



# Distribution Utilities of Future: Advanced Technologies for Business Transformation (Track 4)

## Experience of Leipzig Municipal Utility in the Business Transformation Process

**Thorsten Körner**

**Division Manger of Trading Department (2017-2022)**



# Agenda

1. Short Introdution
2. Tranformation Process Phase (1990 – 2023)
3. Impact of Development electricity Prices
4. Capacity Business Management/Technologies
5. New Products and Andvanced Technologies
6. Business Product PPA for Renewable
7. Business Product Midstream
8. Summary



acatech.de



## Thorsten Koerner

- Engineer in Process Technology / Energy Management Technical University Merseburg
- MBA, University Augsburg / University of Pittsburgh, Gradual School of Business/USA
- 30 years of experience in the European Energy sector in different positions (Managing Director, Board of Directors, Heads of Departments, Area Manager)
- 2007- 2022 Division Manger Energy Trading at Leipzig Municipal Utility responsible for:
  - Trading floor (power, gas, CO2, EEX, OTC, spot and futures trading, asset and sales portfolio management/contracts (gas, electricity, district heating, oil, wood, hedging, CO2 wholesale distribution (gas, power, services and renewable midstream), balancing management
  - Chairman of the Trade/District Heating Steering Committee of the German Association of Energy and Water Industries (BDEW) in Central Germany
  - Member of the Steering Committee Trade of BDEW

# 1. Topics Advanced Technologies for Business Transformation

- Experiences of Leipzig Utility
- What are the results ?
- Challenges of the future



# 2. Transformation Process since 1990 (1)

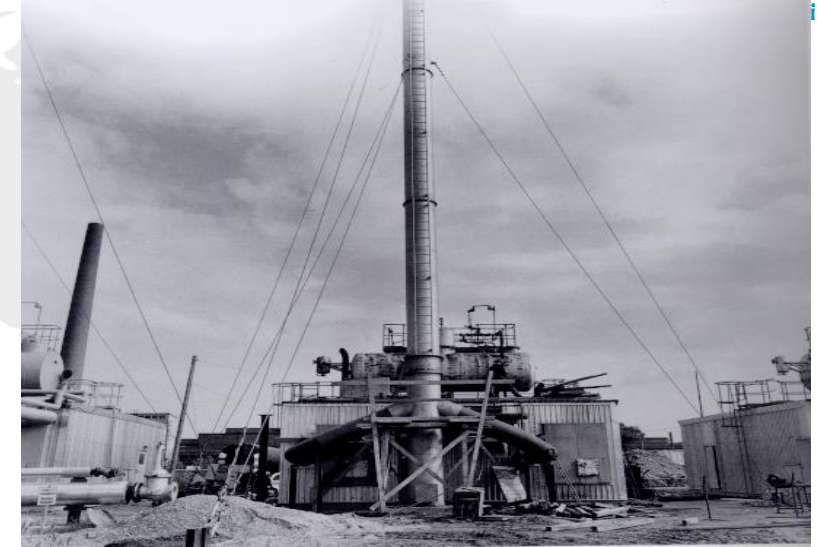
1990  
1995  
2000  
2005  
2010

**Phase 1: Foundation** 1990 – 92 Post-Reunification

**Phase 2: Investment** 1993: Extensive investment program based on market orientated concepts

1995: New Gas fired Power Plant (GuD)

100kV/30 kV, Natural Gas and District Heating Network expansion



**Phase 3: Liberalisation** 1998: EU Liberalisation

2000: Start Energy Trading at Leipzig Exchange EEX

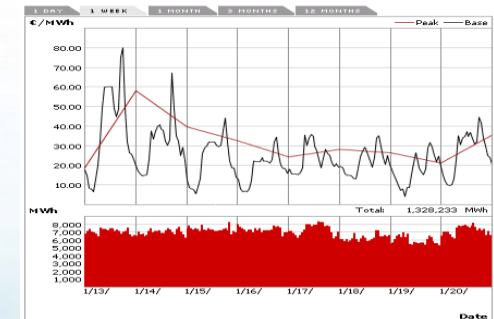


Energy Exchange

**Phase 4: Renewables** 2006: Start Investment Program in Renewables (Biomass)

2010: Start wind farm and solar projects

2011: Post-Fukushima, accelerated energy transition



## 2. Transformation Process since 1990 (2)

2010

### Phase 5: Flexibility

2012: Investments in growing flexibility (i.e. turbine tuning to ensure the power grid stability)  
2013: Participating on German Capacity Markets

