

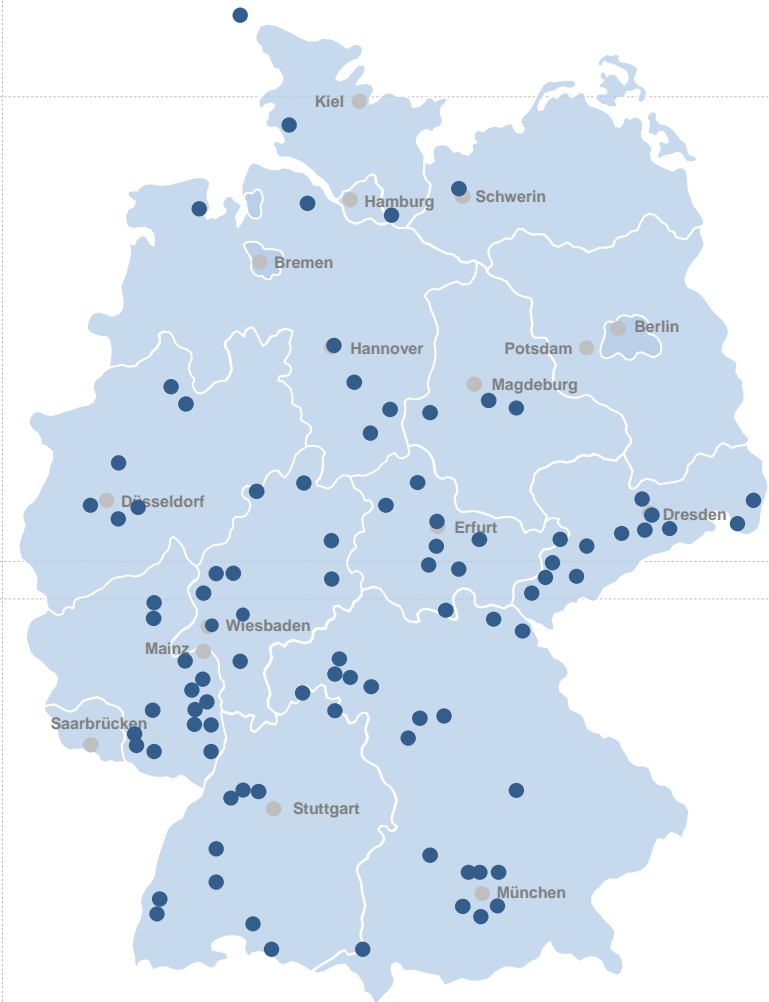
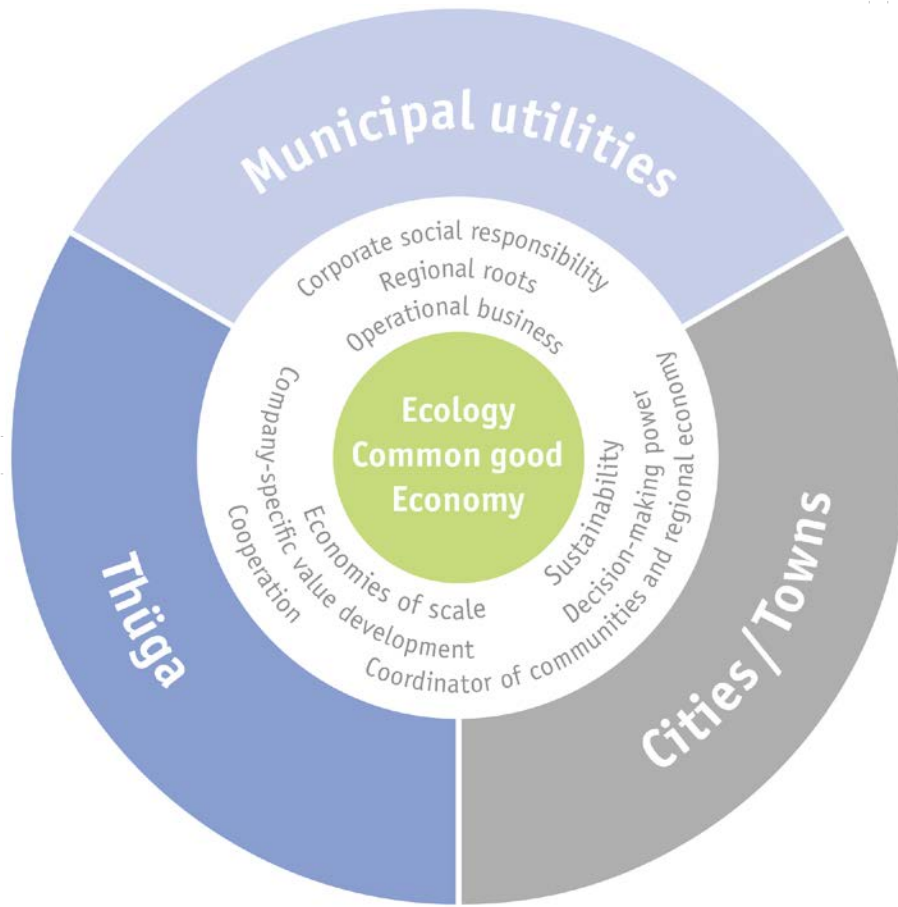
Circular energy economy and cities: from linear to closing energy cycles

