

## STATE POLICY OF INNOVATION - ORIENTED SMEs DEVELOPMENT: IN CASE OF THE REPUBLIC OF MOLDOVA.

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### Abstract

*In this paper, an analysis of government programs to support innovation development in the Republic of Moldova. Existing program of collaboration and cooperation between business and science and implementing a program of grants for the development of innovative SMEs under the leadership of the Academy of Sciences of Moldova. Emphasizes the importance of decentralization existing National Innovation System, necessity of its connections with regional emerging innovation systems. As an example the experience of the Innovative Educational cluster with the leading role of innovation incubator "InnoCenter" of the Comrat State University. Since 2012, Innovation incubator implements innovation projects and developing the infrastructure both inside and outside of the university borders - in close cooperation with the main actors of the regional innovation space.*

*Keywords:* innovation policy, innovative development, Republic of Moldova.

### Introduction.

Research and development institutes (RDIs) in the Republic of Moldova (RM) are a legacy of central planning system and were a part of a production system "which was not directly driven by production needs or market demand" [1]. During the socialist period existed a lack of a market for technologies and feedback mechanisms between end users and inventors. All this factors limited the diffusion of technology and innovation. The separation between the supply and demand for innovation was particularly visible, industry - the responsible ministry mediated research links.

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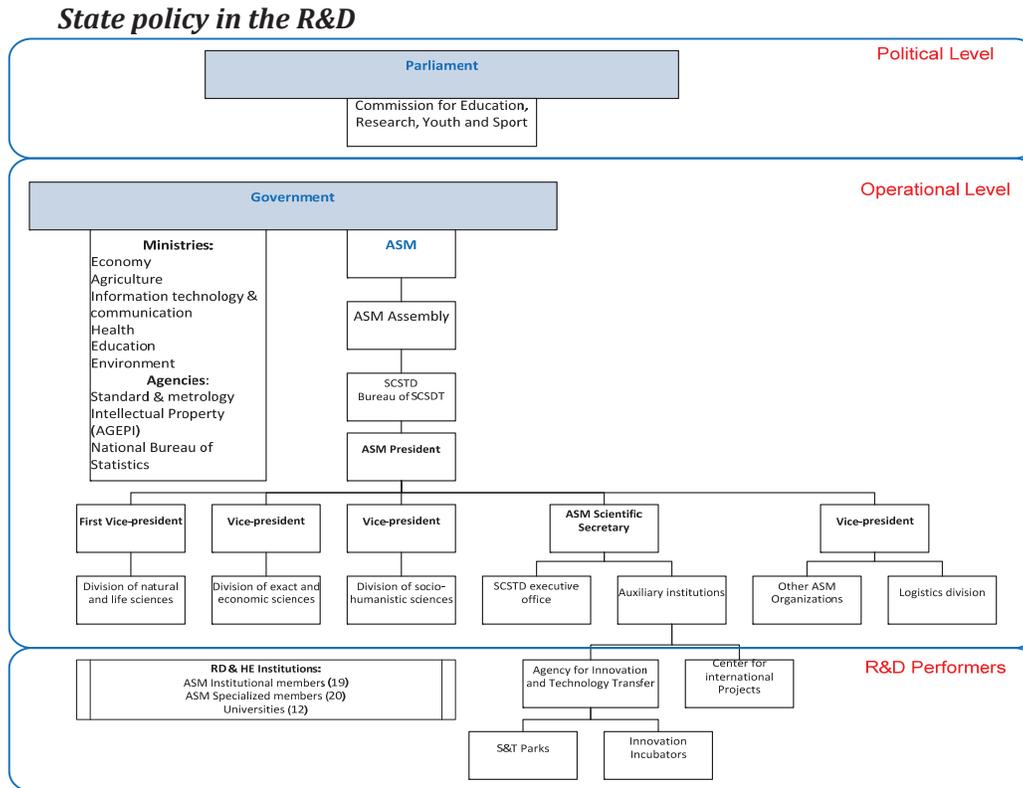
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Typically, the former Soviet Union countries had three main actors in the Science and Research system: the Academy of Science (AS) with own research institutes (now only 17 from 45 in 1991), branch sector and universities. The first actor focused only on the fundamental research, second - developed mainly military - industrial complex with extensive, top-down characteristics. The third actor – Universities focused on teaching process.

Today the innovation system in Moldova presented by several organizations of the AS: Centre for International Projects (CPI), Department of European Integration and International Cooperation (DIECI), Advisory Expertise Council (AEC), Public Centre for Fundamental and Applied Research Funding, Agency for Innovation and Technology Transfer (AITT). Supreme Council for Science and Technology Development has created the Agency for Innovation and Technology Transfer (AITT), which functions in accordance with the statute approved by the Supreme Council.



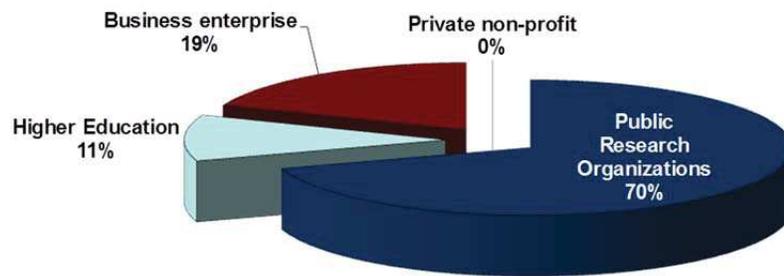
**Fig.1. Existing Innovation System in Republic of Moldova.**

Source: Mini Country Report/Republic of Moldova. INNO Policy Trend Chart with ERAWATCH (2011-2012)

State policy in the R&D was determined in the “Code on Science and Innovation” and the first Government Partnership Agreement with the Academy of Sciences for the period

2005-2008, supported and subsequent Government Decisions on partnership between the Government and ASM. According to recent government decision established that the parties to the agreement for the funding of science and innovation in the 2013 budget allocations was made in the amount of at least 0.34% of GDP. Research and development is one of the most significant drivers of innovation. It is assumed that they have a direct significant impact on the activities carried out in business innovators, and spending on R&D is a way to measure a country's innovation potential. Treaty of Lisbon provides for spending 3% of GDP to research and development (R&D). In 2013 27 EU countries are placed at about 1.71% of GDP [2].

