

POWERING INDUSTRY TOWARDS NET ZERO

Our vision on anchoring
industry in Europe

Who are we?



- Northern/Eastern Germany TSO
- On- and offshore transmission systems
- 80% owned by Elia Group (20% KfW)
- Monopolistic position in Northeast Germany



- National TSO
- On- and offshore transmission systems
- 99.99% owned by Elia Group
- Monopolistic position in Belgium

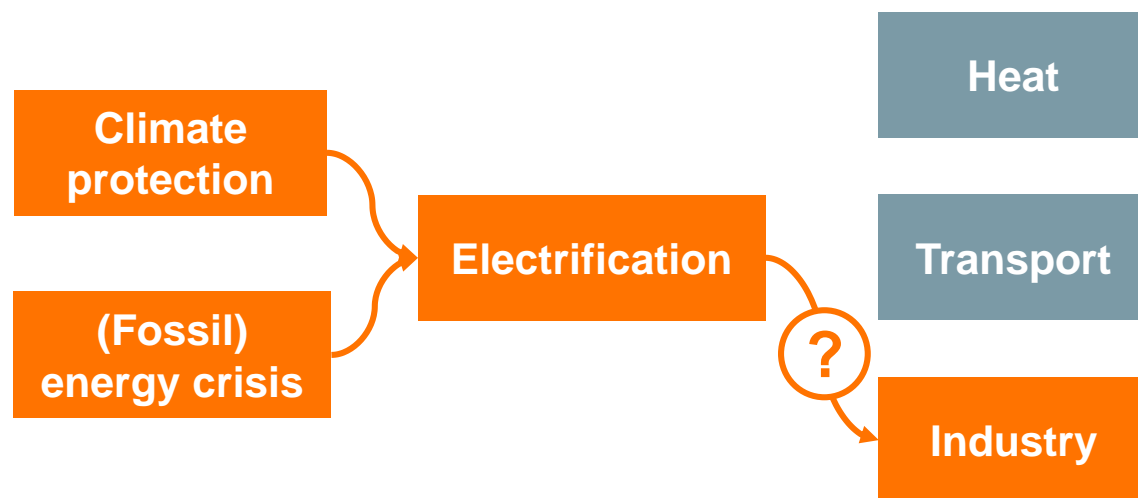


- 50/50 JV between Elia and National Grid (UK)
- Grid interconnection between BE and UK
- 50% owned by Elia Group



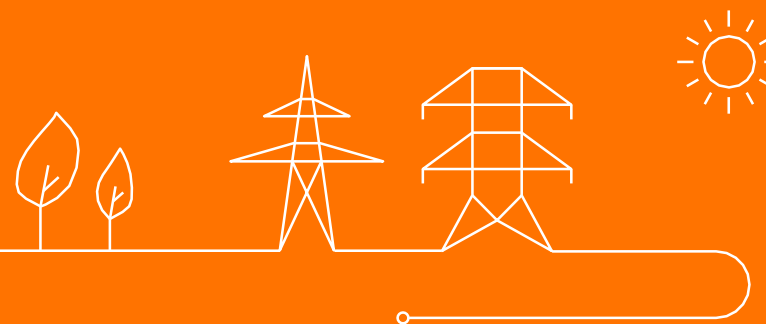
Benjamin de Boissezon
Project Lead Energy Economics
50Hertz

Learning from the crisis: How can we anchor industry in Europe?



- In order to achieve the emissions reduction targets, **electrification** must take place in various sectors
- While power consumption from heating and transport can be derived from national studies, **industry is highly location-dependent**
- The energy crisis has added a new dynamic: electrification as a way to make our industry **less dependent on fossil fuels** and thus anchor it in Europe
- The recent crises have also emphasized the need to **bring back strategic production and secure supply chains**

Motivation and approach of the study



Our motivation: understand industry's plans to reach climate neutrality and their impact on the power system

