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**MANAGEMENT OF THE 21ST CENTURY:
GLOBALIZATION CHALLENGES. ISSUE 3**

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MANAGEMENT OF WASTES: PROBLEMS OF PROCESSING AND UTILIZATION

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A global ecological crisis is a reality of present time. Destruction of environment is, first of all, by the indicator of low level of ecological

consciousness of society. Contamination of ecology generates large problems: origin of new modifications of diseases that is passed genetically; decline of general level of immunity; tumors; problems of reproductive function; extinction of whole types of flora and fauna and etc. The ecological situation gets worse with every year; all greater part of atmosphere is contaminated.

Situation that was folded to Ukraine in the field of handling wastes is extremely unsatisfactory and attained the critical point. In particular it touches the sphere of providing of their collection, redoing and utilization, and also bringing in economic turnover. A negative index for Ukrainians is that our state is the European leader after the amount of wastes per capita. This problem now is very actually and requires the most rapid decision.

The questions of distraction of global ecological crisis unite all scientific knowledge and industries of practical activity on only scientific basis. Researches in this area the row of home and foreign scientists engages in: A. Bayer, G. Sapozhnikova, W. Rhys, S.S. Ufit, P. Connnett., M. Jasen,

V. Doskych, Murey, T. Kharchenko, Yu. Sagaydak, Yu. Kutovaya and others

“Wastes Law”, in that the general aspects of handling are marked wastes and legal, organizational and economic principles of the activity, related to prevention or reduction of volumes of formation of wastes, their collection, transportation, storage, sorting, treatment, utilization and moving away, rendering and burial place harmless, are certain, operates in Ukraine, and also with the distraction of negative influence of wastes on a natural environment and health of man on territory Ukraine [6]. However, unfortunately, law does not operate in a complete measure.

Ukraine is a unique country after the general amount of wastes including dangerous and after the deficit of attention to this question.

The aim of this research is an analysis and directions of decision of problems from utilization of wastes in Ukraine, being base on experience of leading countries of the world.

From statistical data, everybody of Earth creates, on the average, approximately 1 kg of domestic wastes every day [2]. In Ukraine 35 million m³ of domestic wastes appears annually, it means about 0, 8 m³ on one habitant. These wastes are warehoused on dumps that make over 7 thousands hectares of earth. The general area of dumps presents 5 % of territory country almost, that comparatively with the sizes of the Chernovtsy area. In account of environmentalists, Ukraine accumulated 54 milliards of m³ wastes; annually garbage grounds are filled up approximately on 15–17 million tons [1].

Most dumps for garbage do not answer requirements in relation to providing of ecological safety. From data of Ministry of regional development, building and housing and communal services, 4,2 polygons

of domestic wastes in Ukraine overcrowded, 16e meet the standards of ecological safety, and 30 in need passport systems. From 770 dumps – 80 % isn't equipped by the systems of protecting from contamination of soils, water and air. With every year this index becomes all worst [4].

On the draught of many years the amount of domestic wastes grew constantly. A number of factors influence on it, including a change of method of lives of people, which use all more packing and overwrapped materials.

On the landfill there are different types of wastes that destroy an environment: to trade, bits and pieces of ready-to-cook foods, materials and raw material enter in the complement of that appeared at the production of goods or lost fully or partly the consumer properties; solid and liquid wastes that appear as a result of vital functions of people and depreciation of the articles of way of life; consumer (wares and machines that lost the consumer properties as a result of physical or moral wear); building; wastes that appeared as a result of agricultural production; radioactive (untapped radionuclide's and materials that appear during work of nuclear reactors, at a production and application of radio-nuclides) and others like that [7].

In the developed countries of the world the system of separate collection and processing of wastes works a long ago, when assort a glass and plastic container not only, as it is done in Ukraine, but also paper, wastes from a meal, polyethylene and others like that. However, Ukrainians are not ready to it yet far, because not everybody can sort out something one even, for example, in the same container.

It is set that for pleasure: requirements of one man in a meal, clothing and accommodation for a year about 20 tons of different raw material is spent, but only 5–10 % raw materials passes to finish good, and 90–95 % instantaneous goes to wastes [8].

In the countries of Europe part of separate garbage presents approximately 85 %; 15% remained burn ecologically a clean method, or recycle with use of innovative energy keeping technologies.

In a table 1 the ways of decision of problem are considered from utilization of garbage in some countries of the world.

