

Evaluation of waste management in the company vepos-skalica ltd.

Zhodnotenie odpadového hospodárstva v spoločnosti vepos-skalica s.r.o.

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ABSTRACT: The aim of the paper was to analyze and evaluate the state of waste management in the company VEPOS-SKALICA Ltd. and in two selected municipalities in the region of Trnava with a focus on sorted waste collection. Quantities of sorted commodities of waste in the company VEPOS - SKALICA Ltd had a fluctuating character, except for the commodity packaging, which increased from 2012 to 2017. The amount of paper and cardboard varied from 377 to 6,651 tons, plastics from 3 to 1,484 tons, glass from 7 to 1,145 tons, metals from 729 to 2,175 tons and packaging from 3,154 to 6,800 tons. The comparison of the amount of sorted waste showed that the percentage of sorted waste increased by 44% (to 73 kg per inhabitant) and in the village Štefanov by 29% (to 41 kg per inhabitant) during the observed period.

Keywords: waste management, municipal waste, waste separation, VEPOS-SKALICA Ltd.

ABSTRAKT: Cieľom práce bolo analyzovať a zhodnotiť stav odpadového hospodárstva v spoločnosti VEPOS-SKALICA s.r.o. a v dvoch vybraných obciach v Trnavskom samosprávnom kraji so zameraním na triedený zber odpadov. Množstvo triedených komodít odpaduvspoločnosti VEPOS-SKALICA s. r. o. mali v rokoch 2012 až 2017 kolísavý charakter s výnimkou komodity obaly, ktorých množstvá stúpali. Množstvo papiera a lepenky varírovalo v rozmedzí od 377 do 6 651t, plasty od 3 do 1 484t, sklo 7 do 1 145t, kovy od 729 do 2 175t a obaly od 3 154 do 6 800t. Z porovnania množstva triedeného odpadu vyplynulo, že % vytriedeného odpadu sa za sledované obdobie v obci Radošovce zvýšilo o 44% (na 73 kg/ obyvateľa) a v obci Štefanov o 29% (na 41 kg/ obyvateľa).

Kľúčové slová: odpadové hospodárstvo, komunálny odpad, triedenie odpadu, VEPOS-SKALICA.

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INTRODUCTION

A significant challenge of waste management in the Slovak Republic is to stop the continuous increase in waste emerge, reduce the high proportion of landfilling and increase the share of waste sorting. The optimal operation of separated municipal waste collection in a municipality should impose as small as possible as financial burden on the population and simultaneously create the conditions for achieving the desired level of separation. It is therefore important to continuously improve the municipal waste management system and consider all stakeholders' requirements. In particular, the emphasis must focus on the economy, on compliance with waste legislation and environmental protection (Báreková, Sklenár, Tatošová, 2011; Báreková, 2014; Báreková et al., 2020), i.e. in accordance with the Waste Act No. 79/2015 Coll. and regulations No. 365/2015 Coll., 366/2015 Coll., 367/2015 Coll., 371/2015 Coll., 372/2015 Coll. and 373/2015 Coll.

The aim of our paper was to analyze and evaluate the state of waste management in company VEPOS-SKALICA Ltd. and in two selected municipalities in the Trnava Self-Governing Region, with a focus on the sorted waste between 2012 and 2017.

MATERIAL AND METHODOLOGY

Characteristics of company VEPOS-SKALICA Ltd.

VEPOS-SKALICA Ltd. has been operating in the town of Skalica in the Trnava Self-Governing Region since 1995. The company focuses on waste disposal, export, container transport, hazardous waste disposal, and others. The company uses modern methods of waste management, waste transport, waste sorting and waste preparation for the process of recovery, recycling and waste disposal. VEPOS-SKALICA s.r.o. deals with waste management in 3 towns: Skalica, Gbely, Šaštín-Stráže and in 13 adjacent municipalities Lopašov, Chropov, Kátov, Koválovec, Letničie, Radošovce, Mokrá Háj, Oreské, Petrová Ves, Prietržka, Štefanov, Štefanov, Trnovec and Unín, where it provides services for more than 35 000 inhabitants (Table 1). 1) (Kuba, 2020; DATAcube Statistical Office of the Slovak Republic, 2018).