Elia Group Viewpoint 2022: Powering Industry towards Net Zero



















































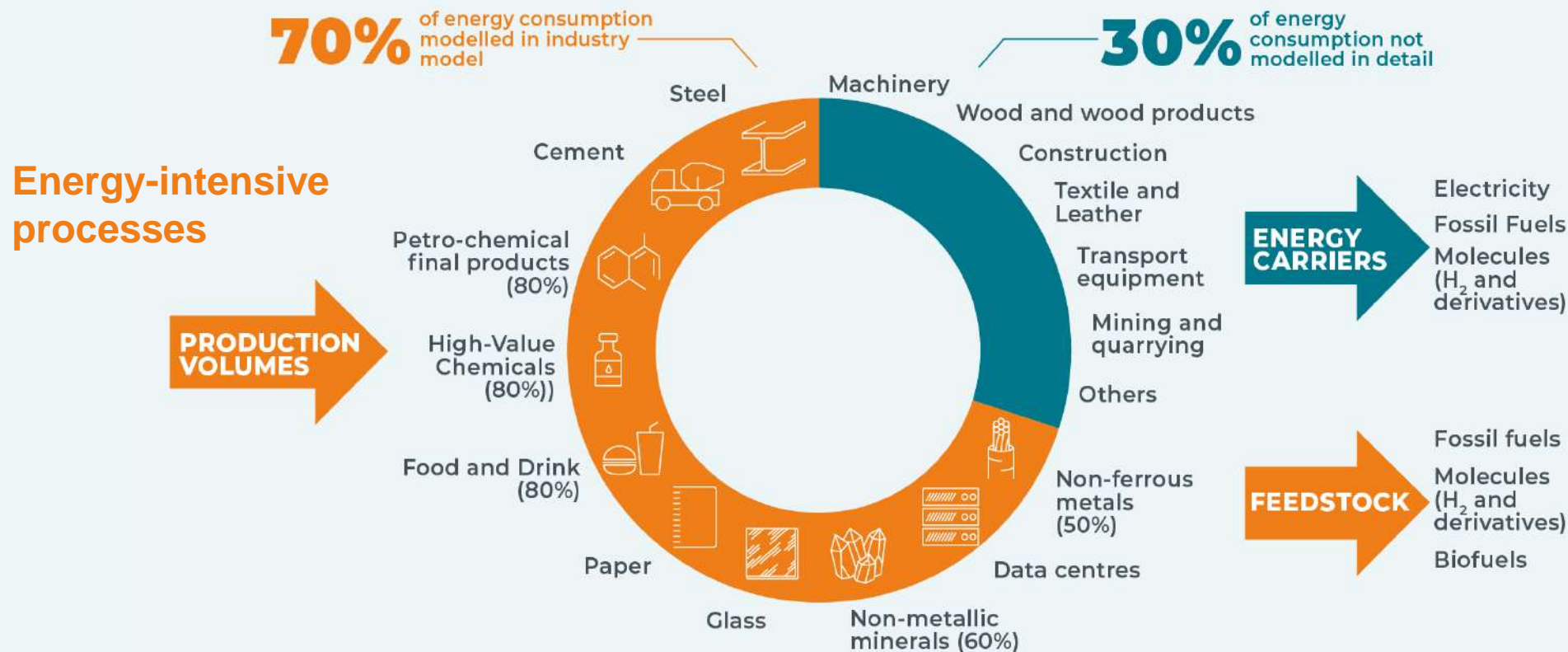




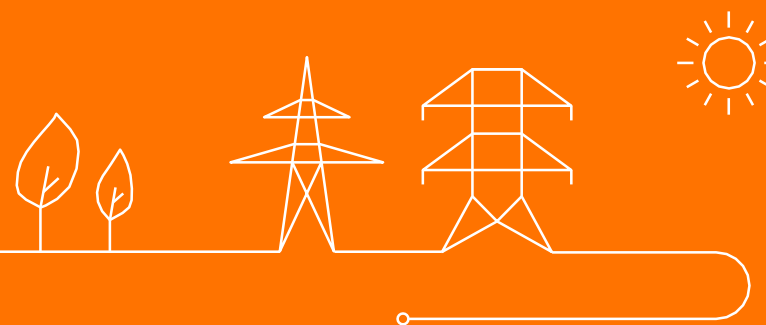


[Link to the report and video of the presentation event](#)

Our bottom-up modeling in Viewpoint covered 70% of industrial electricity consumption

