

# Final treatment of MSW and C&I waste in Germany and neighbouring countries. How to cope with emerging over-capacities?

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Integrated management of municipal solid waste must ensure a balanced relationship between the waste selectively collected for recycling and the residual solid waste left over.

The example of the Flanders region can be taken. Reaching a high selective collection rate goes together with an adequate planning of the available incineration capacity. From the 530 kg/inhabitant of municipal solid waste (MSW), only 150 kg/inhabitant is left over for final treatment through incineration or Mechanical Biological Treatment (MBT). Through an adequate planning of quantities allowed to land filling on the one hand and a taxation system on waste going to incineration and co-incineration on the other hand, the ambitious recycling goals could be reached at the same time as the complete saturation of the available capacities for final treatment.

The dynamics of the residual municipal solid waste characteristics must be taken into account by decision makers when planning appropriate treatment capacity. A high efficiency of selective collection of the organic fraction of MSW can lead to variation of the calorific value of the residual municipal solid waste in case of incineration or to a lack of the organic fraction necessary for the proper functioning of a MBT plant.

The size of a thermal treatment plant must take into account how much the energy content will be during the lifetime of its operation (> 20 years). If the selective collection has not reached a steady state, there is a risk of building over- or under capacity. Therefore it is better to check the flexibility of the existing treatment portfolio before deciding significant changes in the selective collection strategies. Modern plants must be able to handle these practically encountered changes.

## **1. OVERCAPACITY IN NORTHERN EUROPE**

Although these general considerations were known by the authorities, the public and the private waste management companies, an overcapacity was installed in certain countries and will not cease to grow in the near future.

In the Netherlands the currently existing incineration plants and those under construction already provide an overcapacity. For this reason there will be no expansion of the Netherlands incineration capacity till 2020. This agreement has been made between the

competent Minister and the Association of waste processors. In counterpart the Ministry will grant an accelerated R1 status to a number of incineration plants, which makes it easier to import waste from abroad.

Most German studies show an overcapacity estimated between 2 and 4 million tons. As in the Netherlands (overcapacity estimated 600 kt/year) this corresponds in Germany to 8% to 12% of the installed capacity.

Already today Germany is a net importer of waste in order to satisfy the demand of the incinerators. As reasons for the overcapacity, the simultaneous declining national waste quantities and expansion of the incineration capacity are given. Like in the Netherlands some are already calling for a moratorium on extension of German incineration capacity.

Some fear that the UK could end up like some European countries. Situations like in Germany have an adverse effect on the local authority to planning applications for Energy-from-Waste facilities. For the UK's long-term ability to divert residual waste from landfill they need to go on building new thermal treatment capacity. In the meantime, landfill tax increases and the export of waste to the continent has already started.

In Sweden the incineration capacity grew from 2 million to 6 million tons in the last 10 years.

In the 2012 the overcapacity will reach 2 million tons. Today Sweden continues to build thermal facilities as waste incineration is seen as an energy production business. They are extremely dependant on imports. The situation can become worse if the imports from Norway are stopped.

In all countries a part of the projects announced, today, which are mentioned in reports, exist only on paper. Only a certain fraction will be effectively realised. This is true for incineration plants and power plants burning waste.

For certain, we will be confronted with overcapacity at a certain moments in certain areas. A period of market clean-up will follow. Repression is the logical consequence and Darwin's "survival of the fittest" will enter the waste world. As in the animal world; not only the biggest will survive.

## **2. HOW CAN THE OVERCAPACITY BE EXPLAINED?**

There is not one single explanation to explain the overcapacity in every country.

Implementation of the landfill ban has created a lot of disturbances both in the Benelux area and in Germany. In the Netherlands and in Flanders a Landfill ban through tax was decided and implemented between 1999 and 2002 together with a moratorium on classical incineration (grate furnaces). The purpose was to favour recycling as well as high efficiency energy from waste initiatives. This tax system to divert streams from landfill has led to new recycling activities but also to massive exportation of waste from the Netherlands and Belgium to Germany up to 2005. It is in this context, no landfill, no classical grate furnaces that Sita has launched (decision taken in 2002) its fluidised bed in Antwerp, the so-called SLECO (in operation in 2005) helping to balance needs in Flanders.

