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ECOLOGIZATION OF BUSINESS AS INNOVATION TREND OF POST-INDUSTRIAL ECONOMY

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Abstract

During the current post-industrial period of social development, predictions about the future of humanity are generalized. Typical features of the period are computerization of the society, increase in an education level, innovations based on engineering and scientific achievements. Until now, theories aiming to solve the issue of social development has been dealing with separate aspects of the issue. A theory of production and consumption has been dominant for a long time. The article analyzes nature-oriented approaches existing in the state-planned and market economies. The theory of nature transformation and research of the Siberian school on territorial and industrial units are also analyzed. The authors study greening processes in the industrial and post-industrial societies, suggest solutions to the issue of business-environment relations. Methods for developing a balanced approach to economic, social and ecological problems through the innovation system of business ecologization are discussed. They are based on the social responsibility of companies rather than on competitive advantages of environmentally-oriented businesses. The concept of human centricity is introduced.

Keywords: Post-industrial economy, ecological business, competitiveness, innovations, greening, public awareness.

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1. Introduction

Relationship of humans, society and nature is the most topical issue. It usually involves a non-desirable situation and potential ways out.

At the current post-industrial stage, predictions about the future of humanity tend to be generalized. Typical features of the period such as computerization of the society, an increased level of education, innovations resulted from engineering and scientific achievements might contribute to generalization processes. They are taken as a basis for the economic stability of countries.

The concept of social development was firstly used in the book "*The Coming of Post Industrial Society"* by Daniel Bell (1973), an author of the theory of postindustrial society.

2. Problem Statement

Until now, theories aiming to solve the issue of social development have been dealing with separate aspects of the issue.

Since the early days of the social production, i.e. since the days of early civilization, the theory of production and consumption has existed. In a nutshell, the society is described as a society of consumers who think only of their increasing needs and forget about limited resources. Classical capitalism ignores ecological issues as any ecological expenses decrease profit. For uncontrolled capitalism, environmental pollution is a natural thing. At present, a new approach should be developed. The nature provides sources of subsistence and possibilities to live. As far as we do not tend to live as our monkey ancestors, the life quality is ensured by the environment.

3. Research Questions

In the industrial society (at the turn of the 19th and 20th centuries), reverse effects of social impacts (health damage, resource depletion) on the environment were observed. The first attempts to eliminate these effects (labor protection, more economical use of raw materials) were inefficient.

Only in the second half of the 20th century, at the postindustrial stage of social development, the humanity became aware of indirect effects which fueled uncontrollable natural processes (climatic, geochemical, tectonic, trophic, genetic mutational). Direct effects became extremely serious. The theory of production and consumption responded to those effects by imposing additional restrictions (maximum allowable concentration standards, maximum allowable emission standards, maximum allowable discharge standards, forest management control, etc.). However, these standards do not ensure deterioration moderation and conservation of planetary and regional ecosystems. In reality, these rules were, are and will be violated if the approach is the same. How can the humanity solve the problem and to which extent can it be solved?

4. Purpose of the Study

The research purpose is to compare different approaches to the identification of key priorities, mechanisms for development and implementation of human-oriented business and economy behavior patterns in the current conditions.

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5. Research Methods

The main research method is historical analysis of environmental management theories at different social stages. The article is based on the Marxist approach and current theories of transitional stages, including industrial and postindustrial ones.

The article also uses a concept of innovativeness when selecting research methods and searching for solutions to ecological and economic problems.

6. Findings

Let us analyze the issue from the political perspective. For a long time, there have been two different political systems, and the socialist economy seemed to be based on different principles than the capitalistic one. However, criteria of decision making for public companies were similar to the ones for private enterprises: profit is a priority, and investment in environmental protection reduces it. The fact that water and air pollution in the USSR was not as serious as in Western Europe and Japan was due to the lower level of industrial development. However, environmental protection standards in our country were the strictest in the world, but regulation measures were not efficient. There were also specific socialist aspects of the issue. They are related to the theory of nature transformation based on the Marxist theory of world transformation. The theory was supported ideologically. Soviet researcher I.V. Michurin said: “We cannot rely on favors of nature; our task is to take everything from it” (Michurin, 1934).

Construction of hydroelectric stations and their cascades, flooding of agricultural lands and forest areas, creation of water storage reservoirs affecting the climate, changes in fish migration paths, industrial development of taiga and tundra areas, air, water and soil pollution, destruction of viable ecosystems, natural resource depletion, construction of channels, creation of artificial tree belt areas are some of the examples of the implementation of the principle. All these measures were for good purposes, but their ecological consequences were not taken into account. The combination of capitalistic and socialistic methods for causing damages to the environment resulted in well-known consequences.