Energy system planning: the utility perspective



Cooperation creates added value – this conviction allows the Thüga Group to master any challenge.

Partnership Model:



The Thüga Group constitutes the largest alliance of municipal utilities in Germany

Key figures 31.12.2016

Turnover
€19.0 billion



Gas sales
116.8 billion kWh

Heating Sales
9.0 billion kWh

Investments
€1.0 billion



Electricity sale
49.8 billion kWh

Water sales
277.9 million m³



Gas
customers
2.0 million

Electricity
customers
4.0 million

Employees
17,200



Heating
customers
0.1 million

Water
customers
0.9 million

Smart Cities and Smart Grids is not a concept or product you can buy in the internet – all solutions have to be adapted for each local situation

The fulfilment of the climate goals is a huge challenge for every city administration with the available funds while creating a positive living and working environment for the citizens and companies

Smart Cities in the national and international context:



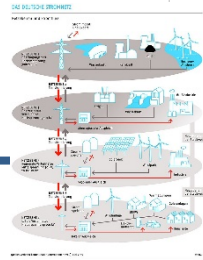
IMPORTANT FOR UTILITY COMPANIES

- Spend the money in the right assets at the right time, run a constant simulation and forecast
- Learn as fast and as broad as possible from solutions in other parts of DE/EU
- Create business models with a return on the investment
- Be a competent partner for the consumers of all sizes, politicians and the local city administrations

The transformation to a decarbonized energy system will keep the utility companies on their toes for the next 30 years



For the grid planning many assumptions have to be constantly re-evaluated and monitored



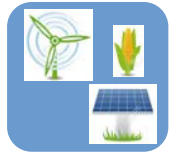
The future depends on what you do today*



Grid planning for gas, electricity and heating

Forecast of grid reconstruction for next 30 years, new residential areas, use of intelligent smart grid components, energy efficiency grid simulations

Integration of local renewable Energies



Analyse existing injections of electricity and gas, forecast future potential, load profiles, storage possibilities, effects of “dunkle Flaute”

Local and decentral



Flexible Customers

Evaluation of possible industrial and commercial Demand Response, use of “waste”-heat, forecast of technology and energy switch

