

Ecological Management and Waste Recycling as an Environmental Quality Factor

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ABSTRACT

The economy has a big impact on the environment. The economic development of the world poses a serious challenge to the natural environment. To overcome the growing environmental crisis and successfully solve the emerging waste recycling problems, it is necessary to save the environment by economics, industries and society. The experience of some foreign countries in the fields of ecology and sorting, processing and disposal of waste gives hope for a number of possible changes in the field of improving the quality of the environment.

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Introduction

In the XX century. Development was focused on the rapid growth of the economy, which led to an unprecedented scale negative impact on the biosphere. There were contradictions between the growing needs of the world community and the limited ability of the biosphere to satisfy them.

Sustainable development implies positive dynamics in the interaction of its most important indicators in the triad of people - economy - nature, which should function steadily and ensure the progressive movement and safety of the social, economic and environmental spheres.

The formation and development of economic science and the practice of sustainable development of society should follow the path of studying, analyzing the interaction of humanity and nature. Identify patterns of this interaction and use to create a reasonable economy in harmony with natural processes [1-2].

The true value of natural capital - the reserve of renewable and non-renewable natural resources such as plants, soil and minerals - is no less than the value of goods and services produced and human capital - for example, paved roads and acquired skills, since all together they determine the real well-being of any country. According to the United Nations Environment Program, the global stock of natural capital per capita has declined by almost 40% since the beginning of 1990, while the volume of goods and services produced has doubled and human capital has grown by 13%.

The average person today has a much higher income, a low risk of being below the absolute poverty line and lives much longer than his ancestors. These are colossal achievements. But these

successes go hand in hand with deep biosphere degradation and significant declines in biodiversity. Rough estimates of our overall impact on nature currently say we require 1.75 planets Earth to maintain the current standard of living while maintaining the current state of economic systems based on depleting production and consumption.

Aspects of The Environmental Crisis

One really worrying outcome of overconsumption is that ecosystems that are already in critical condition are reaching tipping points. Ocean heatwaves have already killed half of the shallow coral species on Australia's Great Barrier Reef. According to scientists, a global temperature increases of 2 °C will lead to the death of almost all (99%) coral reefs. The economic impact will be devastating. Large numbers of people, especially in developing countries, depend on coral reef fishing as the only means of subsistence and nutrition.

The need to guide scientific evidence in decision-making has become even more apparent in recent months. We still have a lot to learn about the epidemiology and impact of the COVID-19 virus [3-5]. A relationship has been established between the decline in biodiversity and the occurrence and spread of infectious diseases. In Singapore, over eight weeks of quarantine, which was weakened on June 1, 5.7 million residents produced - above the usual - about 1,470 tons of plastic garbage: boxes and bags from dishes and products delivered to them from diners and restaurants. Specialized containers for the collection of medical waste should appear in public places. They need to be disposed of like medical ones to prevent the spread of infection and prevent environmental pollution.

In 2020, climate change, biodiversity reduction, extreme weather, natural disasters and man-made environmental disasters will lead the World Economic Forum's annual review of economic and

entrepreneurial risks. For the first time in the history of the forum, all five main risks are environmental in nature, which indicates a higher recognition of the likelihood of their occurrence and the degree of their impact on the world economy and society over the next 10 years.

Over the past year, numerous natural disasters have caused billions of dollars in damage around the world, and it is now generally accepted that the modern global economic system does not properly take into account physical climate risks. For example, Munich Re, a global reinsurance leader, cited climate change as the leading cause of \$24 billion in losses from California wildfires.

In 2019, Australia's severe drought forced farmers to sell their stock and shut down operations as the price of water proved exorbitant to them. In 2019-2020, the Australian federal government announced a drought stimulus package of over A \$500 million, with additional funding of A \$170 million from regional authorities [6]. In addition, more than half of global GDP - \$44 trillion - depends heavily or moderately on nature and its services. Agriculture and food supply are the areas where natural degradation and biodiversity decline become the most significant factors.

A clear example is the prevalence of monocultural production: for example, 60% of the world's coffee varieties are at risk of extinction due to climate change, disease and deforestation. If they disappear, global coffee markets - a sector with retail sales of \$83 billion for 2017 - will be significantly destabilized, which will most negatively affect the livelihoods of many small farms.

Environmental Safety Measures

The strengthening of environmental protection measures includes expanding areas of specially protected areas and improving the quality of their management, intensive efforts to restore the natural environment and a landscape approach in land use planning. It involves extending conservation measures to all areas that are included in the World Database of Protected Areas, the World Database of Key Areas for Biodiversity, and the list of areas where wildlife has been preserved. Within the framework of the scenario, it was assumed that these areas would be effectively managed in such a way as to prevent any changes in land use that damage biodiversity. In addition, in all areas engaged in production activities, there should be financial incentives for the management of sustainable non-depleting land use with increased funding.

