

# CONSIDERATIONS REGARDING THE INNOVATION INFRASTRUCTURE IN THE REPUBLIC OF MOLDOVA

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***Summary:** The main core of the innovation infrastructure - the most efficient mechanism for implementing the innovations, according to the experience of the economically developed countries is represented by the infrastructure of innovative centers, such as science and technology parks, innovation incubators, innovation clusters, which provide enterprises a complete cycle of innovation: from studying the market conditions, making equipment available, providing staff and other services. The paper aims to highlight the main barriers affecting the activity of some innovation infrastructure entities in the Republic of Moldova. The author also analyzes the new amendments to the legislative framework with regard to innovation, which have imposed a new approach regarding the establishment and functioning of science and technology parks and innovation incubators.*

***Keywords:** innovation, innovation infrastructure, innovation incubators, science and technology parks, clusters*

***The innovation infrastructure** represents an essential aspect in the process of elaboration / implementation of innovations. The innovation infrastructure represents the totality of resources and tools available to SMEs, in order to develop innovation and technological transfer projects, to exploit the research and technological development results. The innovation infrastructure is an indispensable component of the National Innovation System, providing innovative SMEs with a full range of facilities, supporting them in the process of carrying out innovation and technological transfer projects, helping them to overcome the barriers that SMEs face, having the possibility to obtain some facilities in the innovation process.*

*Currently, there is a great diversity of the innovation infrastructure typology in the world - science parks, science and technology parks, innovation incubators, technology transfer centers, business incubators, virtual incubators, technopolies, research institutions, funding institutions and others.*

*According to the Code on science and innovation of the Republic of Moldova, no.259-XV of 15.07.2004, the research and innovation infrastructure represents a “totality of the organizations that contribute to the development of the scientific and innovation activity: the Academy of Sciences, other research and innovation organizations, financial institutions, funds and agencies to support the innovation activity, business incubators, innovation parks (scientific, technical-scientific and technological), enterprises and other specialized organizations”[3].*

*According to the data of the National Bureau of Statistics, the research and development (R&D) activity in 2018 was carried out in 64 units, including 40 institutes and research centers, 17 higher education institutions and 7 - other types of units. Out of the total units with R&D activity, 51 units or 80% are state-owned. At the end of 2018, 4451 employees carried out their R&D activity. The distribution of researchers by scientific fields reveals a preponderance for the field of natural sciences - 35.5%, being followed by the fields of social sciences - 15.2%, engineering and technological sciences - 14.6%, agricultural sciences - 12.8% and medical sciences - 12.1%.*

Although, there is a great diversity of the innovation infrastructure typology, in the Republic of Moldova the structures that have the direct purpose of stimulating the innovation activity of the enterprises, mainly come from the innovation incubators and the science and technology parks.

By approving the Law no.138 of 21.07.2007 on scientific-technological parks and innovation incubators, the legal framework for regulating the field of supporting and developing the innovation infrastructure was initiated. It is important to mention that in the context of the major reform of the research and innovation sector, the Code on science and innovation of the Republic of Moldova was amended and supplemented. Thus, under the new conditions, the amended and supplemented Code also required a new approach regarding the establishment and functioning of the science and technology parks and innovation incubators. Thus, according to the Law no.138 of 21.07.2007 on scientific-technological parks and innovation incubators (in force until 06.09.2019), the Supreme Council for Science and Technological Development, as well as the Agency for Innovation and Technology Transfer, which have direct attributions in the creation and functioning of the science and technology parks, no longer exist. In this regard, the Law no.138 of 21.07.2007 on scientific-technological parks and innovation incubators was amended by the Law no.226 of 01.11.2018, thus adopting a new normative framework for the establishment and functioning of science and technology parks and innovation incubators. The new edition of the law came into force on 07.09.2019.

The new version of the law provides a series of changes, among which [4]:

- given the new institutional framework created by amending the Code on science and innovation, following the science and innovation reform, some notions of the law no longer correspond to reality. For example, the notion "scientific-technological cluster" refers to accredited organizations, and the amended Code no longer provides the accreditation of scientific organizations;

- the concept of "resident of the scientific-technological park" has been modified to allow the residents to carry out basic activity not only research, but to highlight the implementation of innovations and technological transfer;

- new concepts have been introduced, such as: "administrator of the science and technology park and / or innovation incubator", "founders of the science-technology park and innovation incubator", "innovative product", "technology transfer" and others;

- the right to initiate the creation of a science and technology park or innovation incubator is assigned not only to clusters, but also to the central and local public authorities, associations created by the association agreement, institutions of higher education. The decisions regarding the creation of science and technology parks or innovation incubators will be taken by the Government, based on the founding documents submitted by the founders of the science and technology parks and / or the innovation incubators at the National Agency for Research and Development.

