

HOUSEHOLD WASTE COLLECTION IN THE SMALL REGION OF BAJA

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ABSTRACT

In Hungary the treatment of solid regional waste is still based on mixed collection and dumping. The aim of waste management is to make use of all parts of utilizable waste. One of its basic conditions is the selective collection of household waste.

In all the twenty settlements of the region the system of refuse sites has been evolved. In 80 % of households non-returnable plastic and glass bottles are collected selectively. The resumption of used portable batteries and storage cells is guaranteed by the law, so their selective collection has a high rate. All the other waste, collected selectively by people, can be delivered to refuse sites. 39% of the population of the area does not know where to find the nearest waste yard belonging to the settlement.

By assuring the possibility of domestic and community compost-making the local re-drawing of organic and green waste could be solved. The proportion of selectively collected household waste could be higher by providing a wide range of information about the selectively collectible waste materials, by motivating the people and by making them interested in selective waste collection.

1. INTRODUCTION

Wastes have two groups according to the place of their formation: wastes of production and that of consumption. Since the latter one is formed mainly in households, institutions, commercial and catering units, and in public places, it can be called settlement or public waste, too. Nowadays the specialized literature regularly uses the name 'settlement waste' (Kerényi 2003). Waste of production comes from productive and service activities, division and consumption activities of the settlement waste (Sántha 1996). In both groups hazardous and non-hazardous wastes are separated (Vermes 2005). In the European Union 80 per cent of the total amount of waste come from agriculture, mining and industry. Regarding the quantity, the agricultural production has the highest proportion, like in Hungary. Industrial wastes are significant because of their effect on the environment (Zimmler et al., 2003).

Indexes of the EURSTAT are regarding the selective collection and recycling of the waste material in the countries of the European Union show very extreme values. What can cause these differences? Maybe the system, the level of development of structure of waste treatment can be interesting? Or is the attitude, culture of people, organizations towards their environment? Is the quality of education, information on the waste, its collection or on the selective waste collection itself? Is the living standard, educational level of the inhabitants of the given country? Or are there any other factors which can affect these indexes?

In this essay we are publishing the results of the research on „Household waste collection in the small region of Baja”.

Hypothesis assumed in connection with the inhabitants' waste collection habits in the region are the following:

1. Plastic and glass bottles, jars are collected selectively in more than 80% of the households in the small region of Baja.
2. Refuse oil and used frying fats are collected selectively and then taken to the waste yards in less than 10% of the households in the Baja small region.

3. Broken, old household devices of bigger size, electronic wastes (washing machine, refrigerator etc.) are handed in in more than 90% of the households in the Baja region, due to the governmental regulation 264/2004. (IX.23.).
4. Broken, old electronic wastes, household appliances of smaller size, electronic equipment for entertainment (iron, hair-dryer, hair straightener, kitchen appliances, mobile phone, mp3 player, CD-DVD players, video player, TV etc.) are piled up or put into the waste bin in more than 70% of the households in the Baja small region.
5. Used galvanic batteries, batteries of smaller size (batteries for mobile phones, cameras, camcorders, rechargeable batteries etc.) are not collected selectively, are not thrown into the designated bins, are not handed in at the appropriate places in more than 80% of the households in the Baja region.
6. In more than 80 per cent of the household in the region the old, broken IT devices, fittings (house, panel, processor etc.), input periferics (keyboard, mouse etc.), output periferics (monitor, printer, loudspeaker etc.), outer and inner stores (hard disc, CD and DVD discs, pendrive etc.) are not taken to the appropriate places, stored at home or thrown into the bin.
7. More than 90% of the households with kitchen or flower garden in the Baja small region do not compost either the organic waste (potato skin, not used parts of the fruits, kitchen leftovers etc.) or the green waste (grass, fallen leaves etc.).
8. More than 60% of the inhabitants of the Baja small region do not know about the waste yards in their environment and their activities.
9. We assume that inhabitants with a university degree in the Baja small region tend to collect the waste material selectively on a wider scale.

