



International Scientific Conference “Environmental and Climate Technologies”, CONECT 2016,
12–14 October 2016, Riga, Latvia

Common and distinctive in municipal solid waste management in Baltic States

Kaspars Klavenieks*, Dagnija Blumberga

Institute of Energy Systems and Environment, Riga Technical University, Azenes iela12/1, Riga, LV-1048, Latvia

Abstract

The importance of the waste recovery issue is emphasized by the concept of circular economy being introduced into a political agenda. New policies offer stricter requirements for recovery of waste materials. This paper discusses contribution of the policy instruments and technological aspects in promoting waste recovery. To assess the impact of different factors, the analysis of experience of waste management system development in the Baltic States: Latvia, Lithuania and Estonia for the period 2004 to 2014 has been made. The study assessed impact of landfill tax on landfill disposal. Separate collection – recycling ratio of biodegradable waste was analysed. Analysis of the mutual effect of various waste treatment solutions and their potential in reaching recovery objectives is conducted. Key conclusions of the study indicate that landfill tax is a desirable but not compulsory tool to divert waste from landfill. The use of a source separation system for recyclables is an essential condition to increase of recycled waste volumes. Availability of waste incineration capacities is the main driver for landfill diversion, but there are concerns, that incineration treatment availability could diminish application of recycling.

© 2017 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the scientific committee of the International Scientific Conference “Environmental and Climate Technologies”.

Keywords: waste management; Baltic States; landfill diversion

* Corresponding author. Tel.: +371 26391611.

E-mail address: KlavenieksK@gmail.com

1. Introduction

With the implementation of the European Union's Circular Economy strategy [1] increasing attention is being paid to the rational use of resources. The circular economy approach significantly affects the waste management sector. The main objective is to maximize reuse, recycling and recovery of waste. Proposed targets, to be achieved are as follows: binding landfill target to reduce landfill to maximum of 10 % of municipal waste by 2030 [2]; common EU target for recycling 65 % of municipal waste by 2030 [3]. In the context of these objectives, particular attention shall be paid to the fact that objectives require municipal waste recycling rather than recovery. It should be noted that, in the context of achieving recycling targets, particularly municipal solid waste (MSW) is one of the most problematic waste streams. The critical characteristic of MSW is its mixture of various waste categories that substantially hinders the recovery of MSW flow.

From the point of view of the waste management hierarchy, priority waste treatment options are: (a) prevention; (b) preparing for re-use; (c) recycling; (d) other recovery, e.g. energy recovery; and (e) disposal [4]. Current targets are: by 2020, the preparation for re-use and recycling of waste materials such as, at least, paper, metal, plastic and glass shall be increased to a minimum of overall 50 % by weight [4] and by 2020 biodegradable municipal waste going to landfills must be reduced to 35 % of the total amount of biodegradable municipal waste produced in 1995 [5]. Despite implemented policy, the current situation indicates concerns that in number of EU countries difficulties may arise in achieving the objectives of both – the period up to 2020 and up to 2030.

Analysis of data characterizing waste management in the Baltic countries: Latvia (LV), Lithuania (LT) and Estonia (EST) in the time period from 2004 to 2014 shows that in these countries there are significant differences in achieving waste recovery objectives. The assessment of the disposed and regenerated amounts of MSW shows a trend where by up to 2011 all the countries had a moderate decrease in the volume of waste disposed with slight fluctuations over the years. Waste disposal proportions in LV, EST and LT were respectively 93 %, 72 % and 98 % by 2004, while the corresponding figures in 2011 were 88 %, 72 % and 79 %. A comparison of results in 2014 shows that in LV the proportion of waste disposed to landfill was up to 80 %, in EST 8 % and LT 60 % [6]. LT, which in 2010 lagged behind LV, in the period up to 2014, has made substantial progress reducing waste disposal by 35 percent. Considering the situation outlined, the aim of this paper is to identify and analyse the causes that determine the success of diverting waste from landfill and increase recovery.

With accession of the Baltic countries to the European Union in 2004, waste management system development projects were implemented. The projects involved the construction of landfills, improvement of MSW collection system, development of separate collection system. In all countries, the strategic direction chosen for MSW management was arrangement of waste disposal in waste landfills and waste recovery on the basis of the provision of separate collection system. In contrast to the countries of Central Europe and Scandinavia, none of the Baltic countries have chosen waste incineration as a treatment method. According to European Environment Agency's study [7], in general, there seem to be two strategies for diverting municipal waste from landfill: to aim for high material recovery combined with incineration, or to aim for material recovery which includes recycling, composting and mechanical biological treatment (MBT) [7]. In the same study it is mentioned that the most important policy tools used to reduce waste disposal in landfills are landfill tax, landfill ban, separate collection systems for MSW, and deposit refund schemes [7]. Landfill diversion practices are extensively analysed in EU countries. By 2014, the smallest amount of waste disposed to landfill per capita is registered in Sweden, Belgium and the Netherlands [6]. As well as one of the examples often cited is the experience of the Netherlands. The Netherlands landfill reduction is based mainly on two instruments – landfill tax and landfill ban [8]. Landfill tax was introduced in the Netherlands in 1996 and gradually increased until 2011 when it reached 108 EUR/t for waste suitable for incineration and 16 EUR/t for waste that is not suitable for incineration. The landfill ban policy was implemented considering recycling capacity and availability of technology, namely, landfill ban was set for waste flows where appropriate technology and sufficient processing power was established, landfill ban in 2014 was set for 64 waste categories [8]. By evaluating the Netherlands' example, it can be concluded that not only the tax is essential, but also the availability of technological alternatives. Similar conclusions are made by authors of the study on landfill tax efficiency in Italy, where it was concluded that not only the tax policy affects landfill diversion, but also technological alternatives – mentioning incineration capacity availability as one of the key landfill diversion drivers [9, 10]. Conclusions of the EU scale study [11] on landfill taxing in the EU countries (Netherlands, UK, Denmark, Austria, Finland, Sweden, France, Belgium) show that landfill

Download English Version:

<https://daneshyari.com/en/article/5445665>

Download Persian Version:

<https://daneshyari.com/article/5445665>

[Daneshyari.com](https://daneshyari.com)