

EXPERIENCE & INSIGHTS FROM RECENT PUBLIC FACILITIES IN GERMANY, POLAND AND OTHER EUROPEAN COUNTRIES



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Waste Management Hierarchy

- Israel is installing Sorting plants to enable recycling and recovering.
- The next step is the installation of WtE-plant for thermal treatment.



Possible Waste Management Strategies

- **No separation**
→ everything goes to WtE-Plant
- **Separation at source (e.g. glass, plastic)**
→ only non-usable material goes to WtE-plant
- **Separation in sorting plant (“Israeli way”)**
→ only non-usable materials goes to WtE-plant



Each European country and sometimes each city has its unique strategy.



Criteria for site selection

- **Transportation**
 - often the site of existing plants or landfills are a good choice (existing infrastructure)
- **Possible energy usage (WtE-plants)**
 - long-term cooperation with industry or public facilities
- **Zoning**
- **If larger catchment area, possible neighbourhood of train system (waste transfer station)**



Private or Public owned – pro & cons

In the last 10 years there were 2 emerging WtE-markets in Europe

- **United Kingdom**
mainly private owned plants
- **Poland**
mainly public (cities or public waste management association) owned plants

Sorting plants in Europe are often privately owned. The recycling rate of plastics in these plants correlates with the “oil price” and not with environmental possibilities.



Private or Public owned – pro & cons

Pro private owned

- **Lean government (companies take care of building and operating of plant)**
- **Investment by company**
- **Easier contracts with EPC-Supplier**



Con private owned

- **Private company will choose the “cheapest” technology (e.g. 1 line with no waste combustion for 700 h/a)**
- **Cooperation will try to increase profit; therefore, tipping fee might increase over time**

Private or Public owned – pro & cons

Pro public owned

- **Local authority can choose what is best for the community**
- **Stable waste disposal costs**
- **Independence**
- **Innovative concepts / political solutions can be persuaded**



