

The Market of Waste Management Technologies in Central and Eastern Europe until 2020

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1.	Introduction.....	115
2.	Current Market Situation.....	117
2.1.	Refuse collection vehicles	117
2.2.	Mechanical-biological treatment plants (MBT plants).....	117
2.3.	Flue gas cleaning in waste incineration plants (WIPs)	117
3.	Future market development.....	117
3.1.	Refuse collection vehicles	117
3.2.	Mechanical-biological treatment plants.....	118
3.3.	Flue gas cleaning plants in WIPs.....	119
4.	Competition.....	119
4.1.	Refuse collection vehicles	119
4.2.	Mechanical-biological treatment plants.....	120
4.3.	Flue gas cleaning plants in WIPs.....	120
5.	Summary, trends and outlook	120

1. Introduction

Many Central and Eastern European countries are under pressure because of their accession to the European Community (EC) and the related demands e. g. to reach the necessary standards of infrastructure especially regarding the environmental sector. Similarly, Eastern European states that are (currently) not willing or prepared to join the EC such as Ukraine or Russia are starting to develop a national waste management infrastructure. Often the most important challenge is to avoid landfill which currently is the most common way of waste disposal. In the near future, these expansions of the waste market are very likely to lead to high investments in different sectors and sub-markets.

The study *The Market of Environmental and Waste Management Technologies in Central and Eastern Europe until 2020* is focussing on ten countries: Austria, Bulgaria, Czech Republic, Croatia, Germany, Hungary, Poland, Romania, Russia, and Ukraine. This study sample covers a broad range of more or less developed waste management systems as well as waste management systems of member states of the EC and those not joining the Community and with distinguished legal waste frameworks.

We have taken a closer look on four markets and forecasted their development until 2020:

- Refuse collection vehicles as indicators of the general development of waste management,
- mechanical-biological treatment plants (MBT plants) as indicators for general treatment of residual waste with cheap technology (compared to incineration),
- exhaust air installations in MBT plants, and
- flue gas cleaning plants in waste incineration plants (WIPs) as an indicator of a higher developed waste management system. (For this essay, MBT plants and exhaust air installations in MBT plants were combined.)

Figure 1 illustrates the relationship between GDP and volume of domestic waste (in total and per capita) in the determined countries: Austria is *front runner* regarding both criteria. The poorest countries of this study sample are Ukraine, Bulgaria and Romania. Surprisingly, their domestic waste volumes are quite high. No correlation between GDP and volume of domestic waste can be observed although it should be assumed that higher GDP cause larger consumption of goods and thus larger volumes of waste. By now, only two countries – Austria and Germany – have achieved a decoupling of both factors.

