Organizational and economic mechanism for the implementation of sustainable innovations

Maksim Zotov*

Kazan National Research Technological University, Kazan, Russia

Abstract. Petrochemical enterprises are faced in the modern conditions with a huge number of new challenges. In the external environment there is a progressive increase in uncertainty in the structural processes of changing economic conditions for industrial systems. Some modern processes lead to the destruction of established supply chains. Reduced access to critical high-tech technologies increases the number of bottlenecks in our economy, expanding the range of risks and restrictions available. Organizations are forced to look for new ways of development, simultaneously solving both existing and newly emerging problems. Traditional management models in existing conditions very often respond to newly emerging challenges, ignoring existing restrictions, including those imposed by the social and environmental environment. However, these restrictions essentially represent hidden opportunities, since with effective management they can reduce emerging risks, their consequences and free up additional resources for the development of companies. The paper analyzes the functions of the organizational and economic mechanism for introducing sustainable innovations.

1 Introduction

In the current economic conditions, achieving a synergistic effect from innovation is possible with a balanced and comprehensive implementation of the social, economic and environmental components [1-2]. This will make it possible to reduce the negative impact on the environment, implement social transformations at all stages of the innovation process, and increase the economic efficiency and financial sustainability of an economic entity [3].

This means that we can say that sustainable innovation is a complex, multidimensional, interdisciplinary phenomenon. They include elements of innovations of various kinds, the combination of which is united by one common feature: the result of their implementation is the simultaneous achievement of environmental, social and economic effects [4].

* Corresponding author: knitu.zotovmaksim@gmail.com

2 Materials and methods

Management methods and approaches are a set of techniques and tools for implementing managerial, organizational, economic, innovative, stimulating influence on the management object to achieve the target function, namely the effective implementation of sustainable innovation, to improve the quality of innovative technological development.

3 Results

The functioning of the organizational and economic mechanism should be carried out based on system-wide principles for the development of complex systems. The main role of the mechanism is aimed at forming an organization for monitoring compliance by the management object with certain rules or corporate standards developed considering the interests of internal and external stakeholders.

Moreover, given the undoubted significance of all the considered characteristics of the organizational and economic mechanism, it is through the study of the function that its main key features can be determined. In this regard, based on the use of a functional approach, our study systematized and supplemented three groups of functions, the implementation of which contributes to the introduction of sustainable innovation (Figure 1).

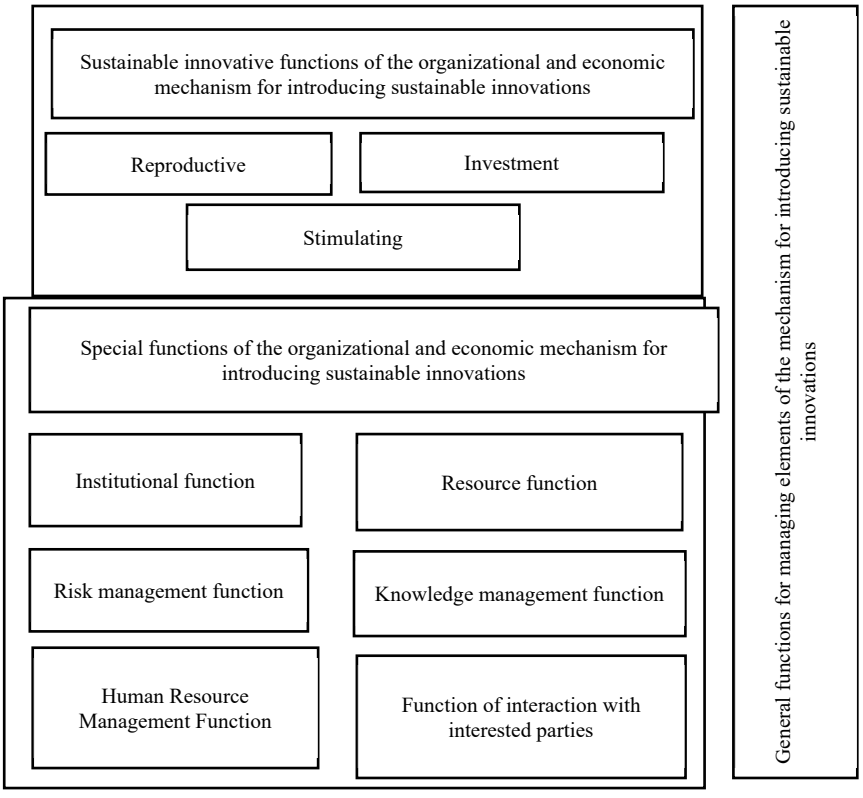

Fig. 1. Functions of the organizational and economic mechanism for introducing sustainable innovations [6-8].

