STATE OF RECYCLING OF WASTE IN BULGARIA

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Abstract: The state of collection, storage and processing of some main waste in Bulgaria is under consideration. In accordance with the legislation in force in Bulgaria and the EU, separate collection of waste is increasingly necessary. Some examples of different types of waste show what the actual condition is and show good examples of work in this area.

KEYWORDS: COLLECTION, RECYCLING, SEPARATE COLLECTION, STORAGE, WASTE

1. Introduction
Over the last few decades, mankind has been faced with the growing amount of waste generated by people’s activities. Apart from that, more and more attention is being paid to the re-use of raw materials and the recycling of waste products. This will play a very important role both in the use of scarce raw materials and in the reduction of these raw materials, their reuse and a significant reduction in the volume of waste on a global scale.

If you are one of the people who dispose of household waste separately, you may have been in the situation for long and long time to search for the yellow, green or blue container in nearby neighborhood streets loaded with a good amount of garbage. Finally, in good luck, your efforts have been rewarded and you have succeeded in finding them. It remains and of course only waste of this type is disposed of, not waste of any type [1]. Of course, if you have not given up and you have not scrapped the raw materials in the nearest household rubbish container and you have not stopped with the separate collection at all. Such difficulty is experienced by visiting foreigners in Bulgaria, for whom the separate collection of waste is normal practice. Because you have often seen how these containers are poured into the general waste bin in the cleaning company’s dump truck.

2.1. State of the separate collection
Dilution of containers is just one of the scenarios that are currently being observed. If you are a resident of the Lyulin quarter of Sofia, you probably will not find a specialized container. If you’ve been from Student’s City, Vubrnice, Poduyane or Pancharevo for about a year, you have not only left yellow containers for paper and plastic but also no glass for glass. If you are from Ovcha Kupel or Kremikovtzi, you have never had one.

The reasons why the usual European and world practice is not very successful in Bulgarian cities are heterogeneous, and the countries involved have been blaming each other for years. Organizations that need to collect and pass on raw materials recycle blame municipalities for not controlling their citizens who do not throw out properly, and as a result, organizations regularly carry a large amount of household waste in their trucks. Municipalities in turn believe that separate collection is a task for organizations that receive money from their members and are additionally funded by European funds, such as companies placing packaging on the market (on a polluter-pays principle). Citizens generally do not believe that their organizations are doing their work conscientiously, and that their efforts have some meaning for which there are multiple signals from bona fide citizens who send written signals and videos about violations in collecting and transporting these wastes. Organizations are mutually accused of misconduct. There is also a problem with shoemakers, and rather with the points that buy raw materials, such as paper and plastic bottles, without a certificate of origin and others.

All this is happening against the background of the European requirements that Bulgaria has to observe and the bar on them rises every year. Municipalities have higher requirements that they will have to meet by 2020. And last but not least, the country itself has an urgent need for better waste management to ensure better use of raw materials and a cleaner environment in the future. There are still fresh memories of the last decade with the transport of household waste to a number of municipalities in tens or even hundreds of kilometers in the landfills of other cities, the closure of landfills, the dumping of bales of waste on landfills and other environmental problems with waste treatment.

In other words, the separate collection is something to be done. This can only be done through good cooperation between all the parties involved and by finding better solutions and practices. The problem is more than up-to-date, as there is a new signing of the contracts of the organizations working in the capital as well as their re-licensing of the new requirements of the ministry. In my opinion, the legislation in force in Bulgaria should be applied more strictly.

In theory, everything is extremely clear and packaged on the idea of separate collection is clear to everyone. Much of the waste generated is a raw material that can be reused, can be a source of energy or transform into compost and used for soil fertilization and recultivation. Waste of this value must be separated from the rest of the garbage and recycled. Thus, resources are used smarter, and the amount of rubbish that goes into landfills becomes considerably less, and they in turn fill up more slowly and can be used considerably longer. This removes the need for new and new landfills, which for unknown reasons in Bulgaria are being built slowly and painfully. Separately, it will also limit the emergence of unregulated landfills, which are not controlled by anyone and are detrimental to our environment. “World and European experience shows that after recycling and composting, the level of municipal waste drops above 80%,” Evgenia Tasheva, of the For The Earth Association, in her study. Or else, separate collection is a very important part of the overall waste management and should not be neglected. This has already been practiced in a number of countries, both in Europe and around the world.

