

Decarbonisation solutions in multi-family buildings A task for utilities?

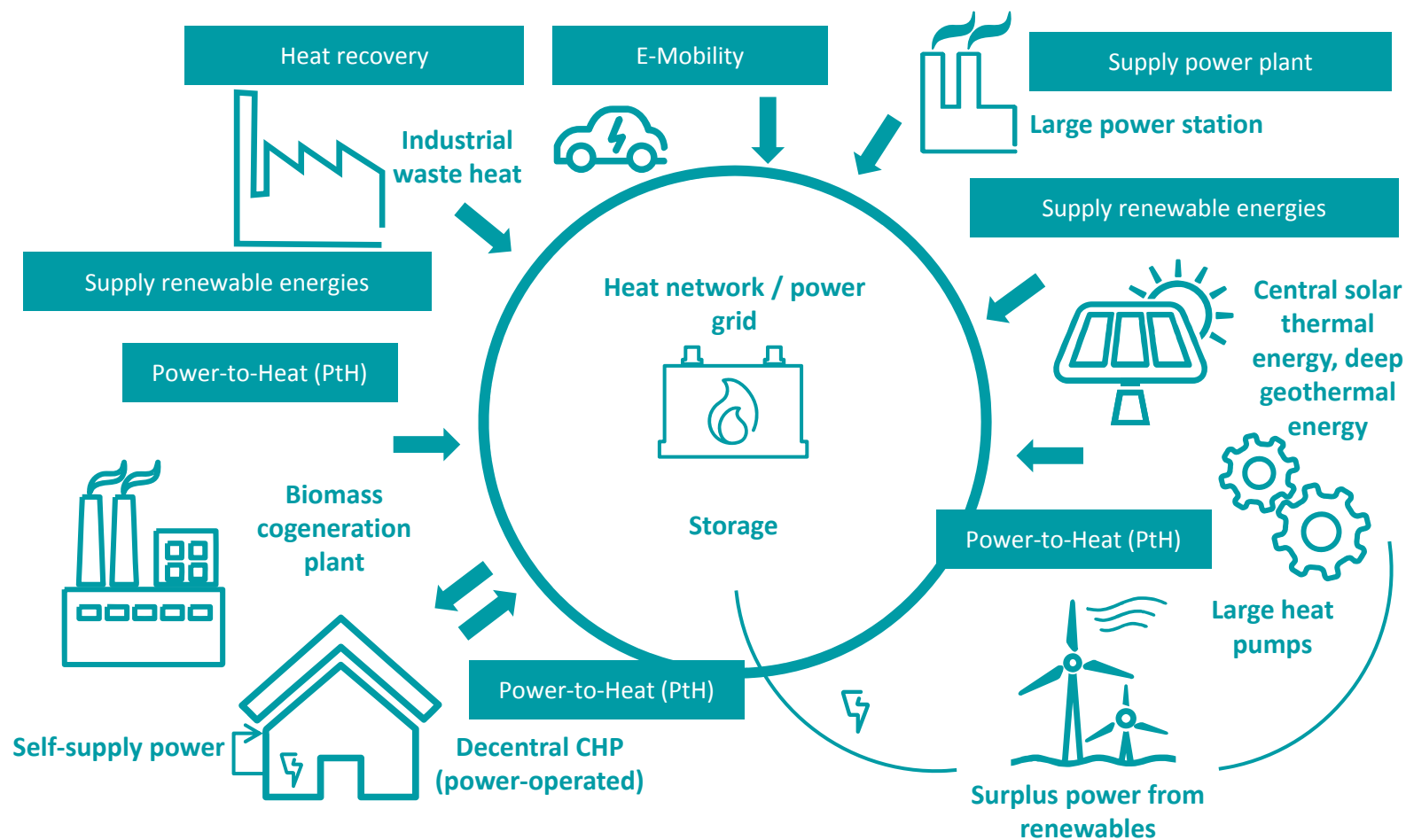
innogy SE · Jörn-Erik Mantz · 16 May 2018

Future requirements to the energy system: from fossil to renewable, from central to decentral, from static to flexible

- Political: zero emissions
- Request to reduce fossil resources and increase renewable share: flexibility
- Improved building standards – low specific consumption
- Reduce losses – decentral production and consumption
- Sector coupling

