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Problems of Technology Parks Development in the Republic of Belarus

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Abstract: This article examines the operating environment of technology parks as entities within the innovation structure of the Republic of Belarus, which negatively impact their functioning and development. Strategies for improving the efficiency of technology parks, their role in developing competitive advantages and stimulating entrepreneurial activity in the country and its regions are discussed. In particular, the analysis highlights institutional bottlenecks, resource constraints, and regulatory mismatches that hinder knowledge transfer and commercialisation, while proposing targeted policy interventions and collaborative frameworks to unlock the full potential of these innovation hubs. Such measures are essential not only for enhancing regional economic resilience but also for integrating Belarusian tech parks more effectively into global value chains and fostering sustainable, knowledge-driven growth.

Keywords: Technology Park, Technopark, Innovation, Innovation Structure.

Disciplines: Management. **Subjects:** Strategic Management.

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1 INTRODUCTION

Currently, the economic development of a country directly depends on its ability to produce high-tech products and promote them on the global market of goods and services. The development of the scientific and technical products market and the maintenance of a favorable environment for innovation activities constitute the primary goal of developing innovation infrastructure entities. The relevance of the topic is driven by the need to transition to a knowledge economy, strengthen the country's competitive position internationally, and ensure sustainable regional development. Under conditions of limited resources and growing technological dependence, technoparks become an important instrument of state innovation policy capable of ensuring structural modernization and stimulating entrepreneurial activity.

2 THE ROLE AND LIMITATIONS OF TECHNOLOGY PARKS IN BELARUS

One of the main difficulties in the development of innovation infrastructure in Belarus is that technoparks still do not fully fulfill the role expected of them. The very concept of "technopark" is interpreted rather narrowly. In Belarusian conditions, such a structure is viewed primarily as an element of innovation infrastructure designed to support entrepreneurial initiatives in the scientific and technical sphere. Its tasks are defined as creating favorable conditions for innovators, including access to logistics, information support, and a structure that allows an idea to be taken through all stages – from initial research and development to the production of a commercial prototype and its final market launch.

However, in Belarus, technoparks are still viewed primarily as support platforms offering services to already existing commercial projects, rather than as drivers of large-scale innovation. While international technoparks tend to focus on national scientific progress, promoting innovative industries, digitalization, and socioeconomic transformation of entire regions, Belarusian technoparks remain focused on assisting small enterprises that have already launched their products. As a result, their contribution, although useful, is much more modest than global practice suggests.

The main problems of technopark development in the Republic of Belarus are presented in Table 1.

TABLE 1 MAIN PROBLEMS OF TECHNOPARK DEVELOPMENT IN THE REPUBLIC OF BELARUS

Problem	Extended content regarding the issue	The implications for the innovative economy

The limited strategic role of technology parks	Technoparks are viewed as auxiliary facilities that provide space and basic services. Unlike international models, they do not serve as technology transfer hubs, do not foster innovation clusters, nor do they create an entrepreneurial ecosystem.	Low innovation returns; limited impact on regional development; and inadequate commercialization of scientific research achievements.
Financial constraints and the underdevelopment of private investment	Dependence on government funding; a low proportion of venture capital; limited utilization of local innovation funds (ranging from 25% to 35% in several regions). Strict project selection criteria restrict access to financing.	Insufficient resources for infrastructure modernization, weak support for startups, and limited growth of high-tech companies.
Staff shortages and poor integration with universities	There is a shortage of professionals in IT, biomedicine, and engineering. Universities primarily interact with technology parks in a formal manner; joint research and R&D projects are underdeveloped. Graduates lack practical skills, and there are no retraining programs available.	Slowed innovation processes, low competitiveness among residents, and limited capacity to develop products with high added value.
The imperfections in the legislative and institutional framework	There is no unified law governing technology parks; the regulatory framework is fragmented. The registration procedures for park residents are complex, intellectual property protection is inadequate, and there are insufficient incentives for private investors.	The declining attractiveness of technology parks for businesses, restrictions on international cooperation, and the increasing number of administrative barriers.
Insufficient specialization and poor cooperation among technology parks	Most technology parks operate in a general-purpose manner, without a specific focus on any particular industry. There is no coordination between the parks themselves, research institutes, incubators, and industrial enterprises. The services offered by these parks are limited to leasing facilities and basic consulting support.	Inefficient allocation of resources; absence of a clustering effect; low efficiency of the innovation infrastructure.
Limited international integration and weak cooperation with China	Institutional disparities, a limited domestic market, and the absence of services tailored for foreign residents are major obstacles. Belarusian companies rarely become residents of Chinese business parks, just as Chinese companies seldom do so in Belarusian ones.	Loss of opportunities to participate in global technology supply chains, and a decline in attractiveness to foreign investors.