Meanwhile, the Marxist theory contains some other, rather promising aspects for the ecological policy. This is a dialectic approach to the analysis of social interests and contradictions which can help understand real processes of nature management and ecological policy formation. Unfortunately, the approach was not widespread. However, foreign experience said that industrialization by means of nature transformation was not a way out. Optimization development models for social and economic systems involved ecological restrictions. The Siberian school of territorial and manufacturing systems had the most significant achievements in this field. The school created a system of models in which one of the most important components was an ecological unit (Burmatova, 1983). It should be noted that ecological development was a target function.

Development of models of territorial and industrial systems identified and formalized various relations of ecological, social and economic aspects of the regional development. It helped develop the results obtained and use them in simulation models which are more adequate in the conditions of the market economy.

A balanced approach to economic, social and ecological problems is a characteristic of the postindustrial stage of economic development.

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In market-economy countries which ensure political freedoms and high living standards, people are discussing the issue of economic development restrictions. Ecological slogans are the basis of some political ideologies and activities in many countries. For example, the German “green” party is a part of the federal and land governments.

During the perestroika in the USSR, “green” ideas gained popularity, but soon they died because of escalation of social and economic consequences of the crisis. As far as modern industrial technologies cause damage to the environment, they should not be used and the consumption volume should be reduced. Its structure and system of values should be modified. Radicalism of the theory makes it attractive for the public. Extremist views are gaining popularity with “green” movement participants.

“Green” extremism is far from being harmless. Green extremists campaign against technology advances and social progress. With an increase in ecological risks, there is an increase in the role of extremist movements. Protection measures should aim to prevent the ecological crisis.

There is a positive aspect of green movements, which contributes to development of adequate ecological and economic strategies. They make governments and businesses create new restrictions of the theory of production and consumption, new non-standard paradoxical technological solutions, and stop production of some products. These activities are features of the postindustrial society engaging in innovation activities.

Let us analyze one more interesting model developed in 1968 by an international non-governmental association of researchers “Roman club” (Corporate forum on sustainable development RIO+20, 2012). They developed a global simulation model based on such variables as population, manufacturing, demand for food and non-renewable resources, environment pollution. Extrapolation of these factors showed that after 2010, the exponential growth of production is hardly probable. Hence, one can conclude that it is necessary to depress the economic growth.

In the 80th of the last century, the theory of sustainable development was developed. It was rather politicized than scientific one. According to the approach, the society should not develop at the expense of resources of future generations. It contains within it two key concepts: the concept of 'needs', in particular, the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs (Medowz & Randers, 1994).

Sustainable development implies that the amount of renewable natural resources should not decrease and should be reproduced; consumption of non-renewable natural resources should be slowed down; non-waste and resource-saving technologies should be implemented; in the long run, environmental pollution should not exceed its current level. The approach based on the concepts of criteria and restrictions seems to be formal.

The current stage of social development is logically sound. The humanity has already faced such global problems as depletion of natural resources, ecological crisis and poverty. In developing countries, the share of hungry people is 13 %, in the world, the amount of hungry people is 795 million (Haščič & Migotto, 2015). In the first half of 2017, their amount was **760 million. And this is only the start.** The population is constantly increasing in the earth. Its number is projected to be 8.5 billion people in 2030, and 9.7 billion – in 2050 (Kabir, 2017). Increasing population results in increasing consumption which

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decreases natural resources and damages the environment. To find optimum solutions to global ecological problems and identify their causes, joint activities of countries and international organizations are required (Larson et al., 2017).

There is one more efficient environment control method – activities of municipal bodies. They can response rapidly to environmental changes using potential of territories, including social capital (Larson, et al., 2017).

It is high time to understand that any successful measures involve greening of public consciousness (nursery school, elementary school, secondary school, university) which might improve the situation (Yakobson & Batciun, 2015). A human is responsible for decisions made.

According to the sociological research carried out by the American Institute of Public Opinion, Gallup International, the number of respondents who prefer the environmental protection to the economic growth is constantly increasing. Figure 1 shows opinion poll findings (GALLUP News).