2.2. Major types of waste that require special conditions
Separate collection in Bulgaria, as in a number of other countries, was entrusted to special business organizations in which companies placing packed goods on the market are members and pay fees. Against this, these organizations are committed to collecting and transmitting for recycling a certain percentage of the quantities and types of packaging their members have placed on the market - targets that are reported annually to the ministry. On this basis companies such as Extrapack and Multipack and other plastic packaging manufacturers collect and process hundreds of tons of polyethylene from packaging. Belana company processes tons of paper and others. This gives a second waste life and stores tons of wood, pulp and other primary materials. For example, in 2015, the overall target was to separate 55% of the packaging placed on the market, 57% in 2016 and 60% in 2017. Organizations are responsible for building a system for separate collection for the population using known green, yellow and blue containers and information campaigns conducted in the print and electronic media.

Considerably improved work with the growing generation and last but not least personal example in the family and society. The municipalities had to provide places for the placement of the containers and to take care only of the household waste, which eventually undergoes some sorting of the landfill itself. However, we often observe the actions of the shufflers, which shuffle the containers and carry out the separation of the waste and pass it on to the secondary raw material points. For some, this has turned into a lucrative business and even used motor vehicles to transport waste

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YEAR IV, ISSUE 4, P.P. 131-134 (2019)
from the containers to the points. Over the past few years, there has hardly been a resident of the big cities in Bulgaria who have not witnessed quarrels between groupings of divisions to distribute areas and containers. But it also has its social meaning because it is some income for the homeless and a reduction in the volume of waste dumped.

The balance looks like this: for 2016, 337,000 tons of packaging are placed on the market. Of these, 182.6 thousand tons have been handed over for recycling. Or, organizations have fulfilled their objectives, but the household collection channel through colored containers remains the poorest source of raw materials, and the quantities accounted for by greening are collected either from sub-contractors or from large logistical and business centers. At the same time, according to official statistics, which the NSI calculates for the municipalities, only 36 thousand tons are recycled. The overall picture is that households eject about 3 million tonnes of waste per year. Or, a very small part of the total does not fall into the landfill [4].

However, following the latest changes to the Waste Management Act, municipalities will have to take a more serious look at the separate collection, as they already have targets that they have to meet. By 2020, biodegradable waste entering the landfill (food, garden, paper, cardboard, etc.) should have fallen to 35% of its total. Paper, plastic, metal and glass must have decreased at least 50%, with an increasing percentage of them being processed secondarily.

Construction waste must be recycled to a minimum of 70%, broken down and used for inert materials and put into service. Recycling of construction waste is the separation and processing of recyclable waste materials obtained during construction, reconstruction and demolition. Materials used in construction can be in many forms: wood, metal, glass, windows, asphalt, doors, plumbing, concrete, tiles, gypsum board, disused electrical and electronic equipment, etc. All of them are potentially reusable raw materials. On the other hand, most of them are inert, heavy, bulky, overburdened and non-biodegradable. Most of this waste goes to landfills. Chemically treated timber can, for example, cause soil and water pollution.

Most importantly, recycling of construction waste is their separate collection at the time of generation. Large metal containers for separate collection must be provided. Materials such as metal, plumbing, cables, plasterboard and wood should be placed in individual containers. They must be close enough to the building site to be used on time.

Construction companies have to plan waste recycling even before construction starts. The location of the recycling containers is predetermined and clear. All workers must diligently separate the materials for recycling to be effective. Thus, there will be no danger that small quantities of hazardous material will fall into one that can be recycled. The main steps in the recycling of construction waste are:

1) Sorting (division);
2) Shredding with a hydraulic shear or hammer (if the size of the waste is larger than the hopper opening);
3) Removal of metals (for reinforced concrete waste);
4) Sifting (of unwanted impurities);
5) Crushing;
6) Fractionation (grouping according to the size of the grains with different sieves); and
7) Purification of the fractional materials (wood, plastic, etc.) and of the dust fraction, which may prevent re-use as an additive material.

