Green technologies as a factor in the sustainable development of the national economy

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Abstract. The author considered the prerequisites of the green technology introduction and expanded the topic of theoretical characteristics of the "green" economy. Corporate and social responsibility are the indispensable conditions for the effectiveness of international and Russian business at the current economic development stage. The author specified the need to unify and standardize non-financial reporting at the international level in order to increase the level of business responsibility for the environmental contribution. The article also highlights the special state role in implementing the green economy principles. The article reports that it is possible to fully develop and introduce innovative methods and techniques of production the environmentally efficient products only with the state support. It is once again highlighted that the uncontrolled use of natural resources should be a strictly regulated process. The author also specified that the modern situation in the geopolitical space is developing so the issues of "greening" should be paid key attention to if the country plans to take its worthy stage in the ratings of economic and social development.

1 Introduction

The change to the need to introduce the "green" economy principles is doubtless today. Limited natural resources force humanity to move to the principles of resource conservation at different stages of its life. However, resource conservation is not the best way to combat the scarcity of natural resources given as even with the economical use natural resources may sooner or later come out. One of the main restrictions in this case are the limited resources on the planet and the slower pace of natural resources resumption relatively to the growth of the Earth's population. According to The World Wide Fund for Nature, there has been a drop of more than 30% in the indicator of the Living Planet Index (estimates the state of biodiversity) over the past 40 years and there have not been signs of any slowdown in this process yet [1,2]. The current state of the environment strongly indicates the need to introduce new consumption models and they should be aimed not only at limiting the used resources but also at intensifying the natural resources renewing process. The increasing contradiction between the urgent need to reduce climate risks and the consequence of this course introduction (such as job cuts) that ultimately leads to a decrease in the living standards of the population requires the construction of a new climate economy [3]. Green technologies
are supposed to play the key role in setting further development reference points in the new climate economy model.

2 Materials and methods

A systematic approach, an evolutionary approach and approaches to the theory of sustainable development are used in the study process. Methods of analysis and synthesis, grouping and comparing are used as methodical apparatus of the research.

3 Results and discussion

It is important to note that there is still no generally accepted concept of a "green" economy. A "green" economy implies an economy of sustainable growth where sustainable growth is accompanied by both an increase in the well-being of citizens and a decrease in global environment risks in some cases. In other cases, it is a system of economic relations where production, distribution and consumption of goods and services are focused on the growth of public well-being in the long term. At the same time, such a system does not put future generations in conditions of environmental deficit and increased environmental risks (UNEP, 2009).

The number of government documents on developing a national sustainable improving strategy was elaborated after the Rio 1992 and Johannesburg 2002 conferences in the Russian Federation. In particular:

• Main provisions of the Russian Federation state strategy for environmental protection and sustainable development (1994);
• Presidential Decree of April 1, 1996 on the "Concept of the transition of the Russian Federation to sustainable development";
• National Environmental Action Plan of the Russian Federation for the period of 1999-2001;
• Environmental Doctrine of the Russian Federation (2002);
• National Strategy and Guidelines of the National Biodiversity Action Plan (2001);
• Program for the conservation of rare species, the development of the system of protected natural areas, the implementation of the requirements of the Conventions "On Biological Diversity" (Ramsar, CITES, etc.);
• The review of the national priorities of wildlife conservation in Russia approved by the Ministry of Natural Resources and Environment of Russia and its territorial bodies (2003);
• The main directions of socio-economic development of the Russian Federation for the long term (2000);
• The program of socio-economic development of the Russian Federation for the medium term (until 2004);
• The energy strategy of the Russian Federation until 2030;
• The strategy for the production and consumption waste management until 2030, etc. [4,5].

The views on environmental activities have significantly changed since the Rio 1992 and Johannesburg 2002 conferences. According to the studies, natural ecosystems are declining at an unprecedented rate, e. g.: vertebrate populations 60% decreased by 2018; freshwater species decreased by 83%. The humanity realized that natural capital should be used rationally and that there is an objective need to use more efficient resource-saving technologies that will contribute to an effective combination of meeting human needs and potential environmental opportunities [6,7,8]. Current situation that has developed both in
the whole world and on the Russian Federation territory does not allow paying high attention to the issues of environmental disaster. It is worth noting that funding environmental protection measures is processing at a low pace. Russia has developed a number of methodological recommendations that contribute to the development of non-financial reporting in our country taking into account the requirements of the international standard ISO 26000 over the past few years. The standard GOST R ISO 26000-2012 "Guidance on Social Responsibility" approved by the Federal Agency for Technical Regulation and Metrology of 29.11.2012 No. 161-art is among them. The Bank of Russia formulated the basic principles of the ESG report and explained what exactly the document should contain [9,10]. The Bank of Russia recommended to reflect the data on the business model used and its strategy firstly, to reflect the environmental policy that the enterprise plans to implement, to attach non-financial statements that will be able to confirm the success of the adopted environmental strategy or to show the opposite effect. In other words, the Bank of Russia strongly recommended enterprises to reflect all issues related to their activities in ESG on the open sources. The fullest information on how many companies in Russia issue non-financial reports and which approaches to reporting are chosen is contained in the National Register of Corporate Non-Financial Reports and in the Library of Corporate Non-Financial Reports of the Russian Union of Industrialists and Entrepreneurs. The data of the National Register allows to trace the release of reports dynamics by year, the change in the number of companies publishing non-financial reports and their industry affiliation, types of reports and other data (see Figures 1 and 2). According to the state in January 2019, 176 companies have been added to the National Register, 924 reports that had been issued since 2000 have been registered. The number includes environmental reports (EO) - 82, social reports (SD) - 326, sustainable development reports (ESD) - 314, integrated reports - 174, industry reports – 27. According to the results of 2017 and 2018, 88 organizations were included in the National Register, 166 reports were registered (77 reports - in 2017, 89 reports - in 2018). The data presented in Figure 1 indicates that the number of reporting companies has stabilized since 2012 at an average level of about 80 reporting organizations per year (slight deviations in one direction or another are not fundamental and only record individual characteristics of companies). A slowdown in the processes of acquiring or reorganizing large companies and holdings as well as the foreign firms leaving can be assumed as the factors that could affect such a result.