2015

### Phase 6: Digitalisation

2017: Start smart grid / intelligent measuring systems  
2018: Test machine learning systems / KI  
2019: Trading test with blockchain technology (peer to peer)

2020

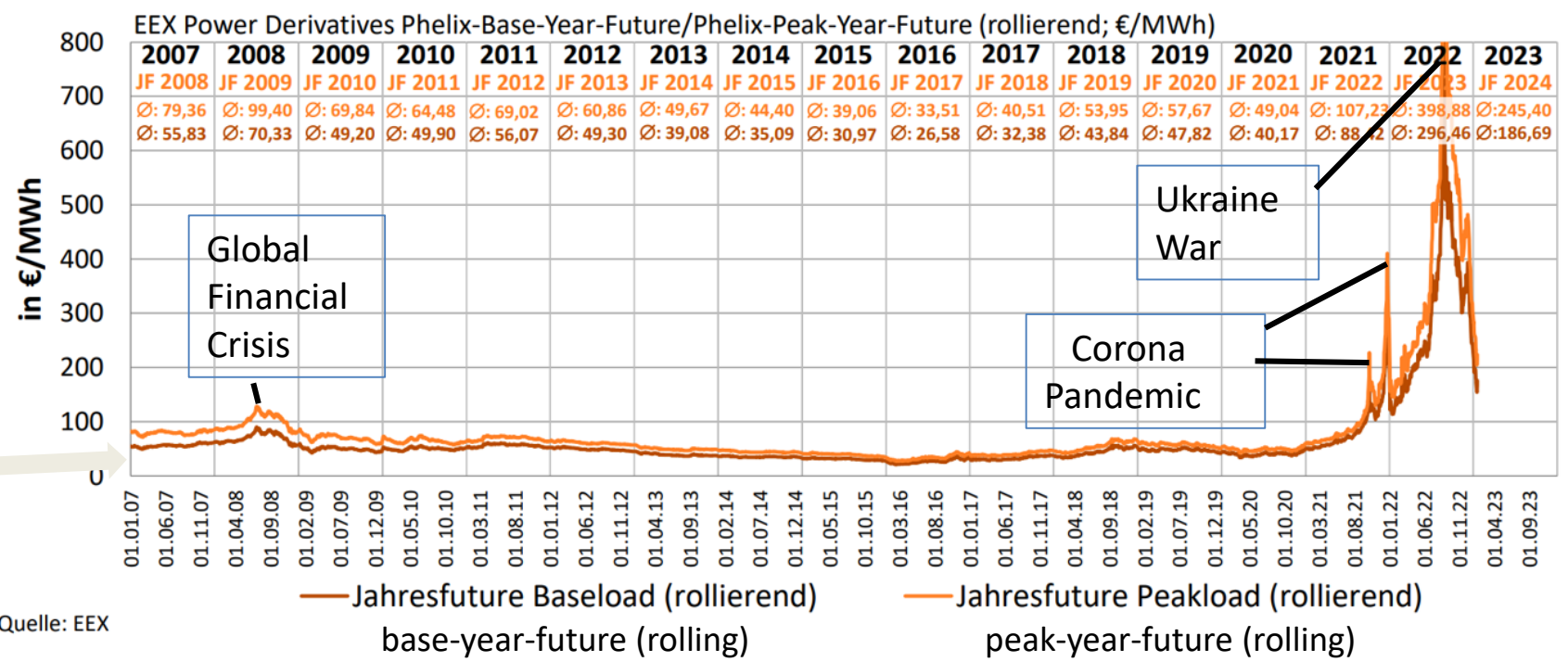
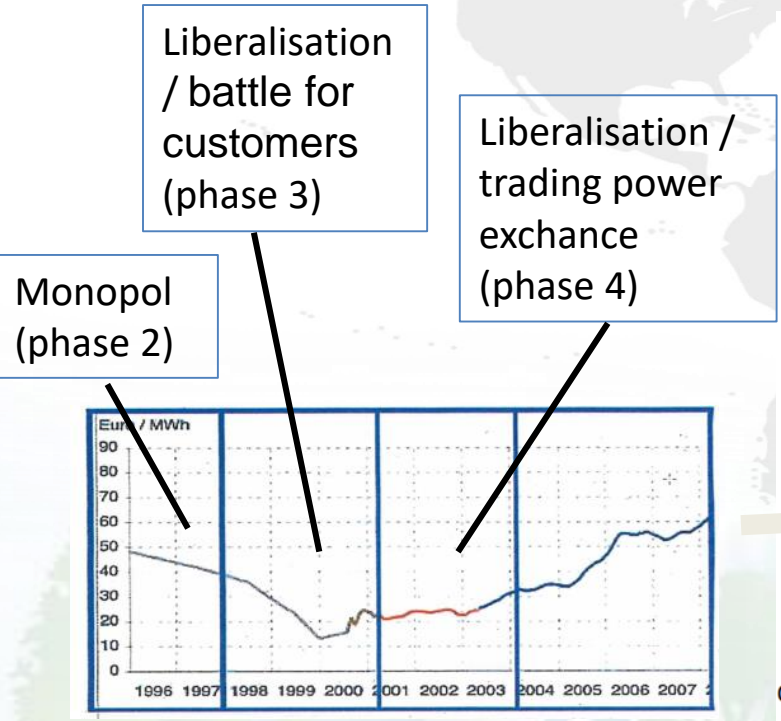
### Phase 7: Decarbonisation