Development of Ecomobilität

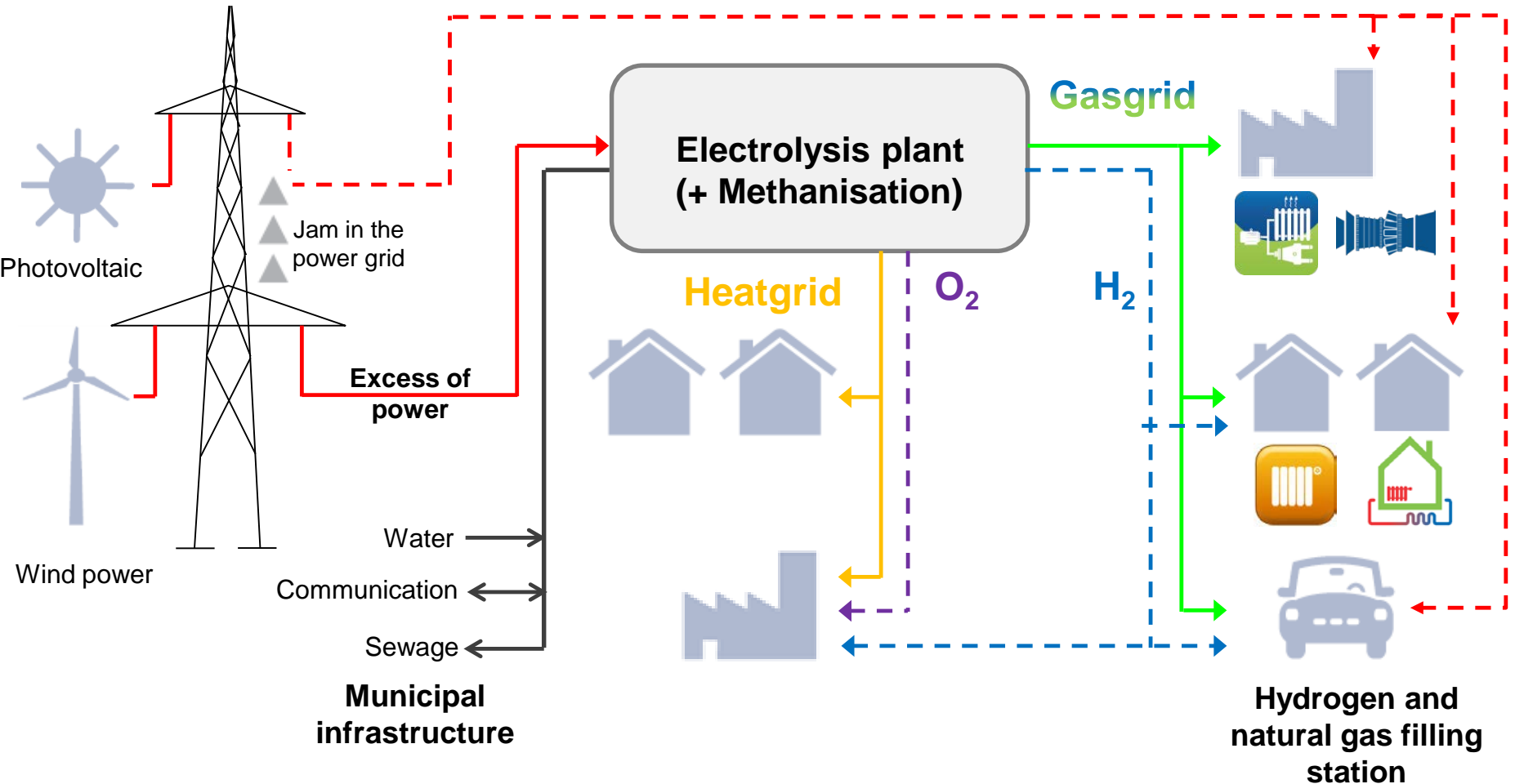


Forecasts for scaling up of e-/gas-mobility, construction of public and private, simulations with different load capacities and load mentalities

The future role of gas grids will change with increased sector coupling and the availability of biomethane, SNG and hydrogen

With methanisation hydrogen is transformed into SNG (Synthetic Natural Gas)

Power grid



For a fast, cost efficient and customer friendly decarbonisation the optimal use of today's infrastructures is key



Eva Hennig

Eva.Hennig@thuega.de

+49 89 38197 1232