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E-COMMERCE AND “GREEN” INNOVATIONS

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In modern conditions innovative economic development is the only possible path for progressive technological progress and growth of well-being in developed countries. At the same time, radical innovations and breakthrough scientific achievements are capable of having a significant impact on the global economy. The development of science, research and development remains the key to the implementation of all types of technological innovations.

In modern conditions special attention is paid to "green" innovations or eco-innovations when regulating global economic and social institutions.

At present, the problem of the need for innovations is becoming more and more serious, it is global and universal in nature. The need to transition from a classical economy to a "green" one, the creation and implementation of eco-innovations in ordinary life can no longer be ignored, due to the current environmental situation in the world. We have become a consumerist attitude towards nature and all its resources, but as a result of this attitude we have many negative consequences, such as pollution of water, air and soil, climate change, loss of natural resources. As a result of assessing the situation and negative trends, most developed and developing countries are following the path of a "green" economy and trying to develop in the direction of eco-innovations. Eco-innovations are a fairly new and very promising direction of development of the economy. However, the problem of environmental stress was seriously raised by the world scientific community only in the last century and it was then that the first studies in this direction appeared. At present, many countries that have already switched to an economy, are engaged in this direction, which is based on eco-innovation or is on the way to it.

Eco-innovation is any innovation that can lead to reducing the impact on the environment; this is the development of new products, processes and systems with the least use of natural resources and minimal emissions of toxic substances.

Today, there are key industries that belong to the clean technology sector and actively use eco-innovations:

- green construction;
- alternative transport and logistics;
- renewable energy, energy-efficient solutions and smart grids;
- water and waste management.

It can be said that today most developed countries have switched to a "green" economy, and the list can go on forever. Particular attention should be paid to the prospects for economic development of countries that adhere to environmentally friendly principles. A shining example of the green economy concept in general, as well as eco-innovations, is Brazil, which is hosting the UN Conference on Sustainable Development. Brazil also makes many proposals at the national and state levels to stimulate the introduction of green principles in the economic sector. Brazil is considered the first country in the world to legislate the use of biofuels as fuel for cars.

One of the main examples of the implementation of green principles in all sectors of the economy is Germany, which has created a closed production cycle without waste. Germany is considered the world leader in the amount of waste recycling and its use as secondary raw materials. 23% of all patented technologies in the environmental sphere and more than 30% in the field of wind and solar energy are accounted for by German companies. The number of employees at German enterprises working in the green sector, i.e. industries in one way or another related to the protection of the environment and climate (energy, transport, recycling and disposal of waste, etc.) is about 2 million people or 4.5% of the total economically active population. This indicator tends to grow steadily. A rare and unique example in the field of eco-innovation is the experience of Sweden. Sweden is the world leader in the consumption of renewable energy sources and local fuels. Scientists from Yale University have developed a rating of the greenest countries on the planet. Sweden took fourth place in this rating. The country's government is pursuing an active policy to implement green principles in all sectors of the economy. Energy efficiency and renewable energy resources are considered as the main and priority areas, and are integrated into energy and environmental policy.

It is worth noting the Swedish experience in terms of energy and resource conservation in the processing of household waste and the production of electrical and thermal energy. Sweden is a country with one of the highest rates in the world in terms of household waste disposal, with a total of 96% of household waste being recycled here. Homeowners are offered tax incentives when switching to renewable energy sources. Taxes are being reduced for car owners who use environmentally

friendly fuels for their cars. Such car owners are offered free parking spaces in city parking lots. The number of such cars is constantly growing every year. Another world leader in the transition of the economy to "green" or ecological innovations is Japan. Japan's green industry has achieved high performance and is considered a world leader in the production of environmentally friendly products and equipment. For example: nuclear, thermal and alternative energy, hybrid cars, building materials, rail transport. In terms of recycling and processing of solid household waste, Japan occupies one of the leading positions in the world. As a result by 2011, 50% of all waste had been subjected to deep processing.

Thus, “green” innovations are one of the conditions for further economic growth in developed and developing countries if humanity wants to protect itself from natural disasters.

However, a major challenge is the current barriers to green innovation. These can be grouped into three main categories:

1. barriers in environmental regulation;
2. barriers in R&D;
3. market barriers.

Obstacles to environmental regulation are common when private companies or households lack incentives to use scarce resources more efficiently. For example, if households have low water prices, they are more likely to use water inefficiently. This also applies to private companies, which do not bear any material or legal liability for harm to the environment.

