

TECHNOLOGICAL, ECONOMIC AND SOCIAL FACTORS OF THE SOLUTION OF THE PROBLEM OF HAZARDOUS WASTE

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SUMMARY: Waste – its quality and quantity, its distribution - is determined by historical level of technical progress. In the XXth century we are confronted with the new challenge in the sphere of using resources and discharging waste. The universal law of inequality is true these days as well as in other times.

1. INTRODUCTION

As a consuming system in borders of one and the same type of material and technical development, society isn't in principle different from any other organic system in the aspect of extracting certain resources and substances from the environment, and since their being limited, is always restricted in its growth. On the every regular stage of industrial and natural equilibrium, corresponding to the historical type of material and technical development, there is an absolute limit of growth, and without overcoming the latter society not only won't be able to rise to a higher level, but also won't be able to hold its existing level, as it is consuming resources above the sum of their fixed store and their natural reproduction. Consequently, once overcoming the limits of natural and environmental equilibrium, society condemned itself to eternal change of technological stages, being not in the condition to finally secure itself on any one of them, since irretrievably exhausting non-renewable resources and rising up the level of restoration of renewable resources. On the every stage of material and technical development it is necessarily reaching the extreme level of production, and for not to perish, it is forced to switch to the usage of qualitatively new resource base. As a whole, material and technical development of society appears before us as an advancing irreversible process, and at the same time every new industrial and technological transition is carried out at the price of increasingly rising additional spending. Particularly, for overcoming of today's ecological situation, i. e. for transition to the next level of the industrial and natural equilibrium, the only thing is needed – additional resources. But their volume is so big that further existence of society becomes more and more indefinite than ever. If until now the line of its development has been wholly inscribed into biosphere's line of development in its past and present existence and was stable, due to this material succession, now the material succession of society's development narrowed to the list of inorganic matter forms, that hasn't become essentially important thus far, and one could rather

definitely bind its further existence with their use, irrespectively of contingencies of the Earth's conditions

While examining historical perspectives of territories' development, it is necessary to follow general theoretical and methodological regulations, connected with technological, economic, social and political interaction between countries in the time of globalization. Globalization means transformation of the world into united system of such interaction and intensifies the problem of struggle for survival. The choice of the geopolitical configuration of the world is determined by the distribution of resources which become more scanty in their cultivated form. The material and technical development of society is being increasingly dependent not on discovery of new deposits of resources, but on more profound processing of already existing ones.

The level of natural resources usage is caused by technological, economic, ecological and social factors which are the regulators of the process of natural using. To each historical stage of material and technical development there are related particular methods of extracting and working up of natural resources, and at each stage different factors play the most important role.

2. ABSOLUTENESS AND RELATIVITY OF THE NOTION OF WASTE

Industrial development leads to the growth of waste together with the growth of its range. The notion of industrial waste means such a degree of transformation of the natural materials when their further processing doesn't give any positive effect, and the residues are - at their best - neutral towards the man (water steam, for the example), but more often they have negative functionality – from the mere absorption of space to the insalubrity and even danger for life.

The level of the natural material transformation beyond the limits of which it turns into waste is determined by the level of technical progress. Together with the technical progress the degree of the processing of natural resources grows, their positive functionality widens, the point of their transformation into the waste is moved further away. But at the same time new natural elements get involved into production, new kinds of waste appear. Thus the notion of waste of the human activity is relative, waste in one sphere can become the starting material in other spheres. The notion of the wastelessness of production is similarly relative. Wastelessness is such a completeness of the natural resources transformation when their residues cannot be utilized. In ecological aspect wastelessness of manufacturing means zero output of danger from manufacturing process. Absolutely wasteless production is impossible in principle.

The real depth of the transformation of natural resources is determined differently by technological, economic and social factors. For example, the striving for economic efficiency of production can limit and hold back the technological possibilities of transformation of the materials. On the contrary, social factors, like military or ecological, in spite of economic efficiency can demand the theoretically maximum depth of processing either for the sake of extracting of some valuable elements or to ban the pollution of the environment. However, as a rule ecological and military factors are mutually exclusive.

The complex use of natural resources means comprehensive realization of their helpful qualities, or maximum fullness of manufacturing, taking into consideration the technical practicability, economical and ecological expediency, and also social conditions and needs.

3. SOCIAL CONDITIONALITY OF SHAPING WORLD RESOURCE FLOWS

Till the mid-XXth century elaborating manufacturing was realized on the territory of the leading countries in the full capacity of manufacturing cycle. General growth of manufacture and technological progress of the second half of the XXth century has resulted in the fact that the waste of manufacture not only reduced a level of comfort of the surrounding natural environment, but began getting more and more hazardous to human life. Therefore, along with the technical decisions aimed at the overcoming of ecological problems, the process of transfer of many resource-intensive branches of production to the territories of the backward countries began. Putting closer the manufacturing process with the sources of raw materials and cheaper man power at the same time provided the release of the territories of the leading countries from manufacturing waste that is harmful for health and hazardous for life. From the historical point of view it gives a short-term social result that is based on technological and economic inequality and demands fundamental scientific-technical decisions.