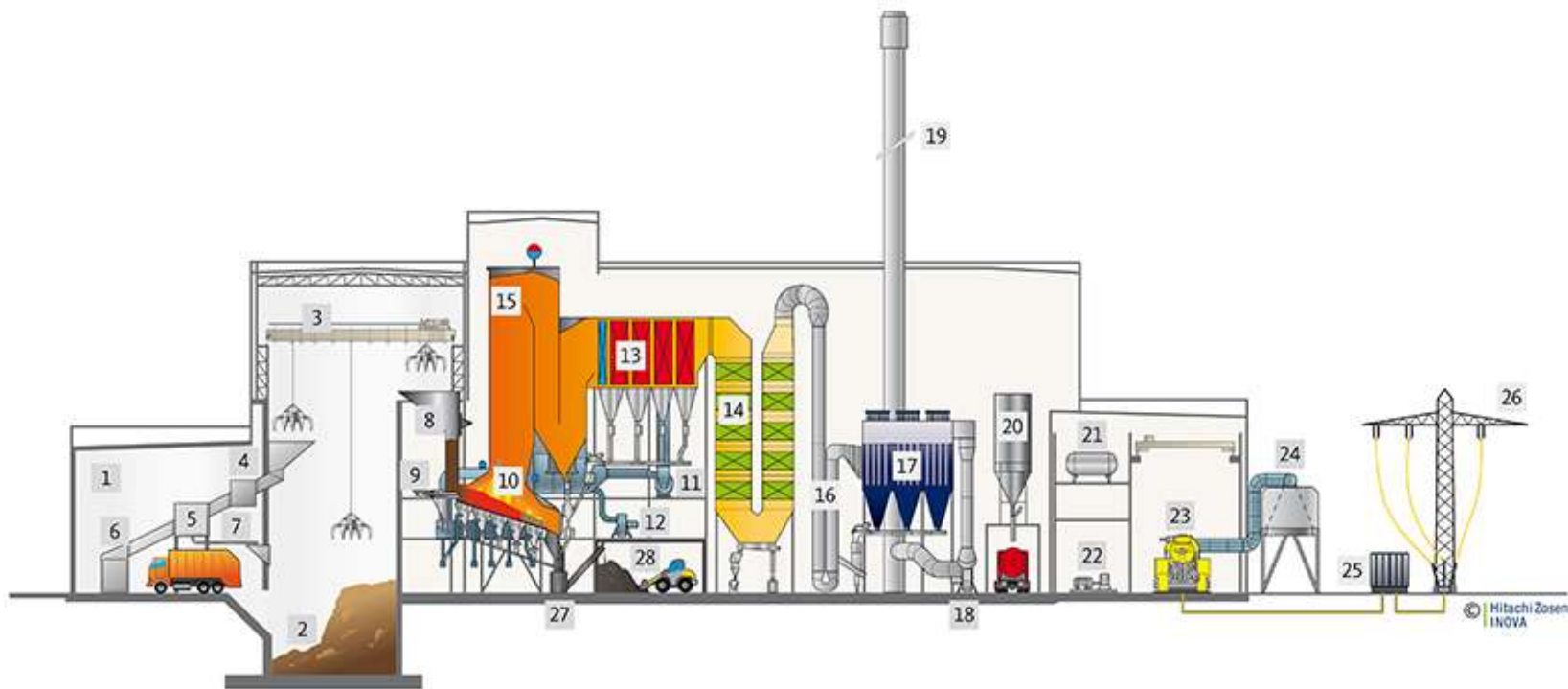
Con public owned

- **Political solutions might increase CAPEX/ OPEX**

How to deal with opposition

- **Always honest and competent dialogue**
 - **open discussion with concerned neighbours. There is a chance that they can be convinced.**
- **Integration of environmental pressure groups should be avoided**
 - **experience show that their aim is and stays to prevent plants. When cities integrate groups and their representatives to formulate limits, plants were not executed because of unrealistic values.**
 - **Talks with representatives should always be with witnesses.**

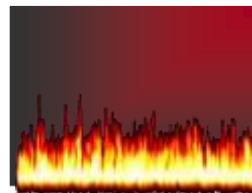
Overview of WtE-technology



Waste delivery and storage	Combustion and boiler	Flue gas treatment (FGC)	Energy recovery	Residue handling and treatment
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Overview of WtE-technology

- **Safe disposal of non-usable waste**
- **Mass reduction (down to 20 – 25 % of untreated waste)**
- **Volume reduction (down to 10 % of untreated waste)**
- **Energy utilisation of waste:**
 - Electricity production**
 - Steam export to industry**
 - Heat export to district heating or Cooling systems**
- **Reduction of CO₂-emissions**



