

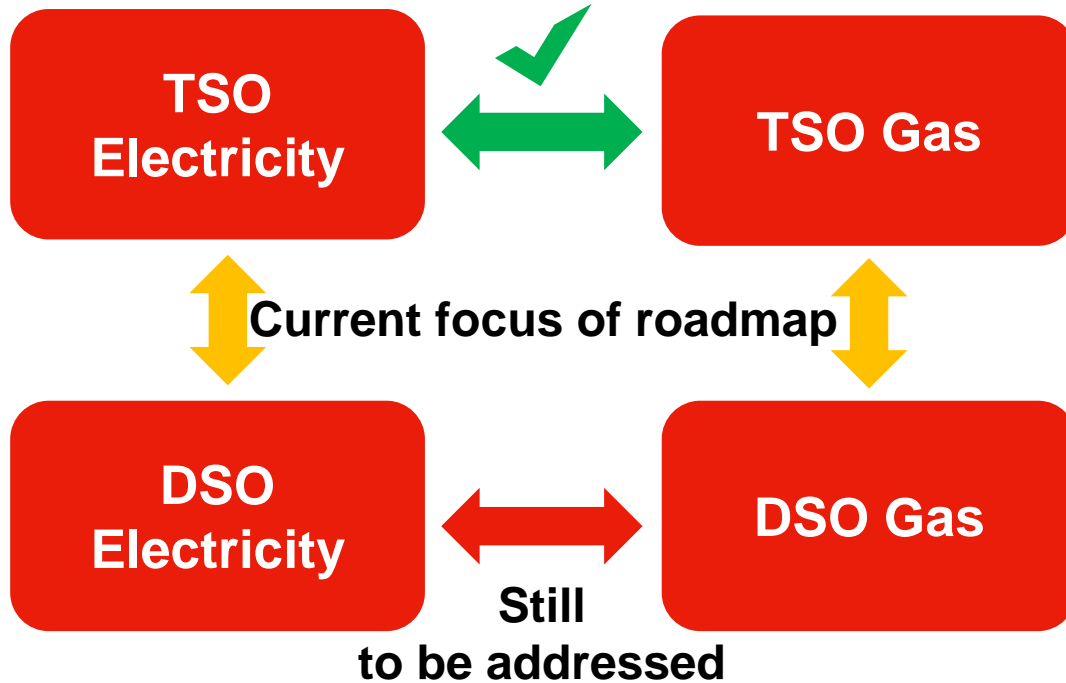
# Towards coordinated electricity and gas planning

Torsten Knop

Energy Infrastructure Forum November 25, 2021



# Coordinated network planning in multiple dimensions



**Harmonization  
primarily  
of general principles  
along Art. 32 (4) of  
Directive 2019/944**

# The data platform allows to consider each and every building/household



## Ex.: Emmastr. 25

- Built 1920-1949
- Gas heating
- Community of apartment owners
- ~20.000 € purchasing power per inhabitant
- Heating installed 1995-2000
- 150-165 kWh/m<sup>2</sup> heat demand
- 380 m<sup>2</sup> living space
- ...

## Ex.: Hedwigstr. 37

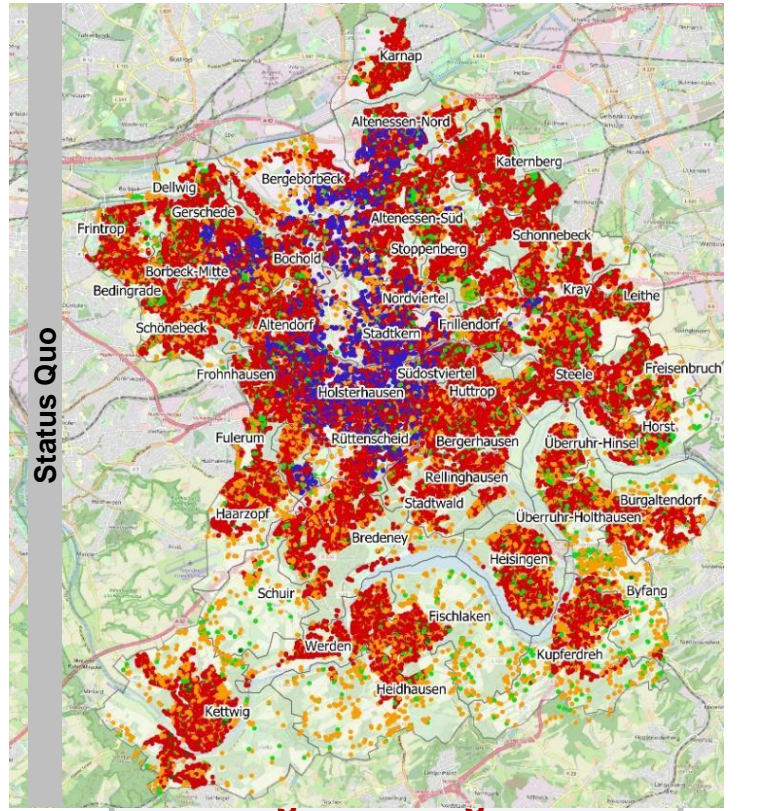
- Built before 1919
- Gas heating
- Private ownership
- ~30.000 € purchasing power per inhabitant
- Heating installed 1995-2000
- 150-165 kWh/m<sup>2</sup> heat demand
- 286 m<sup>2</sup> living space