Table 1. Number of inhabitants in municipalities and towns with waste management provided by company VEPOS-SKALICA Ltd. in 2017

City/municipality	No. of inhabitants
Gbely	5 115
Chropov	381
Kátov	582
Koválovec	148
Letničie	494
Lopašov	332
Mokrá Háj	714
Oreské	375
Petrová Ves	1 094
Prietržka	495
Radošovce	1 830
Skalica	15 175
Šaštín-Stráže	5 115
Štefanov	1 679
Trnovec	306
Unín	1 210

Source: DATAcube Statistical Office of the Slovak Republic, 2018

Characteristics of the municipality Štefanov

The municipality of Štefanov is located near the Chvojnická hill in the Senica district. The cadastral area is 6.6 km from north to south and 4.5 km from west to east. The village's surface is mainly upland, but it is flat in the southern part, located on the river Myjava. The altitude in the cadastre varies from 170 to 330 metres above sea level. The centre of the village is situated at an altitude of 205 metres above sea level. The Štefanský stream flows through the municipality. Development Programme of the Štefanov Municipality identified in the SWOT analysis the strengths in the functioning waste management, and the opportunity is to be seen in the improvement of the municipal waste collection system and sorted waste in the municipality (PHSR Štefanov 2017-2024; Municipality of Štefanov Regulation No. 2/2019).

Characteristics of the municipality Radošovce

The municipality of Radošovce lies on the northern edge of the Záhorská lowland, in the eastern part of the Skalica district. The municipality's territory reaches the White Carpathians in the northern part. The upland surface of the area consists of gravels, younger Tertiary claystone, clays, sands and sandstones. The centre of the municipality is 223 metres above sea level; in the outskirts, it varies from 195 to 400 metres above sea level. The Chvojnica River flows through the municipality; the Chvojnica Nature Reserve is also located there. The municipality is one of the largest in the Skalica district in terms of population (Table 1, Fig. 1). According to the Radošovce Municipality Development Program, the SWOT analysis mentions the established system of municipal waste collection as a strength and the absence of bio-waste separation as a weakness (PHSR Radošovce 2015-2020; Municipality of Radošovce Municipality Ordinance No. 6/2016).

Methodology of the thesis

We have analyzed and compared the development of individual sorted waste commodities in the company VEPOS-SKALICA Ltd. and in two selected municipalities, Radošovce and Štefanov, which have approximately the same number of inhabitants, for which this company collects municipal waste. Subsequently, we calculated and compared the amount of waste commodities per 1 inhabitant in the period 2012-2017 (Figure 1).

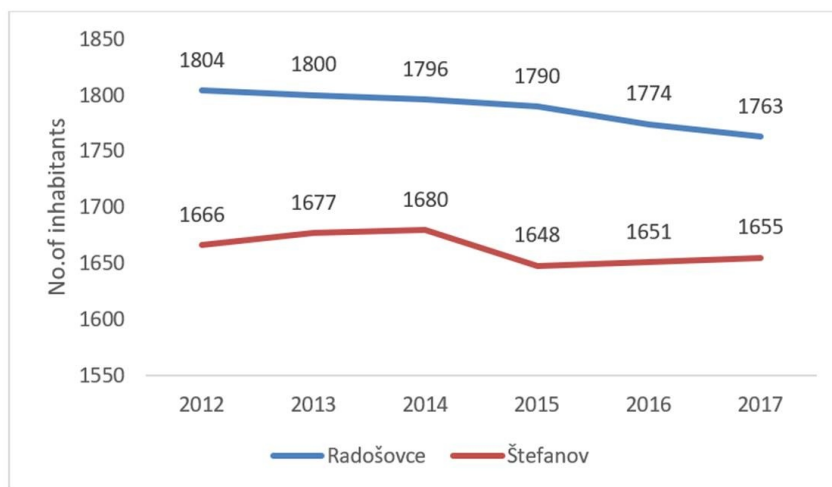


Fig. 1. Population development in the municipalities of Radošovce and Štefanov for the years 2012-2017 (Statistical Office of the Slovak Republic, 2018)

RESULTS AND DISCUSSION

The quantity of **sorted commodity paper and cardboard** of the company VEPOS-SKALICA Ltd. had a fluctuating tendency. Between 2012 and 2014, it ranged from 377 to 470 tons. In 2015, we recorded a sudden increase to 6,651 tons (by 1,664%). The reason for the increase was a higher amount of sorted paper and cardboard, mainly by the municipality of Dubovce (3 352 tons), EURO WASTE Ltd. (1 154 tons) and the town of Skalica (473 tons). In 2016 and 2017, we again found a decrease to 1 404 and 1 377 tons (approximately 80%) (Fig. 2).