2019: Resolution of the city council (100 % owner) on the climate emergency / coal phase-out  
2020/21: Commissioning of further CHP units  
2022: Commissioning of hydrogen-capable modern CHP

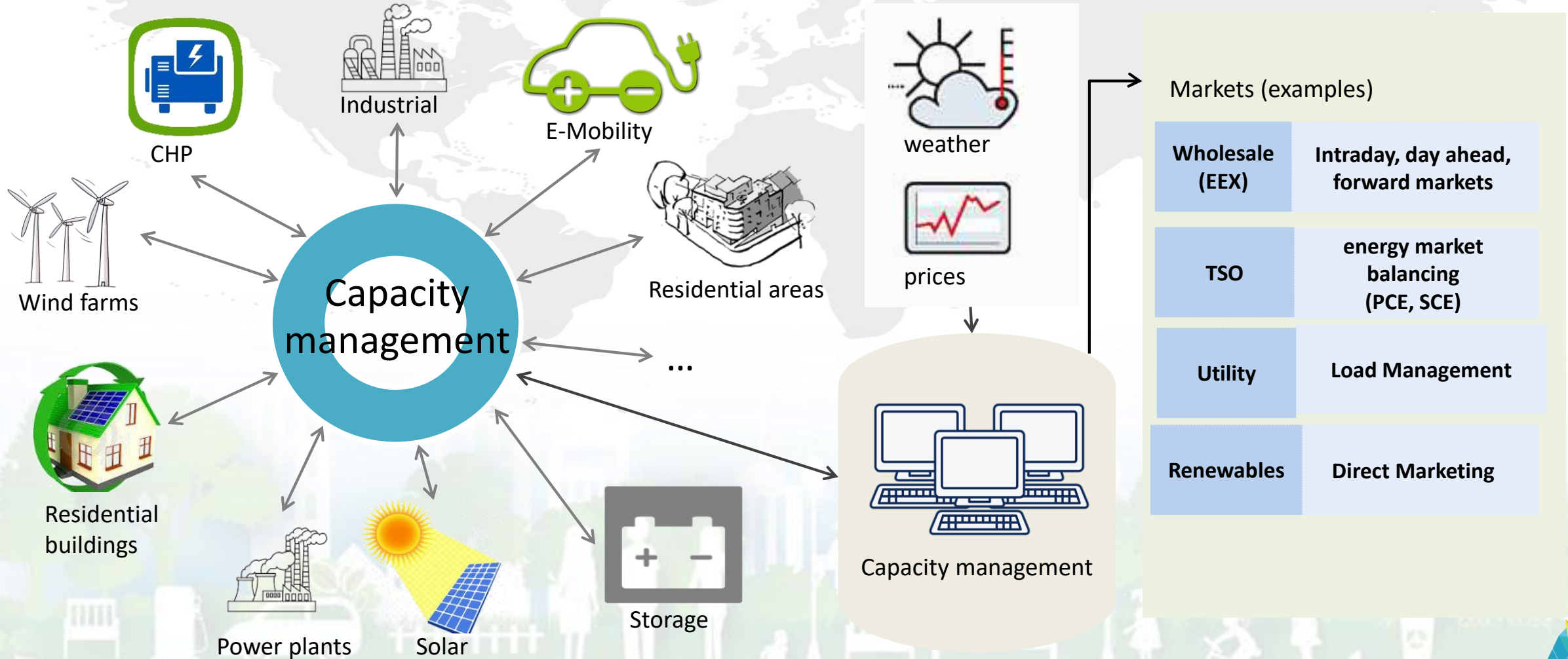


# 3. Impact Development of future prices 1996 – 2023

(since 2007 European Power Exchange, base-year-future and peak-year-future price, rolling)



# 4. Capacity/Flexibility Management/Technologies (phase 5,6)

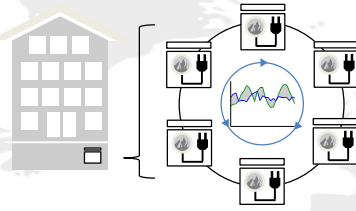




# 5. New Products and Advanced Technologies (phase 5)

Sustainable Transformation of Utilities

