NEW DEVELOPMENTS: SECTOR COUPLING AND INTERLINKED MODEL

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JOINT SCENARIOS PROVIDE A REFERENCE FOR INFORMED CROSS-SECTOR DECISION MAKING

- **Deviations from the policy due to changes in technologies, business models, behaviors, etc**
- **A framework to test the mechanisms and scaling effects of cross-sector interlinkages**

Sector coupling scenario
Distributed Energy

Sector coupling scenario
Global Climate Action

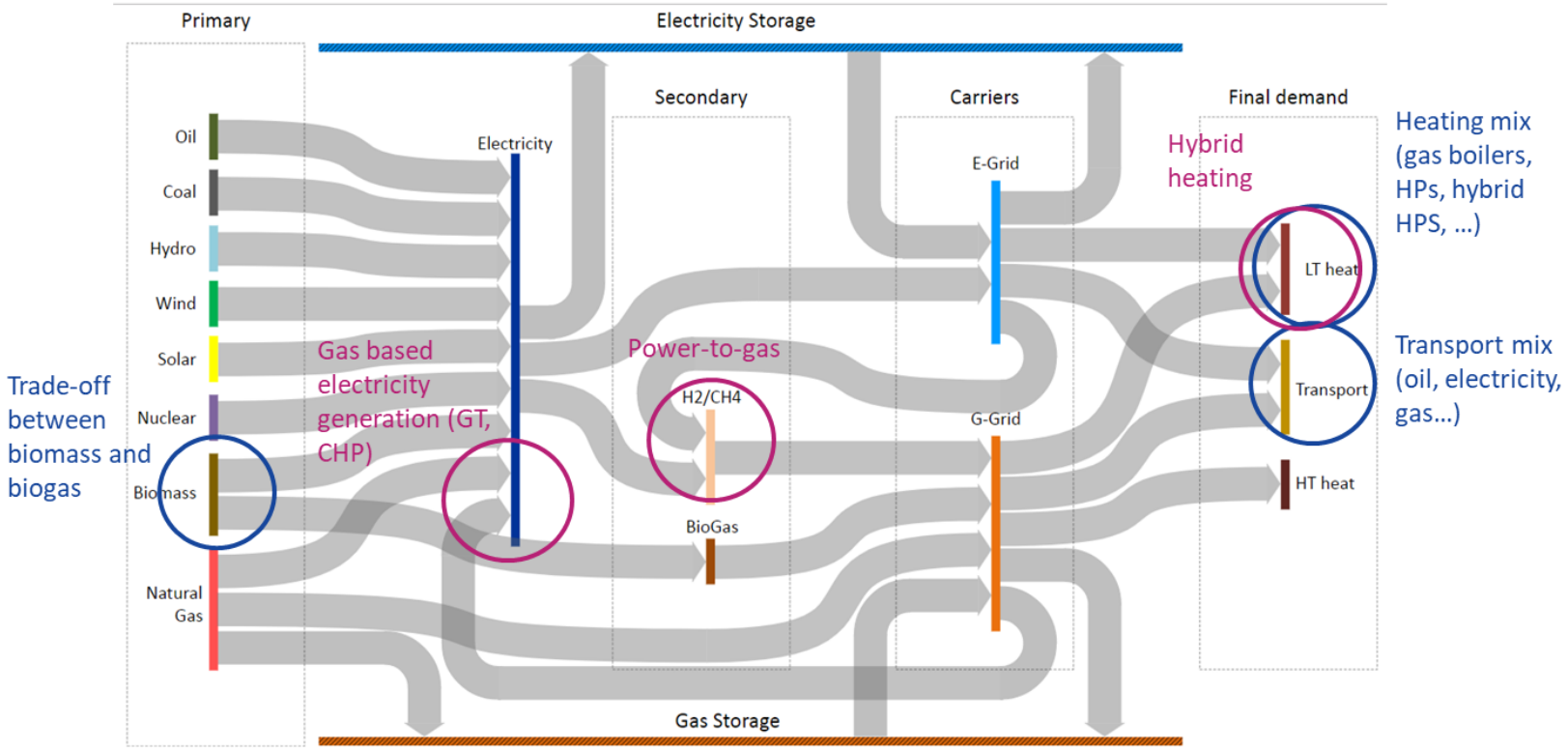
Central Policy Scenario
based on the **National Energy and Climate Plans**