Construction waste has been identified as a priority by the European Union. There is great potential for recycling and reuse. In addition, waste recovery technology is well-developed, readily available and relatively inexpensive. However, within the European Union the recycling and re-use rate varies between 10% and 90%. One of the objectives of the Waste Framework Directive (2008/98 / EC) is to make European society recyclable. EU Member States are foreseen to take the necessary measures to allow at least 70% of non-hazardous construction waste to be reused, recycled or otherwise recovered by 2020. In Bulgaria landfilling is still a major method of disposal of construction waste. In Bulgaria, the Ministry of Environment and Water publishes the Construction Waste Management Ordinance and the “Construction Waste Management Guide on the Territory of the Republic of Bulgaria”. European requirements in this field are also ratified in Bulgaria. The purpose of the Ordinance is to introduce a new model for building waste management, reduce the total amount of landfill and reach 70% recycling by 2020. According to the Ministry's forecast, a major source of construction waste by the end of the decade will be sooner from the road and rail sectors, than from those related to the renovation and rehabilitation of buildings. It is precisely the fact that they are most often mixed and are generated over a longer period, in relatively small quantities and from different objects, is the biggest obstacle to being a major source of recyclable building materials.

Some materials can be recycled directly into the same product for reuse. Others may be processed into other products. Recycling, which requires additional treatment, is often not economically viable unless the recycling facility is near the source of the material.

The cost of landfiling a ton of waste in a landfill should also grow over the years, and this is an additional financial incentive to split raw materials from genuine waste that can not be used for anything else.

The new regulation of the Ministry of the Environment of the Republic of Bulgaria envisages that at least 6 million of the population of the country should be able to disposed of their waste separately. Separate collection should exist in all settlements with a population of more than 5,000 and will be mandatory for all resorts.

Targets for municipalities can only be achieved by better separation of waste as it comes out from households, as much of the raw materials that are otherwise recyclable have already been destroyed to separate the landfill. In other words, organizations and municipalities are mutually necessary, but they need to work in greater co-operation, and the synergy between them needs to be greatly improved.

After many years the Sofia Municipality was trying to solve the Sofia waste problem in a revolutionary way. About 15 years ago, EkoBulpak, one of the five packaging waste recovery organizations in Bulgaria, opened a factory for the processing of waste from glass, paper and plastic in the Philipovtsi quarter of Sofia. This is the first such facility in Bulgaria and a long preparatory path has been spent on it and the experience of other European capitals and European funding has been used [4].

According to the investor at the plant, if its capacity is loaded to the maximum, the volume of garbage ejected to the Sofia waste dumps can be reduced by about 60%. At present only Sofia produces about 1000 tons of household waste per day, which are transported to the landfill near Suhodol, where they are stored and processed. Separately, through separate collection systems, specialized organizations such as EkoBulpack collect, separate and pass on recycling an average of about 400,000 tons of packaging waste per year. Approximately 200 people work in the factory for a three-shift operation.

The investment in the new facilities is 7.5 million leva - part of the credit from Raiffeisenbank, and another from Raiffeisenleasing, through which the machines for the plant were bought. In principle, the plant consists of two main parts - an installation for the separation of waste from plastics, paper and metals and recycling of glass. The first one has a capacity of 100 thousand tons per year and the second one is 40 thousand tons per year. So far the waste collected by EkoBulpak is enough to load half the machines in the factory, said procurator of the organization Milen Dimitrov. That's why the owners are also negotiating with other recycling organizations to process gatherings and garbage from them. Although there are no contracts signed yet, the plant owners say there is no interest, and probably in the future, Ecobulpak's plant will also process foreign waste from across the country. The installation of EcoBulpack for paper, plastic and metal will sort the individual types of waste so that they prepare them for processing. It can also be used for household waste sorting, which also has useful components. However, conversations with the Sofia Municipality in
this direction are not yet being conducted. "We have informed them that we find such an installation, if they are interested, we can negotiate," said Ecobulpack.