According to art.17 of the Law in new edition<sup>3</sup>, the residents of the science and technology park and those of the innovation incubator can benefit from a range of facilities, such as:

- "attribution in free use of public property goods to the administrator for the creation and development of the science and technology park and / or the innovation incubator;

- granting financial allocations, distributed through competition, within the programs and projects in the research-development sphere, innovation and technology transfer, including for the creation and/or development of the science and technology park and/or of the innovation incubator infrastructure;

- granting of donations, sponsorships and investments;

- application by the science and technology park administrator for the residents of the respective park of a coefficient to reduce the value established when calculating the payment for the rent of the public property goods, established in the law of the state budget for that year: in the first and second year of activity within the science and technology park - 0.3, in the third year - 0.4, in the fourth year - 0.5;

- exemption of payment for public property rent by the administrator of the innovation incubator in the first and second year of the residents' activity;

- application by the innovation incubator administrator for the residents of the respective innovation incubator of a reduction coefficient for the value established when calculating the payment for renting the public property goods, established in the law of the state budget for that year in the third year of the residents' activity – 0.5;

- the allocation of the financial means in order to create the technical and production infrastructure of the science and technology park and/or of the innovation incubator from the state budget, the budgets of the administrative-territorial units, from the National Regional Development Fund, as well as from the National Program of Research and Innovation.

It is important to note that the new law does not provide tax and customs facilities. In 2012, the tax and customs facilities were canceled, initially offered by the Law no.138 of 21.07.2007 on science-technology parks

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<sup>3</sup>Law no.226 of 01.11.2018 on science-technology parks and innovation incubators. <http://lex.justice.md/md/378269/>

and innovation incubators, but until then no resident had benefited from them, because a unique opinion on the mechanism for granting and using these facilities was lacking at the level of the state authorities.

Currently, there are 8 Innovation Incubators and 1 science and technology park in the Republic of Moldova. The academic incubators, the creation of which was initiated in 2007, during their activity managed to support the setting up and development of innovative businesses. Some of these innovative businesses were launched on the market, activate more or less efficiently until now, but the incubators created within universities, have remained predominantly inactive, some having failed so far to attract residents, either because of their specialization, or by the lack of an effective management and innovation specialists.

An analysis of the residents' number dynamics within the first Innovation Incubator "Innovator" indicates that their number evolved, from two in 2008 to seven in 2010, and from 2010 there is a negative trend in the number of residents, decreasing from seven to three residents in 2013, and in 2014 this incubator had no residents. In our opinion, this state of affairs is due to the main obstacles, which impede the efficient development of these units, namely the low attractiveness of these innovation support mechanisms. It is important to note that the activity of these enterprises ceased shortly after the expiration of the resident status, and the large oscillation over the years of this incubator residents indicates that many of the incubated companies have not reached their goals of growth and development/implementation of innovations.

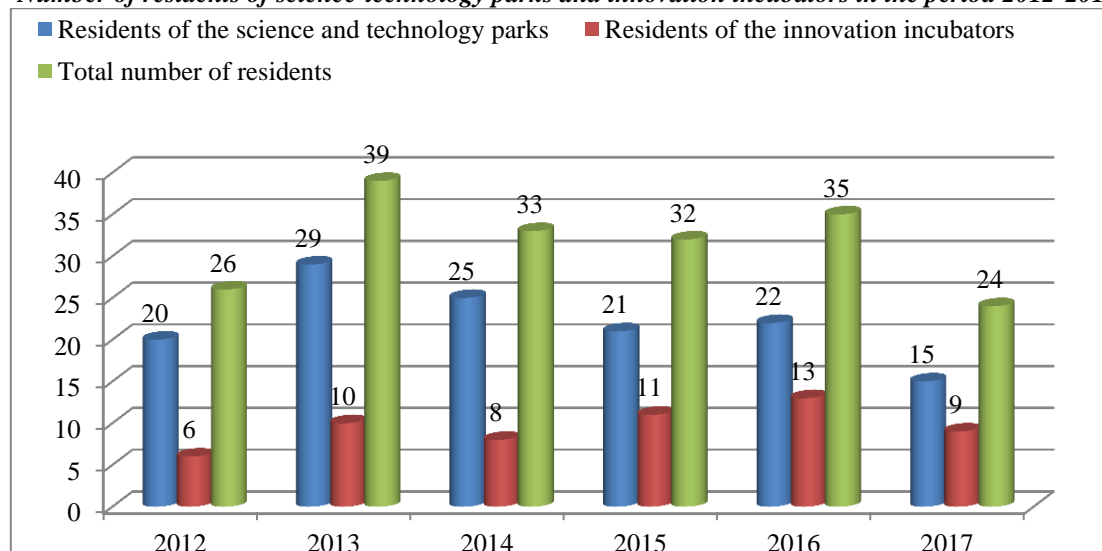
The science and technology parks in addition to providing common facilities, have as objectives the attraction of investments, the creation of industrial competitive sectors based on the advanced and innovative technologies. It is worth mentioning that of the 3 science-technology parks that were active in the Republic of Moldova: one with universal specialization, one specialized in organic farming and one - in nanotechnologies, in 2017 only 2 science-technology parks "Academica" and "Micronanoteh" were functional, and in 2019 only one park - "Academica".

