Udine, 30/03/2021

D.T3.2.2 - Experience Exchange Workshop

Pilot implementation in Udine (Italy)

CITYCIRCLE | UNIVERSITA‘ DI UDINE | PATRIZIA SIMEONI, GIOVANNI CORTELLA,
MATTIA COTTES, MATIA MAINARDIS

INVOLVED AREA

How did the idea come about ?

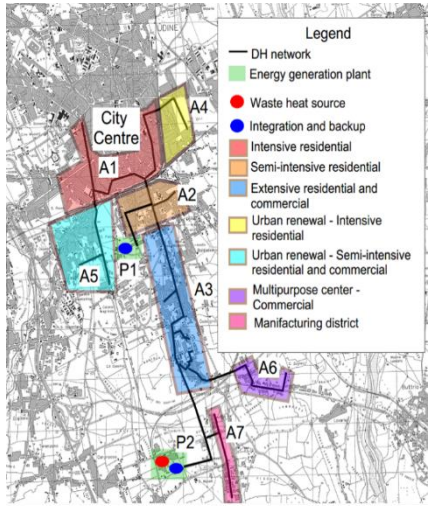
Industrial-Urban Symbiosis

- **Because in the area there are the prerequisites for developing projects with a view to industrial symbiosis and circular economy.**

- The presence of thermal waste (heat otherwise dissipated) and fuels deriving from the construction of a waste treatment plant

- The presence in the area of two "service plants"

- The presence of an adjacent industrial area.



TIMELINE OVERVIEW

Data collection

- Visits to the plants
- Analysis of technical documents

Technology identification

Waste recovery and energy efficiency oriented technologies

Scenario identification

Identification of best feasible scenarios based on different synergies combination possibilities

Preliminary solution

- Technical environmental assessment preliminary solutions identification
- Solutions' strength and weaknesses identification

Businness model draft

- Business model structuring
- Technical economic environmental assessment solutions identification

Decision support system development

- Multi-objective modelling
- Scenario simulation
- Best compromise solution identification

STAKEHOLDERS

NET S.p.A.

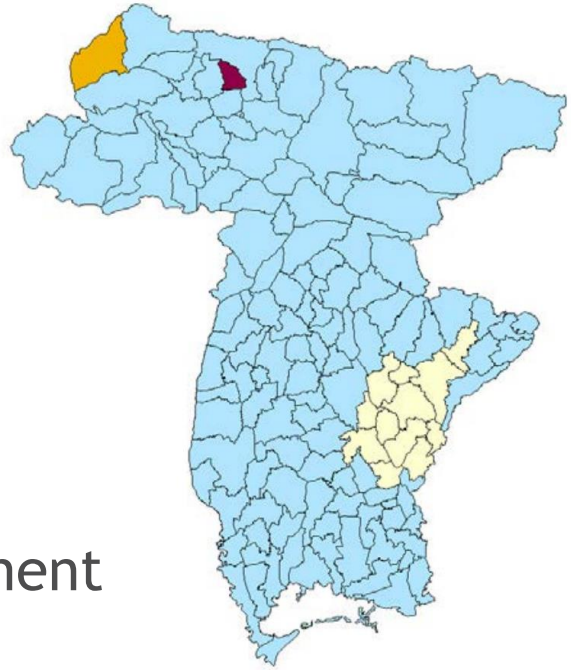
- Service of waste collection, transport and treatment
- Revamping the organic waste treatment plant, transforming it into an anaerobic digester with electricity, heat and bio-methane production

- OFMSW 35000 t/y → 16500 m^3/d biogas
- POF 19000 t/y → 9000 m^3/d biogas
- 2 treatment lines: 4500 + 3000 m^3 anaerobic digesters. Total 15000 m^3 (thermophilic 55°C)

- Vehicles:
  - 280 l tank #150
  - 100 l tank #110

STAKEHOLDERS

CAFC S.p.A



- Manages water supply, wastewater collection and treatment
- Interested in a better exploitation of the excess heat of the cogenerator
- 1500 m^3/d biogas from wastewater treatment

- Anaerobic digester 2800 m3 (mesophilic 35°C)

STAKEHOLDERS

UDINE MERCATI s.r.LI

- Interested in renewing its facilities to improve internal logistic and reduce energy consumption