The **plastics** commodity tended to decrease between 2012 and 2014. Still, in the following year, we recorded a significant increase of 1 254 tons, which was mainly due to the high amount of sorted plastics in Skalica (366 tons), in Gbelo (60 tons) and the recovery of plastics by VEPOS-SKALICA Ltd. (603 tons). In the following year, there was a significant decrease of approximately 1 000 tons. In 2017, we found a further increase in the monitored commodity to 1 484 tons due to the higher amount of sorted plastic in individual municipalities and towns (Fig. 2).

For the **glass** commodity, we recorded a significant increase of 1 072 tons in 2015 due to the high amount of sorted glass waste in the town of Skalica (294 tons) and its evaluation by VEPOS-SKALICA Ltd. (437 tons). Another significant increase in the commodity was registered in 2017 by 885 tons (an increase of 1 065 % compared to 2016). The reason for the increase was the higher amount of glass recycled by each municipality (Figure 2).

The highest increase in sorted **metals** was observed in 2015 when the amount of sorted metals increased by 1 425 tons (190%) compared to 2014. This increase was caused by the evaluation of higher quantities of metals by VEPOS-SKALICA (794 t), KOVOSTEEL Recycling, Ltd. (364 tons) and KBZ Ltd. (330 tons). The total increase in sorted metals from 2012 to 2017 was 956 tons, i.e. an increase of 106% (Fig. 2).

The amount of sorted **packaging** has been on an upward trend. The total increase in this commodity over the whole period under review was 3 592 tons, i.e. an increase of 112 %, which is comparable to the total increase in the metals commodity (Figure 2).

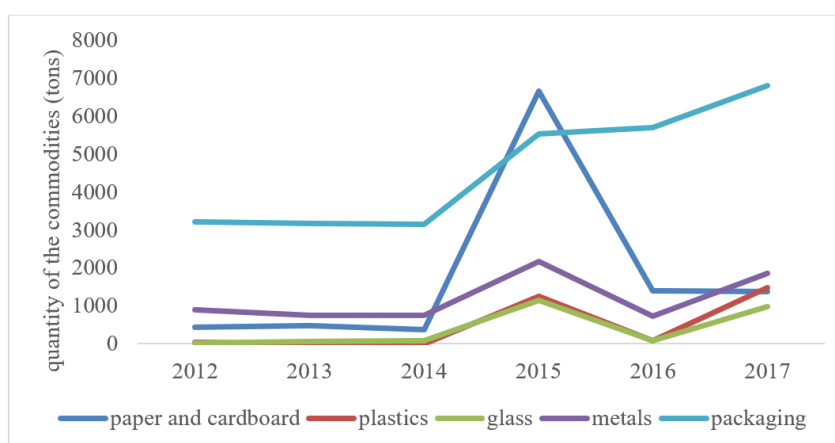


Fig. 2. Quantity of sorted commodities (tons) sorted by VEPOS-SKALICA Ltd. in 2012-2017 (VEPOS-SKALICA, 2012-2017)

In the municipality of Radošovce, we recorded the amount of sorted paper and cardboard in the range from 9 to 13 kg per inhabitant, plastics from 7 to 24 kg per inhabitant, glass from 8 to 16 kg per inhabitant, and metals from 5 to 21 kg per inhabitant during the monitored period. In the municipality of Štefanov we found lower average quantities for all commodities for the same period (Figure 3). The amount of sorted paper and cardboard varied from 6 to 12 kg per inhabitant, plastics from 9 to 17 kg per inhabitant, glass from 9 to 14 kg per inhabitant and metals from 0 to 1 kg per inhabitant.