WtE-plants in Europe

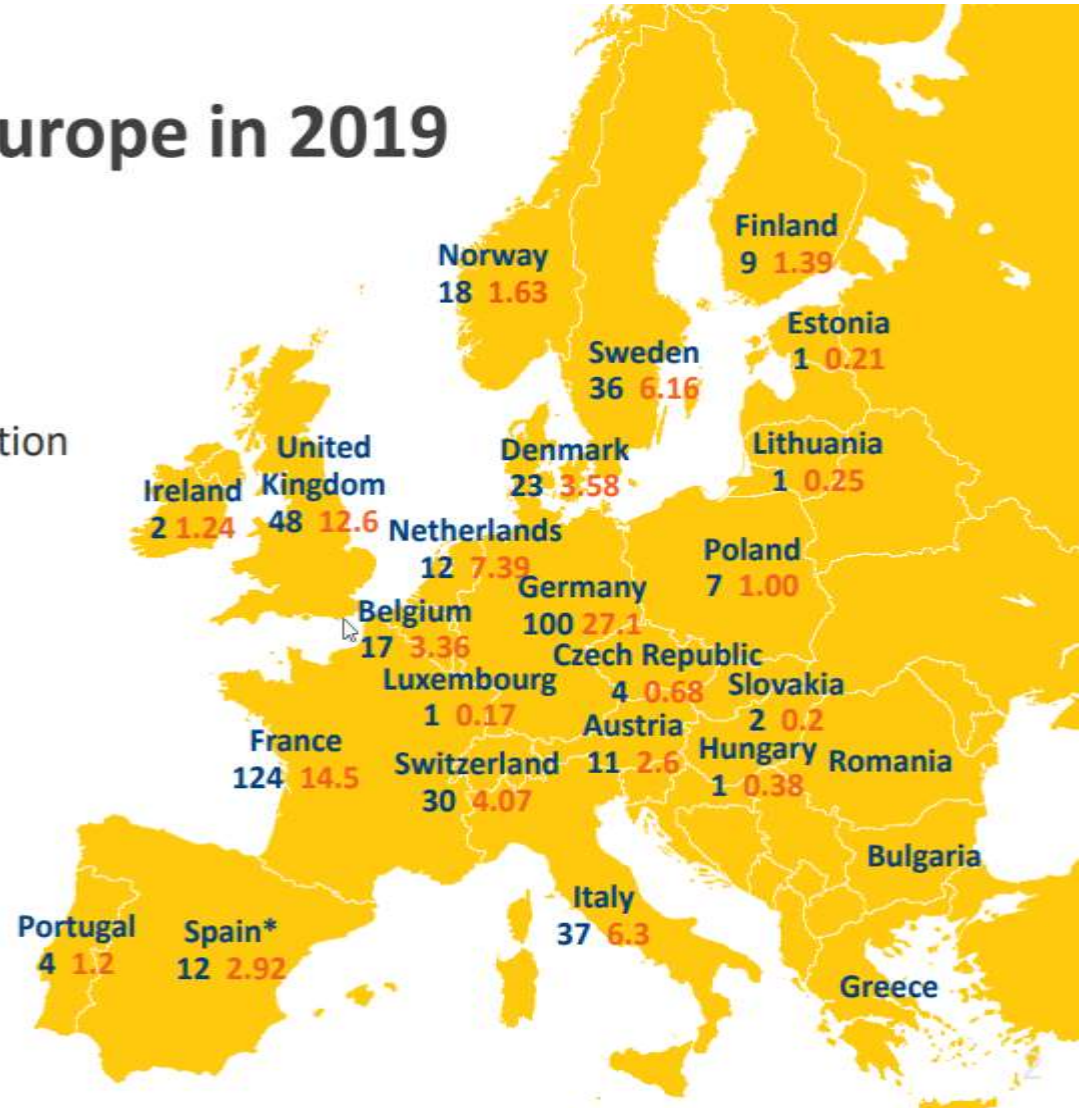


Waste-to-Energy in Europe in 2019

- WtE Plants operating in Europe (not including hazardous waste incineration plants) : **499**
- Waste thermally treated in WtE plants (in million tonnes): **99**

Data supplied by CEWEP members and national sources

*: Includes plant in Andorra and SAICA plant

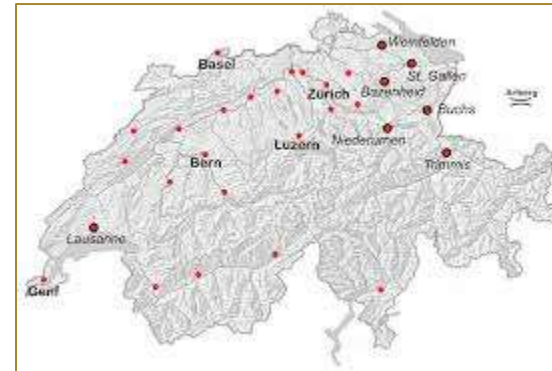


WtE-plants in Europe (Examples)

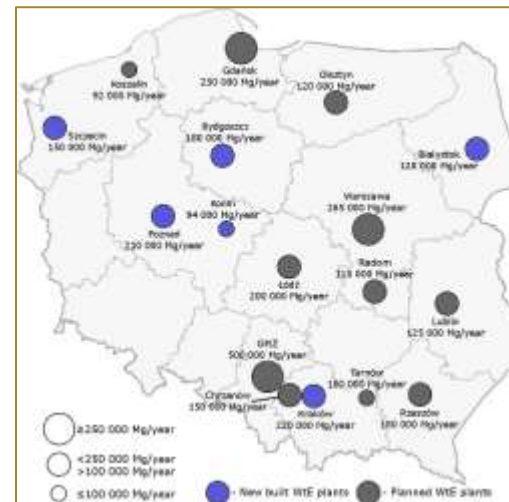
Germany



Switzerland (29 plants)



Poland



RDF-WtE Plant Bernburg

Owner

PreZero

Strong interaction with city council

Specialities

Plant supplies the industrial park of Solvay with steam

Plant is located in the middle of the city.

Technical data: Incineration capacity 552,000 Mg/a
steam capacity 240 t/h, 40 MW_{el}

Operation: since 2008



WtE-plant Bialystok

Owner

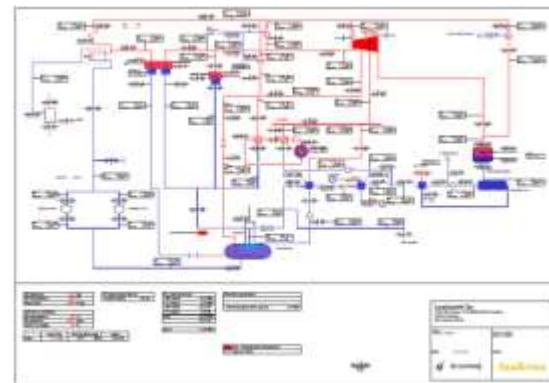
City of Bialystok

Specialties

Plant supplies industry with steam and the district heating grid

Technical data: 120,000 Mg/a Waste
8 MW_{el}

Operation: since 2016



WtE-plant for the City of Szczecin (Poland)



Owner

City of Szczecin

Specialities

Plant located in the harbour and designed like a fish.
The plant is the only plant with a wet flue gas cleaning.
The plant supplies the district heating grid (incl. large heat pump) & produces electricity.