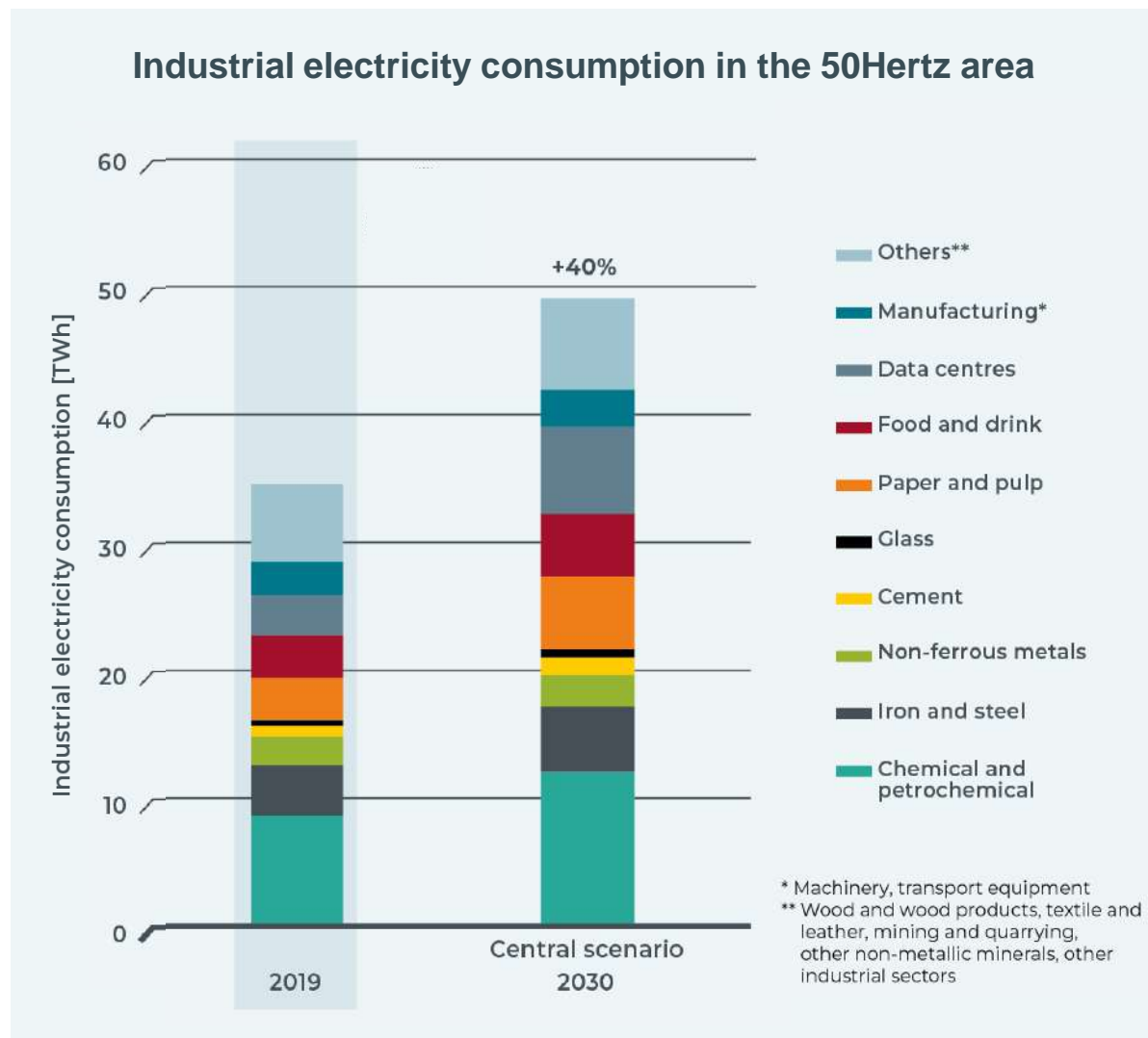


Key results



Industrial electricity consumption in the 50Hertz area will increase by 40% in the run-up to 2030

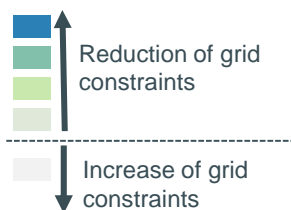
- Based on **plans of the industrial companies in the area**
- **Direct electrification** of low and medium temperature heat
- **Carbon capture**, compression and liquefaction for unavoidable process emissions
- Strong growth in the **digital sector**