In Sweden, Norway, Denmark, Netherlands and other countries in that the sphere of handling garbage is well-proven to maximal efficiency, on dumps gets less than 5 garbage, from that «press» out everything, that it is only possible. In Ukraine on dumps gets anymore 93 %. While a law «On wastes» forbids from, the 1st of January, 2018 to bury on grounds hard domestic wastes are not processed [6].

In Ukraine there is absent politics of handling wastes. It, in turn, annually results in the loss of millions of tons of resource-intensive materials that potentially would be entered in economic turnover. According to estimates of environmentalists, in hard domestic wastes average can be contained up

to 40 % valuable materials. Taking into account, that in Ukraine in majority collect wastes in «general» containers, potential utility waste deteriorates and contaminated, and the amount of valuable resources goes down to 5–10 %.

Table 1
Ways to solve the problem of waste disposal in the world [7, 8]

Countries	Ways to solve the problem
Austria	Conception of «circular economy», after that garbage becomes raw material for the production of new things, is inculcated. A biotechnology is used, that allows slitting a plastic. The special fungal enzyme that is able to slit polymers on simple monomer elements is used for this purpose. A «rotation is so provided the plastic arts» - walking away from one product is used for creation other
Great Britain	The «anaerobic breaking» (the use of bacteria is for processing of food wastes and receipt of biogas and biofertilizer) up is used
Germany	All producers are under an obligation to raise 0, 2 Euros for tin banks and small bottles and close 0, 37 Euros for a greater container. Money is compensated customers since they will turn the used tableware. Money from this mortgage price is distributed so: 85 on organization of collection of container, 15 on processing
Poland	More than 100 objects that engage in treatment of wastes are built. The special law put an end illegal landfills, and people began to assort wastes
Finland	Dwelling-houses, shops and enterprises, have comfortable points of collection of wastes. The system of mortgage cost of packing (at the purchase of product a customer pays yet and for packing) is practiced
France	Every dump equipped by the special tanks: for glass, paper and other garbage. There is a microchip on every tank, automatically fixes time of filling and time of export of garbage that. Garbage trucks are equipped by reading devices and side computers that automatically read this information and order it to the central computer of dispatching office. Logistic, analyzing filling of trashes, the optimal routes of machines and shift works expect
Sweden	Technology of «energy from garbage» is used. Approximately 2, 5 million tons garbage is annually burned for making of electricity and heat. 99 of garbage is used as a fuel for power-stations and as raw material for a production
Japan	100 % result is in the secondary industrial use of aluminum jars. Every check and any ticket is subject of utilization

But, our country gradually moves towards the decision of problem of removal of wastes. National strategy accepted in 2017 from a management wastes obliged, that the volume of burial place of hard domestic wastes on garbage grounds must grow short from 95 % in 2016) to 50 % in 2023 and to 30 % in 2030 [3]. However a last year's index has time after the set pace: the amount of the buried wastes in 2018 diminished all on 1, 2 %.

According to experts, situation in the sphere of handling wastes will not change cardinally, while sorting and processing of garbage will not become profitable business for investors.

Consider that the modern system needs the new model of settlement of these relations: distribution of responsibility for well-educated wastes; stimulation of citizens is to ecological consciousness and behavior. But, to adopt experience of leading countries of the world for the decision of this problem, in our view, difficult enough, taking into account the political, economic, social and other features of country. On this stage of development of Ukrainian society the most effective, to our opinion, instrument on a way to the decision of problem of global accumulation of garbage is a division of wastes.

In some countries, except ordinary containers for garbage set varicolored tanks for collection of separate types of secondary raw material. Interestingly, that such tendency actively develops today and in Ukraine. The separate color of tank marks the type of material, for example, blue are newspapers, magazines and cardboard; green is glass; yellow are the plastic packing; brown are batteries; black are organic residues; red are wastes that cannot be done; orange are plastic bottles and plastic packing.

Some experts mark that a benefit from the colored containers is collection of utility waste for reprocesses – strongly exaggerated:

- firstly, persons without a certain residence draw out from garbage tanks all useful, that it is possible to hand over in the nearest point of reception of utility waste;

- Secondly, there is no guarantee, that to the question of separate collection of wastes will befit responsibly enough and will begin to fill containers severely on purpose;

- Thirdly, even garbage-collected separately it will be once again to assort on enterprises [1, 8].

It goes out in a result, that home utility waste is not enough for valuable work of the Ukrainian reprocesses (tabl. 2), that is why he is even bought in abroad. Yes, in the last year of enterprise of association of “Ukrvtorma» bought in 202, 2 thousand t literary garbage (all is bought in 392, 3 thousand tons) in Russia, in Poland is 17, 4 thousand t polymers (all is bought in 53, 4 thousand tons), in Belarus is 24,1 thousand tons of slaughterhouse (all are bought in 32,5 thousand tons [5].

