

Waste as a renewable energy source – a success story

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In the 70's the world experienced the global oil crisis and at the same time, Linköping was completely dependent on oil for the production of district heating for its citizens. This became the starting point on the city's journey towards sustainable development, independent from fossil fuels and using waste as a locally produced renewable alternative.

This journey has been made possible thanks to close cooperation between the University of Linköping, the municipality of Linköping through Tekniska Verken and private businesses.

The municipality has contributed by implementing policy instruments such as bans and taxes on landfill in order to promote better alternatives. Tekniska Verken has developed a waste-to-energy system and now operates throughout the entire value chain from waste management to energy distribution. This has led to the fact that we today put less than 2 % of our household waste on landfill. Everything else is recycled or used in the production of heat and power. The system provides 90 % of the population of Linköping with heat produced from waste. Also 7 % of the city's vehicles run on biogas from biodegradable waste. Research has contributed to develop a holistic and optimised waste system and energy system that operate in symbiosis. All this has taken place under market conditions at the same time as the region has witnessed strong growth.

What is noteworthy when it comes to thermal treatment of waste is the considerable reduction of emissions that has taken place alongside the continuous development of technology. This has also resulted in very high efficiency with regard to energy output. Practically 100 % of the energy in the incoming waste is converted into power, heat and even cooling thanks to co-generation.

Something significant about the development of anaerobic digestion in Linköping has been the close link between research and practical application. This has resulted in a holistic system that has not been sub-optimised by theorists. The system allows for biodegradable waste to be converted into the cleanest vehicle fuel in the world without leaving a carbon footprint.

With more than 90 % of the world's municipal solid waste being sent to landfill leading to potentially irreparable damages to our environment and increasingly detrimental impacts of global warming as a result of our continuing dependence on fossil fuels the world now faces considerable challenges. We can no longer afford to bury waste that is a locally produced renewable fuel.