2. MATERIAL AND METHOD

Answers to the assumptions can be received the most easily with a questionnaire. It is suitable for purposes of exploration, it is quick and can be analysed easily and its costs are very low. We elaborated the questionnaire according to the hypothesis.

The purpose of the research was stated in the introductory part of the questionnaire. It was important to underline that the examination was carried out anonymously. Clear instructions had to be given on the filling.

We used closed questions in the questionnaire. In case of selective questions the answerer had to choose from the options given by the researcher. We tried to give all the possible options for the questions. According to the rules of the self-report questionnaire we asked the questions about the demographic data of the respondents at the end of the survey. Registration to the survey was carried out according to the classic self-filling method. Apart from this, we applied electronic survey via Internet, as well. The proportion of the questionnaires, filled in and then sent back, was between 15-20 per cent. Surprisingly enough, it was a problem for many people to fill in and send back the questionnaire. Data collection via Internet makes examination of samples easier and quicker but it is difficult to ensure that the Internet users can represent the targeted population in a suitable way. Questionnaires were evaluated by Excel spreadsheet. The functions of table gave the answers to the assumptions and to other data, too.

Respondants were chosen randomly, thus the sample members do not represent the inhabitants of the Baja small region. In the research 429 questionnaires were filled in but not all of them could be evaluated. Two answerers marked „others” with an „x” in several cases. In some questionnaires the answerers made logical contradictions. For example, they used together the answers „I hand it in at the waste yards” and „I haven't heard about the waste yards” or „I don't know where the waste yards are in my environment”.

3. EVALUATION OF THE RESULTS

The first hypothesis is that plastic and glass bottles, jars are collected selectively in more than 80% of the households in the small region of Baja. It is necessary to collect plastic and glass bottles selectively because it is the quantity of plastic packaging waste which increases the most dynamic way. In case of glass bottles the returnable packaging is getting more and rarer. Both of the wastes can be recycled totally, in 100 per cent. Places for selective waste collection can be found in all of the twenty towns of the Baja small regions. They can be easily reachable by the population; they have been placed within 400-500 metres from the residences.

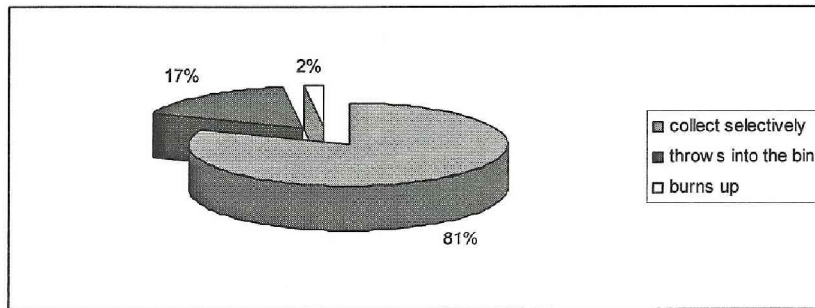


Figure 1. Proportion of the collection method. Source: data collected and edited by the authors themselves

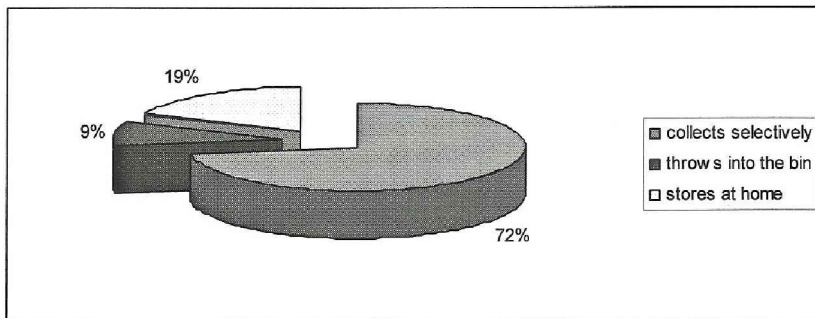


Figure 2. Collection of non-returnable glass bottles. Source: data collected and edited by the authors themselves