- **A common pathway towards European energy targets**
- **A reference for the assessment and support of infrastructure development in Europe**
- **A Consistency between TYNDPs and National Plans**

Proposed set of scenarios to be developed for the TYNDPs 2020 – and possibly the following

SYSTEMATIC MAPPING AND ANALYSIS OF INTERACTIONS BETWEEN GAS AND ELECTRICITY SYSTEMS (ENTSOS)

Direct and indirect interactions



Study performed by Artelys | OPTIMIZATION SOLUTIONS

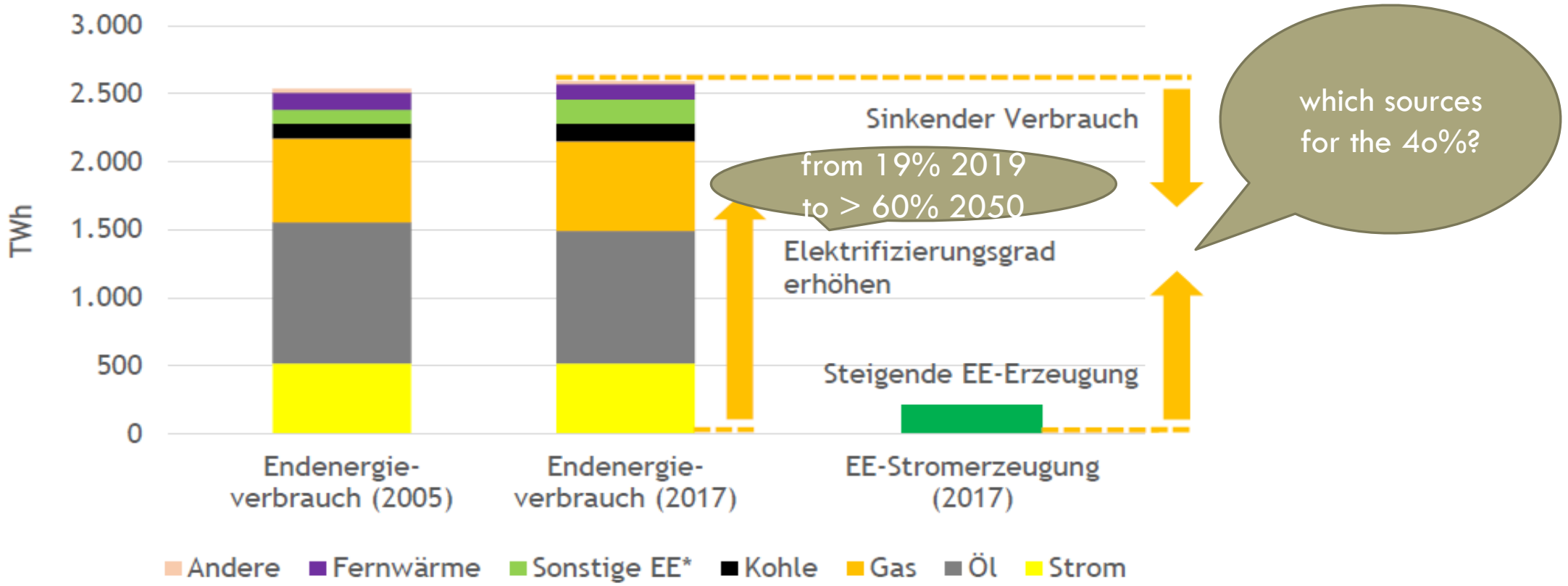
Indirect interactions relate to scenarios assumptions and are translated into demand.

Direct interactions relate to scenarios assumptions as well and are translated into generation/conversion capacities, and can be submitted to TYNDPs as projects.