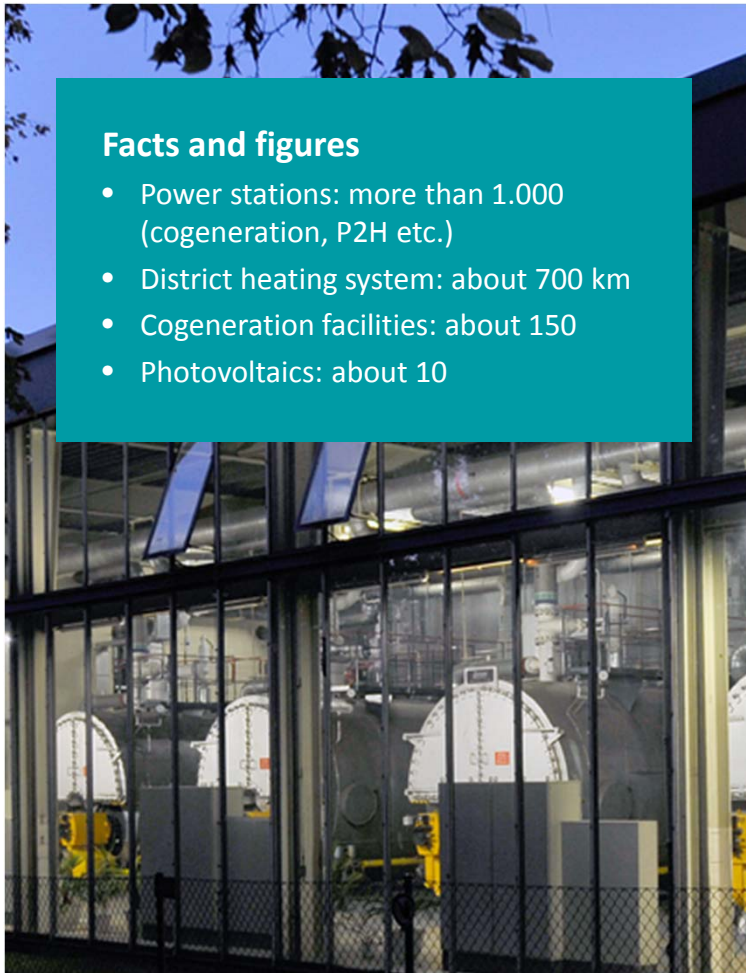


From central to decentral supply – from separated single medium to sector coupling



Own presentation: source: Arthur D. Little Analysis, based on HIR Hamburg Institut Research GmbH

B2B Energy Service at one glance: Our locations and facilities



Facts and figures

- Power stations: more than 1.000 (cogeneration, P2H etc.)
- District heating system: about 700 km
- Cogeneration facilities: about 150
- Photovoltaics: about 10

Energy production nowadays

- Production based on fossil energy sources
- High consumption
- Decentralised production

Amount [GWh]	Energy source	Percentage [%]
79,0	(Heating) Oil	2,6
21,8	Hard Coal	0,7
2,6	Fresh wood	0,1
587,3	District heating	19,0
1.197,7	Natural gas	38,6
975,7	Waste wood	31,5
1,7	Fuels	0,1
170,7	Biomethane	5,5
58,2	Power	1,9

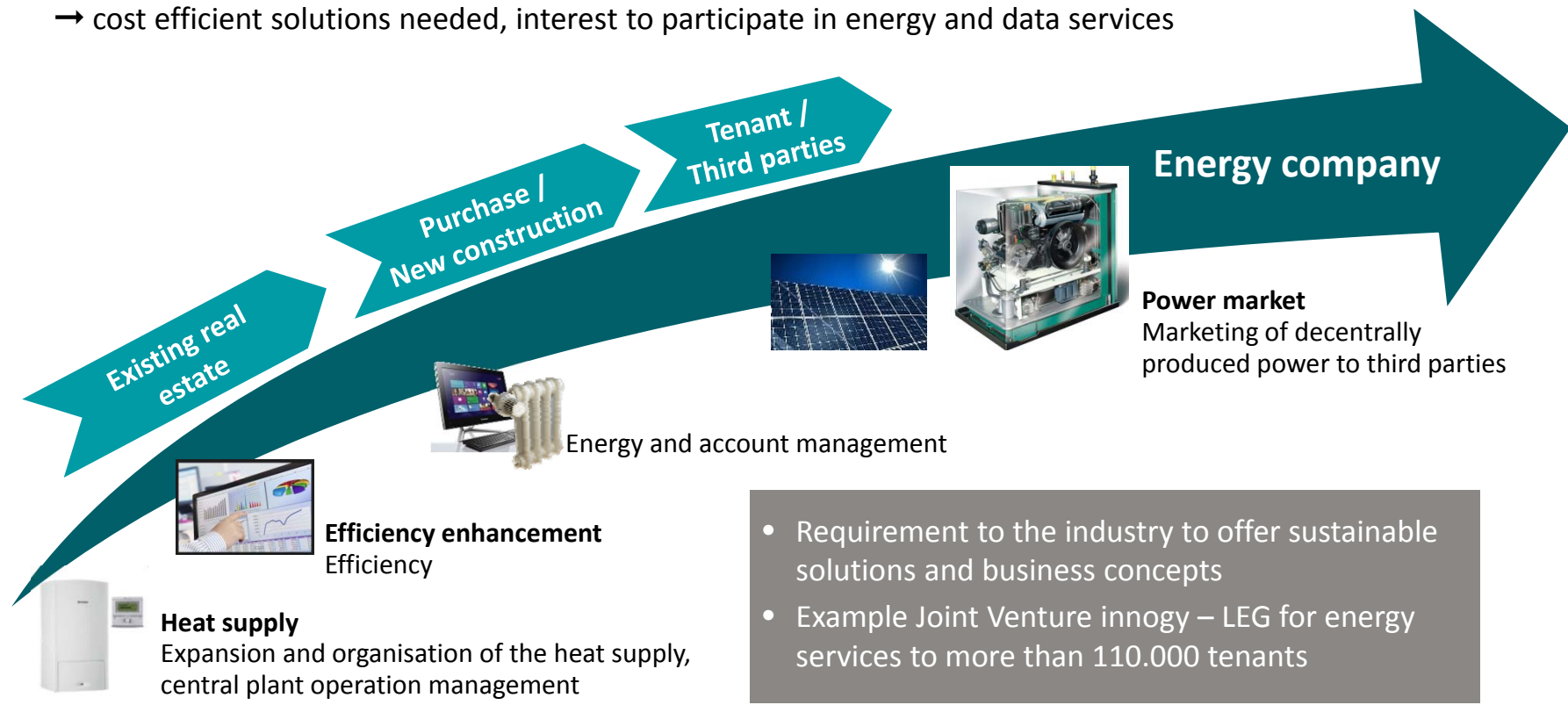
(source: innogy SE, ASR-BEB-B operating details 2016, 29.08.2017)