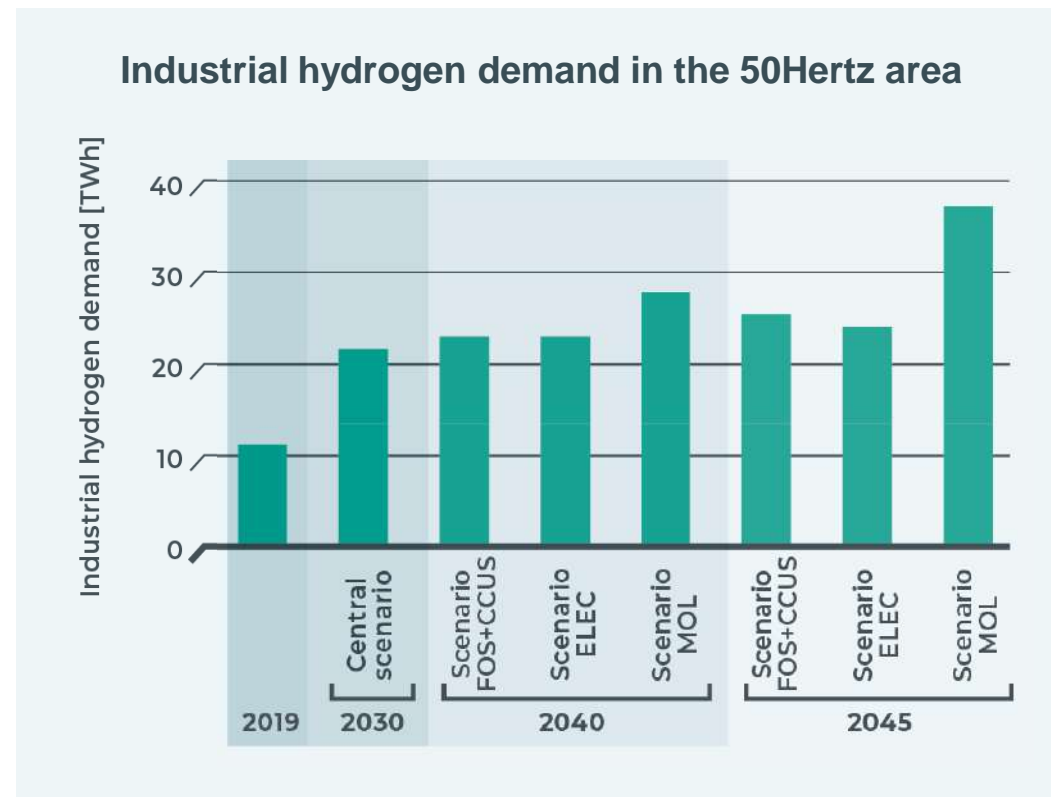
Gradual switch to green molecules ensures additional local electricity consumption

- Today: Hydrogen used as a **feedstock** and produced from **natural gas**
- Decarbonization of **high-temperature processes**
- Most of the green H₂ will have to be **imported**, but **local production** will give the industry a boost
- Approx. **40% of the „grid-friendly“ electrolysis capacity** in the in 50Hertz area

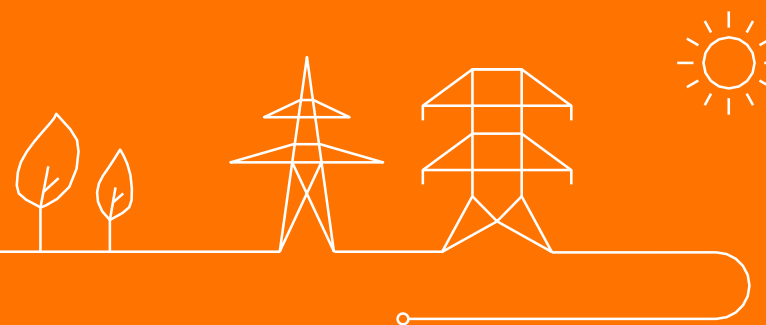
Grid-friendly electrolysis regions 2030



Source: 4 TSO analysis



Our contribution as a transmission system operator



In order to enable the decarbonisation of industry and preserve the competitiveness of Europe as an industry location, we identify four levers

100 Prozent bis 2032 Neue Energie für eine starke Wirtschaft

1 Favourable political and regulatory frameworks to kick-start electrification

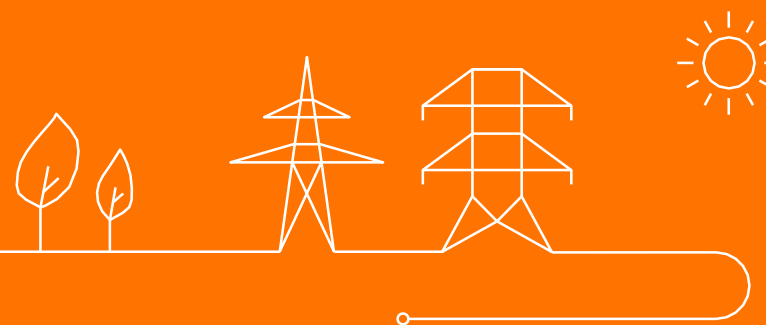
2 Speeding up the development of RES to drive prices down for society and industry

3 Accelerating the build-out of the grid as an enabler of the industrial transition

4 Fostering flexibility as a double accelerator for industrial electrification

- „Industrie“ electricity price Nutzen-statt-Abregeln
- Carbon Contracts for Difference Green base load
- Expansion offensive for RE and grids Contribution PKNS
- Optimization of grid connection processes
- Tempo Hub / CAPEX acceleration
- Fast permitting Business partner development
- Grid-friendly site selection
- See next slides...