Table 2*Separately processed waste processing facilities [5]*

Indicator / Waste	Plastic	Wastepaper	Cullet	Polymers
Number of recycling enterprises	19	17	16	39
Production capacity, thousand tons	77	1200	800	260
Occupancy, thousand tons	50	1104,5	482	170

How much capacity of Ukrainian processing enterprises is used is presented at fig.1.

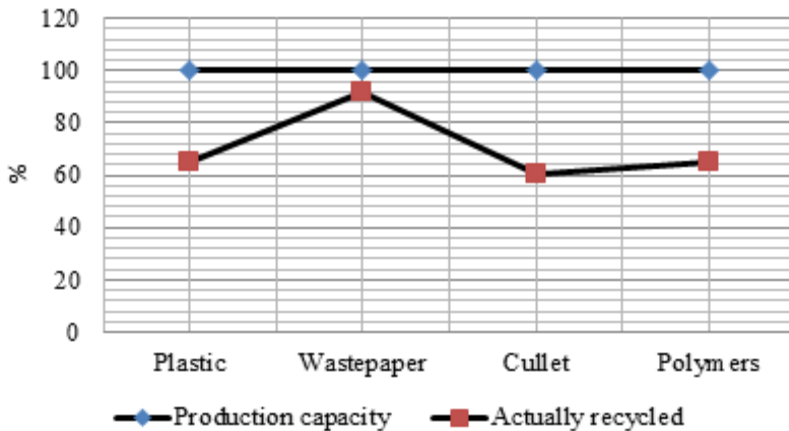


Fig.1. Use of capacities of processing enterprises of Ukraine

Because in Ukraine neither a population nor producers pays for processing of packing – for business organization of collection and processing of utility waste cost far more than in Europe, where the cost of the packing processing is already stopped up in the cost of commodity. Therefore our utility waste at cost more expensive imported and does not answer rates that on her set reprocesses. In the same time, if on utility waste to promote a price, enterprises will not begin to buy her, so as a cost of the imported utility waste for business will be more and more attractive.

And if to bring down, then it will begin unprofitably to hand over her a population in the points of reception.

Consider that to increase the volume of wastes for processing by establishment in the corresponding places of containers, not enough. So, for example, the special system of fines and encouragements is envisaged in Germany. If man qualitatively and responsibly assort the garbage, then his rent is considerably less [1, 8]. Food wastes can be used as fertilizers for

soil.

Thus, as a result of foregoing offer next measures on processing or utilization of wastes taking into account an ecological situation in Ukraine:

- providing of corresponding normatively-legislative base;
- more wide use of the programs from collection of separate garbage, their propaganda;
- introduction of new optional objects in the program of general schools for the studies of the generation educated on principles of maintenance of nature;
- development and introduction of the optimal system of processing of garbage with clearly certain rights and duties;
- introduction of fines for an unauthorized export and extras of garbage, even in negligible quantities;
- modernization and creation of recycling and incinerators ;
- an increase of production ecologically of clean commodities volume;
- introduction of technology of making of packing of products from raw material that is subject to the secondary use;
- an increase amount of points of reception of bulbs, batteries and shallow domestic technique.
- limitation of turn of plastic commodities.

Consider that by a basic factor that influences there are ecological consciousness of society and level of education of population on the state of environment. Using experience of other countries, Ukraine can choose the way on processing and utilization of wastes, taking into account the features of the state and development of country.

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USAGE OF ALTERNATIVE SOURCES OF ENERGY AND SAVING OF ENERGY RESOURCES IN UKRAINE: EXPERIENCE AND PROSPECTS

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The modern world is characterized by uncertainty, fluidity, fast changes. World energy, which is in the process of major changes, is not an exception. These changes are embodied in:

- the intensive implementation of the main renewable energy technologies in the context of corresponding decrease of their cost;
- the growing role of electricity in energy consumption compared to oil products all over the world;
- changes in the world economic and energy policy due to the intensive development of China's economy and the entry into the world market of growing shale gas and oil extraction in the United States [4].

In such conditions, Ukraine must take into account the world trends. The implementation of the latest modern technologies in the energy is highly important for our country, as Ukraine has one of the most energy-intensive economics in Europe. Almost half of the country's energy is consumed by the housing and utilities sector, which became outdated long time ago and now it needs to be renovated [9].

The problem is complicated by the fact that Ukraine, which consumes