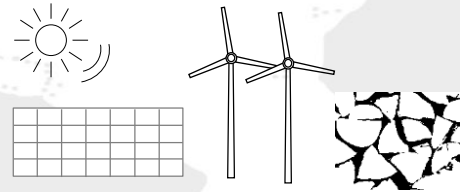
**1** Market Integration of existing CHPs and emergency power generators



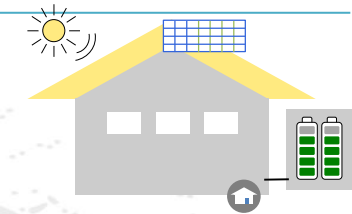
**5** Electricity and heat generation in small CHP units for on-site power and for residential buildings



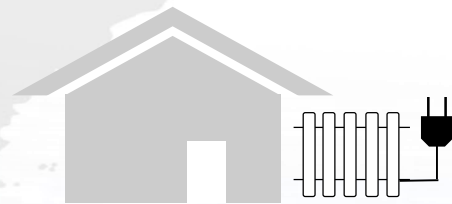
**2** Markt integration of existing renewable power plants (EEG-Direct Marketing)



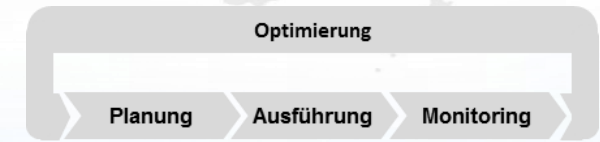
**6** Battery bundling (construction of new photovoltaic systems)