The scenario of more sustainable production (it is based on a change in the approach to the supply of goods and services) provides for sustainable growth in both agricultural productivity and trade in products. The scenario is designed in view of the fact that crop yields for domestic consumption and livestock productivity will grow somewhat stronger than in the baseline scenario, with crop yields growing faster in developing countries, so they will approach the level observed in more developed countries with traditionally higher yields. Trade in agricultural goods worldwide will be simplified by the globalization of the economy and the reduction of trade barriers.

The scenario of more sustainable consumption (it is based on a change in demand for goods and services) provides for a decrease in agricultural waste all the way "from field to table" and implies a transition to nutrition with a decrease in the share of calories of animal origin in countries with high meat consumption.

Total losses across the food supply chain (harvest, processing, distribution and final household consumption) are expected to

decrease linearly between 2021 and 2050, resulting in a 50% reduction in losses by 2050. Dietary preferences change linearly towards a 50% decrease in meat consumption by 2050 compared to the baseline scenario. Calories of animal products will be replaced by calories of plant-based foods, with the exception of regions with low meat consumption, such as the Middle East, sub-Saharan Africa, India, Southeast Asia and the Pacific Islands, where meat consumption will remain at baseline.

Only an integrated approach combining conservation measures with actions aimed at addressing the causes of habitat change - such as sustainable production or consumption, and preferably both - will restore biodiversity. Under these scenarios alone, biodiversity trends driven by habitat transformations will be reversed by 2030 in almost all scenarios and without rising food prices.

Thus, the strategy of integrated measures will not only reduce the need to achieve compromises between nature conservation and agricultural production, but will also allow for transformations that are more consistent with the goals of sustainable development and balance the needs of people and nature [6].

International Experience in Household Waste Recycling

In the modern world, environmental problems occupy a significant place. One of the most important environmental issues in the field of sustainable development is waste disposal and recycling. To regulate this issue in Russia, federal laws, regional resolutions are in force, there are decisions of local governments. On a global scale, decrees of presidents of states, international treaties and agreements operate. However, each country chooses its own path to implement the concept of sustainable development, in particular, how to deal with garbage.

Currently, there are about 250 waste recycling plants, 50 waste sorting complexes and 10 incinerators in the Russian Federation. Only 82% of Russian cities with a population of more than 100 thousand people, according to the results of an assessment carried out in 2020, have created an infrastructure for separate waste collection. Completely separate garbage collection has been introduced in only 26 Russian cities. In 45 cities, a "two container system" is used for separate garbage collection: a mixed waste container and a container for plastic, paper, glass, etc. 18.5% of the country's citizens have access to separate garbage collection, which is almost 2.5 times more than in 2018. But, unfortunately, this is not enough to solve the problem of environmental pollution with human waste in our country. In this matter, attention should be paid to the experience of the leading countries in effective waste management.

By the end of the 20th century, four incinerators and processing plants were built in Hamburg, through which the city became one of the first federal states in Germany to get rid of landfills. Incineration is used here as a source of heat, which, in turn, is used for electricity supply and heating of residential buildings. Such a thermal operation is considered a better way to dispose of waste. Moreover, both economically and ecologically. However, due to the increase in the share of recycling, the need for incineration is reduced. The inhabitants of Germany themselves make a great contribution to this: for them, reasonable handling of garbage is important in the same way as compliance with traffic rules. In the apartment of the Germans, as a rule, there are from 3 to 8 containers for various types of waste. This is necessary to minimize the cost of garbage collection, which is produced by increasing the number of fractions. To simplify this fractional system, so-called color indicators were provided [7].

Old clothes in Germany are not thrown away: here they are given for processing, from where part of them gets to those in need. The same thing happens with working equipment. And with unsuitable equipment, the procedure is more difficult: old furniture or household appliances are exported only a few times a year, and by appointment, since there is a clear schedule and an approved route. In case of non-compliance with the rules, for example, careless sorting of garbage, untimely submission to the reception point or too large dimensions, fines are applied, and in extreme cases, the refusal of services to remove garbage.

Denmark is one of the leading countries in terms of air purity requirements. In general, Danes are very careful in ecology and from an early age raise children in an atmosphere of concern for the environment. Therefore, waste management, including sorting and self-removal, is not a duty controlled by law and fines, but an internal debt. Usually in Danish apartments there is a special place for sorting garbage, and in ordinary stores there are systems for accepting plastic containers in return for money. Thanks to this, in the state, about 90% of packaging containers are returned to circulation.

In the vicinity of Aarhus there is a huge plant where all the garbage is taken. Two-thirds of the garbage goes to recycling, and the rest provides energy needs. The part that is not heat treated is added to the pavement composition. Despite the good performance, Denmark continues to improve the system and proposes to increase the number of categories for sorting waste. The goal of the state and ordinary Danes is to increase plastic recycling and reduce carbon emissions.

