

OEMOF USER MEETING 2023

Thema: Projects with oemof.solph at
Hochschule Nordhausen

Stand: 24.05.2023

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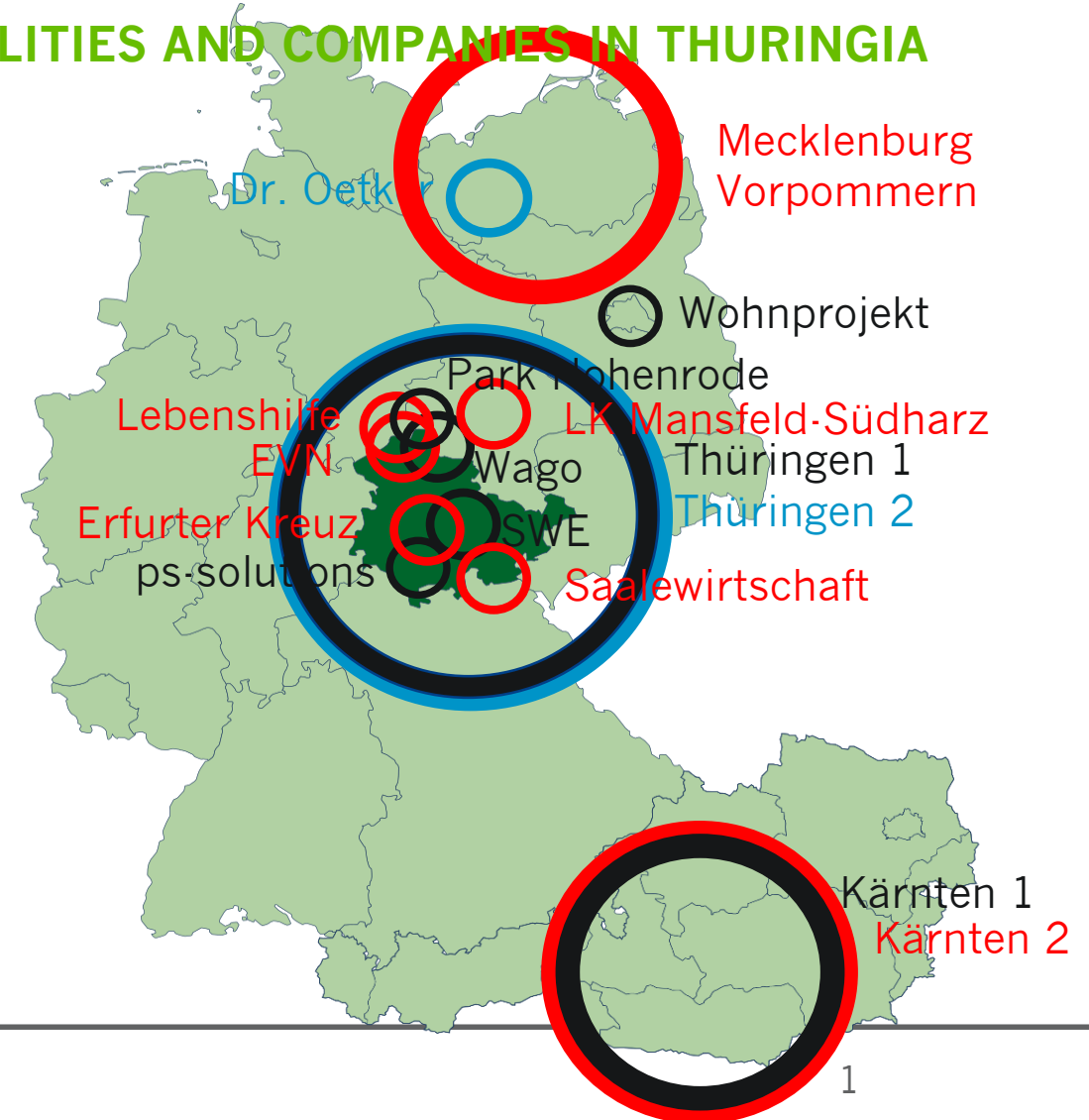
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TRANSFORMATION PROCESSES