81,01 per cent of the respondents collect the plastic bottles selectively, apart from other waste materials, though only 72,10 per cent do the same with glass bottles. If we count the geometrical mean of these two figures, we can have 76,55 per cent. If we compare the diagrams of Figures 1 and 2, we can see that less people collect the glass bottles selectively. However, less glass is thrown into the bin than plastic bottles. 18,56 per cent of the respondents store the non-returnable glass bottles, jars in their home. It is not too favourable regarding recycling but it does not pollute the environment either. All in all, if we examine the non-returnable plastic bottles, the proportion of those who collect them selectively is slightly more than 80 per cent. However, examining the two waste types together the original hypothesis is not true (Figure 1, Figure 2)

Neither the hypothesis according to which refuse oil and used frying fats are collected selectively and then taken to the waste yards in less than 10% of the households in the Baja small region has been proved.

The used fats, cooking oil become unsuitable for further usage of consumption, since they can have a harmful effect on health because of the products of decomposition formed in it. They can have a harmful effect on the environment, too, if we do not deal with the problem of their appropriate collection and treatment. Pouring them into the sewerage increases the load of the cleaning plant. If we pour them into the toilet or house-drain, it can cause clogging since they form a deposit in the inner surface of the drain-pipes. If they infiltrate into the soil, they make its air-permeable capacity worse and thus they can destroy the soil flora. When they get into the rivers or lakes, floating on the the surface, they can prevent oxygen from getting in so they decrease the quantity of the solved oxygen in waters. Finally, they can even destroy the living beings there. If they are mixed with the public waste, they are regarded as hardly degradable materials in the refuse sites. They can be transformed into bio-diesel or basic material for grease.

(<http://kornyezetineveles.hulladelboltermek.hu/hulladek/hulladekfajtak/olaj/> 2012).

19,62 per cent of the households hand in the refused oil and the used cooking oil at the waste yard. The possible answers in the questionnaire did not include the following options: feeding the animals, pouring into the toilet or the house-drain, throwing to the junk-heap and digging in. It is typical in the village households to burn up the cooking fats, oil or to feed them with animals. 94 respondent out of 111 who burn up these fats live in villages. 3,31 per cent of the respondents (14 people) pour the refused fats and the used cooking oil into the toilet and the house-drain. 12 out of them are town-dwellers. In 34,75 per cent of the households the used fats and oil are thrown into the waste bin (Figure 3). Two respondents, who live in Baja, answered that there is a separated bin for the used fats and oil in their block of flats which is regularly emptied. Hopefully, this way of collection which is normally utilized in restaurants and canteens will soon become available for the residents, as well.

The EU regulation regarding the wastes coming from electric and electronic products is based on the producer's extended responsibility. Its essential element is that the producers assume the expenses of treatment when their products become waste. The principle is that it is the producers' duty to elaborate a system which ensures the treatment of the waste coming from electric and electronic products. By 2007 all the registered producers joined any of the organizations which co-ordinate waste treatment. Collection is done with several methods. It is possible to hand in the used appliance –in case of purchasing another- in more than 3000 commercial units. The unnecessary equipment can be left in waste yards or in most of the services. The co-ordinating organizations sometimes organize campaigns of clearing out, especially for electronic wastes (Országos Hulladékgyűjtési Terv II. 2009).