SECTOR COUPLING IN FIVE POINTS

1 The 60/40 question
2 One energy system
3 Take them all: flexibilities
4 Digitalization needed
5 Economic efficiency, regulatory framework and RD

1 THE 60/40 QUESTION



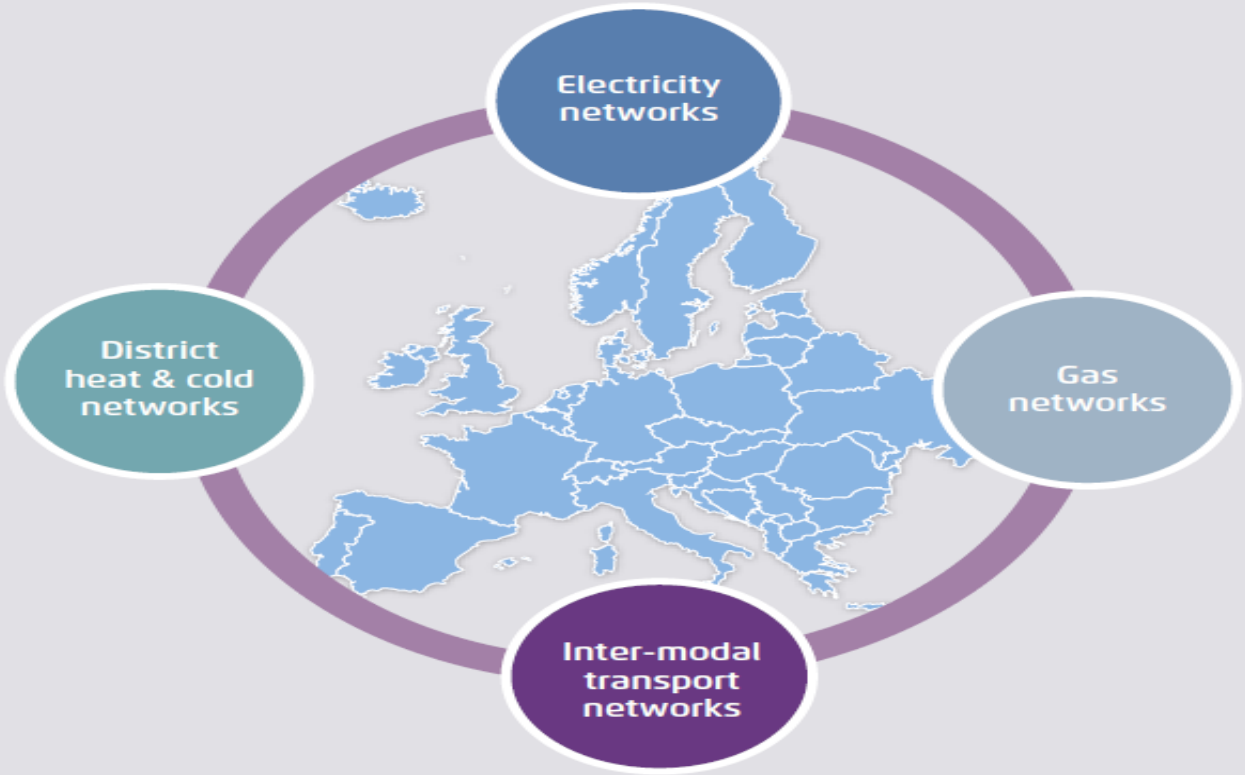
* Biomasse, Abfall, Geothermie und Solarthermie

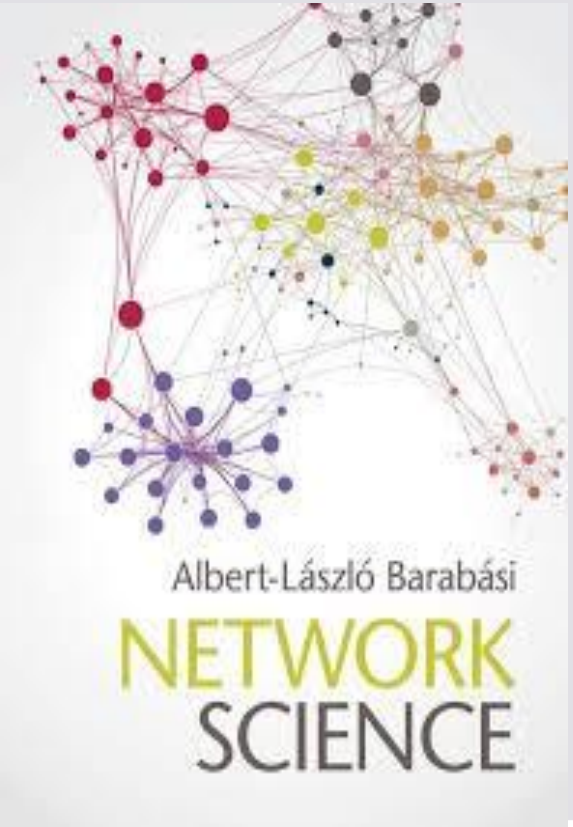
ABBILDUNG 1: ENDENERGIEVERBRAUCH UND STRATEGIEN ZUR ERREICHUNG DER KLIMAZIELE

Quelle: AGEB 2018.