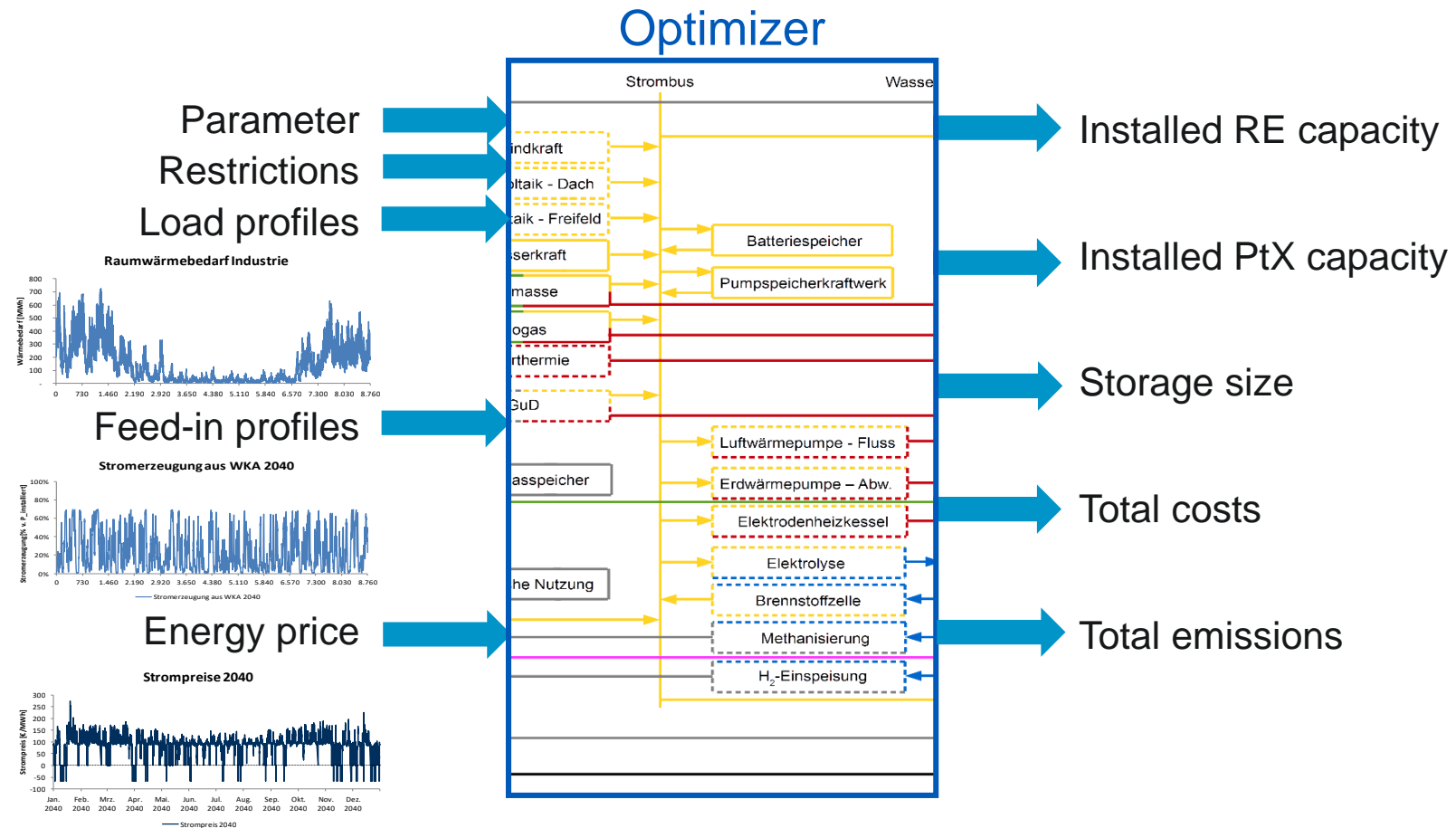
FOR COMMUNITIES, PUBLIC UTILITIES AND COMPANIES IN THURINGIA

- Energy system models are powerful tools
- Energy system models are scalable

- Completed Projects
- Current Projects
- Upcoming projects



1 TRANSFORMATION OF THURINGIA ENERGY SYSTEM



1.1

THURINGIA ENERGY SYSTEM

Phase 1

