

Endeavours of Poland to reach a high standard of municipal waste management

Magdalena Rybaczewska-Błażejowska

Państwowa Wyższa Szkoła Zawodowa w Ciechanowie, Poland

Abstract

While much is known about the requirements of the European Union on municipal waste management in general, comparatively little knowledge is about the implementation of these requisites in the individual member states. Each of these countries experiences some problems with municipal solid waste and thus needs to work out its own approach to these problems. Consequently, the intention of this paper is to inform the reader about the undergoing changes in the municipal waste sector in Poland. As, corresponding to the National Waste Management Strategy for Poland 2010, the system for municipal waste management will rely on regional organisations, established by one or several cooperating communes, this paper examines the case of the Association of Communes from the Ciechanow Region. The practice shows, though, that only such organisations are able to provide highly integrated solutions for materials and energy recovery from the stream of municipal solid waste and finally, if necessary, environmentally sound deposition.

Keywords

Municipal solid waste, integrated waste management, Polish waste sector, the Association of Communes from the Ciechanow Region

1 Municipal waste management in Poland - the state of the art

From the beginning of the preparation for accession to the European Union, Poland has certainly made great progress in strengthening the system of waste management. Over the last 20 years, the municipal waste problems, though not yet solved, have begun to be recognised and addressed. The National Waste Management Strategies for Poland, published in 2002 and 2006, have undoubtedly played a stimulating role for the improvement of functioning of the municipal solid waste sector. These documents have defined, though, the priorities and objectives as regards the waste management in Poland. Therefore, it will be required in the near future, among others,:

- to cover 100 percent of population by the selective collection of municipal solid waste,
- to reduce the landfilling of biodegradable waste to levels required by the Council Directive 1999/31/EC,

- to reduce the level of municipal solid waste landfilling to maximum 85% by 2014.

Despite the dynamic progress in the management of municipal waste in Poland, the time-limits for fulfilling these and other objectives of the National Waste Management Strategy 2010 may require some alteration.

1.1 Generation, collection and composition of municipal solid waste

According to the Polish Central Statistical Office, 124974 thousand tonnes of waste was generated in Poland in 2008. Of this, 12195 thousand tonnes (approximately 10 percent) was municipal waste. Covering the level of municipal waste generation into kg per capita per year, an estimated **320 kg of municipal waste was produced per person in Poland** in 2008.

Out of 12195 thousand tonnes of municipal waste generated in Poland in 2008, 10036 thousand tonnes was collected since not the whole population of Poland is still covered by the collection system. This makes 263 kg per person. There are apparent differences in the generation (collection) levels of municipal solid waste between urban and rural areas in Poland. In 2008, population of cities was responsible for 81 percent of the total amount of municipal waste collected.

In Poland in 2008, **682 thousand tonnes of municipal solid waste was collected selectively. This represents 6.8 percent** – not much considering the objectives of the National Waste Management Strategy for Poland 2010, a lot in the comparison with the beginning of 2000, where there was no selective collection of municipal solid waste in Poland or a split percent of waste (mostly paper, glass and aluminium) was selectively collected. Currently, as depicted at the figure 1, paper and cardboard, glass, plastics, biodegradable and bulky waste are the main streams of municipal solid waste selectively collected at source. Besides, people in many regions has been given the opportunity to select textiles, metals and hazardous waste, for instance batteries and medicines.

The applied system for the collection and transportation of municipal solid waste in Poland does not differ from the European standards. Depending on the types of residential dwellings either a combination of on-site collection of commingle waste and off-site collection of dry recyclables in 2.5 m³ capacity containers is applied or on-site collection of commingle and dry recyclables in bags is used. In both cases, dry recyclables have to be divided into individual streams of materials – the most often glass, paper and plastics together with metals.

1.2 The system of municipal solid waste transformation and disposal

The Waste Act of 27th April 2001 has introduced the waste hierarchy; a universally adopted system in the EU of preferred waste management approaches. The fundamental aim of introducing the waste hierarchy in Poland was to encourage waste transformation prior waste disposal.

Materials and energy recovery from municipal solid waste through physical, biological and chemical transformation encompasses a tiny percentage of municipal solid waste management in Poland. Following data of the Polish Central Statistical Office, for 10036 thousand tonnes of municipal solid waste collected in 2008, **1343 thousand tonnes was recovered, giving a level of 13.4 percent.**

To recover dry recyclable materials for the subsequent reprocessing processes in Poland either selective waste collection at source is applied or waste are collected as a mixture of materials that are separated in a sorting plant. In 2008, **336 thousand tonnes of dry recyclable was recovered** by manual or semi-automatic sorting processes. Besides the quality of materials recovered from municipal solid waste, the crucial problem of the recycling in Poland has been the variability of markets (offered prices and quality requirements) for the recyclable materials.