## Characteristics of the „Digital Twin“:

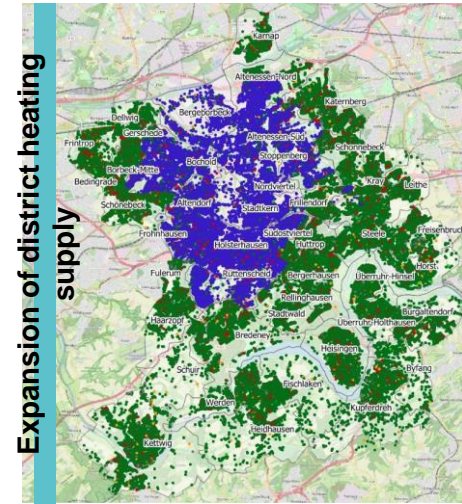
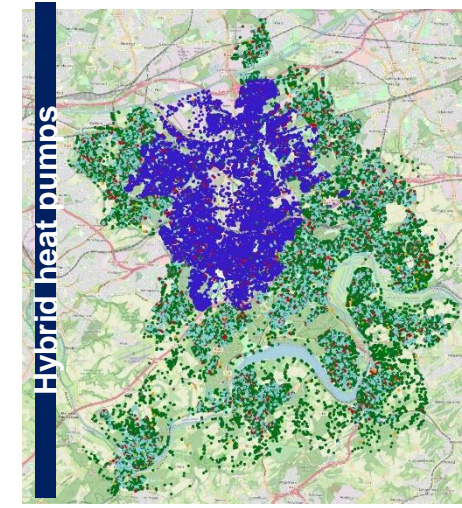
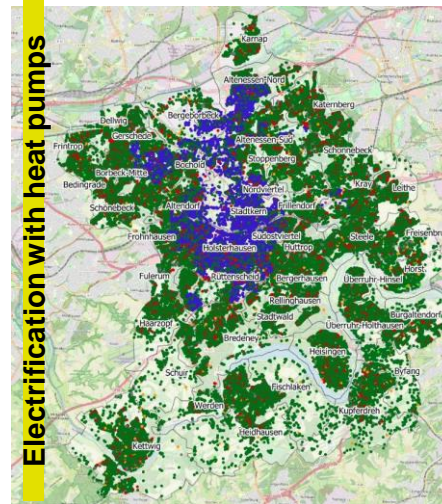
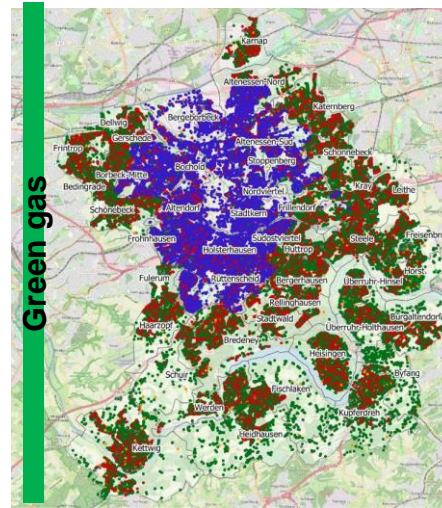
- Commercially available data
- Conform with GDPR / DSGVO
- Scalable



# Scenarios 2050 evaluated



- Ga
- Oil
- Night Storage
- Heat pumps
- District Heating
- Others
- Hybrid



# Coordination must extend beyond grid planning e.g. to energy efficiency and flexibility provision

	Heat pumps	District heating	Direct heating	Green gas	Hybrid heat pumps
CO <sub>2</sub> Emissions	-93% ✓	-93% ✓	-91% ✓	-93% ✓	-92% ✓
Share of wallet	4.6% ? (Today 2,3%)	4.0% ? (Today 2.3%)	3.8% ? (Today 2.3%)	3.5% ? (Today 2.3%)	3.3% ? (Today 2.3%)
Modernization rate	2.1% ✗ (Today <1%)	1.7% ✗ (Today <1%)	1.0% ✓ (Today <1%)	1.0% ✓ (Today <1%)	0.8% ✓ (Today <1%)
LV grids to be expanded	51% ?	43% ?	65% ✗	34% ✓	38% ✓

✓ ✗ ? – Reality check