Stratego
ENHANCED HEATING & COOLING PLANS

Co-funded by the Intelligent Energy Europe Programme of the European Union

Heat demand mapping and the utilization of district heating in energy systems with a high share of renewables: Case study for the city of Osijek

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FSB

STRATEGO

- IEE project
  - 15 partners from 12 EU countries
- Main goals:
  - Capacity building of local government and DH players
  - Mapping of heating and cooling demand
  - Assistance in the creation of NHCPs

Developed in the framework of ©

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Mapping

- Mapping of useful heating demand
- Identification of priority projects
- Identification of sources of local energy and waste heat
- Assistance with energy planning of cities and regions
- Detailed information for the local government, city planers and the general public

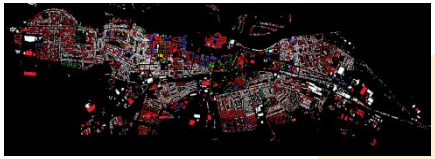
Mapping - Methodology

- Geoportal – location and area of buildings
- Height (number of floors)
- Average energy consumption per type of building

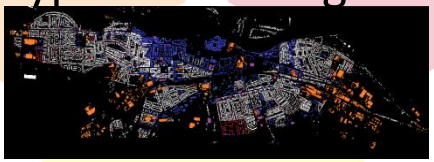
Mapping - Methodology

Matrix (1.36X1.36m)