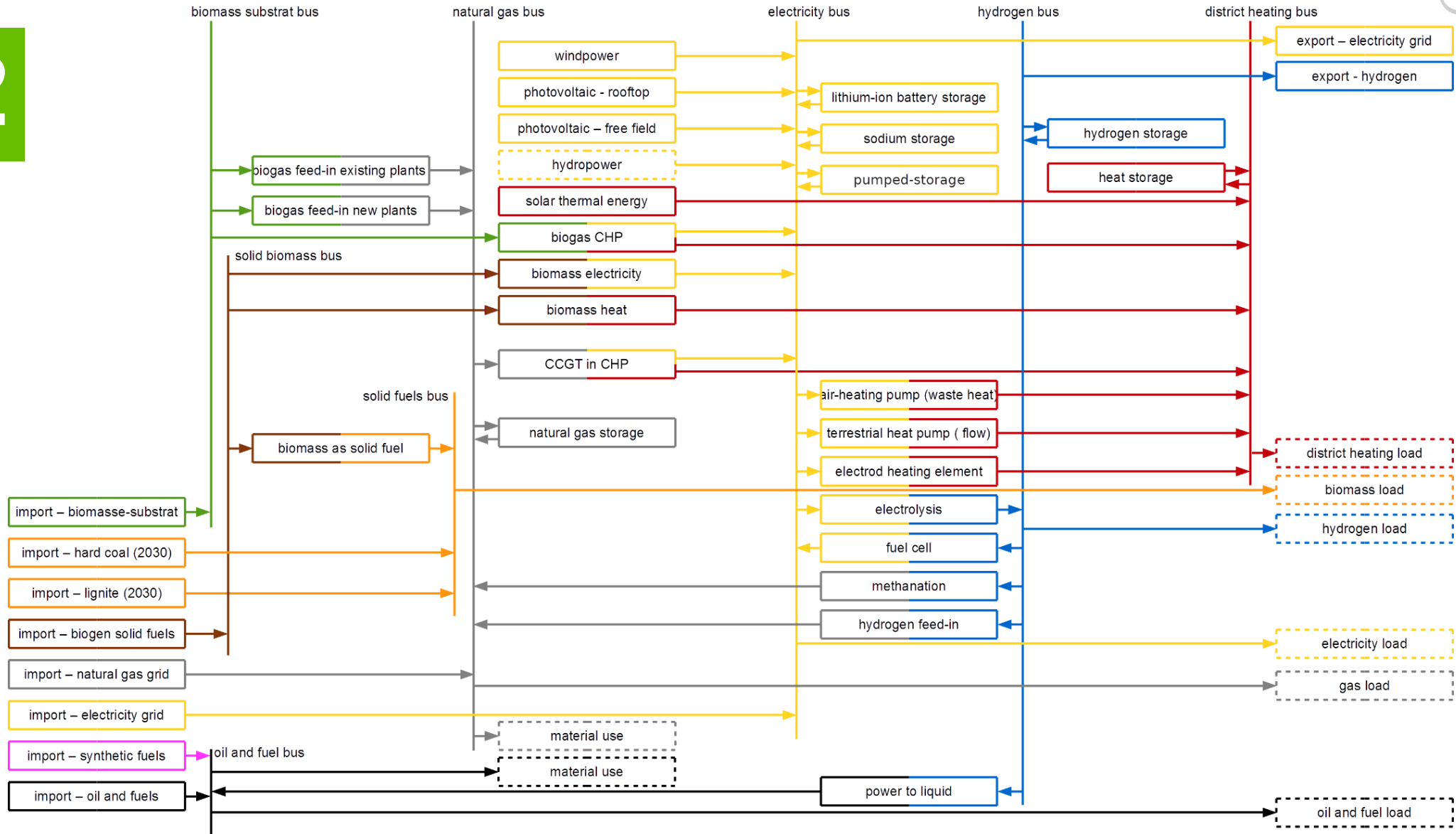
- A climate-neutral Thuringia is realistic und affordable
- Energy efficiency is a requirement
- Wind and photovoltaics must be expanded quickly
- Power-to-heat and heat storage must be continuously expanded
- Biogas technology is about to change
- The ultimate role of the hydrogen economy is still open