Regarding the biological conversion techniques applied in the management of municipal solid waste in Poland, they have still been in little use, which is in contrary to the legal requirements enforced. In 2008, **262 thousand tonnes of biodegradable municipal solid waste was recovered through composting processes in Poland that represents 2.6 percent.** The obtained compost is, first and foremost, applied to land reclamation and, provided adequate quality, to fertilisation in agriculture.

The chemical transformation (incineration) of municipal solid waste is hardly instituted in Poland since there is only one incineration plant, placed in Warsaw, in the whole country. In 2008, this plant processed **63 thousand tonnes of municipal solid waste.** Despite these poor results, a substantial expansion of the incineration of municipal solid waste (up to ten new plants) is expected by 2013. Strong public opposition (the NIMBY symptom), however, considerably restrains the initiation of this waste transformation method.

Disposal at landfill sites is still the primary method of municipal solid waste management in Poland. In 2008, **86.6 percent of municipal solid waste, 8693 thousand tonnes was placed at landfill sites** located around Poland. Converting the level of average municipal solid waste landfilling into kg per capita per year, an estimated **228 kg of municipal solid waste was disposed per person in Poland in 2008.** This is slightly

above the European average, which at that time was equal to 219 kg per capita. There are around 880 controlled sanitary landfill sites in operation in Poland that occupy 3000 ha of area. They are expected to operate to minimise public health and environmental impacts and hence all are sealed with geomembrane, equipped with a leachate collection system and 340 of them have a gas control system.

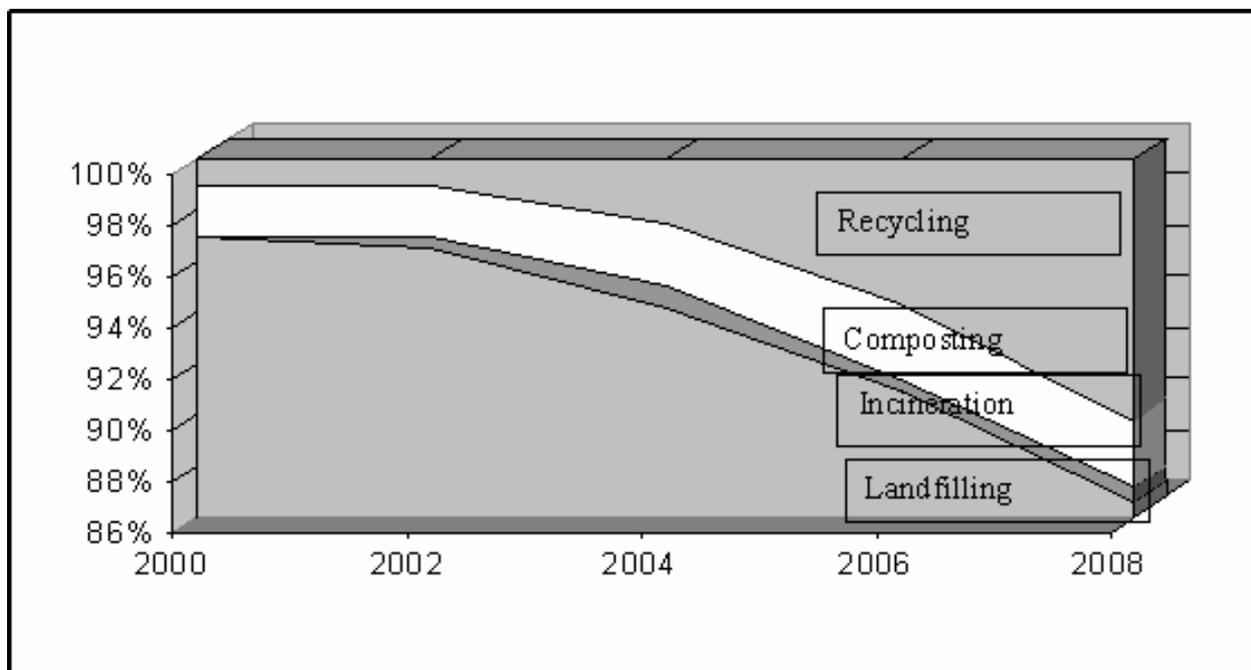


Figure 1 Management of municipal solid waste in Poland from 2000 to 2008

2 Organisational structure of the municipal waste sector – the case of the Association of Communes from the Ciechanow Region

In accordance with the Polish waste legislation, the management of municipal waste falls within the jurisdiction of communes. They have the right, however, to decide whether to manage their waste autonomously or together with neighbouring communes. Two or more local governments can establish 'an intercommunal structure' – a kind of regional organisation for an execution of their responsibilities with regard to the provision of waste collection, recovery and disposal services. It is also possible to restrict the co-operation between communes to one element only, for instance the disposal of municipal waste at a regional sanitary landfill site.

