



Managing multiple
crises by expanding
scope and scale of
targeted innovations



Climate policy and a bit more reality

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My propositions

In search for a new narrative (not only for climate policy)

- ❑ From **fractional targets**
- ❑ as rather abstract reduction targets for GHG emissions

- ❑ ... a shift to **functional targets**
- ❑ that are more visibly tied to solving pressing problems, as
 - ❑ stabilizing energy markets
 - ❑ incentivizing deep energy reductions
 - ❑ prioritizing radical transformations
 - ❑ enabling targeted innovations

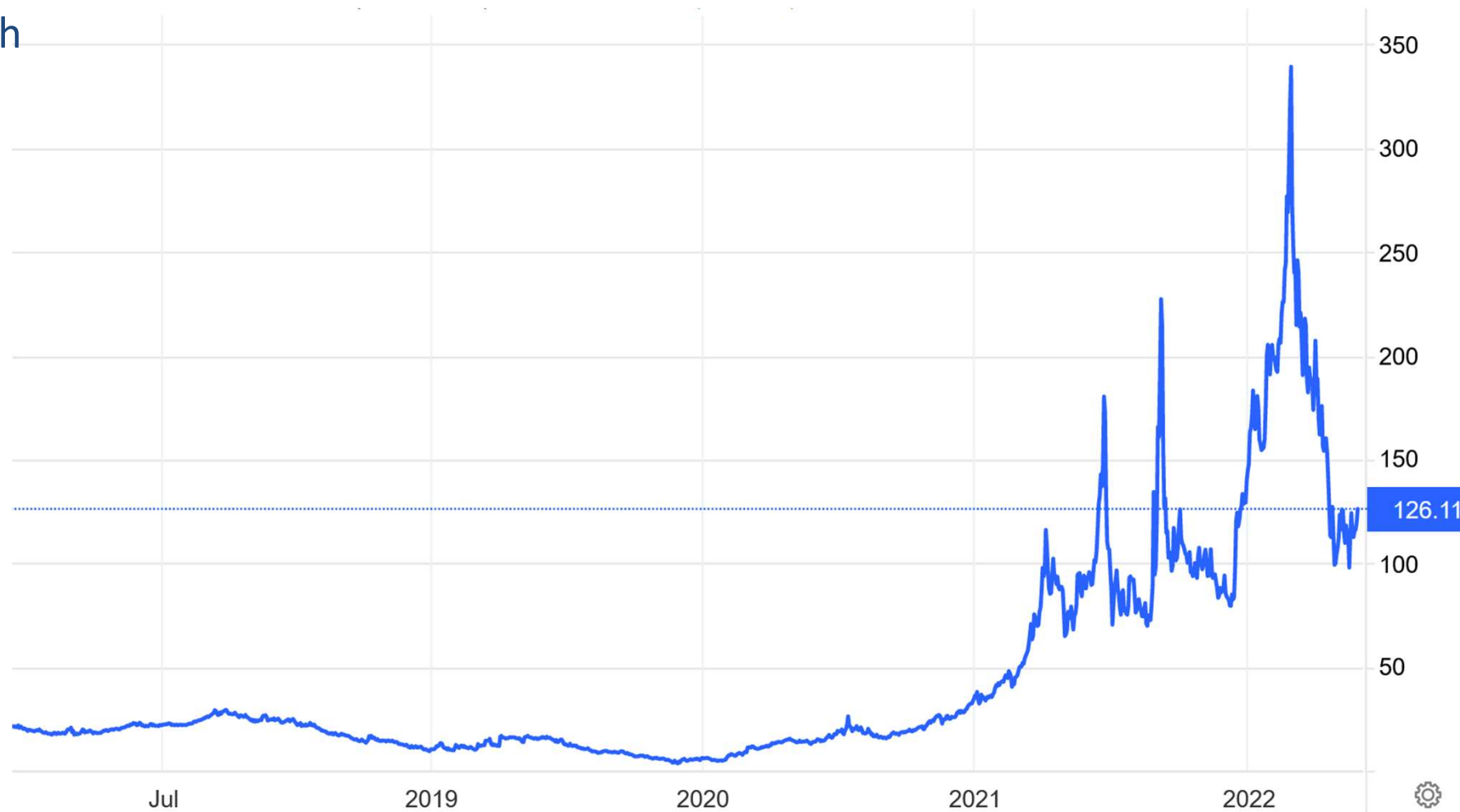
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Stabilizing energy markets