In 2005 Germany has implemented a landfill ban through the so-called TASI. Waste management companies, although it was announced some considerable time ago, seemed to doubt until the last few months that the decision would be implemented, delaying the decision to invest. Since treatment capacity was not ready at that time, prices have escalated in Germany to sky-high tariffs. Very large quantities of Refused Derivate Fuel (RDF) were produced in Germany but neither the power plants nor the cement were able to use all those quantities. Until mid-2007, cement players in the South of France could benefit from attractive lots to substitute fossil fuel in their furnaces.

Even if it looks far away, we need to go back to that period 2002-2005 to understand what the whole industry faces today.

The improvement of the technologies (water-cooled grate with high energy efficiency) coupled by a highly profitable project based on very high visibility market gate fees stimulated players to start up investments in Energy from waste in 2005-2006. Besides this, a scheme of green subsidies linked to production of biomass green energy by electricity or by steam has been developed in Europe. Although those schemes are far from being harmonised within Europe, they have sustained investment in Energy from waste.

It is in this context that more than 30 projects have been analysed and investigated in 2005-2006, permitted for building, permitted for operation and environment, engineered, financed and finally built to be in operation in 2009-2010 and 2011. Most of you know that it takes between 5 and 7 years to go through this difficult and heavy process including about 2 and half years to build. Most of the projects starting operation now were decided on before the crisis which started in October 2008. Sustained by high economic growth, the investment climate was positive. Companies were motivated to build energy from waste plants.

We can identify 3 types of players which have heavily invested in energy from waste capacity.

- a. Firstly: the Public authorities which were up to 2002 the major players on the field of incineration, the only one in the Benelux area. They wanted to serve their citizens, keep their leadership and benefit from commercial waste to upsize their projects and make the costs per ton lower.
- b. Secondly: the Private company, an important collector and owner of both commercial and industrial waste. Possibly players operating landfill who wanted to be integrated in the value chain and enter the incineration market. Sita is one of them. Furthermore Sita benefits from broad expertise in Energy from Waste with a large network of plants (more than 40) in operation outside Benelux and Germany.
- c. Thirdly: Major international industrial players (chemical, paper industry). Instead of seeing the market as a service provider, those actors following a trend set by the cement industry started to see the waste as an energy source. Obviously already in 2005, serious warnings were given on long term prices for fossil fuel. Energy from waste was then seen as a competitive source to divert the risk portfolio. Sita has analysed the cost structure of these projects. Access to large steam users makes their project competitive.

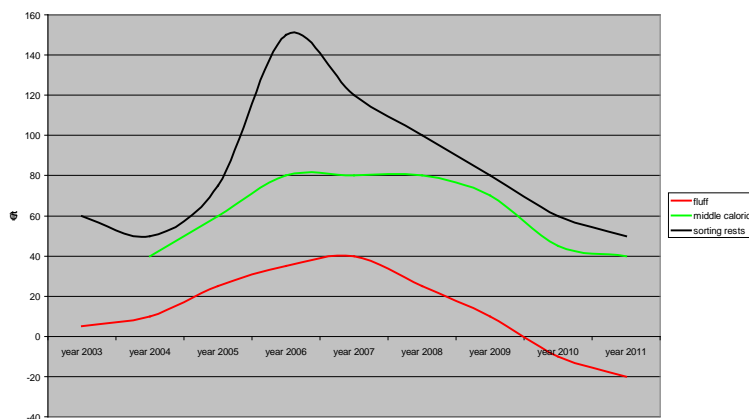
The implementation of the landfill ban has led on the one hand to a flourishing recycling development in wood, plastic, metal, food waste recycling through biomethanisation, etc. On the other hand, as just explained, it has led first to significant undercapacity and then overcapacity on the field of treatment. As other industries such as the organic or inorganic chemical industry have experienced it before the waste management, this leads to major disturbances in market prices and gate fees for treatment. Public, private players as well as the authorities have each played an important role.

### **3. GATE FEE COLLAPSE**

The table below reflects the evolution of the average gate fees for energy from waste during the last 5 years in Germany.

As every Energy from Waste player does not want to shut down even temporarily its capacity to avoid bearing high bank loans due to investments and to fix costs of operation, serious market fights have started to contract and offer treatment services to potential customers. Long-term contracts affording volume coverage were heavily negotiated between processors and customers. It happens more often that in some cases citizens of a municipality are paying more in their own facilities than neighbouring municipalities using the same plant but which have negotiated recently and benefit from very low prices.