**3** Steerable heat electricity (heat pumps, electric heating)



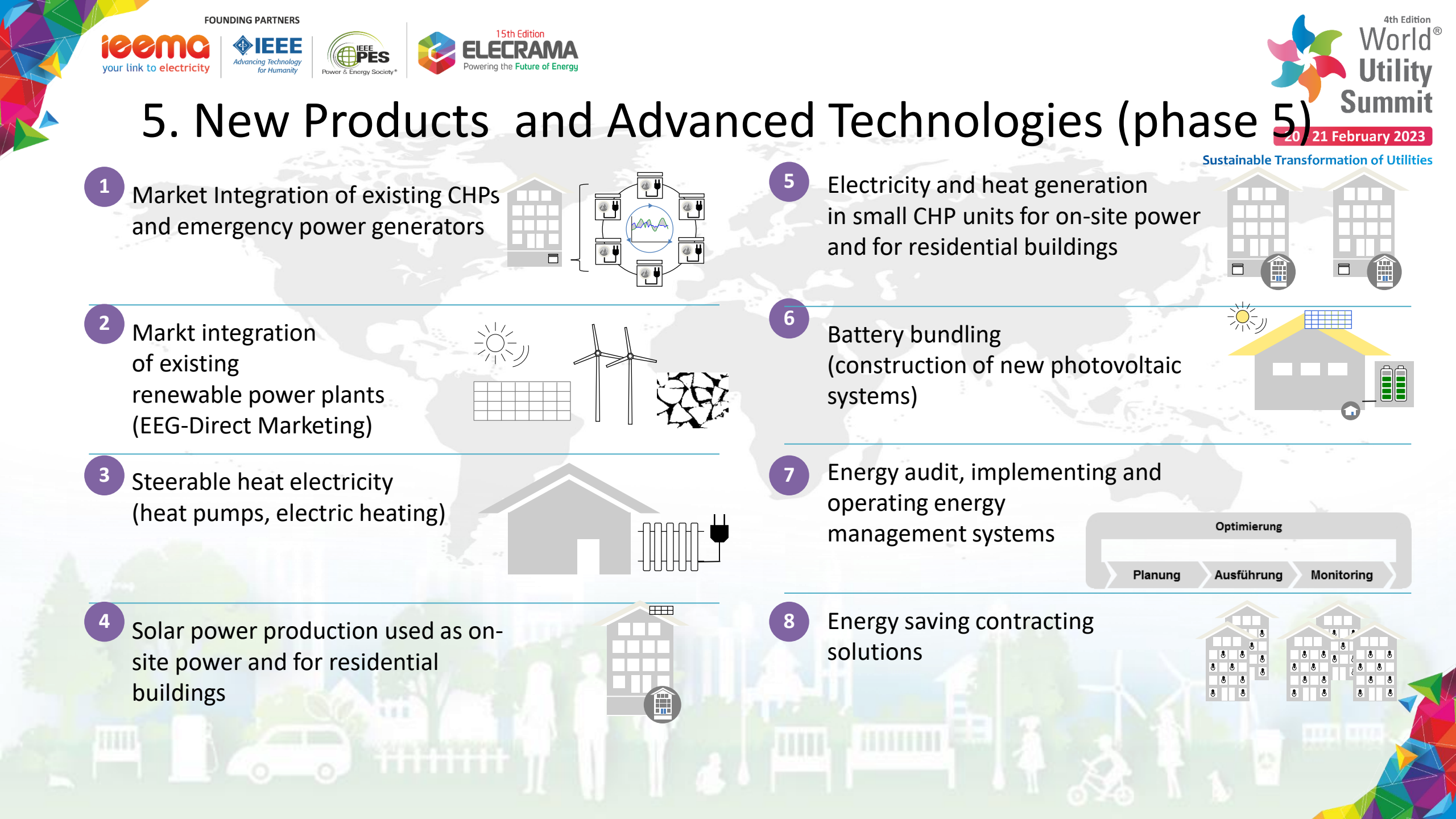
**7** Energy audit, implementing and operating energy management systems