- **Decoupling gas from electricity**
- **Restructuring markets for electricity**

EU Natural Gas Price

EUR/MWh



Source
<https://tradingeconomics.com/commodity/eu-natural-gas>

EU Carbon Permits

EUR



Source
<https://tradingeconomics.com/commodity/carbon>

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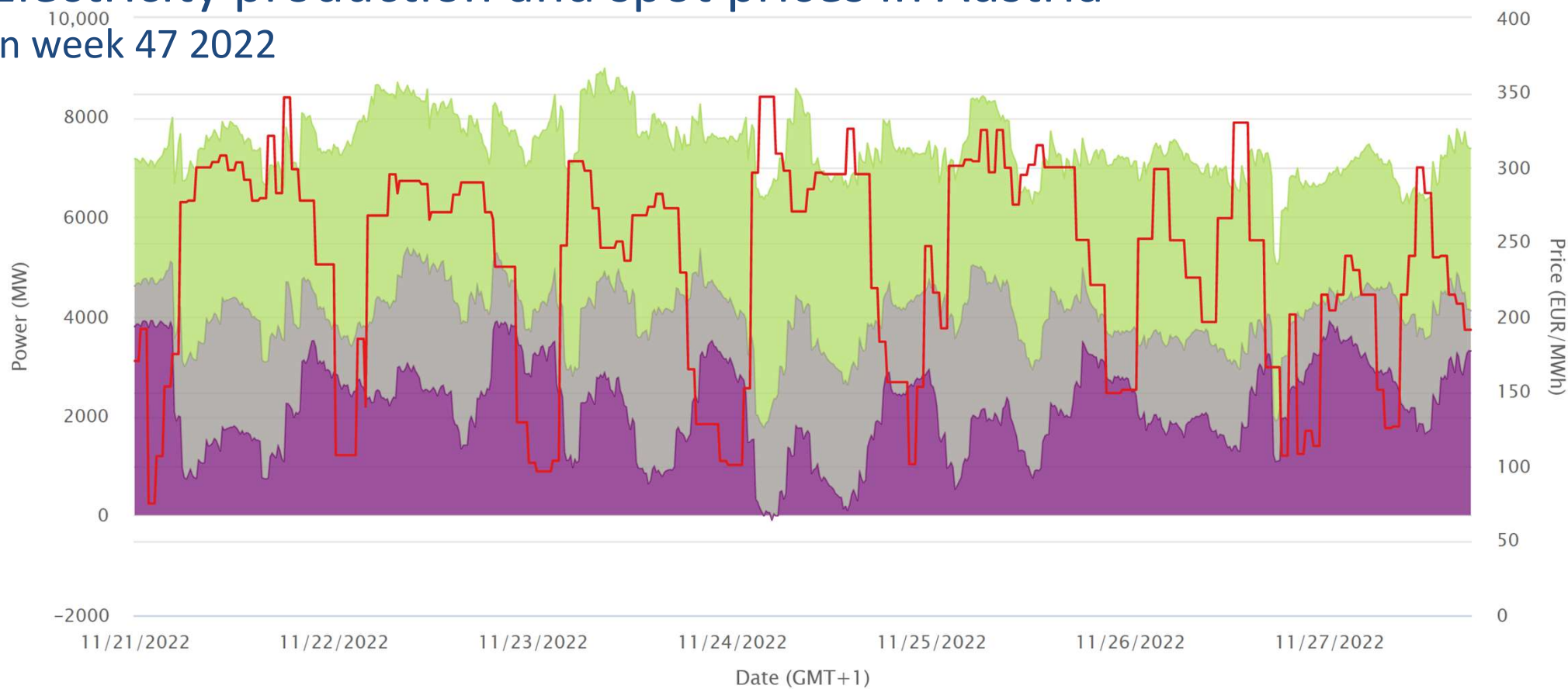
Decoupling gas price from electricity whole sale price