In Japan, the garbage situation is complicated by the fact that the island territory does not allow storing garbage, so this country was one of the first to deal with the waste problem. Despite the tense attitude of other countries towards burning garbage from the point of view of ecology, most of the waste is subjected to thermal destruction, since a modern system is used here - plasma gasification. With this method of burning garbage, toxic emissions are destroyed rather than poisoning the environment. Residential buildings are supplied with generated energy, and the remaining ash is subsequently used in construction. So, for example, a whole artificial island - Odaiba - was built from pressed briquettes of recycled garbage.

Waste separation in Japan occurs, as a rule, into 4 sections: non-combustible, combustible, recyclable and large-sized. Removal is also carried out on certain days, and for the removal of large waste, a preliminary record is required. Fines are provided for non-compliance with the rules, but they rarely reach them, thanks to the discipline and love of order inherent in the Japanese. For tourists who are not familiar with the rules of the country, special garbage cans have been developed, in which only the types of waste for which they are intended can be placed: the rest simply will not fit.

Despite the almost complete disposal and recycling of waste, the Japanese society strives to completely make production waste-free (figure) and abandon single-use goods. In Sweden, technologies for converting waste into energy are well developed: about half of the total garbage mass is used for these needs. However, even this amount of garbage is not enough, and this issue is solved through imports. Thus, Swedes not only resolve the issue of disposing of their own waste, but also make money on this.

It is this state that actively supports the economy of the closed cycle, for this there is even the Miljönär marking. Its task is to

disseminate ideas among organizations to minimize the volume of garbage, as well as to attract public attention to them. The idea of this campaign is to motivate people both from the environmental and economic sides: the authors seek to show that reuse, as well as repair and borrowing, can reduce the amount of garbage, which means saving money and protecting nature. There are already 11 categories of waste in Sweden. Each must have its own container marked with a certain color. Residents of the country take out large-sized garbage on their own or hire a van, and for small ones, there are machine guns even in ordinary stores. Waste recycling by all states will ensure the quality of the environment.

Ecological Management as an Environmental Quality Factor

The preservation of a high level of environmental quality is the basic factor ensuring the existence of all mankind. The environment is a highly sensitive system that limits the possibilities of civilization growth. Successful implementation of economic and social programs is possible if an environmental framework is adopted that obliges us to approach the use of natural resources carefully, rationally and safely, as well as reduce the negative impact on the environment.

The above tasks are solved by organizational, socio-economic and engineering methods, which are collectively applied by the environmental management system of the entire socio-economic structure. The implementation of the environmental management system is the best way to improve not only the environmental, but also the economic situation of organizations.

Such a discipline as "Environmental Management" was formed and developed, which acts as an initiative activity of business entities aimed at developing and implementing key areas of environmental policy and systemic management of the most important environmental aspects functioning of the organization within the framework of the integrated administrative management system. Environmental management refers to the implementation of power powers and the ability to motivate people to consciously achieve the key goals of the organization and the best socio-economic result on the basis of reducing both the used natural, financial, material, labor and other critical resources, and emissions (discharges) of pollutants and negative production waste.

Environmental management acts as an internationally recognized basis for socio-economic dynamics, which fully meets the objectives of sustainable development. The ecology of production processes for many enterprises acts as a new phenomenon, where today the use of effective and environmentally friendly, forms of environmental management is a priority. Traditional approaches to environmental management are "disadvantageous" not only to business entities, but also to society as a whole, for the reason that they are not able to solve existing environmental problems. This circumstance is confirmed by the increasing depth and scale of environmental problems both in the country as a whole and at the level of its individual regions.

Environmental management, differing from conservative traditional approaches to management, acting as an economic entity, pays key importance to actions in sources of pollutant release and waste generation. The process of its implementation ensures the quality of the environment.

Conclusion

The technocratic modern approach of mankind to the organization of life, disrupting the ecology of the environment, forces Nature to defend itself with disasters. Humanity should move to the

development of living spaces according to environmental programs based on natural technologies. The environmental program “Clean air, clean water, clean food, clean energy, clean city and village, clean Nature” is aimed, firstly, at improving the quality of environmental expertise and the responsibility of small, medium and large businesses for pollution of air, water, food, territory and Nature. Secondly, on the responsibility of environmental services and authorities for the ecological state of air, drinking water, the territory of the city and the village. Thirdly, on the development and support of environmental projects and measures to control, take into account and preserve the environment. Fourthly, for the development and implementation of an automated system for accounting and monitoring the cleanliness of air, water, food, energy, cities and villages, the environment. Information from the automated control system received by state and public environmental regulatory authorities will allow you to quickly respond to negative phenomena. Fifth, for the construction and purchase of environmental housing on the basis of shared labor participation. The implementation of this program will contribute to the prompt solution of all issues aimed at restoring the environment and using replenished energy sources, and most importantly, turning the land into a reserve on which people will live according to environmental commandments.

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