According to the requirements of a European directive, 50% of household waste should be recycled and not disposed of. At present, however, in Bulgaria mainly regional garbage depots are being built, and only a few municipalities are working on the construction of a plant. However, no plant has yet started work. Thus, by reducing the amount of waste in the landfill, the newly-opened Ecobulpack facility can be part of the scheme to meet this requirement. The mayor of Elin Pelin welcomed all attendees and pointed out the fact that the investment of Integral Plastics PLC, amounting to EUR 40 million, is the first for Bulgaria and Europe to recycle plastics with innovative equipment meeting the highest standards and environmental criteria of the European Union. He presented the official guest at the meeting - George Kremlis, who has been working in the ecology and economy since 1981, and is a prominent expert not only of a European but also a world-renowned adviser to a number of ministers and a former prime minister of Greece. Thanks to his work and his authority over the past few years, some of the largest projects in the field of ecology in Europe have been realized. The mayor thanked the guests for the visit and the investor for the project, which will be key to waste processing and the environmental sphere. At the end of his statement, he pointed out that it is of utmost importance for Elin Pelin to protect the rights and interests of citizens, their health and the future of their families. This meeting answers some of their concerns and questions about the construction of a plastics processing plant in the immediate vicinity of Elin Pelin in order to be calm about the new investments in the municipality.

The range of traded plastic scrap is extremely wide. The company trades with the following items of secondary raw materials, but not only:
1) Polypropylene - PP / PP / - crates, crates, packaging, etc.
2) Polyethylene - PE / HDPE & LDPE / - thick nylon, stretch / expandable / foil, etc.:
3) Polyethylene terephthalate - PET / PET / - bottles of mineral water, soft drinks, beer and other, sorted by color, as well as blanks - industrial marriage from industries using PET as a raw material;
4) Polystyrene PS / PS / - widely used in packaging for the food industry;
5) Polyvinyl chloride - PVC / PVC / - pipes, joinery, cable insulation and others.
6) Polyethylene terephthalate - PET / PET / - bottles of mineral water, soft drinks, beer and other, sorted by color, as well as blanks - industrial marriage from industries using PET as a raw material;

In his address, Mr. George Kremlis, Honorary Director of the European Commission (DG Environment), emphasized the principles of the circular economy that effectively uses separate collection and subsequent recycling of waste as well as the overriding European norms in the sector. Mr. Kremlis' recast wasted electrical and electronic equipment and perfectly suited this project that fully complies with EU and national legislation. "The plant will have a high added value and will contribute to achieving the recycling targets that are set by Bulgaria under EU legislation."

By 2020, Bulgaria has to achieve waste recycling rates to 50%, and the target is currently below 20%. For that reason, for two years, Bulgaria has had to make serious efforts to reach the set goals. If this goal is not reached by 2021, there will be procedures to impose sanctions and fines on Bulgaria - an EU member state that has not complied with European norms, "he added. This project will contribute to the development of recycling in Bulgaria as well as at the regional level for Elin Pelin Municipality. Plastics processing is of the utmost importance to the European Commission and currently has a functioning Plastics Strategy. If the necessary measures are not taken today to reduce the amount of used and disposed plastic, the time will come in the future when there may be more plastic waste in the ocean than fish. The European Union is conducting environmental policies to prevent this from happening.

He answered the questions of the citizens of Elin Pelin municipality about the environmental assessment of the project and its safety for the population and nature in the region. This pioneer plant is the first on the Balkan Peninsula to use this type of technology and machinery for processing recyclable plastic products. The finished products will be of high quality for the European industry and will meet the principles of the circular economy [6].

Julian Belev, executive director of Integra Plastics AD, described in detail the stages of operation of the new plastics processing plant, which is being built next to the town of Elin Pelin, and shared about the innovative processes through which the recycling will take place. After its opening, the plant of "Integra Plastics" PLC will reduce by 65% the volume of landfilled plastic products that are subject to recycling and will generally reduce environmental pollution, while producing high quality raw materials for new plastic products. The work of the plant will increase the pace of implementation of the European recycling standards that are mandatory for Bulgaria and will present Elin Pelin Municipality as a leading center for the environmental policy of the country.

"The plant is high-tech because it uses absolutely automated processes for waste processing without the involvement of a human hand. There are no combustion processes in the processing lines of the plant, and wastewater complies with environmental directives. The first step in creating a quality recycle to be reused in industry is the proper separation of the individual types of plastics and this is one of the main objectives of the plant. This is made possible by the so-called optical separators in the form of streamlines developed by famous Scandinavian and German companies. Optical separators are widely used in other industries and can recognize different types of products and their qualitative performance. Plastics processing is part of the measures that will reduce the volume of discharged plastics in Europe and is a priority cause for us. There is no danger of harmful emissions to the atmosphere because no combustion processes are carried out in the process." answered a question from the Hall about the impact of the new plant on the environment.