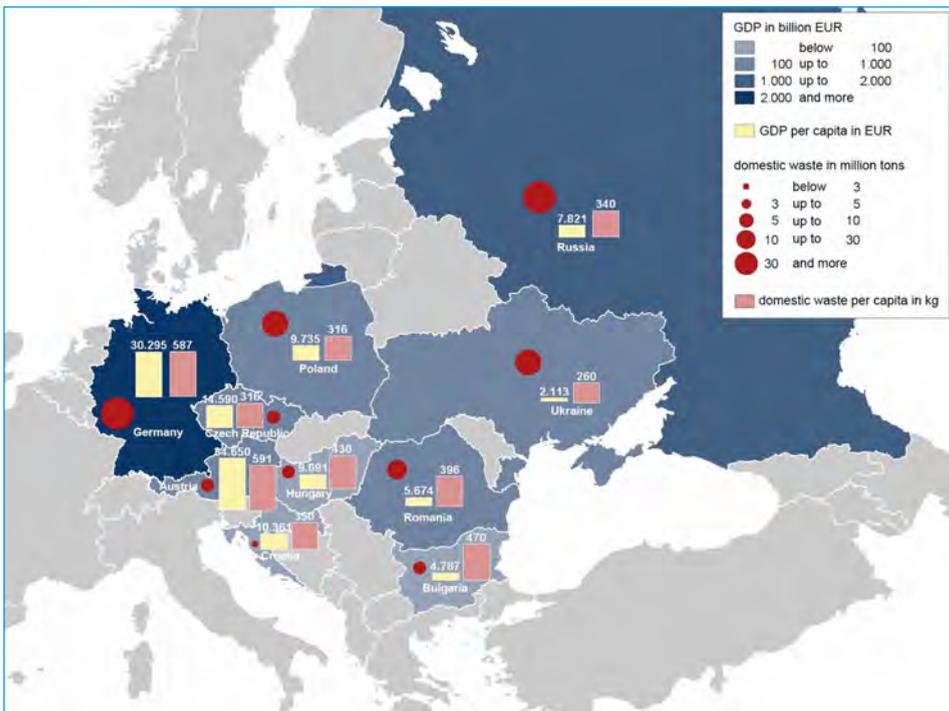


Figure 1: Overview of the determined countries regarding their GDP and domestic waste volumes

Source: trend:research on basis of EUROSTAT, own calculations

2. Current Market Situation

2.1. Refuse collection vehicles

The main factor in the development of the market volume of refuse collection vehicles is logistics. Frequencies of collection normally vary between one day to four weeks and depend on the community, its structure of settlement, density and number of population. Normally, the frequency depends on the degree of waste separation: A single kind of waste is collected less frequently, the more kinds of waste are collected separately.

The market of refuse collection vehicles differs strongly among the analysed countries. In those countries with high developed waste management systems, technological innovations such as electrical and hybrid engines are demanded while in other countries waste often is collected with platform trucks and other two-axle vehicles e.g. in Russia and in Ukraine. Due to this imbalance, it is quite surprising that compared to the other three markets, the market of refuse collection vehicles does not have the highest volume in each observed country. Currently, this only is the most important market in Austria, the Czech Republic and in Germany – in Austria and Germany only for replacement. Additionally, the market for used refuse collection vehicles is higher than the one for new vehicles in some of the Eastern European states.

2.2. Mechanical-biological treatment plants (MBT plants)

Austria and Germany currently have regional overcapacities of waste to energy plants and mechanical biological treatment plants. Hence operators are competing for waste volumes. Contrary, in the Eastern countries many concepts foresee that residual waste has to be treated mechanically-biologically and is fermented for energy recovery. Often, it is not clear how to use the refuse-derived fuel (RDF) resulting from the treatment. RDF power plants are not available in these countries; hence co-incineration is only possible in coal power plants and in cement kilns although their flue gas cleaning does not fulfil the regulations given by the Industrial Emissions Directive (IED) of the EC. It remains an open question whether the compost, resulting of the biological step of the treatment, can partly be used in agriculture although it contains contaminated. The economic and ecological utilization of the MBT plants' output is still an unsolved problem.

2.3. Flue gas cleaning in waste incineration plants (WIPs)

While modern flue gas cleaning has several steps of cleaning especially to guarantee the elimination of dioxins and furans in Austrian and German WIPs, old plants, e.g. in Russia and Ukraine, normally only use electro filters. Sometimes, WIPs can only be used partially because of their high emissions. The expansion of further steps of flue gas cleaning is often mainly a question of costs. New plants are built with more-step cleaning concepts.

3. Future market development

3.1. Refuse collection vehicles

Regarding the market structures, the research area of this study has to be divided into two areas – the East (and the South) on the one hand, and Central (West and Northern) Europe on the other hand.

For Southern and Eastern Europe concepts are required which cover the whole range of the value chain from collecting, sorting, recovery to disposal because their waste management system is usually still built up from a low level. Hence, a strong demand for refuse collection vehicles and high sales potential can be expected by producers of vehicles. Besides new vehicles, also used vehicles are required in Eastern Europe as their prices are 70 percent cheaper. We expect an increasing market volume in the new EU member states until 2014 as projects subsidized by the European funds will be invested by then. Subsequently, the market volumes in these countries will decline after that because of the EURO VI. They will increase again around 2018 when the EURO VI norm has to be implemented and alternative drives are supplied profitably and recycling objectives of the EC waste framework directive have to be reached. We expect increasing market volumes up to approx. 420 million Euros in the *CEEC front runner states* Poland and the Czech Republic while in the non-EC-member state Russia a much smaller total market volume of 135 million Euros (of which half is for new and half for used vehicles) is assumed.