$$P^{el} = w_{g,el} \cdot P^{gas} + e_{el} \cdot P^{CO2}$$

$$286 = 2 \cdot 126 + 0,45 \cdot 76$$

Electricity production and spot prices in Austria

10,000
in week 47 2022



Source

● Import Balance ● Nuclear ● Non-Renewable ● Renewable — Load — Day Ahead Auction (AT)

https://www.energy-charts.info/charts/price_spot_market/chart.htm?l=en&c=AT&stacking=stacked_absolute_area&week=47

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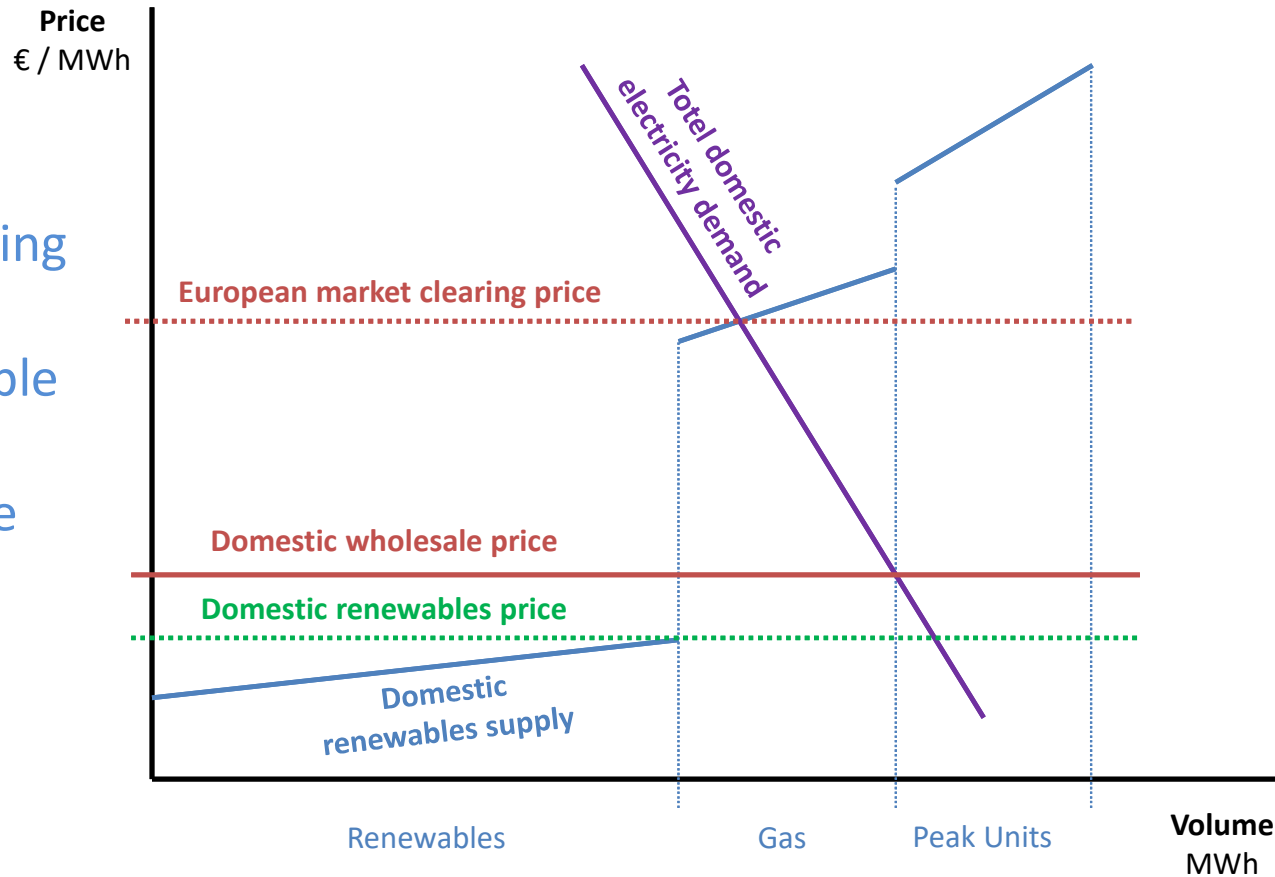