There are also quite a few obstacles in the R&D sphere, and, of course, the main one is insufficient or irrational funding of civilian research. Under conditions of competent R&D management and sufficient funding, the following three types of obstacles are identified:

1. conducting R&D associated with high fixed costs,

presupposes the presence of a developed economic system that allows for minimizing costs during the transition to mass production. Otherwise, the results of R&D may not be in demand by the economy, and the funds spent

on the work of scientists - thrown to the wind;

2. all research and development are associated with their inherent uncertainty.

It is especially difficult to assess the probability of R&D success in market conditions, where there is often a deficit of information, for example, due to competitive struggle;

3. knowledge obtained as a result of R&D may be unprotected due to the fact that scientists often do not find a common language with representatives of business. This leads to a decrease in investment in fundamental research. To minimize this effect, work is underway to protect intellectual property rights, and

targeted subsidies are allocated to private companies, who conduct fundamental research, but both of these mechanisms are accompanied by additional difficulties and are not always feasible in practice.

The various market barriers to green innovation can be grouped into three main groups of barriers to entering the market with a new product.

Firstly, the standards that dominate in the energy and transport sectors often "push out" new, more promising technologies. For example, the high cost of developing an alternative infrastructure for hydrogen energy inevitably leads to the rejection of fuel cell technologies, primarily due to the existing transport and energy infrastructures (this concerns the hydrocarbon fuel filling system and the dominance of the sales market of relatively inexpensive cars with low efficiency).

Secondly, technological uncertainty and the length of deployment of alternative "green" technologies leads to a decrease in interest among investors.

Thirdly, it is often not possible to differentiate the environmental friendliness of a product; for example, consumers may not know whether their electricity comes from a "green" hydroelectric power station, a wind farm, or from an environmentally unsafe combined heat and power plant. Stimulating green innovation through policy mechanisms depends on the correct answer to the question of which regulatory methods are most effective. Experts believe that many methods related to tariffication of harmful impact on the environment (for example, duties on carbon emissions into the atmosphere) which are applied at the final stages of the innovation cycle, are only capable of encouraging incremental innovations and are unlikely to contribute to the introduction of radical improvements.

Experience shows that "green" innovations "take root" best in

countries with a good innovation and investment climate.

Thus, one of the ways to indirectly encourage all types of "green" innovations, including radical ones, remains the creation and maintenance of favorable economic conditions for innovative growth, namely:

a) the development of mechanisms for the rapid establishment of start-ups and, in case of failure,

b) promotion of competitive markets open to international trade and investment instruments;

c) adequate protection of intellectual property rights;

d) balanced macroeconomic policy, mechanisms for the rapid and painless exit of private investors from them.

In addition to the framework conditions for innovative development, governments can successfully apply target mechanisms that promote an increase in demand and supply for "green" technologies. First of all, this concerns two

important instruments of state regulation:

1) investment in research and development;
2) commercialization of “green” innovations.

Increasing funding for science is one of the most important conditions.

The second and no less important condition is to promote the demand for scientific achievements in the economy, without which it is impossible to increase the efficiency of the country's scientific system as a whole and develop strong ties between private companies and research institutes and universities.

Research that leads to green innovations is spread across a wide range of fields of science and technology. Simple patent research shows that the most important fields of knowledge for green technologies are materials science, chemistry, and physics.

Entrepreneurial activity is one of the most important conditions for the growth of the number of inventions in countries with market economies. It is significant that a significant part of inventive activity falls on young companies. Thus, it is extremely important to eliminate administrative barriers to young and emerging companies, especially those specializing in high tech. Private companies are more likely to rely on long-term incentives for green innovation, such as the widespread use of feed-in tariffs and stimulation of market demand, than on short-term measures such as tax breaks or rebates.

Innovation policy should be conducted taking into account the maturity of promising technologies. According to the recommendations of the International Energy Agency, at the early stage of developing "green" technologies, efforts should be focused on targeted support for R&D and energy infrastructure planning. As soon as the technology can be verified as working, targeted support can be reduced, for example, to providing preferential "green" tariffs for connecting to the power grid. If the technology proves to be competitive, further support can be expressed in the issuance of "green" certificates or the standardization of quotas on greenhouse gas emissions. Finally, support for mature technologies consists solely of removing market barriers to their widespread use.

Finally, it should be noted that the majority of foreign countries, including European ones, have already achieved certain progress in the direction of sustainable development through targeted and active implementation of the “green” economy and directly environmental innovations. Some of the effective management methods are considered to be the following: international eco-management and auditing standards, the concept of eco-efficiency, products and services while simultaneously strengthening the competitive position of business, methods for improving production safety.

Ecological innovations are not only a tool for preserving and maintaining

natural resources and the environment as a whole, but when used wisely and reasonably, they are also a modern, reliable and at the same time very effective tool that helps to increase the economic well-being of the country and the level of competitiveness in general.

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