- Electric load:
  - Current: 400kWel
  - After revamping: + 200 kWel

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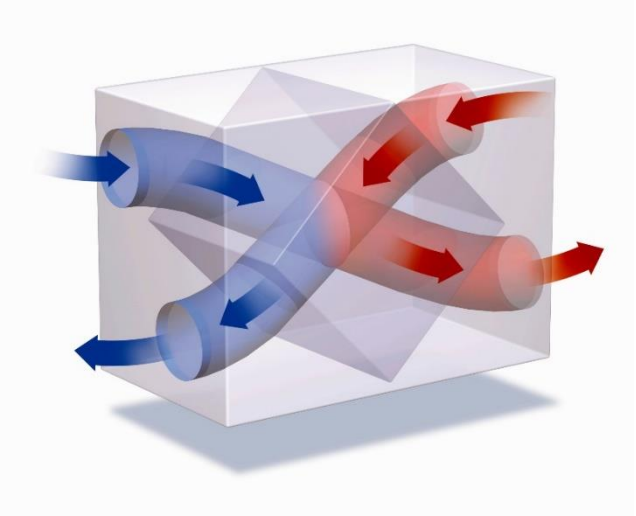
SCENARIOS

CAFC-NET symbiosis

- Heat Exchanger (HE)
- Cogeneration (CHP)
- Waste mass flows

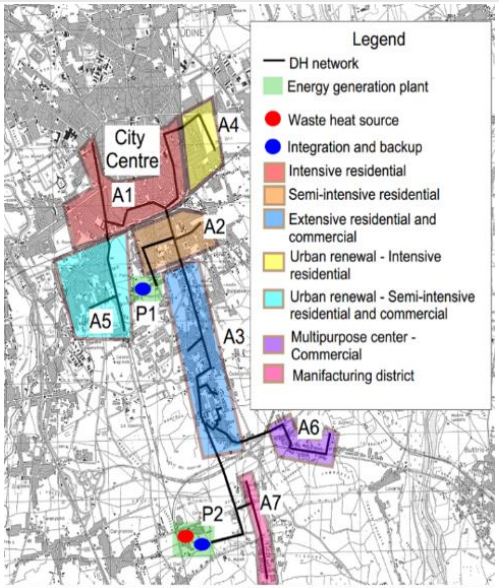


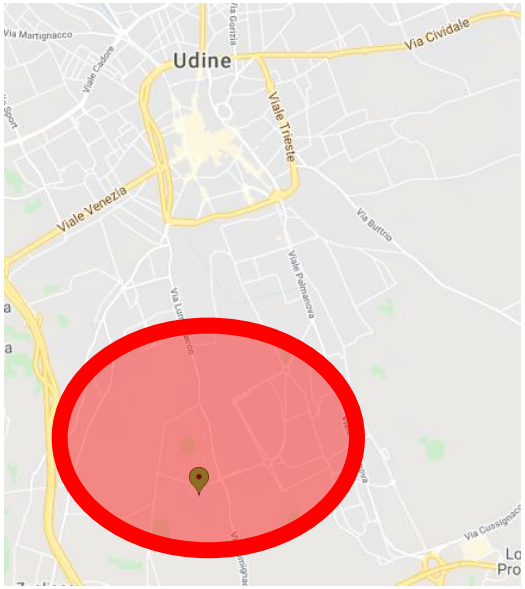
- NET:
  - Heat load: 307 kWth
  - Heat production: 41400 kWth
- CAFC:
  - Heat load: 9 kWth
  - Heat production: 3800 kWth

SCENARIOS

CAFC-NET + DHN/DCN

- DHN:
  - 200 MW (10 in the hub surroundings)
  - 7000 MWh from CHP in heating period (15/10 to 15/4). 1,88 MW continuous





- DCN:
  - 19000 MWh cold energy. 3,7 MW continuous
  - Absorption chillers for heat surplus

Interreg CENTRAL EUROPE European Union European Regional Development Fund
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CAFC-NET + UDINE MERCATI symbiosis

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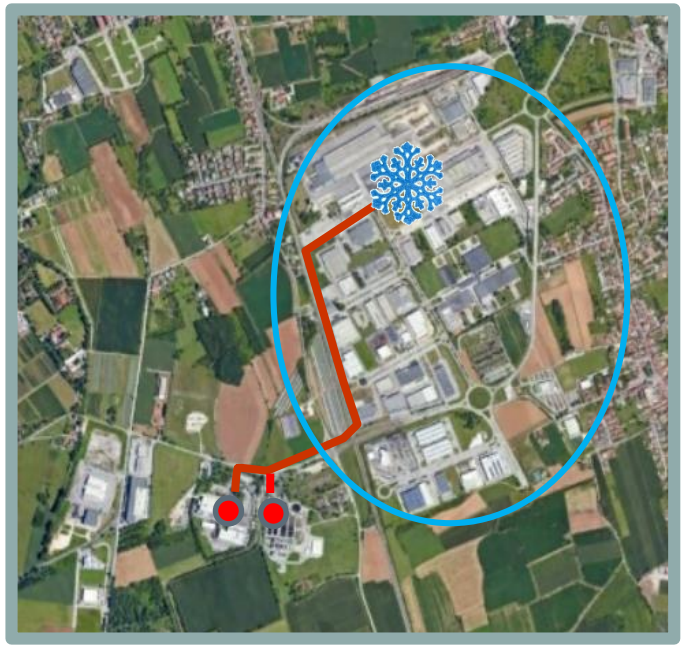
- UDINE MERCATI user both of DCN and direct connection with hub.
- Current 400 kWel (+ 200 after revamping)
- Electric Chiller: electricity surplus converted in cold energy
- Absorption Chiller: heat surplus converted in cold energy. Suitable for DCN integration



net

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UDINE MERCATI The global market