2 ONE SYSTEM APPROACH BASED ON NETWORKS

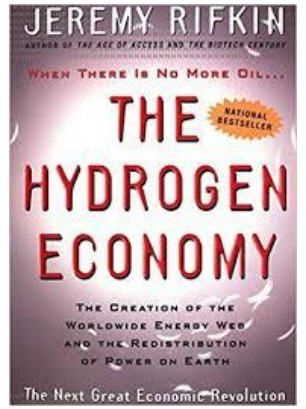
Transforming network infrastructure for 2030 Figure 19





Quelle: Agora Big Picture 2019

3 TAKE THEM ALL: FLEXIBILITIES



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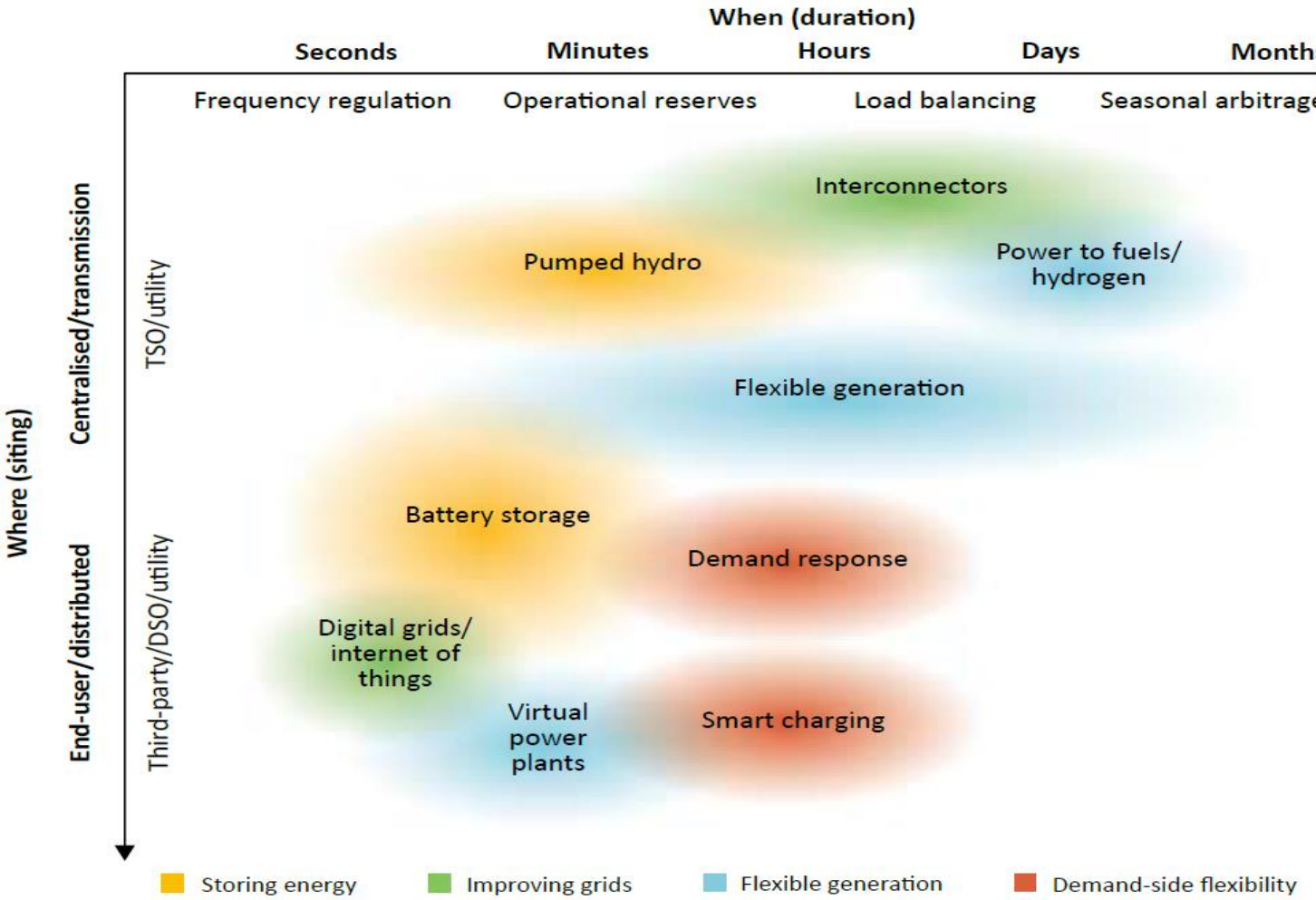
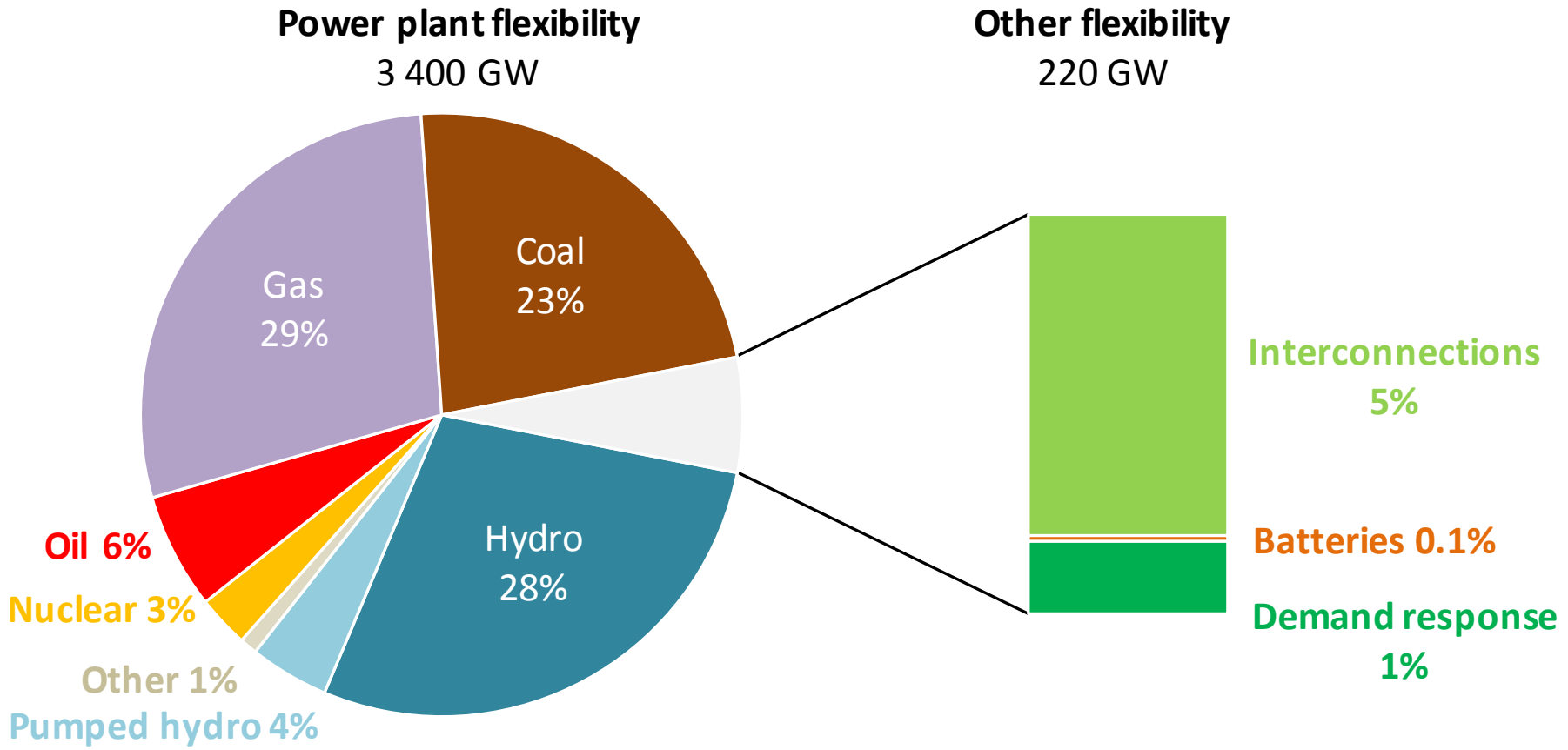