**4** Solar power production used as on-site power and for residential buildings

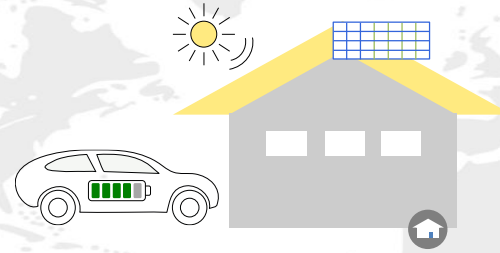


**8** Energy saving contracting solutions

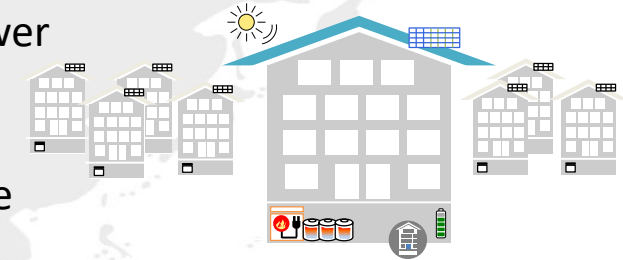


# 5. New products and Technologies - generating value around the customer electricity metering points (phase 5-7)

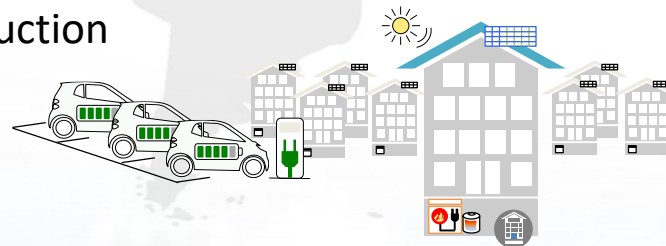
- 1 Solar power generating, electromobile house-owner



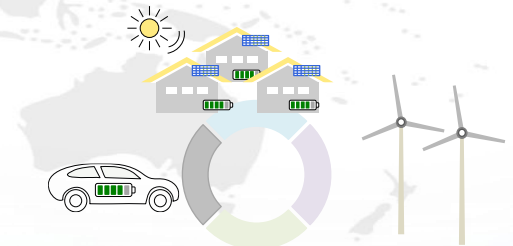
- 4 Block of flats providing power for tenants through solar and flexible CHP power production + power storage



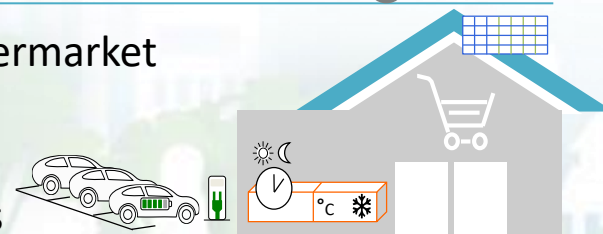
- 2 Block of flats having solar and CHP power production + car sharing pool



- 5 Community power and others ...

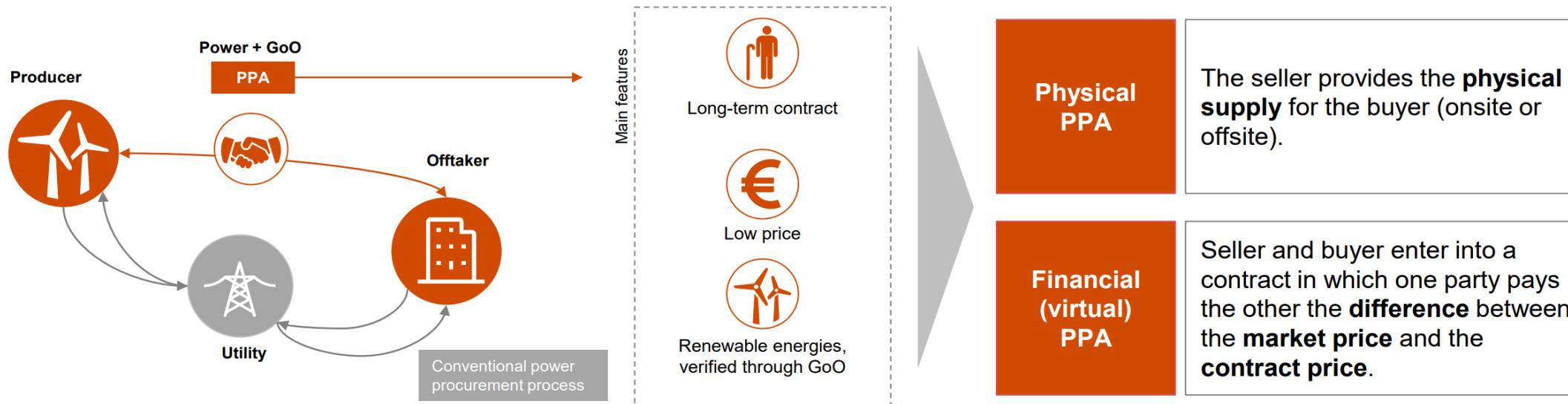


- 3 Solar power generating supermarket chain having refrigeration system and power charging stations



