



**MÉTROPOLE**  
EUROPÉENNE DE LILLE

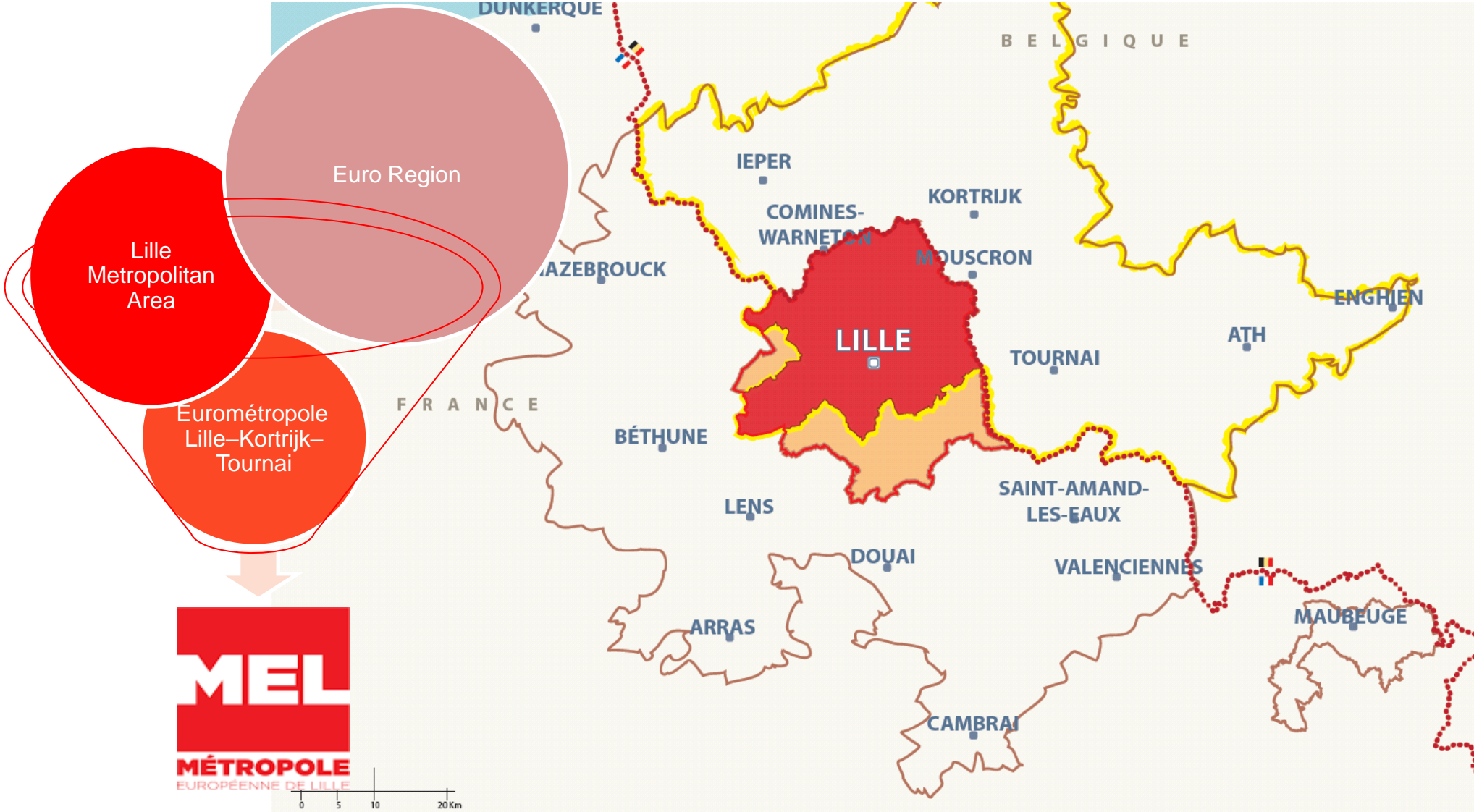
# EUROPEAN METROPOLIS OF LILLE

## Development project of heating networks

### Recovery of « inevitable » energy from the Energy Recovery Center in the city of Halluin

Copenhagen  
Seminar from Energy Cities and DBDH  
13 September 2016

# A METROPOLIS IN THE HEART OF EUROPE



# A MULTI-FACETED METROPOLIS

85 municipalities

An area of 612 km<sup>2</sup>

1.2 million inhabitants

2<sup>nd</sup> most important agglomeration in terms of density

4<sup>th</sup> biggest agglomeration behind Paris, Lyon and Marseille

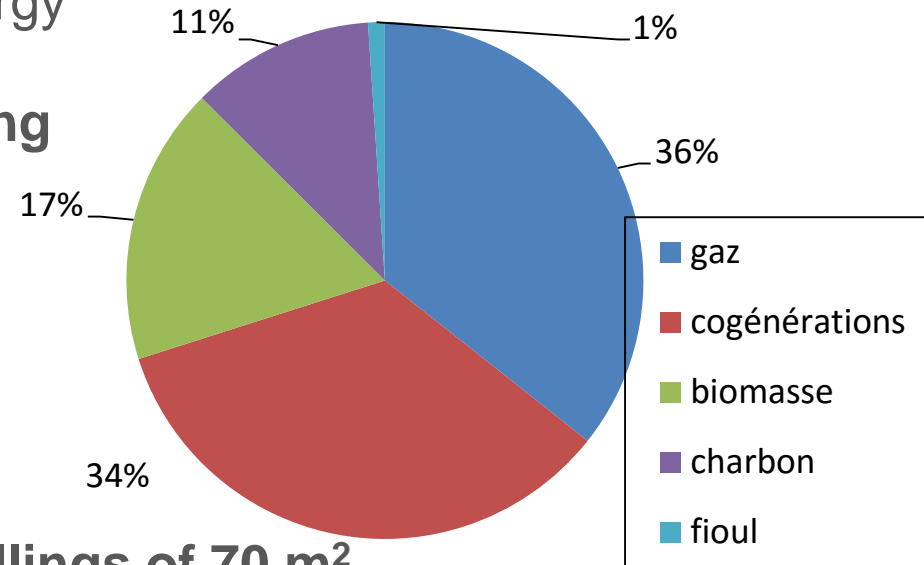


# HEATING NETWORKS (EUROPEAN METROPOLIS OF LILLE)

- **7 heating networks** over the metropolitan territory,
  - Lambersart, Roubaix, Wattrelos, Villeneuve d'Ascq and Mons en Baroeul, a part of the heat is produced by biomass
  - Lille and Wattignies, 100 % fossil energy

- **575 GWh of released heat a year including**

- 200 GWh from gas
- 200 GWh from CHP
- **100 GWh from biomass**
- 70 GWh from coal
- and 5 GWh from fuel



- **The equivalent of 50,000 to 60,000 dwellings of 70 m<sup>2</sup>**
- 9 main boilers mostly by gas and 82 km of network (62 km up to 110°C and 20 km up to 180°C)
- Failure of a biomass boiler project in the Lille's network (42 km)
- A network operator, the company