Restructuring markets for electricity

Pooling of separated markets

A two-stage Merit Order principle for electricity

Domestic wholesale price is generated by pooling of domestic renewable price and European market clearing price



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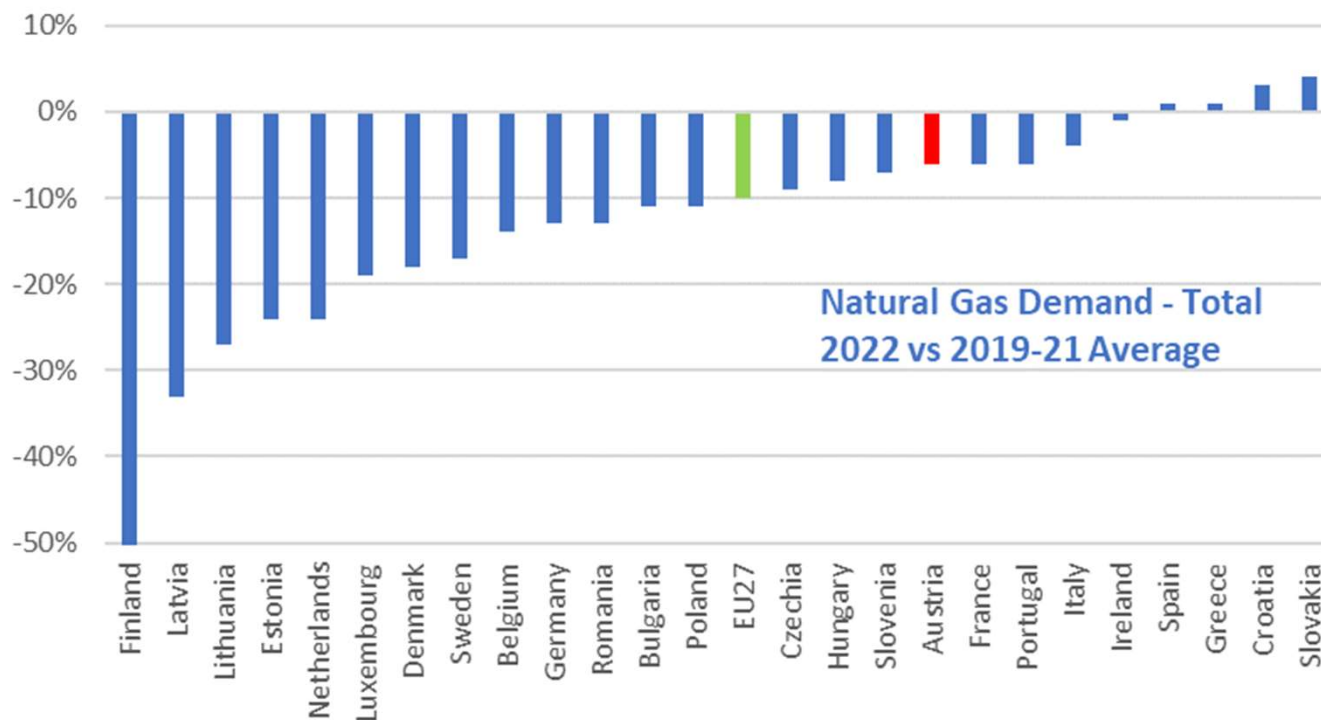
Incentivizing deep energy reductions

- Rewards
- Self-selecting tariffs

Natural Gas Demand - Total

2022 vs 2019-21 Average

the European Union has agreed a target to reduce gas demand by 15% from August 2022 to March 2023