# 6. Business product: PPA for (private) financing renewable investments (phase 7)

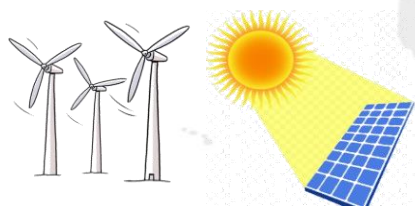
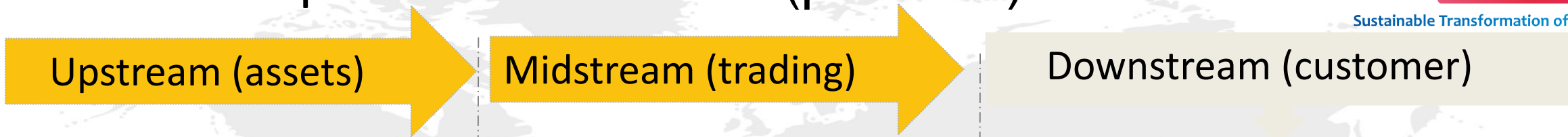
Power Purchase Agreements are **long-term contracts** between a buyer (off taker) and a seller (producer) of renewable energy that allow the buyer to purchase electricity directly or indirectly on a long-term basis at a **price level** agreed upon by both parties and to receive the associated **guarantees of origin**.



GoO: Guarantees of Origin



# 6. Business product: Midstream (phase 7)



1. Origination back-to-back green power (customer balancing)

2. Transfer, mismatch

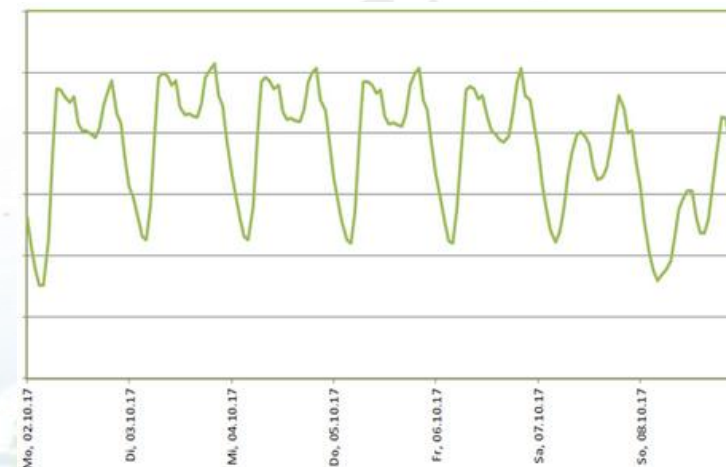
3. Residual power supply



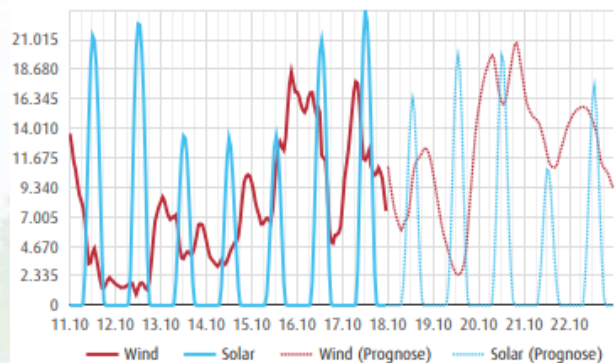
**Trading book  
 Midstream  
 (Leipzig Utility)**