We have identified sustainable innovative functions of the organizational and economic mechanism for introducing sustainable innovations. It was revealed that the functions of innovation are transformed under the influence of the essential characteristics of sustainable

innovation. The reproductive function in the traditional understanding of innovation represents the basis for expanded reproduction and profit maximization [5].

However, within the framework of the mechanism under consideration, the reproductive function of innovation is aimed at reducing negative social and environmental effects, which leads to increased financial viability. In addition, the introduction of sustainable innovations makes it possible to reduce production costs and free up resources for reinvestment in sustainable innovation projects (sustainable investment function). And the emergence and accumulation of new knowledge in the process of introducing sustainable innovations makes it possible to improve and introduce new sustainable products that create additional socio-ecological value and ensure an increase in economic indicators of economic activity (sustainable stimulating function) [9].

In general, we can conclude that sustainable innovative functions of the organizational and economic mechanism include new ways of creating value. This intensifies the transition from traditional tools for introducing innovation to new ones that can create new growth points and simultaneously lead to innovative technological sustainable development.

At the same time, it should be noted that the implementation of sustainable innovative functions creates new requirements for the performance of general management functions. Thus, planning the process of introducing sustainable innovation requires solving creative problems related to eliminating social and environmental problems. To do this, the management entity needs to create conditions for the formation of knowledge and competencies among employees in the field of features of the implementation of sustainable innovations.

The organization function will be responsible for transforming the organizational structure and culture. According to A.S. Ponikarova an effective structure needs to be given a more horizontal appearance. This form will increase the adaptability and flexibility of the entire mechanism in the process of introducing sustainable innovations. [10]. Changing corporate culture can be based on the introduction of social and environmental standards, principles of sustainable and innovative development [11]. This will be further accompanied by regular training of employees in the field of social and environmental management, and further strategic development and support of creative initiatives to introduce sustainable innovations.

Coordination is one of the central functions of the sustainable innovation process. It should ensure high efficiency of communication channels in the process of interaction with various economic agents and with the limitation of the many available alternatives for their behavior and use of resources [12]. Therefore, within the framework of the mechanism, it is necessary to develop adaptive coordination methods and tools to ensure effective interaction between its elements and subsystems during the implementation of sustainable innovations.

The motivational function will be responsible for creating incentives for the implementation of sustainable innovations for the subject and object of management. Its key objective is to encourage employees to improve their competencies and skills to effectively implement sustainable innovation.

The control function in the organizational and economic mechanism for introducing sustainable innovations is placed under a heavy burden. Thus, in addition to assessing the effectiveness of operations and work at different stages, it is necessary to take into account and evaluate all deviations that arise during their implementation. In addition, it is necessary to develop new criteria for assessing the effectiveness of implemented activities, which are determined by the essence of sustainable innovation. They will allow the management entity to respond in a timely manner to changes in internal and external factors and adjust business processes to achieve development goals.

Thus, modified management functions will contribute to a change in motivation and awareness of new opportunities that sustainable innovation provides for high-quality long-

term development. They will transform the company's routine innovation processes and increase receptivity to the implementation of sustainability initiatives at all levels of management. This, in turn, will lead to a reorientation of resource flows towards the introduction of sustainable innovations and a transition to a new level of development of the enterprise as a whole.

At the same time, it is worth noting that in order to achieve the effectiveness of the implementation of sustainable innovations and their further reproduction within the enterprise, it is necessary to effectively perform the special functions of the organizational and economic mechanism. Their implementation allows you to transform elements and forms of their interaction. Based on the analysis, the study identified the following special functions of the organizational and economic mechanism for introducing sustainable innovation.

The knowledge management function is one of the key ones for implementing the process of introducing sustainable innovation [13]. It provides the basis for the selection, evaluation and implementation of sustainable innovations. And it allows for more effective adaptation of imported technologies in the field of sustainable development.

In its content, the knowledge management function is closely related to human resource management. According to O.N. Melnikov's practice of efficiently operating manufacturing enterprises shows that improving the quality of human resources leads to a greater return on material and other types of resources through their more efficient use [14]. In our opinion, the human resource management function at all stages is aimed at introducing and adapting modern practices in the field of sustainable development. This requires changes in the organization of interaction with all stakeholders in the process of introducing sustainable innovation. Stakeholder theory substantiates the need for mutually beneficial cooperation among many business participants aimed at long-term innovative technological development, and claims to be the fundamental basis of a new model of management organization. We share this approach and believe that effective interaction with stakeholders allows us to facilitate the acquisition of necessary information and resources, which leads to increased efficiency in the implementation process of sustainable and requires new institutional conditions.