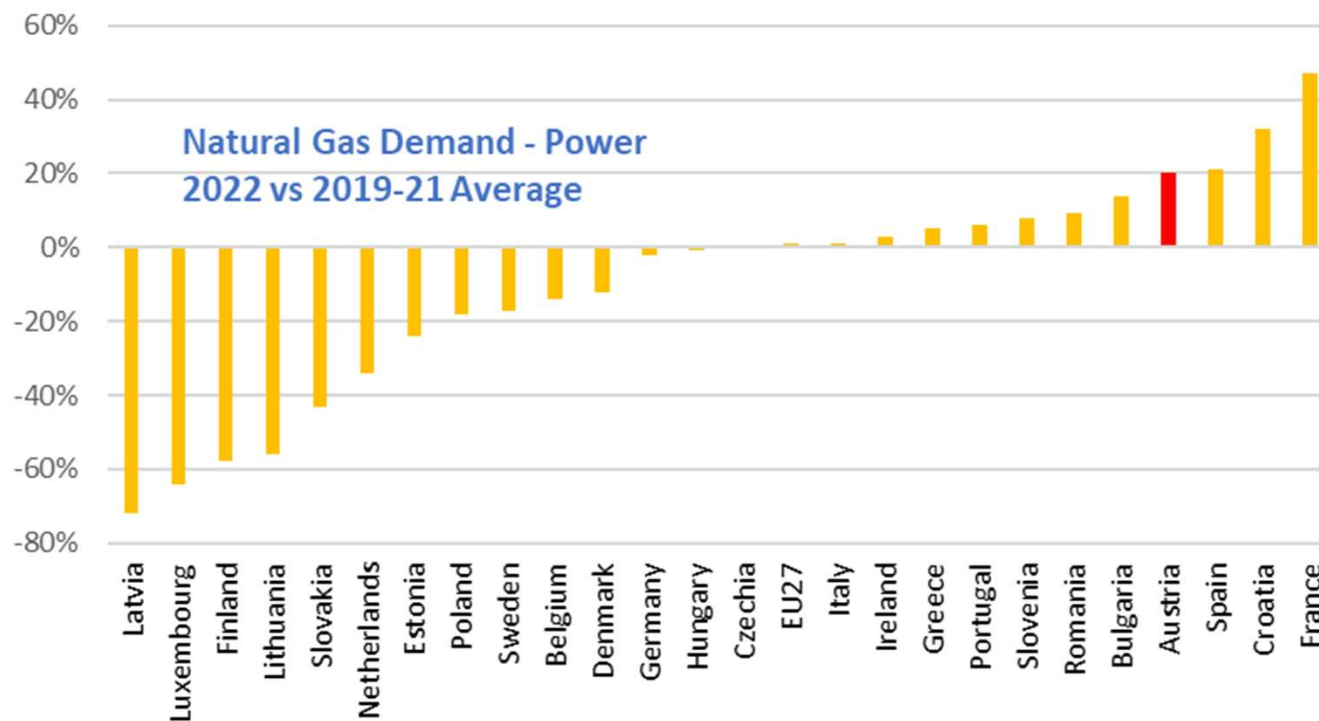


Source
<https://www.bruegel.org/dataset/european-natural-gas-demand-tracker>

Natural Gas Demand - Power

2022 vs 2019-21 Average

In Austria, the strong growth in gas for electricity is striking.



