Biogas- and Composting Plant Bützberg

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The potential of organic waste for biogas production and composting

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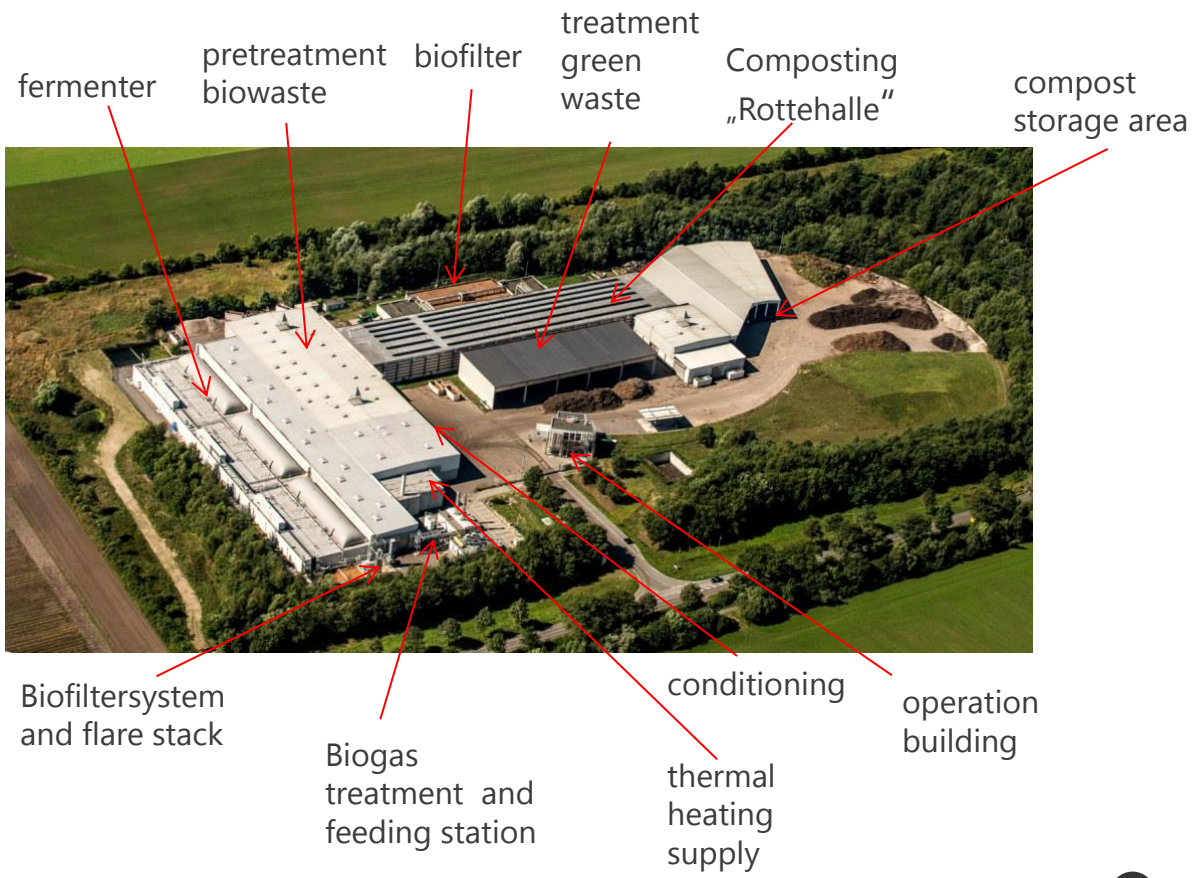

1. Closed Cycle Management Act

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- determines all aspects of waste management: responsibilities for collection, climate and resource protection, treatment of waste, waste transport, design of landfills etc.

Some regulations of Closed Cycle Management Act:

- Responsibilities for waste disposal (household waste!)
- Climate and resource protection
  - 5-step waste hierarchy (1. Prevention of waste, 2. Preparing for re-use, 3. Recycling, 4. Other recovery, e.g. energy recovery, 5. Disposal)
  - By 2015: Area-wide separate collection of biowaste, metals, plastics, paper and glass
  - By 2020: Quotas for substantial and energetic usage (e.g. 65 % recycling of municipal solid waste)

2. Challenge: Utilisation of organic household waste

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Goal of the treatment:

- Production of renewable energy
  (energy of 1 Mg Biowaste = 450 kWh)
- Recovery of substantial resources and raising of the enviromental relief (mainly humus und phosphorous)
- Treatment and recovery of the whole life time cycle of the waste
- Optimizing and utilisation in treatment and recovery

3. Approach

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- Collecting green waste from gardens through the waste management systems in Hamburg
- Collecting seperate wood - mainly treated wood - for energy recovery
- Seperate collecting of leaves for special treatment and recovery in pellets as agriculture fertilizer
- Commercial organic waste for treatment in wet-fermentation at the **BioWerk Plant**
- Seperate collected biowaste in the bio-bin and treatment at the **Biogas- und Kompostwerk Bützberg**