Also, an analysis of the science and technology parks activity indicates similar problems to those of the innovation incubators, attesting a poor performance in their activity. Eloquent in this regard, is the fact that in 2016, only the residents of the science and technology park with universal specialization performed innovation activities, generating revenues from the commercialization of the created innovative products. The park specialized in nanotechnologies "Micronanoteh" has not hosted any residents, and the park specialized in organic farming, has not been active for several consecutive years. Thus, this state of affairs shows us that the attractiveness of these entities is so far low for the SMEs in Moldova.

The analysis of the residents' number of science and technology parks and innovation incubators indicates a decreasing trend in recent years. Thus, in 2017, the total number of residents marked a decrease by 31.4% (or 11 less residents) compared to the previous year.

Figure 1.

Number of residents of science-technology parks and innovation incubators in the period 2012-2017



At the same time, several factors affect the innovation infrastructure activity. One of the major obstacles in the activity of the innovation infrastructure entities is the lack of the innovation specialists, which affect the quality of the offered services, as well as the possibility to identify and exploit the innovation potential of the country. Also, other barriers that impede the development of the innovation infrastructure refer to a weak connection between the business environment and the research, as well as the insufficient stimulation of the innovation activity through legislative acts and policy documents.

One of the most important negative factors, in our opinion, is the legislative factor, namely the tax facilities for the residents of the science and technology parks and the innovation incubators, initially introduced by the Law

no. 138 of 2007 on science-technology parks and innovation incubators, which were not applied in practice due to different interpretations of the law, being canceled in 2012. As a result, the efforts to attract residents have resulted rather with the hosting of enterprises, than with offering the wide range of services characteristic for the innovation infrastructure units.

**Clusters** are another component of the innovation infrastructure, being considered, according to the experience of economically developed states, as an important engine for innovation, business development and attracting investments. Currently, the role of the scientific-technological clusters in the Republic of Moldova is reduced to the fact that the science and technology parks and the innovation incubators can be created only on their proposal (Law no.138 of 2007).

Currently, there is no normative act that establishes the activity of the scientific-technological clusters, except for some very vague regulations, contained in the Law no. 138 of 21.07.2007 ((art. 3, letter b); art. 4, paragraph (1), (3), (4); art. 7, paragraph (1), letter c); art. 10; art. 15) and the Code on science and innovation of Republic of Moldova (art. 131, paragraph (1), letter i)) [2; 3]. Contrary to the imperfect and incomplete provisions regarding the activity of the clusters, 10 scientific-technological clusters were set up in order to create the science and technology parks and the innovation incubators.

In other words, the role of the scientific-technological clusters was limited to the creation of the science and technology parks and the innovation incubators, there being no acts that would regulate the development procedure of these clusters and monitoring their activity, which leads us to the idea that the created scientific-technological clusters are formal and inactive organizations.

Moreover, it is important to mention that the Law regarding the science and technology parks and the innovation incubators (in new edition) already does not refer to the scientific-technological clusters, but only to clusters as "association of interconnected enterprises, located in a geographical proximity, usually belonging to a domain or related fields, as well as scientific research institutions, universities and other organizations whose common purpose is to exploit the results of the innovation and research activity, technological transfer, the acquisition and deepening of knowledge in the concerned fields"[4]. Thus, it is not clear what will continue to be the role of the scientific-technological clusters, these being mentioned further in the Code on science and innovation only as entities of the organizations typology in the research and innovation fields (art. 131, letter (i) ) [3].

Regarding the industrial clusters, the policy of their creation in the Republic of Moldova is still at the early stage and although the mechanisms for creating clusters are not clearly defined, the need to establish clusters is mentioned, among others, in several strategic documents: the Strategy for the development of the SME sector for 2012-2020, the National Strategy for Regional Development 2013-2015, the National Innovation Strategy of the Republic of Moldova "Innovations for Competitiveness" for 2012-2020, etc. An important premise for the creation of industrial clusters in Moldova was the adoption by the Government in August 2013 of the Concept of cluster development in the industrial sector. This Concept was developed in accordance with the National Development Strategy „Moldova 2020”.

The innovative component of the cluster is recognized by the Concept of the cluster development in the industrial sector, being approached through the “significant improvement of the business environment, associated with the elaboration or production of new goods and services, implementation of new technologies and equipment, modern production and management methods, as a result of the elaboration and use of innovative and creative approaches in the enterprises activities” [1].

**Conclusion.** The facilities stipulated in the law regarding the science and technology parks and the innovation incubators for the residents of these structures were canceled without being applied. This approach discourages the business environment from investing in innovative activities. At the same time, the research activity, including the applicative research, is not oriented towards the practical needs of the national economy real sector. The connection with the private sector is weak, these being developed separately, being limited to episodic knowledge transfer and technologies without complex activities based on private investments in research and innovation activities. Some entities of the innovation infrastructure (such as the scientific-technological clusters) have rather a formal, declarative and inactive character, being devoid of functional attributions.

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