# DEVELOPMENT PROJECTS



- **Metropolitan heating network masterplan**

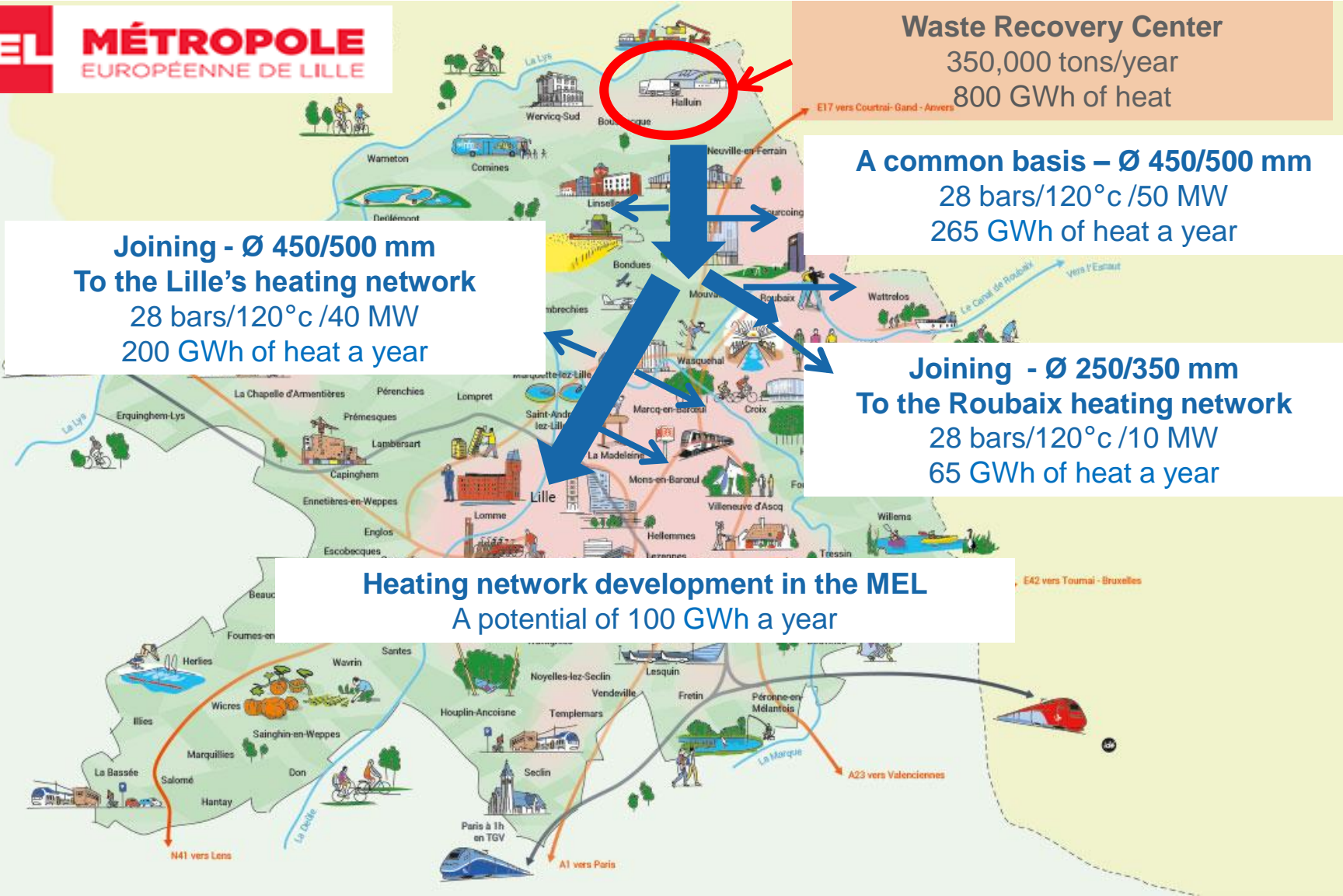
- Local Energy Climate Plan targets :
  - **-10 % : primary energy consumption between 2007 and 2020 (- 5,500 GWh)**
  - **- 20% : greenhouse gas reduction**
  - **20 % of renewable energy**
- 3 000 GWh/year : renewable and recoverable energy potentials
- Heat : 47 % of metropolitan energy needs
- A potential of heating network doubling **over next 10 years** in urban areas
- Low local biomass resources but a significant **potential of unavoidable heat recovery** (industry, DATA Center...)

# DEVELOPMENT PROJECTS



- **Waste treatment, a pioneer Metropolis :**
  - An unique Center of Organic Waste Recovery which treats biowaste since 2007
    - Biofuel production injected into the public gas network since 2011
    - Compost for farming production
  - An incineration plant for the metropolitan household waste since 2000. A potential of heat recovery of **800 GWh a year :**
    - **180 GWh are currently recovered in the form of power including** 40 GWh for the CVE's needs,
    - By 2020, an electric production of **160 GWh**, a heat recovery of **365 GWh** including 265 GWh for existing heating networks.
  - National targets and local initiatives to reduce waste production, « zero waste initiative»