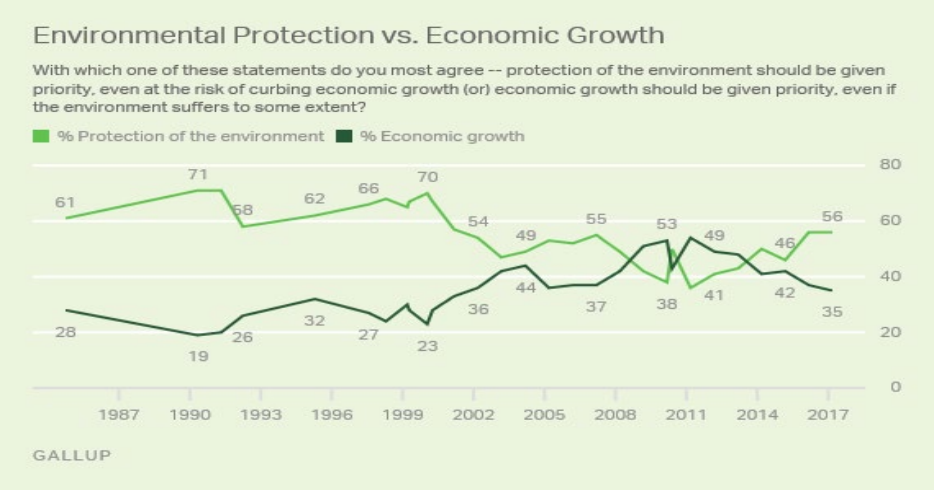

Figure 01. Environmental protection vs. economic growth

Innovation activities as a driver of the social and economic development can eliminate ecological and economic contradictions. An increase in material progress does not necessarily cause damage to the environment. About 5-10% of all registered inventions are environment-protection technologies. The USA, Asian countries (Korea, Japan and China) and Germany dominate in this area (The State of Food Insecurity in the World, 2015).

Since the beginning of the 21st century, the global economy has been transformed. Innovation activities are not a long-term remedy from competitors who are full of different ideas. Increased competition has positive effects on market conditions and contributes to integration of national economies into the global one. However, one should remember that governments work for their own national benefits. Therefore, businesses should play an important role. Large corporations have great opportunities in different areas, including investment, technological and political ones. A market without boundaries contributes to improving competitiveness of businesses and nations.

However, inconsistency between businesses and ecology, financial markets and sustainable development has always existed. The use of natural resources by businesses is unreasonable. Moreover,

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they pollute the environment. In Russia, unreasonable use results from the availability of natural resources. Why save them?

There is still an inconsistency between the purpose to reduce expenses and need for nature protection but natural interests of businesses can be used for ecological purposes. A key purpose of any business is to increase profit. Businesses take care of the environment if:

- owners and managers developed ecological awareness;
- there is strict control over ecological legislation;
- consumers, investors, share-holders, suppliers, trade unions, media show interest in environmental friendliness of products and their manufacturing processes, application of non-waste and resource efficient technologies. As a result, social responsibility gives businesses a competitive advantage (Batciun, 2012).

Makato Ando, a president of the Japanese ecological company *Ecobusiness network*, identified five key concepts of ecological business – the five Rs: refine, reduce, recycle, reuse, reconvert energy (Timonina, 2008).

These reasonable economic activities can "green" business. Currently, experts say the global market of ecological goods and services is receptive and growing. Ecological awareness contributes to interaction of the global economy and international relations: the share of an ecological component in the global trade and investment, scientific and technical cooperation and information exchange is increasing.

In February 2017, participants of the Krasnoyarsk Economic Forum (KEF-2017) discussed the potential of social, economic and technology long-term development of Russia. The Center for International Finance of the Ministry of Finance presented the results of research on green investment in Russia (Fig. 2). Unfortunately, the share of green investment is less than 1% of the investment in fixed assets.

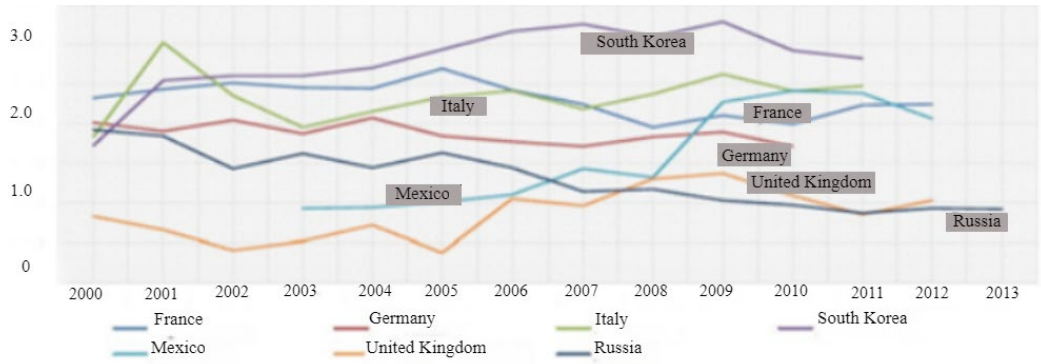

Figure 02. Share of investment in fixed assets for the environmental protection and rational use of natural resources in the total volume of investment for the G20 countries, % in 2000-2013.

Due to this fact, the share of green economy is growing very slowly and is 2-6%. The world market is becoming green more rapidly (see Fig. 3) and is estimated at 5 trillion dollars. At present, the structure of the world market of ecological services can be presented as follows (Fig. 3).