Contrary, in Central, Western and Northern European states particularly new techniques and innovations with specific skills are demanded. In this part of the EC sales markets for more expensive vehicles can be expected and thanks to higher environmental consciousness the EURO VI norm is assumed to be implemented faster.

3.2. Mechanical-biological treatment plants

The development of MBT plants is strongly influenced by the European emission standard regulations. In Germany the demand of sophisticated exhaust air installations such as regenerative thermal oxidizers (RTO), which is caused by the 30th federal regulation regarding emissions, lead to bad cost structures. A similar regulation is also discussed to be implemented in Austria. But the interviewees do not expect that the high German standards will be adopted in their country as well. The most important markets for MBT plants in Eastern Europe are Russia, Poland, Hungary and Ukraine.

For Russia, we expect the largest market volume for new MBT plants with approx. 220 million Euros between 2012 and 2020 and with 117 million Euros for maintenance and modernisation of existing plants. Taking into account the scenario of the statistical office of Russia we expect a slight reduction of population. Besides an increase of GDP of 6.5 per cent per year is expected (same level as before crisis). All three factors together lead to an increase of the volume of domestic waste of about circa two per cent which is not that much because Russia already has a comparatively high rate of waste production per capita (cf. figure 1). From 2016 to 2018, we assume a *market shock* caused by the compulsory supply obligation on public waste disposal agencies. In these years a higher volume of domestic waste is expected (in the first year after introduction of 7 per cent, in the second and third of 3 per cent and afterwards 1 per cent, cf. figure 2).

Russia's current waste management is characterised by antagonism, this effects the MBT plants-technology as follows: We have strong town-country-disparities – while on the country-side waste is composted, stock-fed, (illegal) landfilled or incinerated at home, cities with a high population density and multi-storied buildings have regulations regarding hygiene leading to a daily collection of residual waste. Moscow and St. Petersburg are pioneer cities in fields of waste management among the metropolitan areas of their country but still they are far away from EC standards. We expect that the preparations of the Olympic Games in 2014 and the Soccer World Championship in 2018 will lead to substantial efforts in improving the waste management sector in the area of Krasnodar in the next years as they will be required by the organising committees as well as due to prestige reasons.

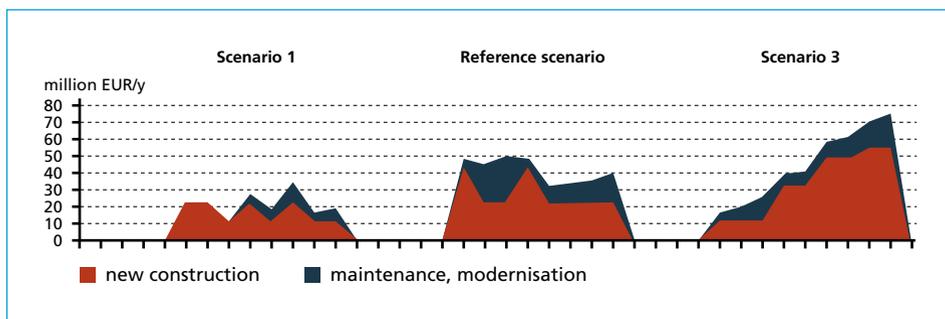


Figure 2: Market volume for new and modernised MBT plants in Russia

Source: trend:research

For Ukraine, we expect a cumulative market volume for MBT plants of approx. 92 million Euros for new construction and four millions for maintenance. Currently, not a single MBT plant is under operation but e.g. in 2014 a big MBT plant, with a capacity of 140,000 tons per year projected by a German company and financed by the German Kfw-Bank, will be commissioned. Complex exhaust air installations are not expected but in some single cases open procedures with extraction of biogas will be installed.

3.3. Flue gas cleaning plants in WIPs

In some countries of the EC, new WIPs, which at least fulfil demands of the IED, will be commissioned due to the landfill directive. Generally spoken, the market for flue gas cleaning plants will increase in those countries that are investing in or modernising incineration procedures. This is specifically the case in the Czech Republic, Poland, Russia and Ukraine. We do not expect high potentials in Austria and Germany as they already have enough capacities of WIPs and RDF power plants. For the second half of this decade, retrofit potential can be identified for the German market because new emission standards of the 17. federal regulation regarding emissions have to be implemented.