Small collectors in Germany or in the Netherlands benefit today from better gate fees than large and well established companies like Sita which have contracted put or pay obligations to ensure continuity of service and operation. Those very large volumes contracted for long periods are paid above the market prices. This cannot last. Our company will not tolerate losing market share to small, short-term-minded companies benefiting from spot market prices. We expect the best price conditions from our partner, meaning that in one way or another small companies have to pay more than us.



In Belgium an incineration and land filling ban exists for selectively collected waste that can be recycled. A restrictive permitting policy for landfills and incineration facilities has to avoid an overcapacity for the treatment of mixed waste. Such an overcapacity would lead to lower disposal costs and take away the drive towards more prevention, re-use and recycling. But under the pressure of the lower gate fees and the transcription of the Waste Frame Directive (with R1-formula) Belgium will probably not be able to maintain its current principles on the subject of proximity and self-sufficiency.

While planning and implementation of waste management policy was organised differently in various countries, one could claim that the best students are not getting the fruits of their work.

#### **4. CONSEQUENCES OF THE OVERCAPACITY**

##### **a. Financial**

Van Gansewinkel Groep closed one of its AVR incinerators in Rotterdam as of 1 January 2010. The current economic situation, overcapacity in the Dutch waste processing market and an uneven European level playing field, made the planned investment in the incineration plant irresponsible.

In an interview, the chairman of Remondis' management board Ludger Rethmann said that the company is planning to sell its interests in two or three waste incinerators over the next two years. The plants might also be shut down altogether. It was also Ludger Rethmann who warned the 'waste world' for the upcoming incineration overcapacity since 2006.

Financial write-offs or bankruptcies cannot be excluded.

##### **b. Technological**

Except for energy efficiency programmes (district heating, partnership for greenhouses and industrial steam delivery) new technologies, not proven with two years' of 8,000 hours a year in operation are not expected.

As far as Western Europe is concerned, the market for technology providers will be limited to renovation, modernisation and maintenance of existing plants over the coming years.

##### **c. Environmental**

Financial pressure will lead to a low maintenance programme in existing plants. Nevertheless, it will hopefully not impact the environmental performances of the plants.

Long-distance transport of waste on the road and in the worst case waste tourism is expected.

Stop of commercial modern plant versus old (fully amortised) small incineration plants fed by guaranteed municipal streams is to be expected.

Pressure on the organic recycling streams (organic waste, plastic and wood) with potential consequences on the European targets will happen.

##### **d. Quality of service and continuity**

Many well structured, large waste collection companies undergo the negative consequences of good management as years ago they underwrote important put or pay contracts for delivering a certain quantity at a fixed price. In a market with falling incineration prices they are losing market share to small local companies that can act on

the spot market. This will impact the quality of the service and the reputation of the waste management industry.

## **5. OPPORTUNITIES**

Everybody will be motivated to limit the overcapacity and use all logical means to find solutions. The solutions have to be found by all participants to the waste management.

Alliance should be found between private and public players or among public players to stop small size plants and divert the waste streams to efficient and modern installations.

Technology assessment should be carried out. The mechanical Biological Treatment offers limited economical and environmental benefits compared to recycling or energy from waste. While it was previously a treatment solution when no energy from waste plants existed, it became a pre-treatment operation offering low added value. Private and/or public players should assist the MBT owner in finding a long-term economical solution generating benefit for each of the parties.

Environmental assessment should be elaborated to check how the R1 principle defined in the waste framework directive correspond to the so-called proximity principles.

Local authorities can help with the strict application of their landfill rules/landfill bans. They have to prevent sham land filling occurring under other regulations and prevent sham recycling being misused to cover a landfill operation. This applies to activities in the inland country and abroad. By preventing export to not one hundred percent secured and ecologically healthy destinations outside of the country, the authorities can help.

Power plants burning so-called secondary fuels are looking for cheap combustibles that can replace the expensive primary combustibles such as oil, gas and coal. Their calculations are based on the price difference between primary and secondary fuels. In the long term it is also in the interest of power plants to pay an honest price for SRF/RDF. Otherwise this secondary fuel will disappear from the market. The mothballing of several secondary fuel installations is already the first sign of this evolution.

Finally, as was the case in Flanders, transparency in project, monitoring of capacity toward waste available, planning in the wished installations and permitting restrictions should be implemented to create a stable framework for the coming years.

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