The director of Integra Plastics AD proposed to organize a new discussion meeting with municipal councilors, citizens of the municipality and / or other persons to provide more detailed information about the work of the plant and to clarify all issues to the public.

"The Metropolitan Waste Plant is entering its final phase. Last week, the Supreme Administrative Court acknowledged Yordanka Fandakova's mayor's order to choose a builder valid, Sofia Municipality is finally expected to enter into a contract with the selected company - Actor JSC - Hlelector JSC. The decision in practice saved the European funding of the project under the Environment Operational Program because the contract must be signed by the end of this year - the deadline of the programming period. It is now up to the plant to be implemented by the end of 2015 at the latest, again because of the requirements of Brussels."

Of all importance is the recycling of electronic scrap. In Bulgaria, various companies are engaged in collecting, temporarily storing, packaging and transporting discarded electronic and electrical equipment and components thereof:
1) Telephone relay stations;
2) Computing machines;
3) Electronic measuring apparatus;
4) Computers, motherboards, video cards, processors;
5) Mobile phone boards;
6) Capacitors, relays, microcircuits, transistors, diodes, resistors, connectors;
7) Radio lamps;
8) Contactors [5].

Companies have made significant investments in machinery, infrastructure and know-how and to date are specialized in the treatment and recycling of all kinds of waste cables. The company mainly processes copper and aluminum cables by extracting non-ferrous metals such as copper, aluminum, lead, nickel and others. For example, Ecomax has made investments and purchased a telephone line for telecommunication cables and cables with a cross section less than 1 mm. The capacity of the processing line is 2500 kg. daily as the resulting copper "granulate" is of high quality and the processing losses are minimal. Of course, besides telephone and communication cables, the company manufactures mechanized and mined metals and all types of power cables.
To its corporate clients in the country, ECOMAX has the opportunity to offer complex buy-out of all types of cables and wires as well as other metallic and non-metallic secondary raw materials, including "from the place", by providing specialized containers for collection of recyclable waste, of different color and volume to suit the different types of secondary raw materials and to make it as easy as possible to use it by the company's customers [6].

In addition to its acquisition of secondary ferrous and nonferrous metals for scrap metal and scrap metal, our company is among the largest buyers of disposable batteries and accumulators (NUBA). From an ecological point of view, the price is not decisive, and the possibility of re-using the battery and protecting the environment from harmful emissions. The reusability requirement does not meet primary batteries, which occupy the main market share, hence the problem of their landfilling and recycling. Disposal and recycling of disused batteries is a problem not only for Eastern European countries but also for other countries with poorly developed separate waste collection programs. The first step towards reducing the current problem of recycling spent batteries is their proper and purposeful collection [2].

An example of the importance of the problem globally is the non-profit organization established in the United States, or so on. The Corporation for Battery Recycling (CBR) from the four largest manufacturers - Duracell, Energizer, Panasonic and Rayovac. The program started in 2013 and focuses on the collection and recycling of primary alkaline, zinc-carbon and reusable batteries based on zinc, silver oxide and lithium [2].

The cyclical use of power supplies is associated with a certain number of discharges and charges that are carried out without affecting the operating voltage. Each battery has a number of cycles guaranteed by the manufacturer, after which the voltage begins to change [3]. This requires the use of new batteries and accumulators so they can retain their factory metrics and perform their functions. And this in turn leads to the accumulation of new quantities of unnecessary devices that need to be stored under special conditions and processed to source materials or recycled.

Every month, over 250 tons of rechargeable batteries are collected, stored and transported in containers located in large commercial outlets, mobile operators' offices, and more. Partners of Rovotel Steel Ltd. in this activity are the largest recycling facilities for rechargeable batteries in Bulgaria, ensuring environmentally friendly, efficient and regular recycling of these hazardous waste.

Rovotel Steel Ltd., together with its partners from 'NUBA Recycling' AD, has over 200 special containers for collecting and storing rechargeable batteries and over 3600 small battery containers all over the country.

Containers of NUBA Recycling AD and Rovotel Steel Ltd. can be found in the retail chains, gas stations, malls, office and business buildings, as well as state institutions.