The institutional function is expressed in the desire of the organizational and economic mechanism to create conditions for the realization of opportunities that arise in the process of interaction with stakeholders. It contributes to the formation of new rules for effective horizontal interaction with participants in the innovation process in the conditions of fundamental socio-economic, political and legal norms for conducting business activities.

The resource function is implemented through the effective attraction, use and transformation of all types of resources to improve the processes of introducing sustainable innovations (sustainable products). Rationalization of resource flows at all stages of value creation can reduce not only resource consumption, but also improve the quality of management itself. The need to form an effective resource management system is determined by the desire of the subject of management to increase the quantity and quality of energy-resource-saving processes [15-16].

The risk management function is one of the important ones in the process of implementing sustainable innovation. For enterprises of the petrochemical complex, the risk management function is of increased importance, taking into account the complexity and danger of the technological processes occurring there [17-19]. Thus, the implementation of a complex of industrial risks can lead to catastrophic consequences for the environment, employees of the organization, third parties and the financial condition of the enterprise as a whole [20,21].

So, the multifunctional approach we used made it possible to identify three groups of functions, the totality of the implementation of which will allow the functioning of the organizational and economic mechanism for introducing sustainable innovations in the conditions of innovative technological development.

4 Conclusion

Thus, the features of sustainable innovation give new specific characteristics to the management system, shifting the emphasis of management from a purely economic component to a socio-ecological-economic aspect, increasing the financial viability and efficiency of the company. General management functions are aimed primarily at creating socio-environmental value. This forms the boundaries and needs of transformation (change) of the system in the context of the introduction of sustainable innovations. And the special functions of the mechanism for introducing sustainable innovations contribute to the transition to advanced innovative technological development.

References

1. Y. Geng, T. Fujita, H. Park, A. S. F. Chiu, D. Huisingh, Journal of Cleaner Production **114,** 1-10 (2016)
2. J. Klewitz, E. G. Hansen, Journal of Cleaner Production **65**, 57-75 (2014)
3. M.A. Zotov, AIP Conference Proceedings **2503**, 50030 (2022)
4. F. Boons, F. Lüdeke-Freund, Journal of Cleaner Production **45**, 9-19 (2013)
5. O.Yu. Chelnokova, Humanitarian scientific journal **1(1)**, 9 (2018)
6. G.M. Galeeva, E.N. Kadeeva, Journal of Physics: Conference Series **1730(1)**, 012118 (2021)
7. A. Ponikarova, E. Kadeeva, I. Gilyazutdinova, AIP Conference Proceedings **2503**, 050037 (2022)
8. M. Zotov, A. Ponikarova, AIP Conference Proceedings **2503**, 05009 (2022)
9. Y. Dao, M. Xinguo, Z. Xianyu, Journal of Cleaner Production **274**, 123005 (2020)
10. A.S. Ponikarova, I.R. Gilyazutdinova, A.I Romanova, et al., International Journal of Economics and Financial Issues **6(2S)**, 74-81 (2016)
11. A. Ponikarova, AIP Conference Proceedings **2503**, 050035 (2022)
12. M.V. Livansky, V.V. Zotov, A.E. Popel, et al., *Management of institutional innovations* (Moscow, Rusigns, 2017)
13. C. Díaz-García, Á. González-Moreno, F.J. Sáez-Martínez, Innovation: Management, Policy and Practice **17(1)**, 6-23 (2015)
14. O.N. Melnikov, A.A. Zaitsev, Issues of innovative economics **6(4)**, 397-408 (2016)
15. A.S. Ponikarov, S.I. Ponikarov, E.V. Osipov, Processes **9(11)**, 2047 (2021)
16. E.V. Osipov, E.Sh. Telyakov, S.I. Ponikarov, D. Bugembe, A.S. Ponikarov, Processes, **9(11),** 1865 (2021)
17. A. Salin, A. Ponikarov, E3S Web of Conferences **417,** 04004 (2023). https://doi.org/10.1051/e3sconf/202341704004
18. A. Salin, A. Ponikarov, S. Ponikarov, E3S Web of Conferences **417,** 02007 (2023). https://doi.org/10.1051/e3sconf/202341702007
19. S.I. Valeev, I.E. Kharlamov, Materials Today: Proceedings **19(5),** 2488-2490 (2019)
20. M.A. Zotov, AIP Conference Proceedings **2503,** 050031 (2022)
21. M. Zotov, A. Salin, A. Ponikarova, AIP Conference Proceedings **2503,** 050091 (2022)