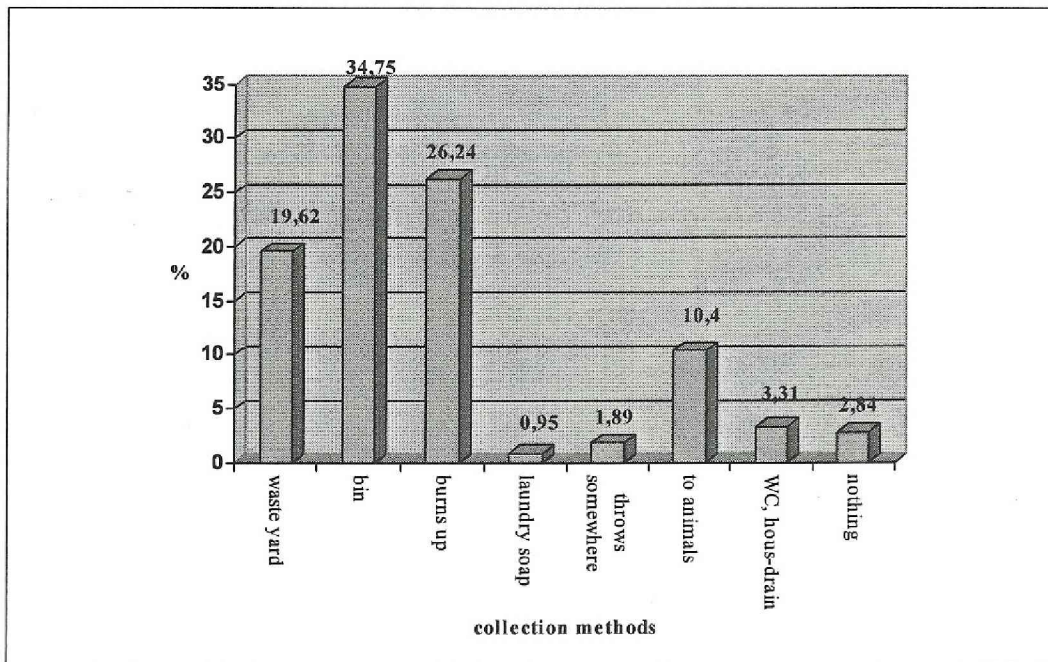


Figure 3. Collection of refused oil and used fats in the households. Source: data collected and edited by the authors themselves

47,04 per cent of the households hand in the old, broken household and electronic appliances of big size when purchasing another, 26,95 per cent leave them in waste yards, while 8,27 per cent get rid of them during clearing out. We cannot proportion of over 90 per cent predicted as handed in at time of purchasing even if we add up these percentages (Figure 4).

The company which is responsible for the regional waste treatment carries out the compulsory public services according to what is ordered in the law of waste treatment. Thus, they remove the household waste put in a standard waste bin and then placed in front of the houses every week. Wastes of bigger size are removed from the house in the framework of clearings out once a year. The local authorities have to pay for further services like collection of electronic waste, used tyres and green waste etc. Consequently, the local governments do not utilize these services or they try to collect and remove them to a waste yard on their own. Unfortunately, neither the conditions of this possibility are available. Answers given to the option „Others” prove it. Town-dwellers answered: „I take it to the advertised collection”, „I hand it in at the annual collection”. Villagers gave the answer- without exception: „cleaning out”, „I put it in front of the house at cleaning out”. The answer of a respondent with degree was: „I hand it in at the organised collection in the town”. At cleaning out small or big household appliances, equipment of IT, telecommunication or entertainment and every other material regarded as hazardous are not conveyed.

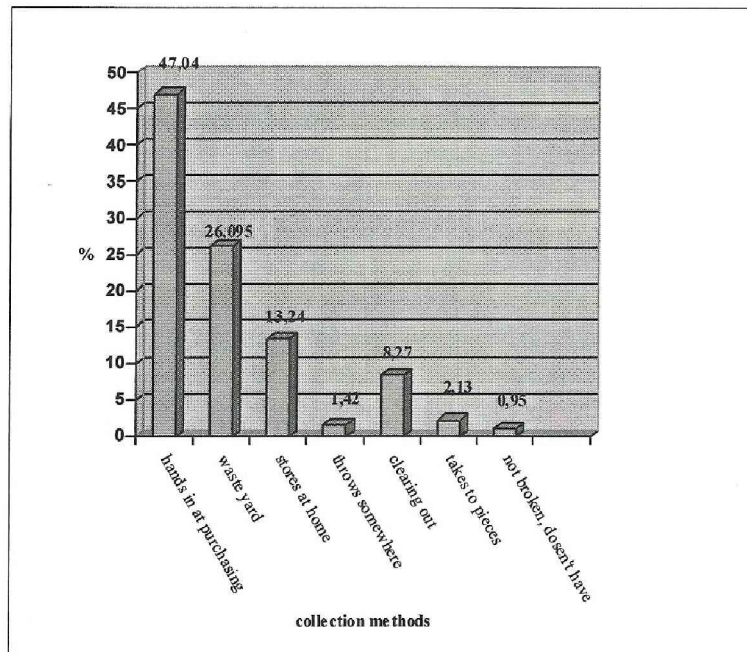


Figure 4. Collection of old, broken household and electronic appliances. Source: data collected and edited by the authors themselves