Focus on industrial flexibility



Investing in new "hardware" for decarbonization creates new sources of flexibility

trimet

Flexibilization of aluminium electrolysis process

10% of the load can be shifted within one week
Short activations up to 90% of inst. capa.



CAPEX investment and storage of intermediate products (virtual battery)

PROCESS FLEXIBILITY



BASF

We create chemistry

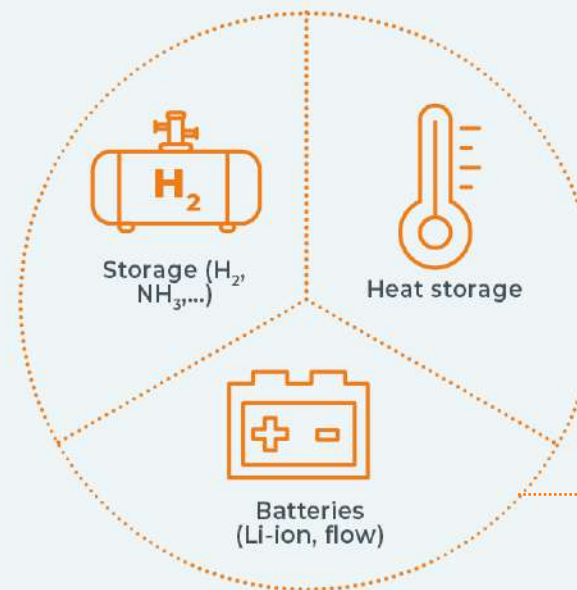
Investment in PtH in combination with existing gas boilers

Allows short-term fuel-switch between gas and electricity for process heat production



Location and/or time

FLEXIBILITY DEVELOPED IN PARALLEL



TRATON

Smart charging of e-trucks in the Port of Hamburg
Leads to a 21% reduction in energy costs

How did companies react to the high energy prices in 2022?

Survey of 35 energy-intensive industrial companies* in the 50Hertz area

6%

Use of flexibility / DSM

- Optimization of production plans against **DA prices**
- Shutdown **during high price phases lasting several days**

66%

Medium-term reduction in electricity consumption

- Increased **efficiency**
- Temporary **reduction** in production

28%

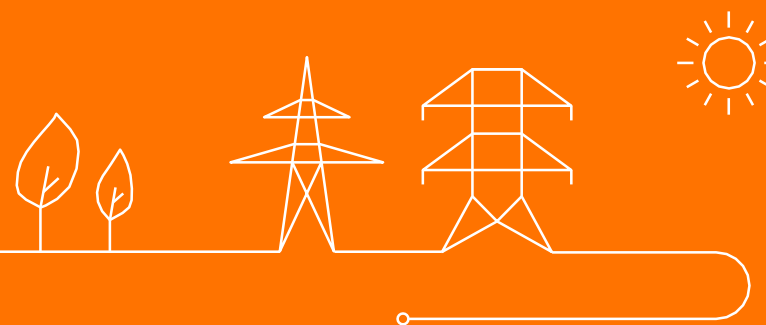
No changes in behavior

- Impact of price fluctuations mitigated by **hedging**
- **Price rise** allowed by high demand for products
- **No flexibility lever due to technical limitations** in the production processes
- **7000-hour rule** (§19 Abs. 2 StromNEV) hinders the use of flexibility

Despite high price volatility, measures were primarily implemented in the medium term in the form of **production reductions**.
A actual flexibilization (DSM) could only be identified in two cases.

*Survey period: January and March 2023.
n= 35 (response rate approx. 23%, as at: 30.03.2023)

Conclusion



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- 1** Electrification is a key building block for industry to achieve climate targets
- 2** Green energy supply is a competitive advantage. This is what 50Hertz is committed to with its "100% by 2032" strategy
- 3** Decarbonisation will require flexibility potentials that are currently hardly used

Thank you