Aspekte: Standort; Technologie Neutralität; Zertifizierung 'clean'; Markt oder reguliert?

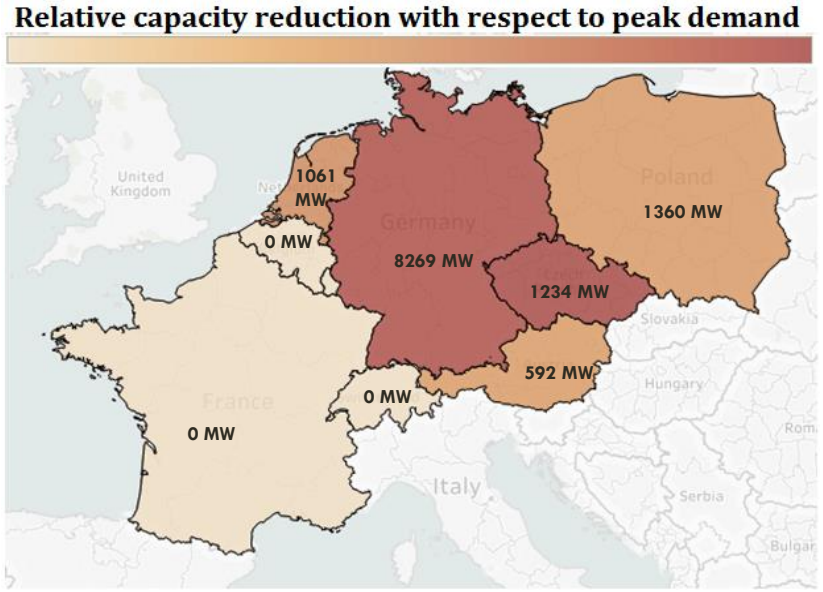
3 STATUS QUO: FLEX IN THE GLOBAL POWER SYSTEM 2017



traditional powerplants on place 1. Batteries including hydro pumped, networks and DSR represent only 10% together

Source: World Energy Outlook 2018

European Low Carbon Szenario: - 23.35 GW different from 2025 Base case



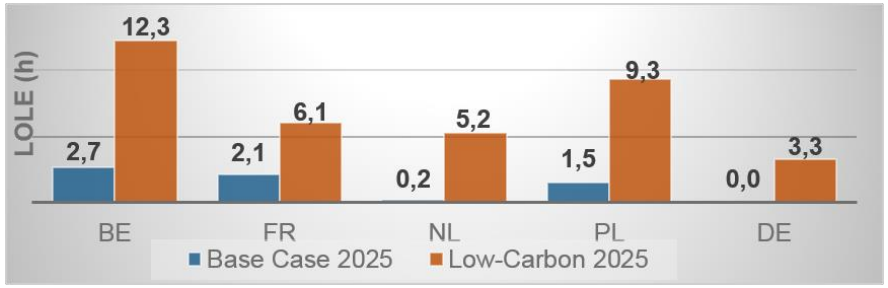
Germany:

- ❑ 2018 → 2025 Basisszenario: -36,6 GW

plus "low carbon Szenario":

- ❑ Steinkohle → - 7,36 GW
- ❑ Braunkohle → - 1,97 GW

→ LOLE increases to 3h (von 0h)



