

Analysis of the possibilities mixed plastics collection in terms of city Brno.

Project MUNISS

Efforts to mitigate the negative impact of the presence of wastes in the city Brno, has a long tradition. Contemporary society, however, puts increasing demands on the functioning waste management system. The legislation tightens conditions for waste management, limits the permissible amount of waste deposited in landfills and requires increasing the proportion of waste that is re-used. On these facts, must Brno responds and adapts to the new legislative changes. The preferred waste management methods are in accordance with the hierarchy of the law on waste, waste creation prevention, reuse of waste, recycling, incineration and landfilling. Thanks to the built and upgraded incinerator, Brno uses a portion of the waste to produce heat energy and other not so important part of the waste is converted into secondary raw material in the recycling process. For the purpose of recycling, are currently in Brno, sorted: paper, glass and PET bottles. However, in some European and Czech cities, is realized the separate collection of other mixed plastics. The fact, that sorting mixed plastics can work and contribute to reducing the amount of mixed municipal waste, is for the city of Brno impulse for streamlining the existing waste management system. Therefore, this project monitors and analyses the status of the collection of plastics in Brno, and focuses on conditions for the possible collection and recycling of mixed plastics. The issue of collecting plastics is influenced by many factors, especially by the energy intensity, involvement of citizens into collection system, and of course the environmental and economic questions. For proper functioning of the mixed plastics collection system, is necessary that all these factors work in harmony. This study is primarily focused on monitoring the energy balance of the process of collecting mixed plastics in terms of Brno.

The project analysis choices of collecting mixed plastics in the conditions of the city Brno, the Czech Republic. Because the society and legislation put greater demands on waste management, it is necessary to look after new ways, how to decrease the total amount of unsorted waste, which is further, landfilled. It is necessary to find effective ways, how to each

waste types separate and their further utilization. Till the end of March, 2014, city Brno separated PET bottles and bulky plastic waste from the plastic waste type. Since April, however, were also introduced collections of separated plastic waste types, so called mixed plastic. Into the containers intended for separation of plastics can be thrown both PET bottles, cardboard and aluminium beverages' packages, or plastic bags, sacks, foils, but also washed plastic cups from foodstuffs, and plastic containers from cleaning products, washing powders, fabric softeners, etc. Therefore, the project is mainly aimed on effectiveness of mixed plastics separation. The analysis is focused on energy intensity of the collection process and subsequent use of mixed plastics.

In the analytical part of the project, is described a current condition of plastic waste treatment. The system of collection and utilization of plastics was described, in the company SAKO a.s., situated in Brno, the Czech Republic. In the following chapters were analysed the systems of collecting plastics from the different Czech and foreign cities, and the comparison was made. The comparisons and the analysis of the ways of collecting mixed plastics were made with the cities Bratislava, Leipzig, and Salzburg. It was found out, that in some cities the collection process of mixed plastics is efficient and total amount of unsorted waste going to landfill is decreasing. There are several ways of collecting mixed plastics in different cities, but mostly it is pot and sack collection. According to the analysis, the biggest problem in the Czech cities is the lack of consumers of the products made from mixed plastics. The most important company processing mixed plastics is Transform Lázně Bohdaneč. In the Czech Republic still prevails, the demand for simple plastics, such as PET bottles. Other mixed plastics have limited options for recycling. The rest of the plastics that is not saleable is used to produce energy or stored in a landfill. In the foreign cities, it is similar. Most of plastics are used for the production of thermal energy, and another part is sold as raw material to manufacture new products.

Due to the limitations of places for PET containers, is according to us, the increase of number of containers for mixed plastics, inappropriate solution. Therefore, we agree with the existing planning strategies for increase the frequency of waste collection. Purchase of new vehicles, is not necessary for now, but for the future is likely, if there is a significant increase in the quantity of material in containers that will be necessary to increase the capacity of vehicles from the current number of 2.5 vehicles. Looking at the equipment needed for

sorting, it is necessary to take into account the wear, so the energy challenging process. Over time, it will be necessary to consider upgrading equipment. Important role in the amount of PET and mixed plastics, which is sorted out at SAKO a.s., has obviously marketing, its role in our recommendations thus cannot be neglected. If citizens will be more aware of, what materials and on which collection points throw out, it can be expected the increase of the amount of PET and mixed plastics in the collection containers. For city of Brno, we further propose the establishment of bags for sorting waste. This way of supporting people in sorting has been operating since 2012 in Ostrava. The aim of this introduction will increase the number of citizens in Brno, who begin to sort plastics. If there was a sharp increase in the amount of raw materials, it is necessary to increase capacity of current sorting facility, or building a new sorting facility. Also the number of people involved in the collection and operations of the company SAKO Brno, a.s., which is shown in Table 10, will probably need to be increased.

The aim of this study was to analyse the possibility of collecting mixed plastics in terms of Brno in order to determine if this method ensures that the city of Brno, is particularly environmentally friendly. This study offers the possibility of changes, in order to increase the effectiveness of cooperation between the city of Brno, along with SAKO, a.s.. The work puts the greatest emphasis on the collection of plastics, especially in the context of the newly established collection introduced in April, this year. Therefore, our suggestions are: 1) increase the capacity of the vehicles, because for the future is very likely that the new system for the plastic collection, there will be a significant increase in the quantity of material in containers. 2) Looking at the equipment needed for sorting, it is necessary to consider upgrading facilities, because it is necessary to take into account the wear, due to energy challenging process. 3) If citizens will be more aware of, what materials and on which collection points throw out, it can be expected the increase of the amount of PET and mixed plastics in the collection containers. 4) We propose the introduction of bags for waste separation for Brno, as we get inspiration in the city of Ostrava. The introduction of this method to support sorting, which in Ostrava proved much higher number of people who started sort, we assume that the same effect would have on the city Brno. 5) Focus on education, on the plastics, which should try to bring citizens closer to sorting, to the extent that would have aroused more interest that they are not indifferent to what is happening with



the waste further. People should learn to educate especially in this area, and what is more important to start already with our children. It is also important, that in addition to sorting and recycling would join in producers themselves. For those, it is necessary to use an easily recyclable plastic and not mixtures thereof. The problem of plastic waste is mainly in the behaviour of us, people.

We believe that the application of our proposed changes will help improve the collection efficiency options both mixed plastics and PET bottles in terms of Brno.