Phase 2

- Development of load profiles for each sector
- Prognosis of PV potential in household sector
- Detailed and sector specific analysis for Thuringia



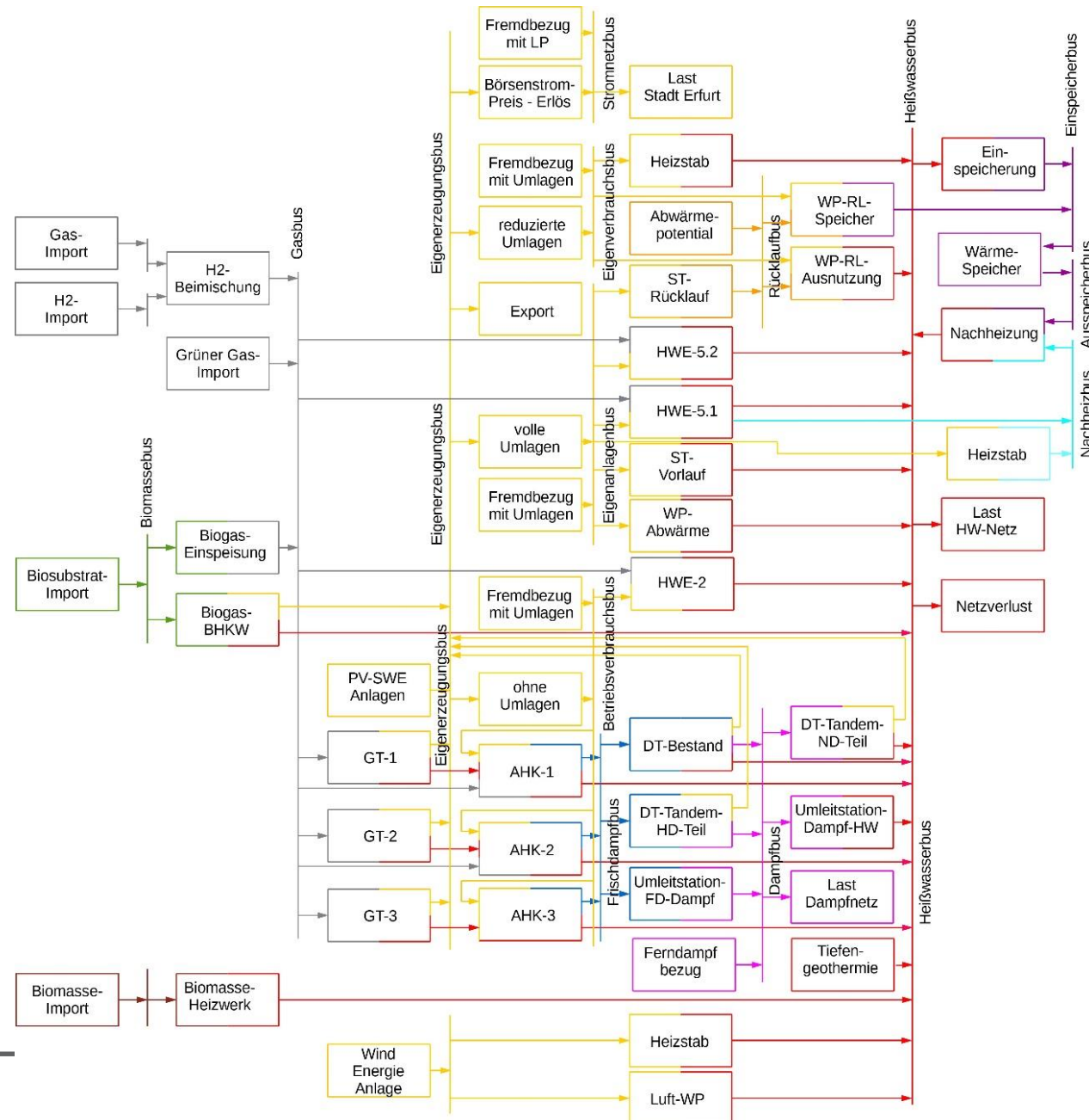
1.2



2 STADTWERKE ERFURT (SWE)

- Development of an ESM with the existing technologies and possible expansion/development options for SWE GmbH
- Validation of the developed ESM based on current situation
- Development of the expansion paths necessary for the implementation of the heating concept for the individual heat and sector coupling technologies with intermediate time steps up to 2045
- Expansion paths → provides SWE with a decision-making basis for future investments and serve to develop local energy potentials