4. Competition

4.1. Refuse collection vehicles

Both waste management companies and producers of vehicles interviewed in our study said that the intensity of competition for the collection and transport of waste currently can be described as strong with an increasing tendency: 41 per cent of vehicle producers and 75 per cent of waste disposers said that the intensity of competition in their branch is increasing. Meanwhile, companies from abroad try to enter other markets; hence 40 per cent of the vehicle producers and all waste management companies interviewed expect an increasing competition in the next five years.

For Russia, a higher competition is expected, too. Here, many of the very small companies provide their services on a regional level. Vehicle constructors from Russia and Ukraine such as Karmaz, Kommash and Zil have relevant market shares in these countries because they do not have to fulfil EC standards such as the EURO VI norm.

4.2. Mechanical-biological treatment plants

Operators of treatment plants and WIPs are competing for waste with one another in their specific domestic markets. Depending on the kind of waste, they have specific *territories* whereas larger plants have larger territories and block out smaller companies. In Bulgaria, Poland, Russia and in Ukraine many MBT plants and WIPs operate below their capacity limits because landfill is much cheaper than recycling or energy recovery. E.g. capacities of the WIP in Dnipropetrowsk (Ukraine) are only used by 50 per cent.

A majority of interviewees mainly from the Eastern European states stated that the intensity of competition among operators of recycling and MBT plants is very strong. Hence, they expect an increasing intensity until 2015.

In Russia and Ukraine, not only currently but also in the near future landfill will be much cheaper than recycling or other waste treatments. Nevertheless recycling of waste to secondary raw materials becomes more and more important: Many waste management companies provide containers in big cities to enforce the separated collection of waste. Mostly materials such as paper, glass and plastics are collected separately. Some waste management companies such as the Ukrainian Grinko or a subsidiary company of the French Veolia have own sorting plants to sort and sell secondary raw materials.

Since, in all EC member states, recycling and treatment of waste is demanded by law, the intensity of competition is very high among waste management companies and operators of treatment and disposal plants.

In Austria and Germany operators of the plants compete for waste due to on the one hand regional overcapacities in the sector of incineration and on the other hand due to recycling plants that are working below their capacity.

4.3. Flue gas cleaning plants in WIPs

Also producers of flue gas cleaning plants were interviewed in our study and asked what potentials they expect in their specific country. 57 per cent stated that the new EC legislation such as IED with new environmental standards for flue gas cleaning is an important factor. They expect higher demands for flue gas cleaning in existing plants. Secondly, 36 per cent believe in an increasing demand and pointed out that also other branches such as the cement industry might as well benefit from it. A third of the interviewees expect the intensity of competition to remain the same, while 17 expect that it will increase.

5. Summary, trends and outlook

The study describes distinguished perspectives for the countries in the research area: While in some of the analysed countries, waste management technologies are on a high level, others have high potential for gaining some ground. EC regulations do not guarantee an expansion of waste management. For example although the EC landfill directive has not been implemented by all countries yet, we expect it at least as a market driver. In most Eastern European countries landfill is still dominating. A reduction of this way of disposal for instance by taxation, might give a boost to in building WIPs and MBT plants with advanced flue gas cleaning technologies. In some of the analysed countries a change of trends can be expected: Countries that currently follow the line of incineration might change to recycling after 2020. Incineration might play a more important role in countries with a high share of landfill in ten years. This depends on the technological and economic

developments. An important factor are waste management fees as somebody has to pay the technologies – mainly the citizens. In some member states of the EC as well as in Russia and Ukraine, the average income of citizens is too small for increasing waste management fees. Therefore we expect that the waste management will not expand in Eastern European states such as Bulgaria, Romania, Russia and Ukraine before 2020. Nevertheless, the market for waste management technologies will become more attractive and has high potentials for companies as well as for mergers and acquisitions, to widen the product and service portfolio with provision of containers, transport facilities, sorting plants and treatment of waste resp. secondary raw materials to cover the whole value chain, in Eastern Europe, in the next decade.

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