Financing of innovative projects is carried out provided they meet the following criteria: organization of a technological process that ensures an average level of value added per employee comparable to or exceeding the average level of value added per employee for the corresponding type of economic activity in the European Union; export orientation of the innovative project; creation and implementation of new technologies and/or production of products new to the Republic of Belarus and/or the global economy. The existence of these criteria limits the possibility of financing a greater number of projects [1, p. 35].

In Belarus, the initiative to create technoparks belongs, in the vast majority of cases, to the state (state authorities and state organizations), rather than, as per global experience, to private entities – individuals or organizations.

Subsequently, the state typically does not finance the current operations of the technopark but participates in ongoing management, strategic development, etc. In Belarus, conversely, the initiative to create technoparks belongs, in the vast majority of cases, to the state (state authorities and state organizations). This is reflected in the structure of technopark financing: the infrastructure of the modern network of technoparks in the republic has been formed primarily from budgetary funds – funds from local and republican centralized innovation funds.

3 KEY CHALLENGES AND STRATEGIC IMPERATIVES

In Belarus, relations between innovation structures and universities have a distinctly educational character, while contacts in the field of scientific research and development are rather sporadic and highly selective in nature.

Personnel are the most important component of effective innovation processes. According to expert estimates, for the successful advancement of innovative projects in Belarus, there should be about 7,000 specialists in innovation management. This is one of the reasons for the low innovation activity of enterprises and organizations. Training and retraining of personnel should be carried out on the basis of universities [2].

Training and retraining of personnel should be carried out on the basis of universities. The situation is exacerbated by the so-called "brain drain" processes. It is noteworthy that the outflow of personnel is now observed not toward the USA and Western countries, but toward countries of the near abroad.

The development of technoparks in the regions is determined by the presence there of educational (universities) and research organizations, which are mostly concentrated in Minsk and regional centers. Technoparks can function successfully when universities and research institutions are present and when they are close to the corresponding specialized industrial production. This creates infrastructure for the commercialization of high technologies and the creation of high-tech product prototypes. The absence of major research centers in the regions significantly complicates the establishment of technoparks there [3, p. 53].

In the context of implementing the National Strategy for Sustainable Development until 2035, technoparks serve as infrastructural nodes of digital transformation, ensuring end-to-end integration of innovations into the economy and governance. Their further development requires a comprehensive approach, including modernization of management models, expansion of partner networks, startup support, and strengthening of technology transfer.

Thus, financing of infrastructure formation under such a scheme is essentially carried out from the budget, although in statistics it is reflected as extra-budgetary funds.

The absence of a unified state strategy for technopark development leads to fragmented actions by different ministries and departments, which complicates resource consolidation and coordination of efforts. Weak communication between technoparks, research institutes, business incubators, and educational institutions hinders information exchange, synergy creation, and joint efforts. The lack of clear specialization of technoparks limits their ability to concentrate resources in certain areas and attract specialists with unique competencies.

4 CONCLUSION

Ways to improve the efficiency of technoparks in the Republic of Belarus may include the following: amending legislation to simplify business establishment and operation in technoparks, diversifying funding sources by stimulating venture investments and supporting crowdfunding platforms, developing startup ecosystems, strengthening cooperation and networking through the creation of innovation clusters and joint research centers, introducing and expanding technology transfer offices at universities and research institutes, promoting the creation of technology incubators, and developing cooperation among technoparks within the EAEU framework for experience exchange and attracting additional investments.

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