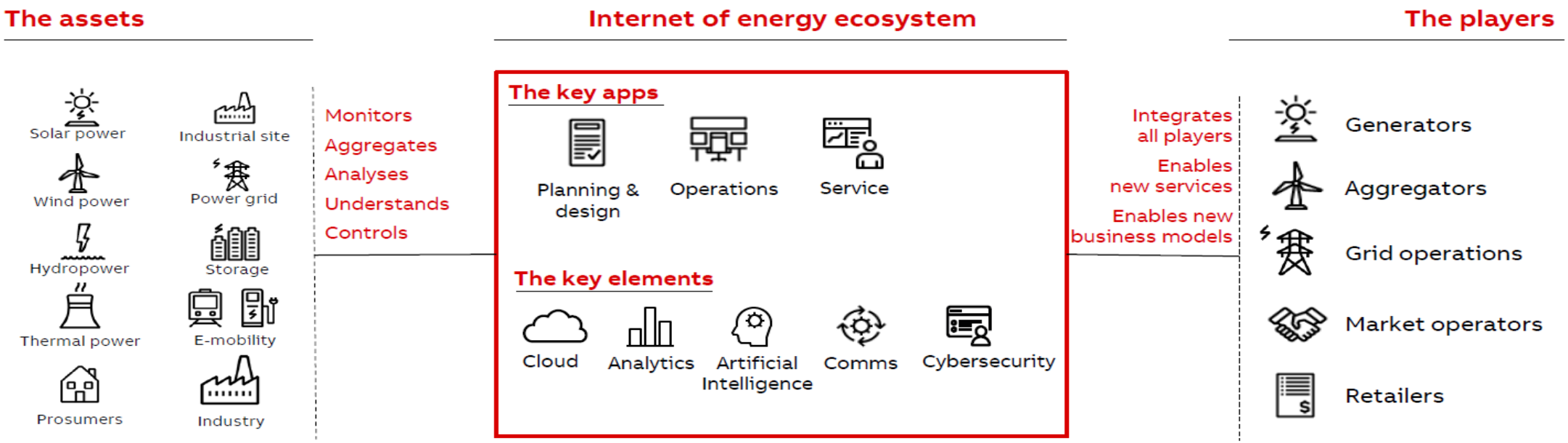
Needed

- detailed consistent analysis on national and international level
- development of networks
- regional cooperation

4 SECTORCOUPLING REQUIRES DIGITALISATION

Energy management in the digital era

A digital ecosystem integrates players and their assets for supporting their business goals and processes



5 ECONOMIC EFFICIENCY, REGULATORY FRAMEWORK AND RD

Use the economic potential of hybrid grids

-Use the networks: gas networks Europe including distribution 260.000 km,

power 480.000 km (TSO grid)

-Navigant Gas for Climate 2019: 217 Mrd € savings year by year as of 2050

-interlinked model ENTSOs)

-EWI study 2018: cost efficient sector coupling

RD for *Early stage technologies and regulatory framework*

-World Energy Investment Outlook 2018 Trends:

20 MW existing>100 MW Elektrolysis projects planned (most in Europe)

-Storage, e-mobility, digitalisation

-needed: technology neutrality: support for pilots and close to market, no FIT, CO2 floorprice

(carbon price around 25 Euros/ June 2019)

1/ CEP Implementation from July 19 to 2023: ENTSO-E tasks

Entry into force – Jul 2019

by Dec-19 (+6m)	mid-20 (12 m)	mid-21 (24 m)	mid-22 (36 m)	2023

- **RPP:** 2 short-term adequacy methodologies (seasonal to day ahead, regional crisis scenarios); crisis scenarios identification (6 to 14m)
- **CRM:** 2 methodologies, 3 sets of common rules, terms of operation of registry (12m) & set up & operation of registry (24m)
- **RCCs:** RCC cooperation & coordination framework, system operation regions (6m) & 10 new tasks with relevant methodologies & digital tools depending on ENTSO-E decision (36m)
- **BZ review methodologies & scenarios** ('relevant TSOs'), coordinated by ENTSO-E (3m), monitoring the *BZ review*
- ENTSO-E Technical report (structural congestions & CC thresholds) (every 3y)
- **Resource adequacy:** 5 methodologies (6m); yearly adequacy report & enhancements to the resource adequacy assessments & methodology over next 4y (48m)

- *Increased legal exposure (new mandates), transparency requirements, and ACER data requests*
- *Risks of financial penalties for non-compliance for ENTSO-E, RCCs & TSOs*

Regional Security Coordination Conference 2019

Efficient markets supporting operational security

8 October – Copenhagen

https://rsc-conference.com

Thank you for your attention

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