The largest importers of automobile tires in Bulgaria - Medina Med and Diana, opened a recycling plant for recycling of used tires - "Ecumenical wheelchair" in Stasi Zagora in 2015. In its construction, the owners have invested BGN 5 mln. Through the recycling of tires, several raw materials are produced - rubber granulate, metal and textile, for which markets are already secured.

The plant is built on a total area of 2200 sq.m in the place of an abandoned workshop of the former Agrobichim, which has been completely rebuilt and modernized. For the construction of the new power the company has applied for OP "Competitiveness" and in particular under the scheme "Energy efficiency and green economy". The approved project is for BGN 4 million, with 50% of it being its own financing. An investment loan from UniCredit Bul bank also makes it possible to realize the idea. The current regulatory chaos served as a motive for building the enterprise.

"A small number of consumers know that old tires can not be dumped at municipal landfills We have a waste law but we did not have a regulation on how to deal with this law We paid ecotaxes to the EMEPA ie the state and we waited for it we did the job, that is, to collect and destroy these tires."

As early as 2010, the government of Bulgaria has issued an ordinance authorizing companies to set up a collection, transport and tire recovery organization. Our plant was created on the basis of this regulation, "said Ivan Panchov, owner of" Medina Med "at the opening. "We built the company in Stara Zagora because of the good location of the city in the center of Bulgaria, here we can easily collect the worn out and tires out of use on more than 60 sites across the country, "he added.

After the adoption of the Ordinance on the requirements for treatment of end-of-life tires under the Waste Management Act at the end of 2010, the two competing companies Medina Med and Diana established "Ecomediana-2010", which received a license for a recovery organization of discarded tires [8].

'Ecomediana" is now the largest such organization in Bulgaria, with more than 66% fulfillment of the targets for waste and used tires. There are 30 companies - importers and manufacturers of tires from Bulgaria. By joining the collective system, they are given the opportunity to free themselves from a product fee of 30 cents per kilogram for light tire and 20 cc per kilogram of heavy tire.

A second stage of the investment in the new plant will be invested, with an additional BGN 2-3 mln. We plan to install a textile and steel cleaning line, which will bring even better market positions, the owners say.

Looking ahead, we will also produce end products that we would not like to comment at this stage, they add. Owners of EKM expect to receive new funding opportunities for the second phase of the company’s construction at the opening of the next programming period under OP Competitiveness [6].

The paper and metal wastes are not presented in the review because they have a good organization of collecting, transporting and recycling the raw materials. Although we have not yet achieved European requirements in this area, things are much better off than using and recycling other waste materials.

Finally, I would like to mention that the Sofia Waste Treatment Plant for the period 01.01.2018 to 31.12.2018 has processed 366,301 tons of incoming waste; 34,951 tonnes of recyclable materials; 171,109 tonnes RDF; 51,119 tonnes of landfilled quantities [4].

3. Conclusions:

1. In Bulgaria over the last decade, the separate collection of waste in large settlements has greatly improved. There is a separate waste collection system in place, but the population still has no habits for this type of waste collection.

2. Despite the explanatory work carried out in the mass media and the changes in the Bulgarian legislation, the achievements in this direction are far from the European and world norms.

3. It is necessary to implement not only the achievements of EU countries, but also Japan, China, USA, Russia and other countries in the collection and recycling of waste products and raw materials.

4. Literature:

1. Долчинков Н. Т. Оптимизиране на системите за мониторинг и оповестяване на населението при радиоактивно замърсяване на околната среда, дисертация за придобиване на ОНС доктор, НБУ "Васил Левски" Велико Търново, 2017.

2. Иванова, Г. Екологични проблеми свързани с рециклиране на батерии, Сборник доклади от Международна научно-практическа конференция на НУБ "В. Левски"-гр.В.Търново 3-4 юли 2014г; ISBN 1314-1937, том 9, стр.170 – 175, 2014.;

3. Иванова, Г., Влияние на работоспособността на източника на захранване върху жизнен цикъл на отбранителен продукт, Новини и потенциал, 2014.;


5. Иванова, Г. и въздействието на ресурсните ограничения в определени стратегически отрасли в България, "Економика, статистика и информация" 2015.;


7. Экомакс, http://www.ecomax.bg/рециклиране на автомобильи