Source

<https://www.bruegel.org/dataset/european-natural-gas-demand-tracker>

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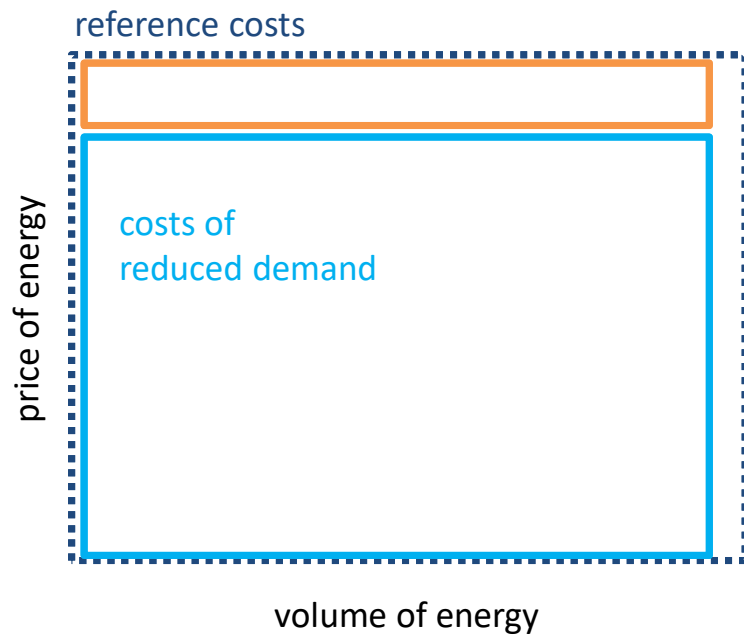


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Innovative incentive mechanisms for energy reductions

Rewards for voluntary energy reductions



Customers obtain a reward if they reduce their energy consumption beyond a defined threshold

Incentive based tariffs

- ❑ Non-linear tariffs
 - ❑ unit price increases with volumes consumed

- ❑ Time-of Use tariffs
 - ❑ tariff depends on grid load

- ❑ Semi-autonomous tariffs
 - ❑ customers allow control of some equipment from outside

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Prioritizing radical transformations

- **Rebuilding the stock of buildings**
- **Enabling radical transitions for industry**

Transformation of the buildings stock

Areal concepts with localized energy systems

Radical innovations for buildings and their use

The areal Suurstoffi



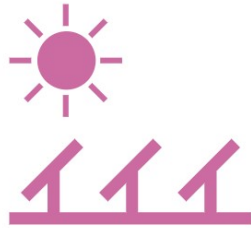
A 16 hectares areal

- ❑ integration of living, working, and other activities
- ❑ innovative building technologies
- ❑ innovative energy designs