![Bar chart showing the number of non-financial reports registered in the National Register by the production year.](image-url)

**Fig.1.** The number of non-financial reports registered in the National Register by the production year.
Fig. 2. The number of companies (cumulative sum).

It should be noted that the publication of non-financial reports allows to conduct effective monitoring and control over the environmental side of the enterprises and organizations activities. However, despite the fact that the need for monitoring is not in doubt there is no single regulatory document on the non-financial information provision with the help of which it would be possible to process the comparisons and take the appropriate response actions. The state should provide all possible regulatory support in terms of developing requirements for the submitted reporting as well as standardize and unify the forms of documentation as much as possible.

The European Parliament clearly stated in the reporting directives that reporting should provide appropriate information regarding the implementation of risks and strict control of their impact. Particular attention should be paid to the severity of the concealment or modification of the provided information reliability. The need to place non-financial reports in the public domain which will allow developers to take the content more carefully as well as allow stakeholders to have the complete information about the environmental burden that the organization has should be especially highlighted. According to the definition of the Russian Union of Industrialists and Entrepreneurs, non-financial reporting is the public face of the company that reflects the acceptance of its activities by society and the environment, allows you to track the process of achieving strategic goals and the social and environmental price of their implementation. The first national "Green Standards" were applied on February 1, 2019 (until February 1, 2022). The developers of the standards were TK 366 "Green" technologies of the living environment and "green" innovative products" organized on the basis of MGSU [9,10]. It is not in doubt that environmental control issues are becoming increasingly acute requiring a unified approach to achieve rationalization of natural resources used as well as renewable natural resources. Issues of environmental control not only by the relevant state management bodies but also by public organizations should be the priority. It is necessary to create such living conditions for the business so that the business pays the appropriate attention to environmental policy issues of the company because the success of business depends on the effectiveness of the company environmental policy. It is also important to note the need to increase the level of civil responsibility for the planet pollution level in this context. It is worth paying attention to environmental education from a very young age. Moreover, non-compliance with the adopted norms and rules should be accompanied by appropriate sanctions for representatives of the business community and for citizens in general. A response in the field of ecology should be expected from the whole world showing a more attentive attitude to the consequences of one's life for the surrounding world in the current situation. Environmental human rights require the same protection from the state as well as the other rights and therefore violators should be punished regardless of
its spatial location as the world moves closer and closer to environmental disaster with each step.

4 Conclusion

The impending environmental disaster is doubtless, the need to introduce "green" technologies and control the effectiveness of their implementation is also an objective necessity. The governments noted that the further living on the planet without its "greening" is objectively impossible at joint meetings not once. The way out is not only in the resource-saving technologies introduction but also in the extended reproduction technology introduction.

The modern "green" level of development of the Russian Federation economy should not be considered as high. In addition, it is necessary to note the variation of the "green" technology introduction throughout the country. The reasons for the difference are in historical, political, economic and geographical factors. Although the Russian Federation has a fairly high potential to take a worthy stage in the modern geopolitical space due to its climatic and natural resource conditions at the same time and the current stage of economic development the Russian Federation pays very little attention to the problems of "greening". Moreover, the country is falling behind in many ways in the terms of introducing "green" innovations.

The following steps must be taken at the state level in order to implement the principles of a green economy:
1. to stimulate innovative enterprises that are engaged in the latest developments in green technologies in every possible way;
2. to introduce a system of fines and other sanctions for the usage of technologies that harm nature as well as organize incentives for business that is built on the usage of "clean" technologies;
3. to reduce the public funding environmentally harmful enterprises and industries;
4. to revise the system of environmental measures at the legislative level;
5. to implement state measures aimed at eliminating the environmental damage already caused.

The implementation of these solutions in practice is difficult since many local and non-local production systems imply a high level of hydrocarbons consumption and changing the current production system is also a difficult technological task. Reforms in this area require high attention from all participants in the manufactured products consumption process. The lag of the Russian Federation largely depends on the fact that there is no decent level of demand either from citizens or from business. However, it is impossible not to search for the possibility of "greening" business, increasing the level of civil responsibility in modern realities if the Russian Federation plans to take a worthy stage in the geopolitical space. It is important to note that many countries have implemented effective systems to stimulate environmental innovation. They include both tax and credit mechanisms as well as mechanisms for subsidizing innovative activities the country.

References