APE Agenzia Per l'Energia del Friuli Venezia Giulia www.ape.fvg.it

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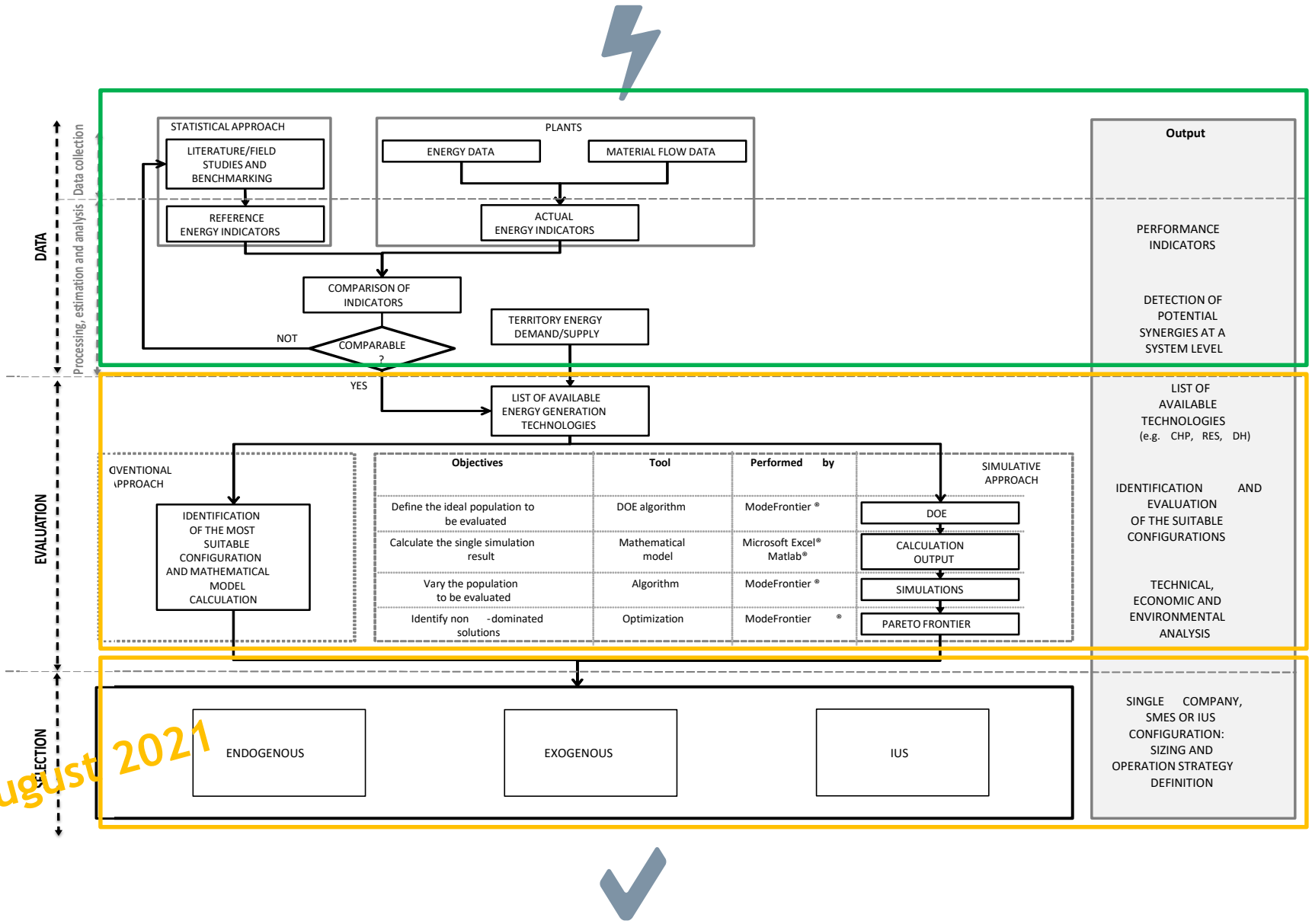

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LESSONS LEARNED

Highlights

- Wasted thermal availability allows cascade symbiosis systems

- Collaboration and information exchange between stakeholders is very important

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PROJECT PARTNERSHIP

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