If only local governments are able to reach an agreement as to constituting the regional organisation they can largely benefit from this. First and foremost, such organisations have bigger money at their disposal and thus have a higher ability to adopt integrated, innovative solutions for municipal waste management being a response to the concept

of Best Available Techniques (BAT). In addition, thanks to better organisation, they have a wider access to external (also EU) funding. As a result, the regional organisations are in favourable situation regarding the fulfillment of current municipal waste regulation. The National Waste Management Strategy 2010 anticipates that **the management of municipal waste in Poland will soon rely on regional municipal waste treatment facilities that will serve at least 150 thousand dwellers.**

2.1 The Association of Communes from the Ciechanow Region

Understanding the need for changes to achieve more sustainable municipal waste management in Poland, the growing number of communes sign or are going to sign inter-communal agreements for joint waste management. This was the case of the Association of Communes “Dolina Redy i Chylonki” (located in the north part of Poland), the Intentional Association of Communes CZG-12 and the Association of Communes “Clean City, Clean Commune” (both located in the west part of Poland) and many other placed around Poland. It is essential for all, to provide such services that will substantially decrease the number of municipal solid waste going to landfill sites.

As in other Polish territories, municipal waste management in the Ciechanow Region (located in the central part of Poland) has been recently reorganised. Small, very often ineffective local municipal waste treatment facilities has established **the Association of Communes from the Ciechanow Region that unites 27 communes** from the following administrative districts – ciechanowski, przasnyski, makowski and pultuski. **It covers the area of 3500 km² and is inhabited by 210 thousand citizens.**

The central municipal waste treatment facility in Wola Pawlowska belonging to the Association of Communes from the Ciechanow Region will be responsible for the management of 60 thousand tonnes of municipal waste yearly, including their collection, the processing and finally sound deposition. To meet these objectives, the regional facility offers or is just about to offer integrated solutions allowing, among others,:

- the semi-automatic sorting processes together with the production of refused derived fuel, having the capacity of 50 thousand tonnes of municipal solid waste annually (at two shifts), which are collected selectively or as commingled waste,
- aerobic processing of 20 thousand tonnes of the organic fraction of municipal waste yearly in the BIODEGMA in-vessel system to produce good quality compost,

- deposition of municipal solid waste residues at the sanitary landfill site equipped with a leachate collection system and a landfill gas control system converting landfill gas into electric energy.

The total value of the project has been estimated at 88 million zloty (approximately 22 million euros).

3 EU waste requirements and Poland's possibilities to reach them

These days all in Poland, irrespectively if they represent the municipal waste sector, the government or municipalities, have agreed that the traditional approach to municipal waste management that relied on local facilities landfilling most of their waste has no longer a *raison d'être* in Poland. It is not though clear yet, what will replace it. Corresponding to the National Waste Management Strategy 2010, it might be expected that the Polish system for municipal waste management will rely on regional organisations providing integrated solutions for materials and energy recovery from the stream of waste, and finally environmentally sound deposition. Much more difficult task, however, is to transfer the spirit of this sustainable language to the actions in the field among the practitioners. Although the near future will show, how Polish municipal waste treatment facilities cope with their environmental and socio-economic obligations, current practices appear to believe that they are on the good way to fulfil the European Union requirements.

4 Basic literature

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| Główny Urząd Statystyczny | 2009 | Environmental Protection 2008 – statistical yearbook, Zakład Wydawnictw Statystycznych |
| Kundegórski, M | 2008 | Environmental Impact Statement for the municipal waste treatment facility of the Association of Communes from the Ciechanow Region |
| Uchwała nr 233 Rady Ministrów | 2006 | National Waste Management Strategy 2010 |

Author's address

PhD Magdalena Rybaczewska-Blazejowska

Panstwowa Wyzsza Szkola Zawodowa w Ciechanowie (The University in Ciechanow)

Narutowicza Street 9

06-400 Ciechanow, Poland

Email: magdalenarybaczewska@pwszciechanow.edu.pl