# ENERGY RECOVERY CENTER IN HALLUIN HEAT RECOVERY



**Waste Recovery Center**  
350,000 tons/year  
800 GWh of heat

**A common basis – Ø 450/500 mm**  
28 bars/120°C /50 MW  
265 GWh of heat a year

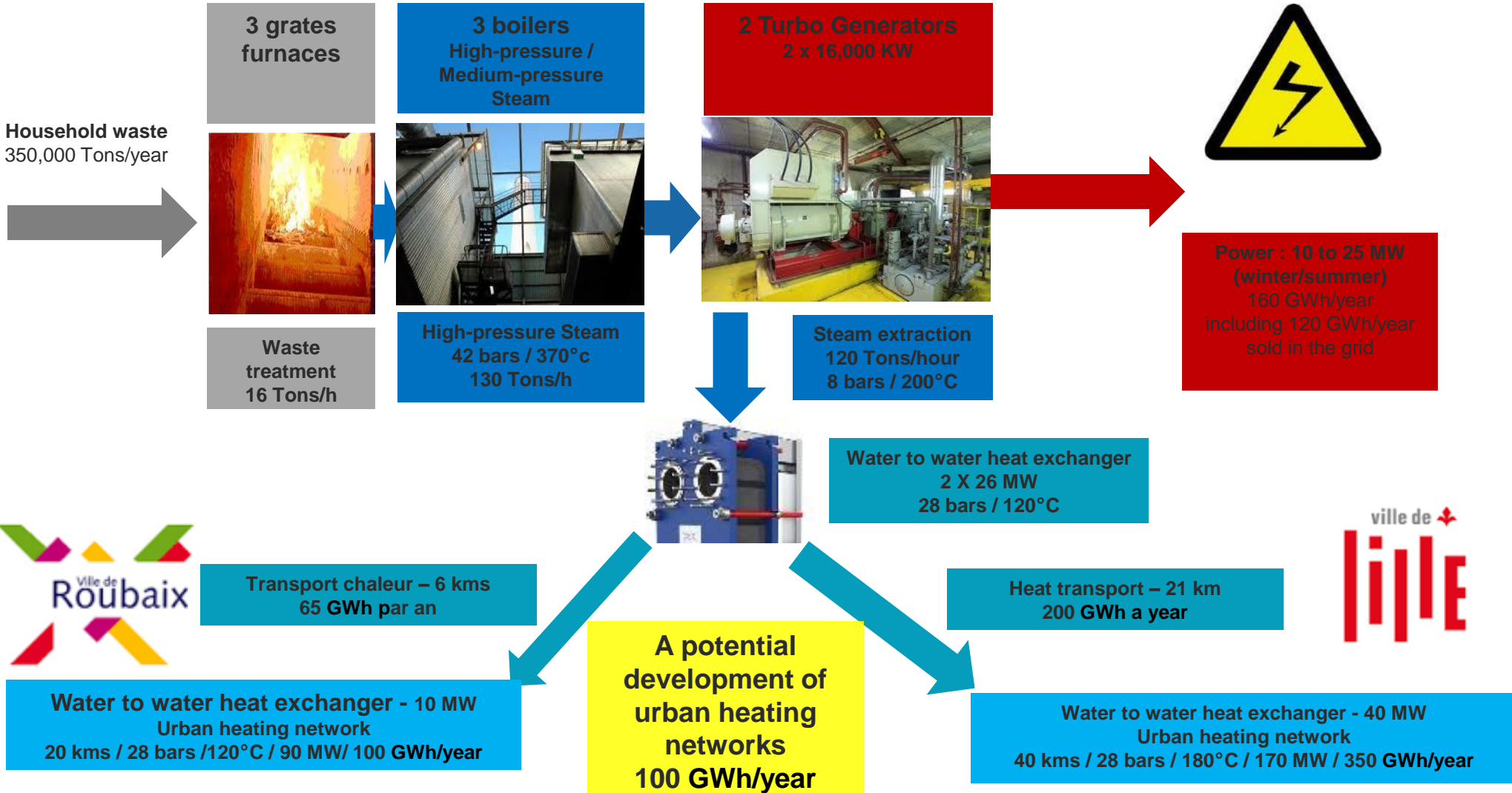
**Joining - Ø 450/500 mm**  
**To the Lille's heating network**  
28 bars/120°C /40 MW  
200 GWh of heat a year

**Joining - Ø 250/350 mm**  
**To the Roubaix heating network**  
28 bars/120°C /10 MW  
65 GWh of heat a year

**Heating network development in the MEL**  
A potential of 100 GWh a year



# ENERGY RECOVERY CENTER IN HALLUIN HEAT RECOVERY



Household waste  
350,000 Tons/year

3 grates  
furnaces



Waste  
treatment  
16 Tons/h

3 boilers  
High-pressure /  
Medium-pressure  
Steam



High-pressure Steam  
42 bars / 370°C  
130 Tons/h

2 Turbo Generators  
2 x 16,000 KW



Steam extraction  
120 Tons/hour  
8 bars / 200°C



Power : 10 to 25 MW  
(winter/summer)  
160 GWh/year  
including 120 GWh/year  
sold in the grid

Water to water heat exchanger  
2 X 26 MW  
28 bars / 120°C



Transport chaleur – 6 kms  
65 GWh par an

Heat transport – 21 km  
200 GWh a year



Water to water heat exchanger - 10 MW  
Urban heating network  
20 kms / 28 bars / 120°C / 90 MW / 100 GWh/year

A potential  
development of  
urban heating  
networks  
100 GWh/year

Water to water heat exchanger - 40 MW  
Urban heating network  
40 kms / 28 bars / 180°C / 170 MW / 350 GWh/year



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