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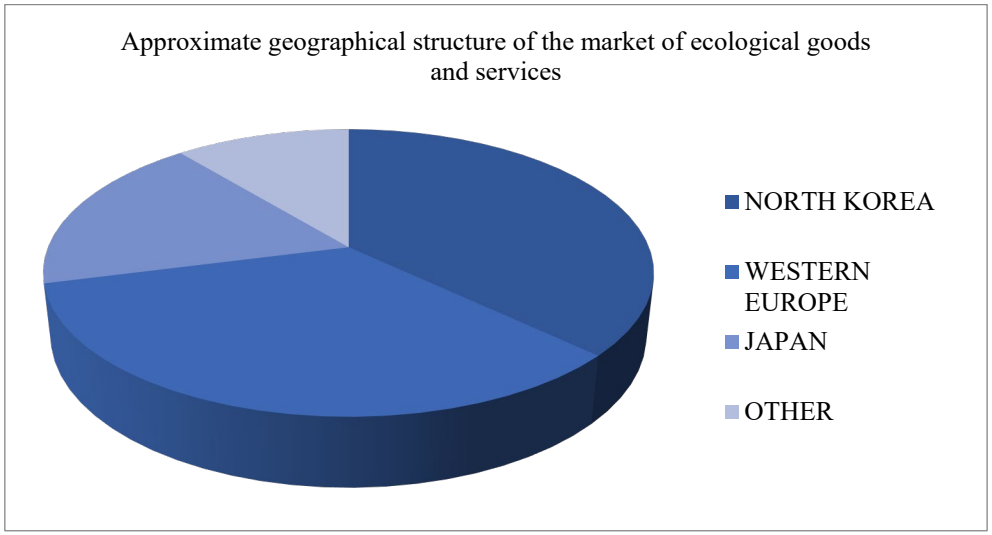

Figure 03. Approximate geographical structure of the market of ecological goods and services

Experts project the world to grow fourfold by 2050. It will increase energy consumption by 80 %. If the government measures are inefficient, fossil fuels will remain the dominant source of energy (85% of all energy sources). The main energy consumers will become BRIC countries (OECD, 2012).

Figure 3 shows that Russia is in the segment "others" as its share is very small due to poor progressive development of the ecological sector. How much should Russia spend to hold a leading position? Experts give different answers. Ecologists believe that expenses in the amount of 3% of the GDP can keep the ecological situation at the current level. According to the Russian Federal State Statistics Service, in 2016, the expenses on the environmental protection in Russia were 0.7% of the GDP. In this situation, let us remember about businesses which are more accustomed to external impacts.

It should be noted that monitoring of innovation activities is carried out in dozens of countries every year. Both the number of patent applications and investment in education are taken into account. It sheds light on innovation potentials of these countries. The World Intellectual Property Organization (WIPO) released the 10th edition of its annual Global Innovation Index 2017. Switzerland and Sweden top the list of the countries. Russia is absent in the list. The structure of leading industries has completely changed. Information technology replaced automobile and aerospace industries and electrical technology in the top of the list. Russia is and will be in the periphery of innovation development until Russian companies use cheap technologies. Pilot rather than simulation innovations are required for development.

7. Conclusion

Relationship between the human society and nature is still an issue as there are no practical solutions offered by anyone. Market and state-planned economies have no efficient greening mechanisms. Political measures (both mass movements and international agreements based on utopian ideas) are inefficient as well. It is high time to implement the above-mentioned models, develop non-waste technology, ecologize human consciousness, etc.

The analysis identified that increasing consumption of natural resources and technological underdevelopment are key causes of the environmental degradation. A technological development gap is

mainly due to the greed of businesses and governments. As a result, the risk of non-reversible processes increases. The authors are skeptical about reasonableness and wisdom of humans, their conscious attitude to the future and ability to bear responsibility for decisions made. With this background, the number of people preferring the environmental protection to the economic growth is increasing. Increasing expenses on innovative environmental protection technologies help develop “reasonable” economic activities.

Currently, ecological problems are crucial economic tasks. Flexible, market-oriented businesses are able to solve these tasks. This is about social responsibility rather than competitive advantages. The concept of client-centricity (anything for your money) is well-known. It is high time to use a new term – human-centricity.

One of the possible ways of ecologization can be ecological marketing. Marketing today is the integral part of any business. But marketing can be ecologized itself. It means that ecologic goals should be taken into account and promoted independently of economic ones. It becomes possible if ecological image is important for the consumers. In such a case what is sold and afterwards bought by the consumers becomes the environmental idea rather than a specific product.

A consumer having a certain level of ecological education and consciousness is able to control his life quality by shopping activities. Environmental characteristics of manufacturing technologies and products should determine competitiveness in the domestic and world markets. The current economy has to be green. An economic doctrine based on innovation business technologies can help Russia become a fully valid participant of new world economic relations.

The authors intend to go on with their investigations in the direction outlined in this article, making a stress on specific problems of Baikal Region.

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