4. Processing scheme

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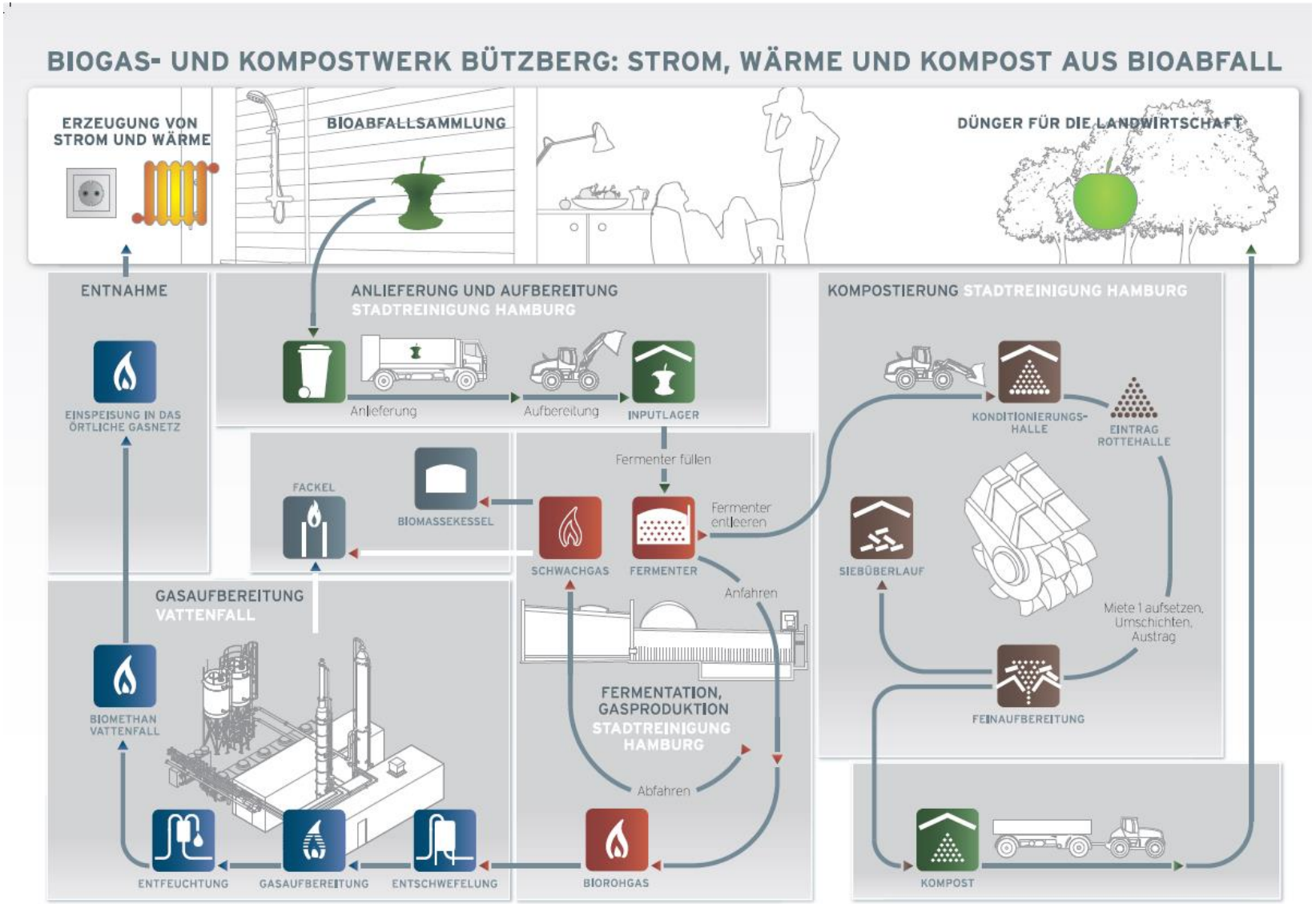

5. Outputs

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Amount of

Input bio-and greenwaste: 70,000 t/a

Output contraries: max ca. 3,500 t/a

Energy

Biogasproduction approx. 350 – 700 m^3 Biogas/h

Biomethan after treatment: 2.5 to 2.8 Mio m^3/a

> feeding to the main gas distribution system

Energy content biomethan approx.10 kWh/m^3 = 25 Mio kWh/a

Substantial recovery

compost ca. 35,000 t/a > marketing: private gardener, agriculture

Structure material approx. 5,000 t/a - Energy production in biomass heating plants

6. Lessons

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Increasing requirements

- Recycling of nutrients, particulary Phophorus
- Humusfertilization to protect the function of the soil
- Renewable energy

Becoming more impotant

- Substantial and
- Energetic recycling of biowaste
- Consiering climate influences in treatment and recycling
- Life time cycle of waste and hierachy of waste treatment