No. of floors

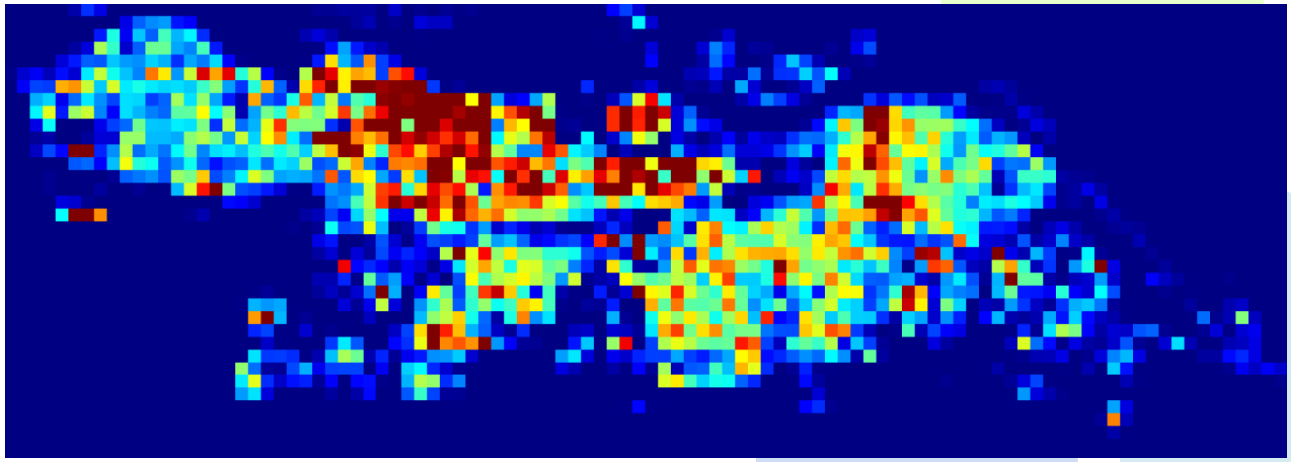


Type of buildings



Heat map of Osijek

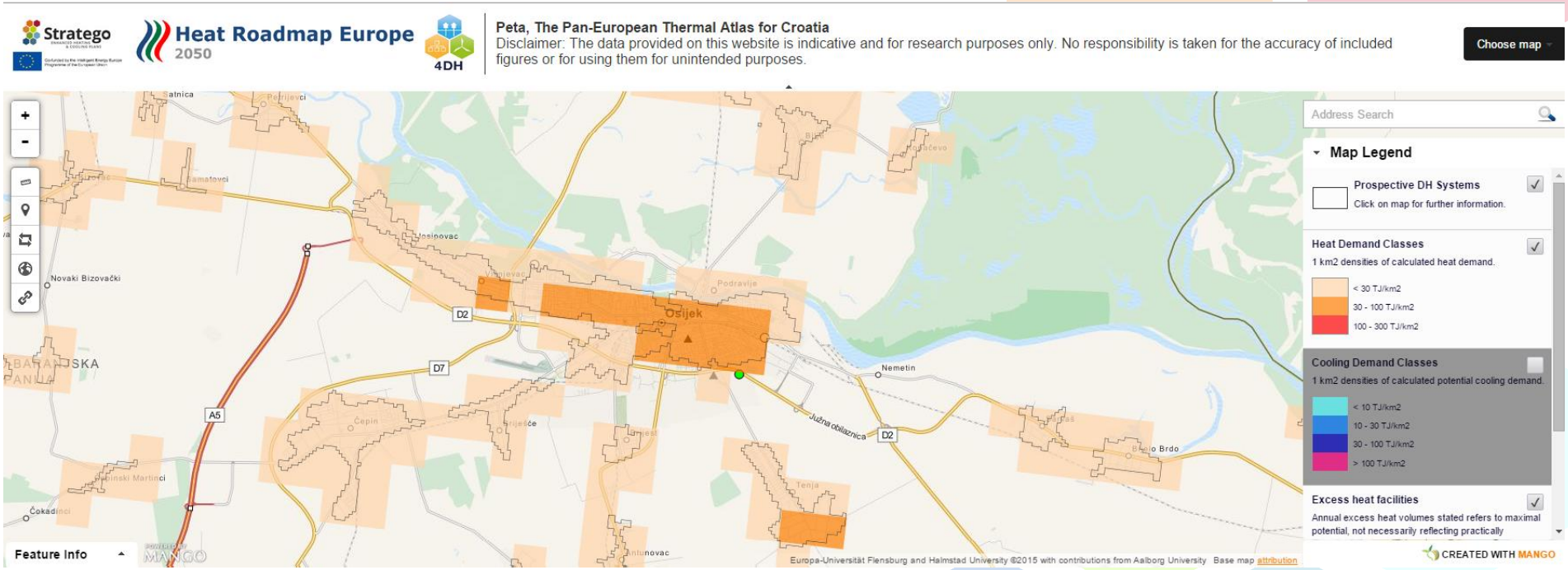
100X100m



Mapping – Future steps

- Calibration
- Linking of public data and data received from the city and DH operator with the map
- Transferring the data to a GIS interface