WIFO 

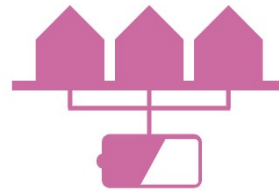


The „Zero Emissions“ – energy system of the areal Suurstoffi



solar energy

**PV and thermal
collectors
integrated into the
buildings structure**



energy grid

**low temperature grid for
heating and cooling
and recycling heat with
heat pumps**



geothermal storage

**seasonal thermal
storage
for heating
and cooling**

TBA

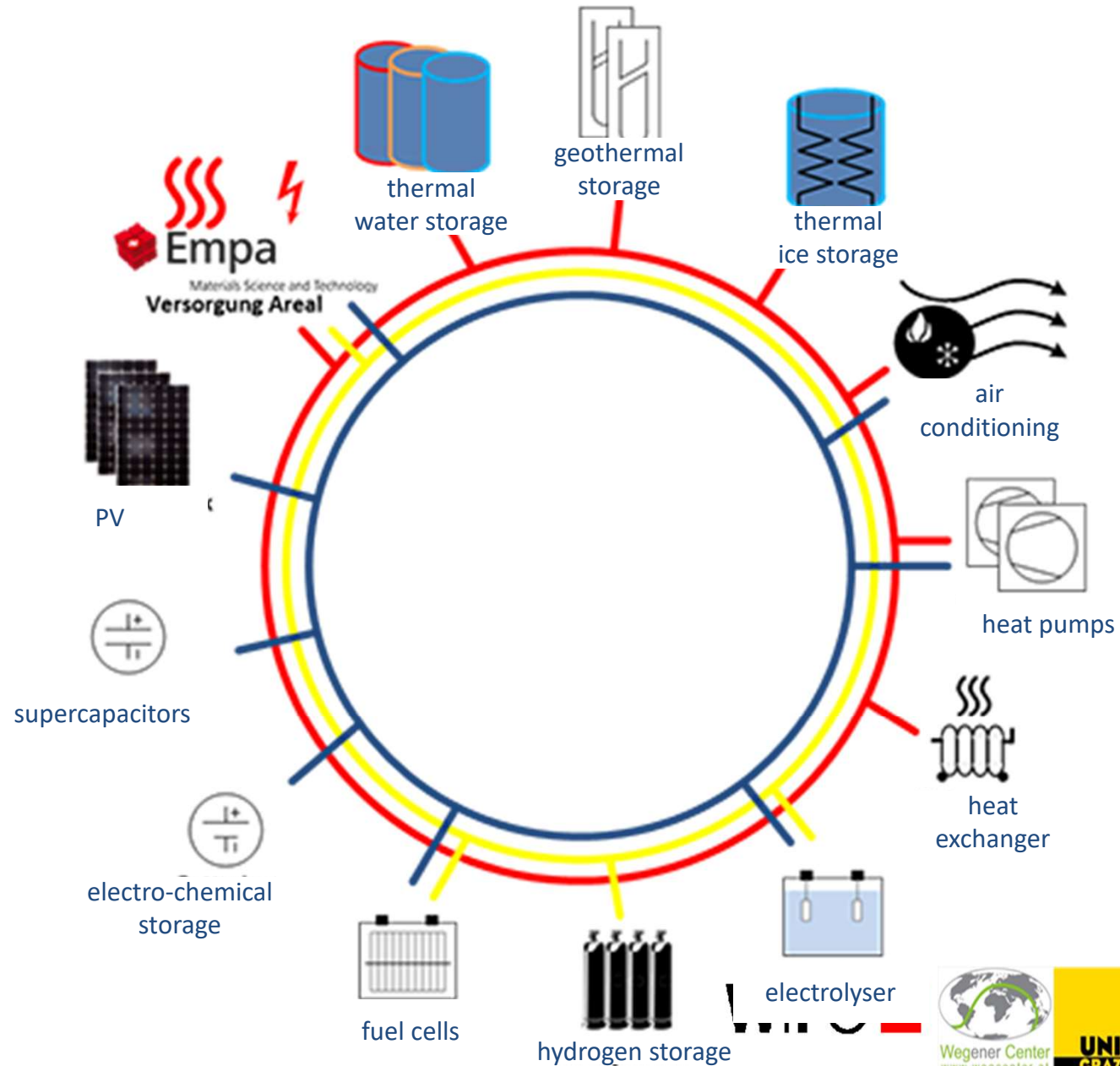
Thermal component activation



Energy clusters / hubs

highly integrated energy systems

- ❑ **Four grids**
integrate all components of the energy system
 - ❑ electricity
 - ❑ heating / cooling
 - ❑ gas
 - ❑ IT
- ❑ all grids are bi-directional
- ❑ all components are permanently controlled