Assume residual risks

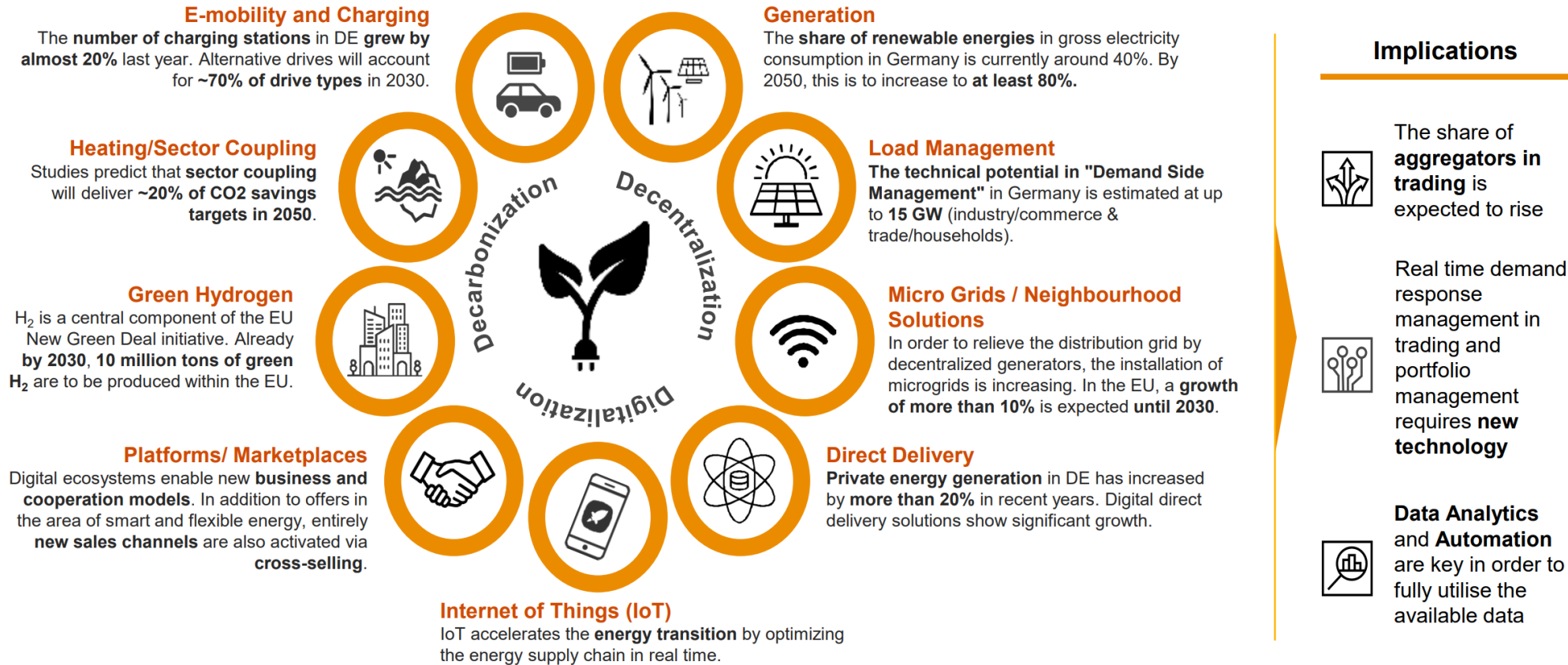
EEX / OTC	structured hedging
Power Transmission Operator	Balancing



Produktion Wind- und Photovoltaik in MWh (quellen: EEX, UBIMET)



# 7. Summary Business Advanced Technologies for Transformation Megatrend Green Energy in Europe





**ieema**  
your link to electricity

FOUNDING PARTNERS

**IEEE**  
Advancing Technology  
for Humanity

**IEEE  
PES**  
Power & Energy Society\*

**ELECRAMA**  
15th Edition  
Powering the Future of Energy

4th Edition  
**World  
Utility  
Summit**

20 - 21 February 2023

Sustainable Transformation of Utilities



# Thank You

*For discussions/suggestions/queries email: [thorsten\\_koener@t-online.de](mailto:thorsten_koener@t-online.de)*