- Additional layers:
  - Energy certificates
  - Gas and DH grid
  - Waste heat sources…

Thermal Atlas



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EnergyPLAN

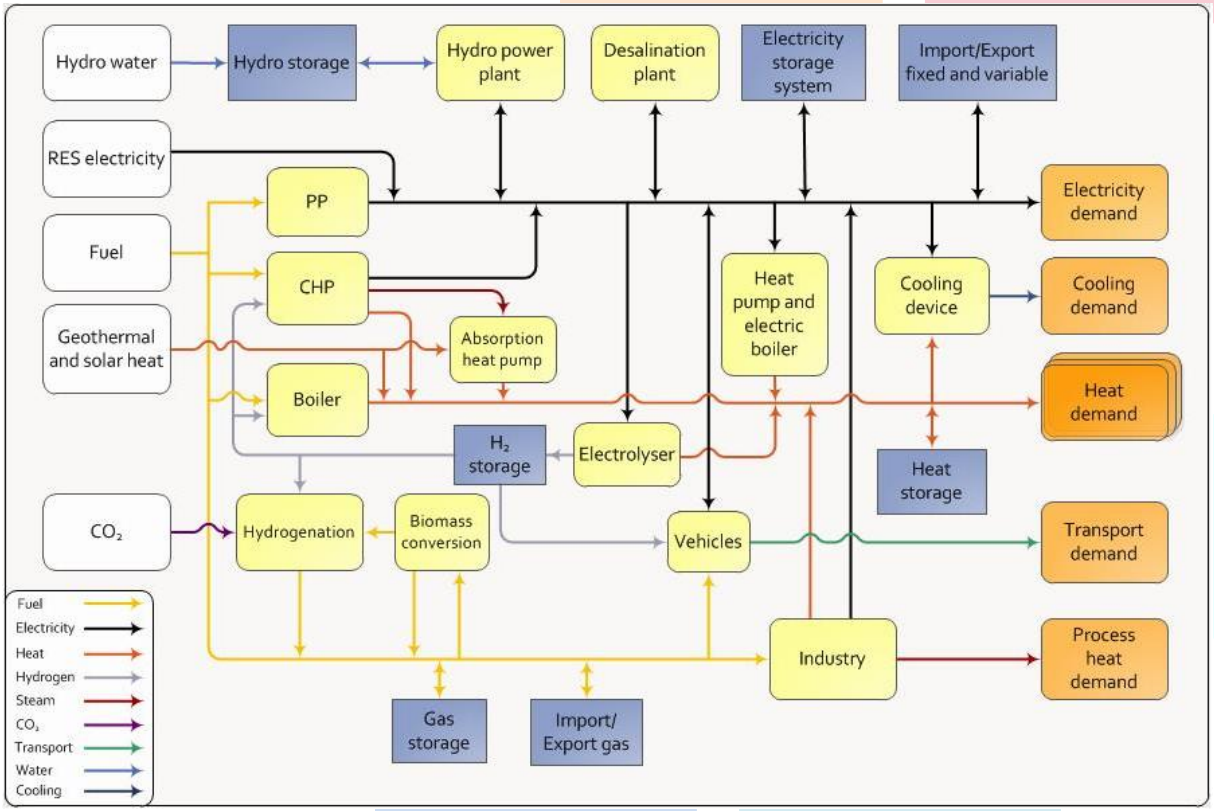
Sustainable Energy Planning Research Group, Aalborg University, Denmark