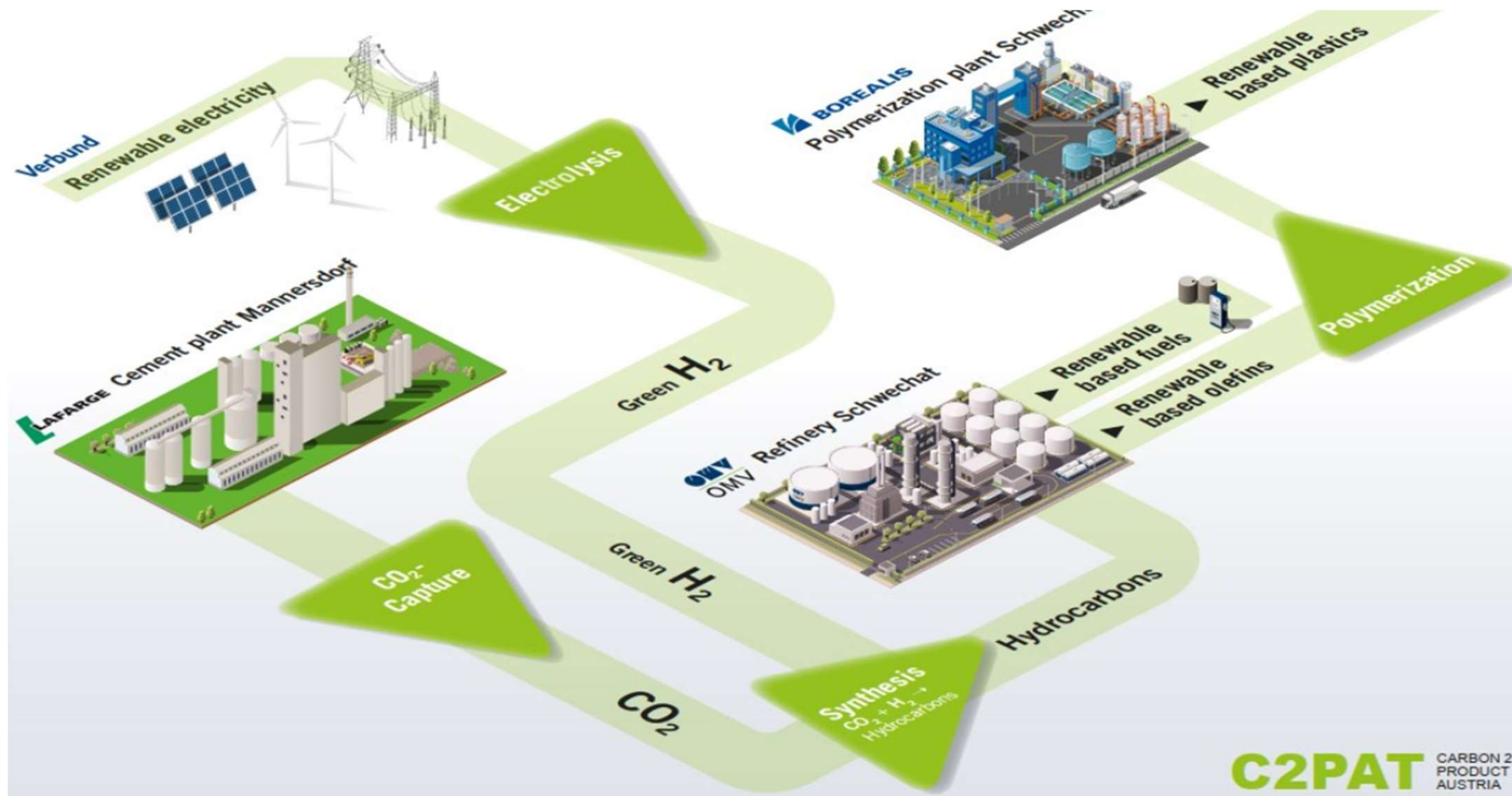


Transformation of production

Cross-sectoral industrial clusters for decarbonization
and full carbon and materials cycles

Project C2PAT: Carbon to Product Austria

Lafarge, Verbund, OMV, Borealis



C2PAT CARBON 2
PRODUCT
AUSTRIA



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Enabling targeted innovations

- National mechanisms
- EU financing

One-stop shops for energy services and Markets for Difference

- ❑ Energy service companies organize from the exchange of heating systems to the thermal renovation of buildings all project stages from advice to implementation by the appropriate companies
- ❑ At an initial stage, the Markets for Difference funding mechanism can be used to create such companies

The public sector as an enabler for innovation and transformation

- ❑ New infrastructure for the transport and storage of hydrogen and CO₂
- ❑ New national financing instruments such as an Austrian Innovation and Transition Fund (AITF)
- ❑ New EU financing instruments such as the Innovation Fund des EU Emission Trading Systems (EU ETS)

My summaries

In search for a new narrative (not only for climate policy)

- ❑ **A shift to functional targets**
- ❑ **that are more visibly tied to solving pressing problems, as**
 - ❑ **stabilizing energy markets**
 - ❑ **incentivizing deep energy reductions**
 - ❑ **prioritizing radical transformations**
 - ❑ **enabling targeted innovations**

- ❑ **... will also serve achieving fractional targets**
- ❑ **as reduction targets for GHG emissions**
- ❑ **and might therefore ease consensus policies**

Thank you.



Österreichische Gesellschaft
für Europapolitik

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