As long as the system of material production grows in scale and complexity, flows of resources transportation increase. Their directions are determined by technological, economic, and social factors. Social determination of resources' movement means that in the general system of economic interaction leading countries get more resources than lagging ones. The nomenclature of resources and mechanisms of their unequal distribution historically change in the course of technical progress, but the law of inequality stays the same. Non-equivalent exchange of products between leading and lagging countries in the sphere of information and technology production becomes the main means of acquiring additional resource in global economy.

Moreover, in the XXth century there appears a new independent type of resources, necessary for maintenance of life on Earth. These are ecological resources that are accessible for quantitative measurement and are as exhaustible as other resources. They are also indrawn to resources circulation between countries and have become an object of competition struggle. They include environment favourable for life, which diminishes in size. The same law of inequality is true in the sphere of distribution of these resources as in the sphere of distribution of all other resources. Particularly, ecologically dirty production is transferred to territories of lagging countries, being the source of environmental pollution, and these territories are turned into storehouses of hazardous waste.

The question of rules for all kinds of resources' flows motion deserves a separate scientific research.

4. TRANSITION TO USAGE OF NEW TYPE OF ENERGY BIORESOURCES AS THE SOURCE OF NEW HAZARD

The starting point of the research of the bioenergetics development perspectives is the statement of the objective fact of the regular growth of the world power consumption which is connected with the process of globalization in economy.

Firstly, the globalization manifests itself in the growth of the scale of material production, its distribution on the planet. The developing countries are industrialized – the power-consuming, labour-consuming and environment-consuming production is placed on their territories. The total productive consumption of energy grows.

Secondly, the removal of material production from the territories of technological leaders is accompanied by the growing reconstruction of these territories to make them more comfortable for life. This also means bigger consumption of energy.

Thirdly, the growth of material and technical activity of men leads to the constant growth of transportation – the growth of the volume and distances of transportation of solid, liquid, dry and gaseous materials, electric power and information. Therefore, the growth of power consumption by transport is added to its consumption by technology and production.

On the whole despite of growing introduction of resource-saving technologies in the spheres of production, transport and everyday life, the total volume of the world consumption of energy is growing.

The second unconditional premise is the fact that the resources of hydrocarbon sources of energy are exhaustible and they cannot serve as the basis of civilization in the long-term historical perspective. In its turn, nuclear energetics is still connected with the ecological uncertainty, while the thermonuclear energetics doesn't have any definite technological solution. As for the so-called alternative sources of energy in the forms of wind, concentrated solar, geothermal energy, they don't satisfy the demands of growth of the solitary productive facilities.

That is why the use of living bioresources as a source of energy compared in its power with hydrocarbons is quite possible due to their comparability from the point of view of the available mass and technical and economic parameters.

But there arise several questions, the study of which is connected with the better predicting of the possible consequences of such reorientation of energetics. General history of change of technological ways of obtaining energy is evidence of energy supply growth, always accompanied by emergence of new ecological problems (firewood – coal – oil – atom). They include a bigger-scale threat of energy carriers' sources exhaustion and strengthening of damaging influence on environment in the process of extracting energy resources and as a result of residuals' exhausts. Global transition to biological energy resources usage won't become exclusion.

Unpredictability of the new ecological situation defies evaluation in respect of either landscape changes or discharges in the new type of production together with oil processing, as well as the products of biofuel combustion. In particular, this can be demonstrated by the correlation between the initial mass of grain and the mass of fuel, produced out of it. Even with the big crops the removal of considerable serviceable areas from the agricultural production of food is inevitable.

On the one hand, this will certainly lead to the growth of prices on food due to the use of some part of vegetative materials to produce biofuel, the expenses of which are comparable with the hydrocarbon fuel in the situation of the growing prices on oil. On the other hand, the results of genetic modification of plants used as raw materials for fuel are quite predictable; they will lead to the negative consequences in respect of violating the general genetic environmental balance as well as of the possibility that they will get into the uncontrolled turnover of food products among the most poor who are not protected from the rise of prices on food. The expansion of areas under new technical crops will result in the changes of agricultural production structure similar to those that took place in England in the XVIIIth century when great numbers of peasants were driven away from their land for the sake of expanding sheep pastures.

It is difficult now to choose the best vegetative substance for fuel: fibers like sugar cane, oil-yielding crops like sunflower or rape, grain-crops like wheat or corn, different sorts of wood. It is also not possible to determine the priority type of alternative fuel: petrol, spirits, hydrogen or any other combustible gas. But we can be sure that the production of energy from the living vegetative mass – either obtained from wild nature or specially produced – is a real alternative to the production of energy from hydrocarbons. The use of the solar energy, once conserved by nature itself, will be inevitably replaced by the use of current energetic radiation including the one that is collected by the industrially grown plants.

The main social consequence of the energetics reorientation to the use of bioresources consists in the social restructuring of the world, in the changes in the system of relations between the countries.

5. CONCLUSIONS

Material and technical development of society has no principal limits neither within sources of potential resources for life in nature, nor within human intellectual capacities for dragging these resources in industrial circulation and managing waste coming out from vital activities. Consequently, there is no absolute ecological threshold in society's existence. However, the infinity of human life on Earth can only be realized on the basis of scientific and technological progress and social harmony.

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