Deterministic input-output model

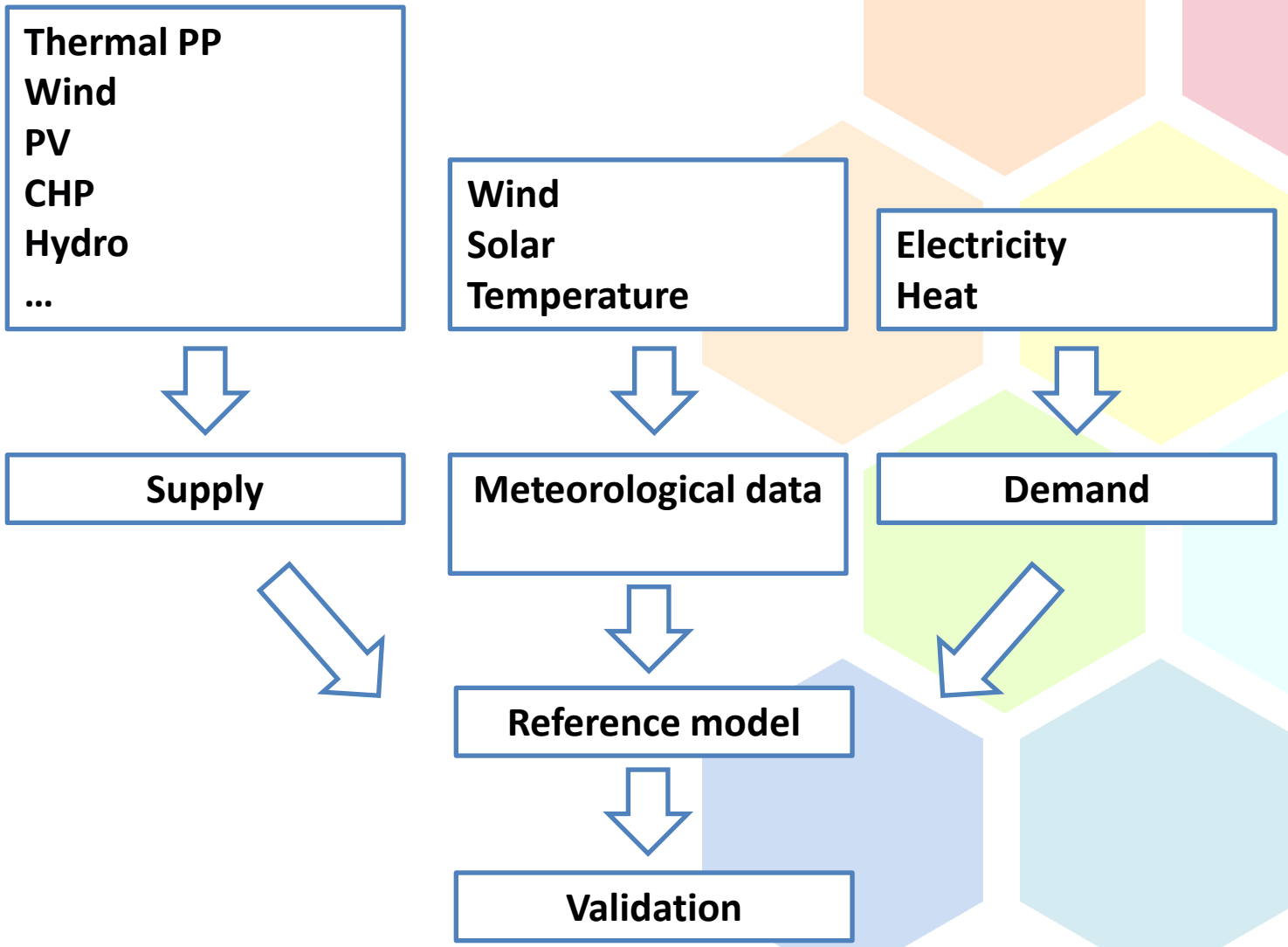
Aggregated

Annual analysis on an hourly basis

Optimization of the system



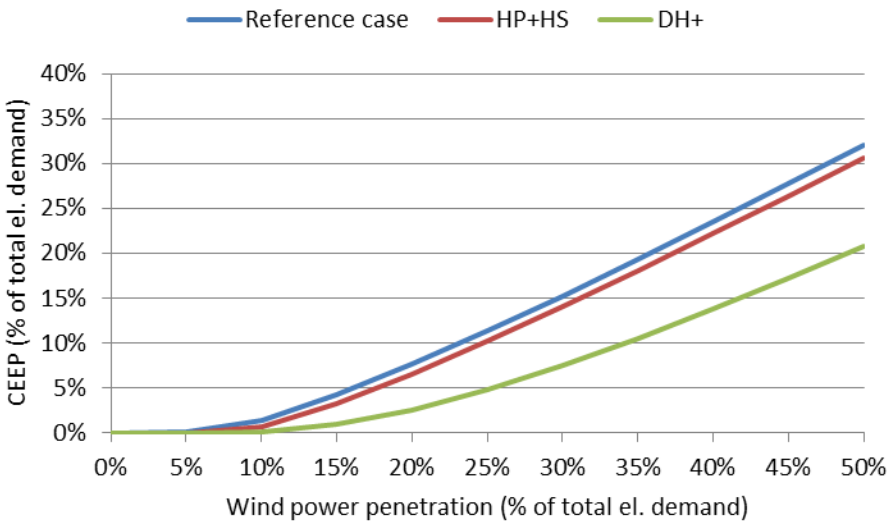
Energy Planning



Influence of DH in Osijek

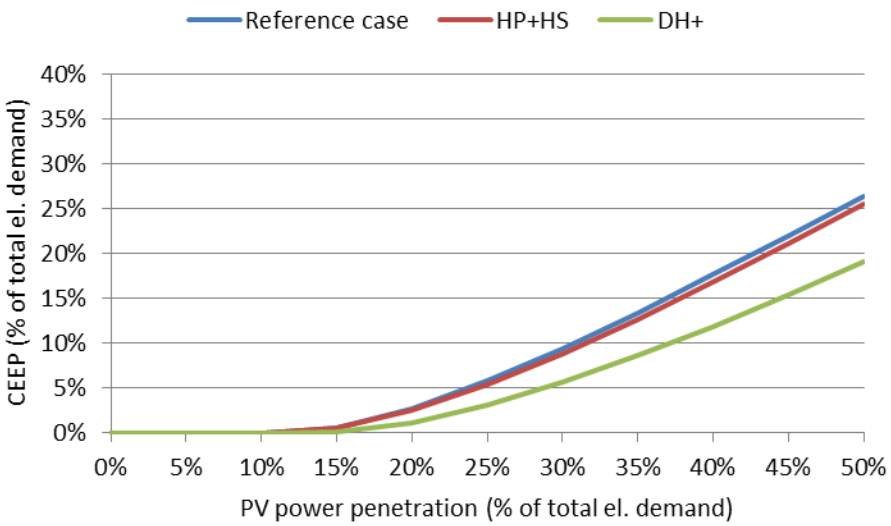
Influence of DH on wind penetration

- Wind penetration increase from 15% to 25% for CEEP < 5%
- At 50% wind power reduction of CEEP from 32% to 20%



Influence of DH on PV penetration

- PV penetration increase from 20% to 30% for CEEP < 5%
- At 50% PV power reduction of CEEP from 26% to 19%



Conclusion

- Advantages of a heat atlas
  - Assistance in planning of heating network development
  - Assessment of DH potential
- Influence of DH on the overall energy system
  - Increase of intermittent RES penetration
  - Increase of efficiency
  - Reduction of cost and emissions

Acknowledgement

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Thank you for your attention!

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