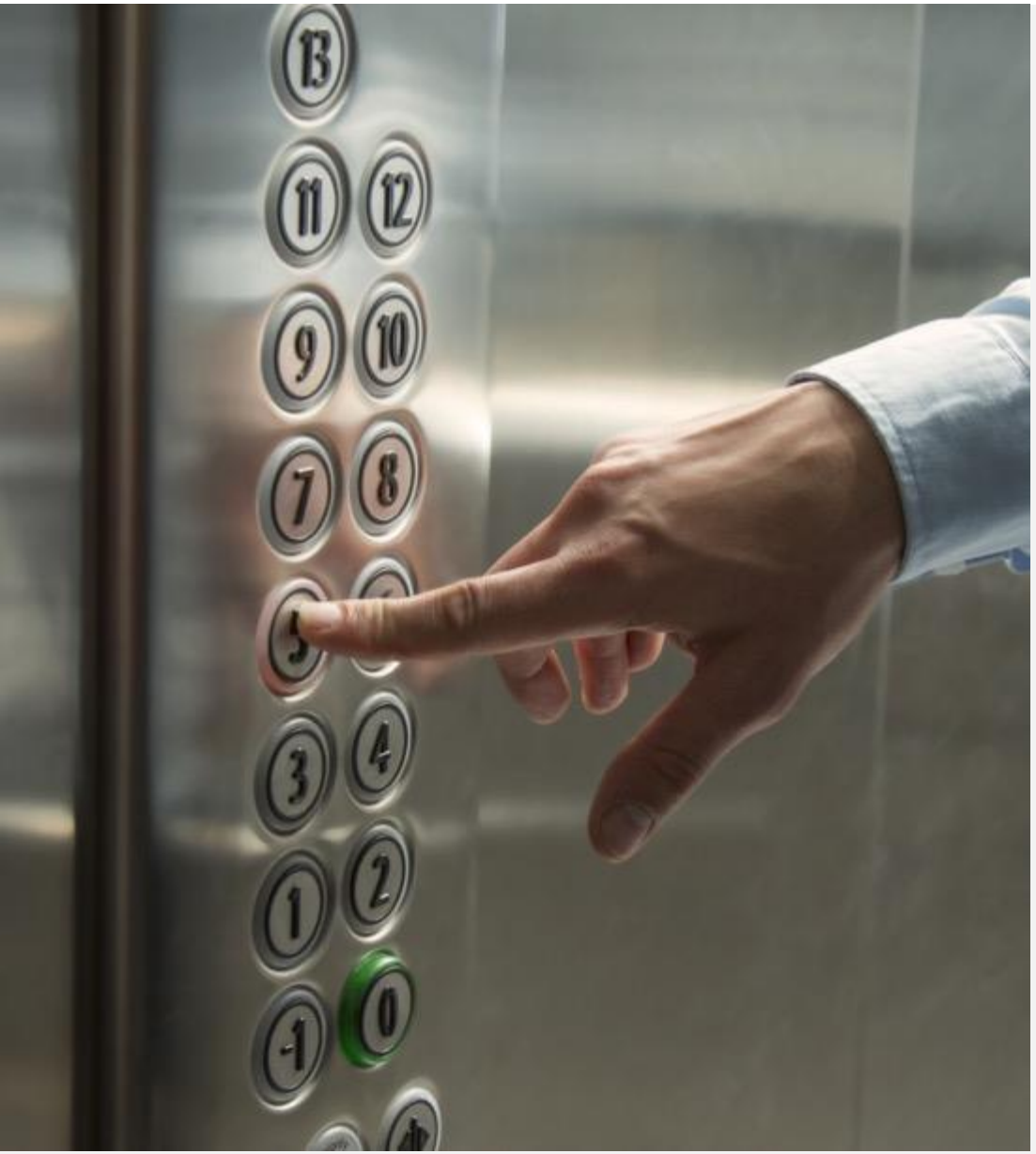
European Union has to create an appropriate mechanism

Why not applied yet?

Regulatory challenges:

- Market launch of Green Hydrogen is an added value & needs political support.
- Storage for integrating variable renewable energy (vRE) should be rewarded.
- The EU needs a clearly defined, easy to use and long-term support scheme encouraging invest.
- There should be an EU-wide target for Green Gases in TWh or percentage of total energy supply.

Elevator pitch



- Energy Storage is recognized as an increasingly important element for grid flexibility.
- Hydrogen is an extremely flexible storage capacity.
- For a decarbonised scenario in 2050 Hydrogen is a “game changer”.
- Avoided costs of vRE curtailment and CO2 reductions of backup capacities create a business case of large scale energy storage.