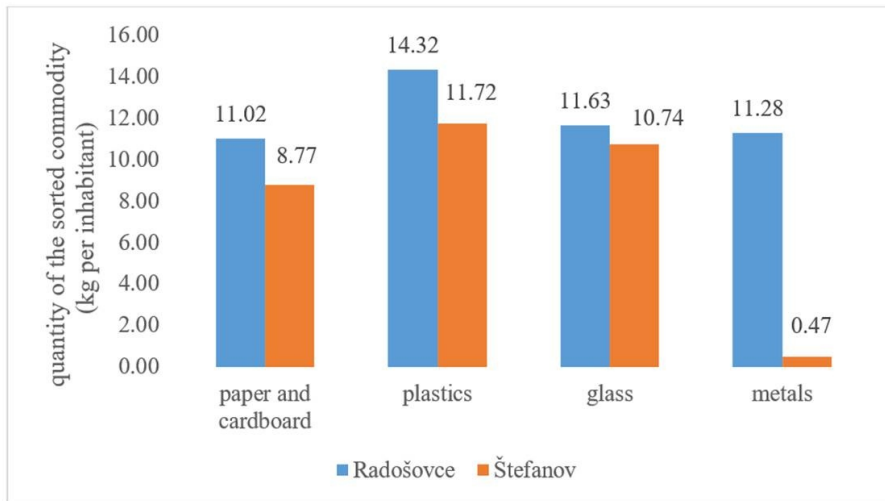


Fig. 3. Average amounts of sorted commodities in the municipalities of Radošovce and Štefanov for the years 2012-2017 in kg per inhabitant (VEPOS - SKALICA Ltd., 2012-2017)

From the comparison of the average amount of sorted waste for the six monitored years (2012-2017) we can state that the Skalica town had the highest amount of sorted waste (176 kg per inhabitant), followed by the municipality of Radošovce (52 kg per inhabitant), the municipality of Štefanov (33 kg per inhabitant), while the increase in Slovakia was at 47 kg per inhabitant (Fig. 4). From 2012 to 2017, the municipality of Radošovce had an increase in the amount of sorted waste by 32 kg per inhabitant (by 44%), the Slovak Republic by 55 kg per inhabitant (by 177%) and the municipality of Štefanov by 12 kg per inhabitant (by 29%). A positive trend has been observed in the increase in the amount of waste sorted per inhabitant in both monitored municipalities, as well as in the city Skalica and in the Slovak Republic.

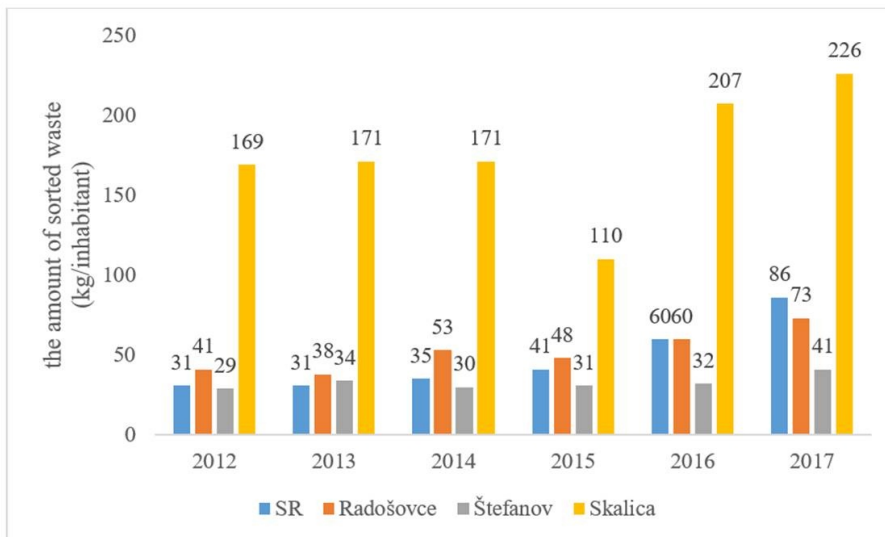


Fig. 4. Comparison of the amount of sorted waste in Slovakia, Radošovce, Štefanov and Skalica in 2012-2017 in kg per inhabitant (Statistical Office of the Slovak Republic; VEPOS - SKALICA, 2012 - 2017)

CONCLUSION

The quantities of sorted waste commodities in the company VEPOS-SKALICA Ltd. fluctuated between 2012 and 2017 in the Trnava Self-Governing Region, except for the packaging commodity, whose quantities were increasing. The quantities of paper and cardboard ranged from 377 to 6 651 tons, plastics from 3 to 1 484 tons, glass from 7 to 1 145 tons, metal from 729 to 2 175 tons and packaging from 3 154 to 6 800 tons. A comparison of the quantities of sorted waste showed that the percentage of sorted waste increased by 44% (to 73 kg per inhabitant) in the municipality of Radošovce and by 29% (to 41 kg per inhabitant) in the municipality of Štefanov over the period under review.

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