Technical data 160,000 Mg/a Waste, 14 MW_{el}

Operation: since 2017



WtE-plant in Konin (Poland)



Owner

Waste Association

Specialties

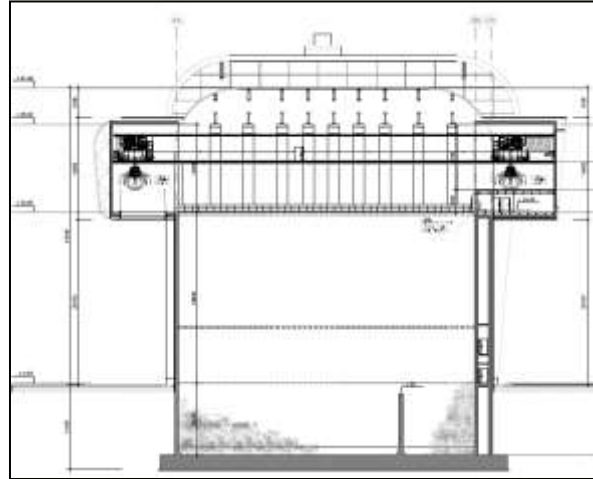
Located next to existing landfill.

Supply of district heating grid.

Technical data: 90,000 Mg/a Waste, 7 MW_{el}

Operation: since 2016

WtE-plant Rzeszow (Poland) for PGE



Owner

PGE (electrical company)

Specialities

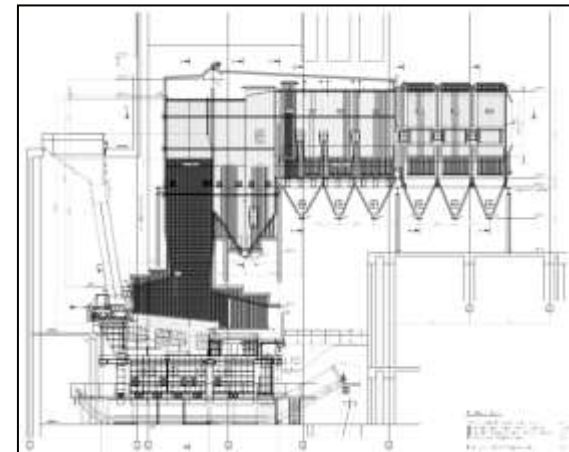
Supply of district heating grid.

“Fancy” design.

Second line is being.

Technical data: 100,000 Mg/a Waste
8 MW_{el}

Operation: since 2018



WtE-plant Warsaw (Poland)

Client

City of Warsaw

Speciality

“Green” design

Addition of small existing plant

Supply of district heating grid

(and electricity production)

Largest plant in Poland

Technical data:

2 x 17 Mg/h

Operation:

starting 2024



WtE-plant Solingen (Germany)

Client

Technische Betriebe
Solingen (City)

Specialities

Supply of district heating
Plant is now located in the middle
of the city with a Kindergarten
and a school right next to it.
Citizens can bring their bulky waste
directly to the bunker.
Innovative concepts as decided by
the city council.

Technical data: 160,000 Mg/a Waste

Operation: since 1969



WtE-plant Leverkusen (Germany)

Owner

AVEA Leverkusen (waste association)

Specialties

Supply of district heating

Located in the middle of the city



Technical data: 280,000 Mg/a Waste

Operation: since 1969



WtE-plant Düsseldorf-Flingern (Germany)

Owner

Stadtwerke Düsseldorf AG

Specialties

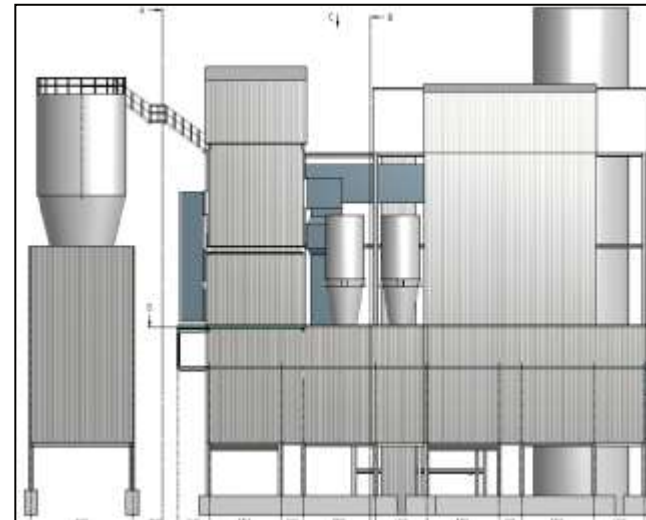
Steam supply to power plant

When City Utility company was sold to external company, all large re-investments were stopped.



Technical data: 420.000 Mg/a waste

Operation: since 1967



RDF-plant Chalampé (France)

Owner

Umweltdienste Bohn (German company)

Specialities

Plant supplies chemical park of Alsachimie with steam.

Plant is integrated in regional waste management.

Technical data: ca. 26 t/h Waste through-put
ca. 100 t/h life steam
ca. 175.000 Nm³/h flue gas

Operation: since 2023



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Thank you very much for your attention!