The inhabitants are always informed about the wastes which will be conveyed by the local authorities. Despite of this fact, the electronic and IT wastes and other wastes thought to be valuable are collected by rubbish-sifters who arrive by vans or with trailers before the professionals could get there. It is not controlled or regulated at all.

The hypothesis about the collection of the old, broken household, electronic or consumer appliances of smaller size was more than exaggerating. The proportion of the households where these devices are thrown into the bin or stored at home is 32,92 per cent. It is far from the presumed limit of 70 per cent. Proportion of the households where they hand it in when purchasing a new one, or take it to the waste yard or the organised collection of electronic waste is altogether 59 per cent. In this case we talk about selective collection.

It can be seen from the answers given to the questions connected to the galvanic batteries, and small-sized batteries (for mobile phones, cameras, rechargable batteries etc.) that 75,3 per cent of the respondents throw this kind of wastes into the designated bins. Proportion of those who collect them selectively is 83,22 per cent (throw them into the designated bin, hand them in to the waste yard or at the organised collection). Proportion of those who do not collect them selectively (throw them into the bin, store at home, throw them somewhere) is 16,78 per cent. This poroportion is much smaller than the assumed 80 per cent.

The quantity of devices and fittings which become worthless for the owners is increasing due to the fact that the electronic and IT-devices grow obsolete very quickly. If these devices are put into the bin, they will be treated together with the public waste, thus the hazardous materials in them can get eroded or go into the air with burning. Apart from the environmental pollution, it has also an economic importance to collect the broken or old IT machines and accessories selectively. A significant part of the IT devices and wastes

can be recycled. The IT devices and wastes can be divided into three groups. Ways of collecting broken, spared fittings, the broken or old periferies (monitor, printer, keyboard, mouse etc.) and data stores (CD, DVD disc, pendrive etc.) were examined separated.

102 people out of the total respondents do not have a computer, they form the 24,11 per cent of the answerers (Figure 5). Those who do not have a computer live in a village and have elementary or trade qualifications in 45,1 per cent.

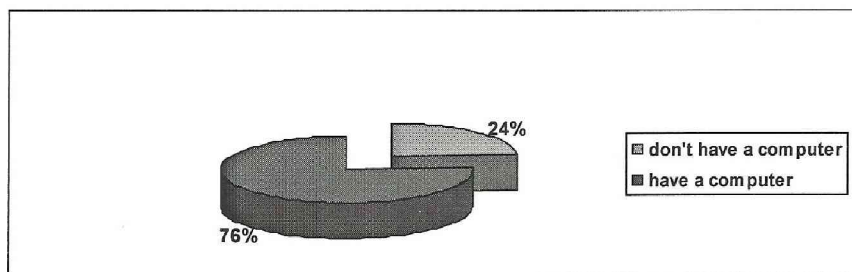


Figure 5. Proportion of those who have or not have a computer. Source: data collected and edited by the authors themselves

4. SUGGESTIONS

It would be very important to inform the inhabitants about the wastes and their collection. People generally know how waste treatment and selective waste collection can help protect the environment. It would be important to make the economic importance of selective waste collection clear, too. It could be motivating. The importance of the selective collection of the local hazardous wastes could be emphasized with campaigns and tools similar to the ones which call the attention to the harmful effects of smoking. Regular collection which goes to the house could increase the number or the quantity of the waste collected. Thus, even the low proportion of selective collection of refuse oil and cooking fats could be risen, too.

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