2.1



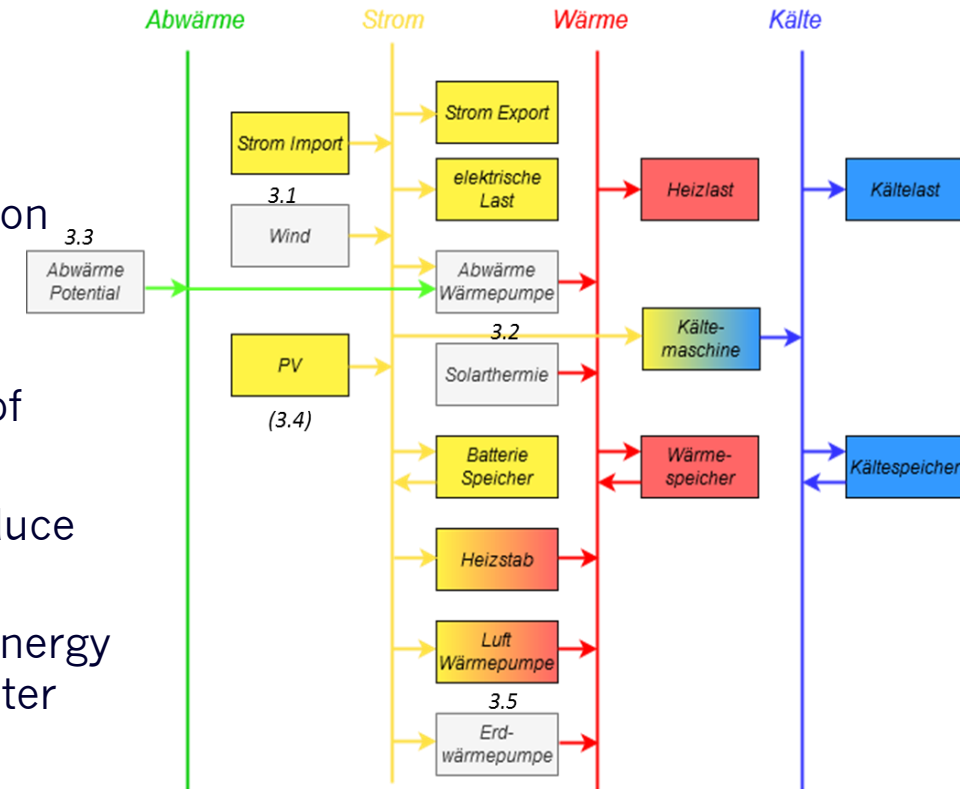
3 WAGO

GOAL:

- High share of RE to satisfy the demand
- Heat supply without gas connection or other combustion systems

RESULTS:

- Direct use of PV reduces cost and lead to a RE share of 73% in all scenarios
- Direct connection of Wind turbine can significantly reduce cost
- Use of geothermal heat, Waste heat or solar thermal energy has no cost reduction potential compared to an air-water heat pump
- PV stand-alone grid can reduce the risk of frost damage during power failure



4 GUI



Difference between OpenPlan and EnSys

- Direct usage of oemof.solph
- Basis of web interface from RLI

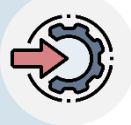


Optimal for professionals and beginners

- Modelling without programming knowledge
- Separate input interface for beginners and professionals

Inputs

- Linked with Open-Energy-Platform
- Availability of Standard load and feed-in profiles
- Implementation of open-source libraries to develop desired profiles (v1.1)



Simulation

- Locally on host server using Docker Container



Results

- Energy system model can be exported
- Visualization using Sankey diagram, etc.



We would like to thank the Free State of Thuringia for the project funding.



Discover more about ZO.RRO : **www.zorro.energy**



7. RET.Con on 8./9. February 2024 in Hochschule Nordhausen

