The Role of waste-to-energy in sustainable waste management considering the 20-20-20 goals of the EU for 2020 and overall environmental and economic benefits based on experience in Austria and the EU

by

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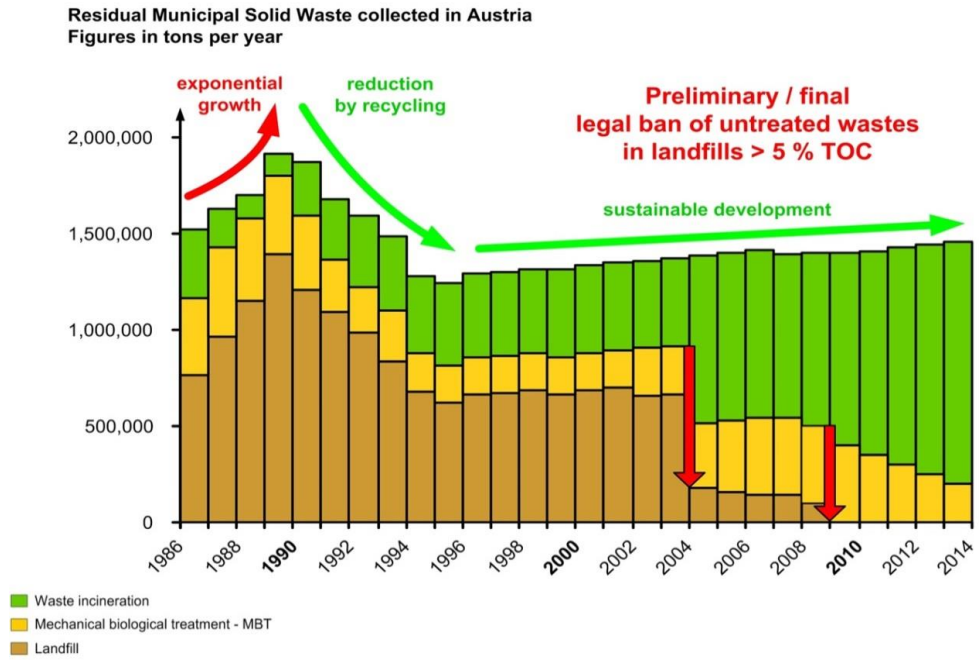
Summary

Waste management is an interdisciplinary and complex issue. Waste prevention and re-use of products must be complemented by integrated waste management systems with recovery of materials and energy rather than disposal of waste ("Circular Economy").

The following figure illustrates the development in residual municipal waste treatment ("post-recycling" waste) in Austria throughout the last 30 years:

- Reduction of mixed waste quantity by introduction of waste separation at source for recycling (incl. collection of "green" organic wastes for high quality composting)
- Phasing out of any disposal of untreated wastes exceeding 5 % TOC in landfills (legal ban in 1996 for new "reactor dumps" in Austria, exemptions for continued operation of existing landfills until the end of 2003 with some limited options for further exemptions by the State Governor until the end of 2008);
- Implementation of waste incineration (waste-to-energy) with significant improvements over more than 50 years of experience in operation;
- Long-term experience with MBT (mechanical biological treatment) and its declining importance for residual municipal waste due to its inherent ecological and economical inefficiency compared to state-of-the-art in waste incineration with energy recovery.



Integrated waste management can effectively contribute to achieving the 20-20-20 goals of the EU by 2020 by recovery of materials and energy from waste:

- 20 % reduction of Greenhouse gas emissions
- 20 % more renewable energy
- 20 % more energy efficiency

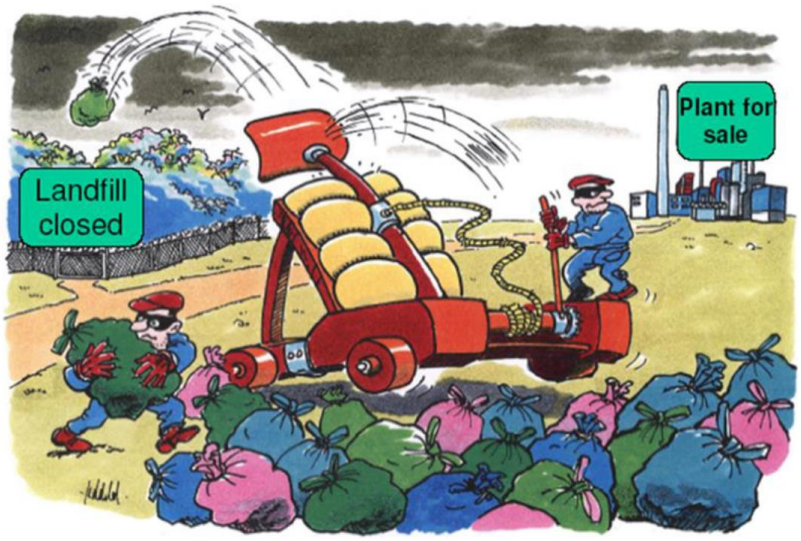
A considerable reduction in greenhouse gas emissions is achieved by waste incineration due to production of electricity and heat, as well as the avoidance of emissions from land filling by incineration of waste (despite the considered capture and thermal utilization of landfill gas).

According to extensive model calculations based on all different installations for treatment of residual municipal wastes in Austria, it has been shown that about 1 ton of CO_2-equivalent can be saved by waste incineration with energy recovery compared to MBT with utilization of RDF (refuse derived fuel) only.

The calorific value of residual municipal waste in Central Europe represents typically about 50 % renewable energy.

Energy efficiency can be achieved by the integration of waste-to-energy installations into energy-intensive industrial operations or large district heating / cooling networks with continuous thermal energy demand throughout all year.

For project implementation, the three fundamental prerequisites are environmental, social and economic acceptance. Best practice examples for appropriate waste-to-energy facilities already in operation as well as some typical mistakes made in Austria are discussed in order to encourage the development of sustainable integrated waste management systems, incl. necessary and economically feasible waste-to-energy facilities in similar countries (e.g. in Bulgaria) by valuable “lessons learned” in the last 50 years.



Finally, an overview on the newest edition of the “White Book Waste-to-Energy in Austria - Figures, Data, Facts”, published by the Austrian Federal Ministry of Agriculture and Forestry, Environment and Water Management will be given.