Request of our customers: Building companies are in need for sustainable strategies for replacement

Building companies are challenged

30+ year old, inefficient building structure, outdated heating systems, need for energetic modernisation, limited ability to increase rents

→ cost efficient solutions needed, interest to participate in energy and data services



Innovative projects with sector coupling – innogy as a professional solution provider

For large scale quarters

Heat, cooling and power with cogeneration for the science city in Berlin-Adlershof serving 1.000 enterprises and 20.000 people (reduction of CO₂ emission p.a.*: 18.000 tons)



For large scale quarters

Use of industrial waste heat for district heating (around 95 km), serving about 1.300 residential buildings



For small scale quarters

Thermal energy supply of an apartment building by solar heat, heat pump* and ice-energy storage with neutral carbon footprint



For large scale quarters

Low-ex-net for urban development area: generation with CHP, gas boilers, reversible heat pumps, geothermal, sewage, customer sites. Integration of existing plants. Power-to-heat/cooling



*comparison 2015 to 1966

Summary and future requirements for economic projects in sector coupling



- 1) Discharge of the electric sector in comparison with the fossil sector for more competitiveness. The solutions are often not economic yet
- 2) Efficient generation in existing buildings is more expensive than new buildings
- 3) Therefore definition of a framework by the municipality is essential
- 4) Attention on integrating all competitors to avoid discrimination
- 5) We as innogy are ready for offering appropriate solutions that meet the framework conditions



Thanks for your
attention!

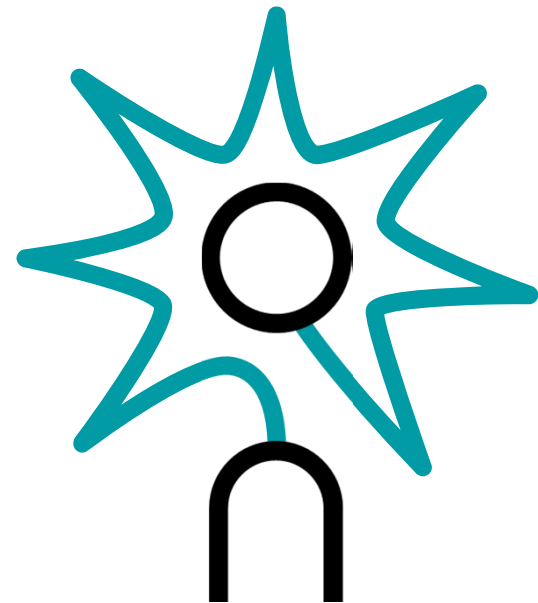
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BACKUP



Europe as a big challenge for efficient decarbonisation solutions



- In opposition to China e.g. (‘City of the future`), where a big amount of construction projects is planned, we deal with mainly existing buildings in Europe
- Therefore projects that aim on improving the energy efficiency have to base on existing building resources
- Solutions in existing buildings for new opportunities such as heat, power and media supply are often designed as stand-alone solutions that meet the needs as planned – improving the energy efficiency
- Since fossil energy production is still cheaper, these stand-alone solutions seem to be the smartest way to improve the energy efficiency
- This procedure disguises the fact that those isolated solutions don’t meet the requirements of integrated future solutions
- Therefore a framework set it necessary which serves as parameters and guidelines for the competitors’ solution offers