The previous agreements were established during more favorable conditions for financing the development of science and development. This first agreement envisaged an increase in the amount of allocations for science and innovation from 0.35% of GDP in 2005 to 0.80% - in 2009. Real allowances were increased, but did not reach the expected level in 2009 accounted for 0.70%. In 2010, in connection with the critical state of the national economy, the parties agreed that the allocations for science and innovation will be 0.53% of GDP, which is 0.42% real GDP [3].



**Fig 2. Gross Domestic Expenditure on R&D by sector of performance.**

Source: Research and Development Strategy of the R.M.

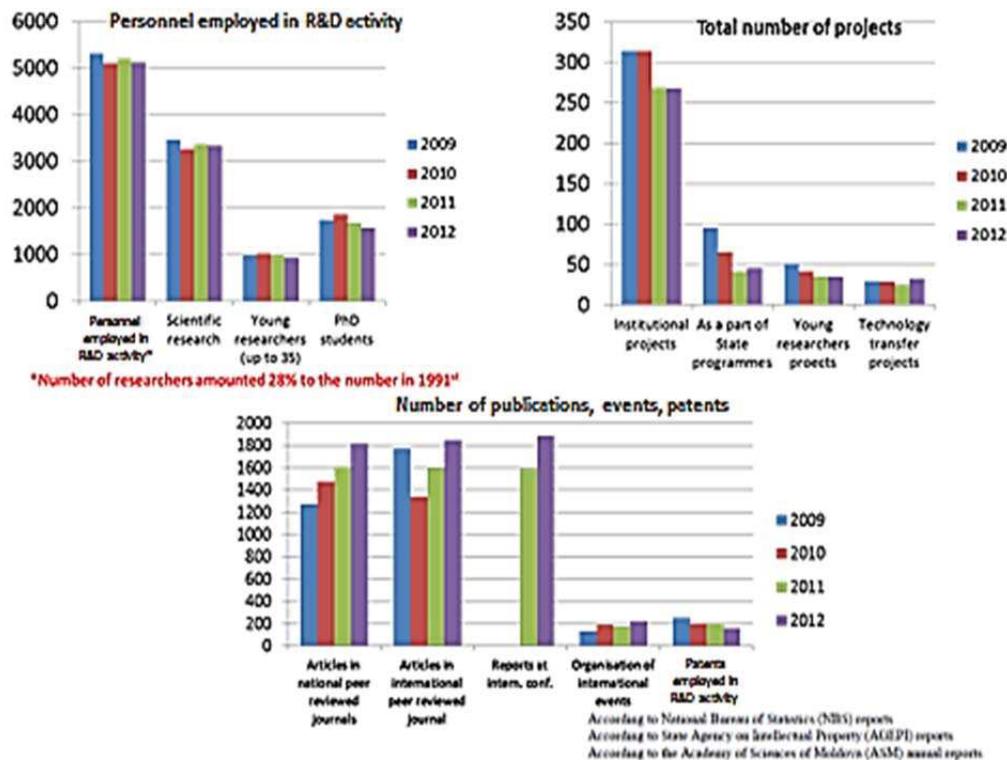
Therefore, science and innovation from Moldova operates today under dry enough, from the previous period. R&D activity in 2013 was conducted in 64 units, including 40 institutes and research centers, 15 higher education institutions and 9 - other units. Of the total activity of CD units, 53 units or 82.8% are in state ownership. The 2013 total expenses for research and development in the public sector accounted for about 0.35% of GDP, which is less than half the average indicator for EU countries (0.75%).

Unfortunately, but in 2013 and 2014 funding situation of science and innovation has degraded from the previous period, and the most favorable value of the indicator can be seen in the statistics of 2009, which were recorded R&D expenditure of around 0,7% of GDP. The increasing importance of innovation policy for the economy is reflected in the structure and tasks of the ministry. It has a department for technological development and competitiveness, and several subordinated institutions:

- National Institute for Standardization and Metrology,
- The Organization for the Development of the SME Sector of the Republic of Moldova,

- The Moldovan Investment and Export Promotion Organization.

Overall, the Moldovan innovation governance is highly centralized. Policy formulation and priority setting, as well as policy implementation and evaluation are concentrated in the academy. The centralized system ensures continuity of the funding stream and provides stable priorities for pursuing long-term research. There is an obvious risk that such an innovation system is not very efficient and slow to respond to emerging topics. Furthermore, co-operation between public and private research institutions depends fully on the academy's actions. The low level of participation of the private sector in the governance of the academy, and in innovation activity in general, means that the academy has only limited feedback from companies on the effectiveness and relevance of its activities and policies [3].



**Fig. 2 Research indicators of National Innovation system in RM.**

Source: Mini Country Report/Republic of Moldova. INNO Policy Trend Chart with ERAWATCH (2011-2012).

### ***Weaknesses of R&D sphere***

However, the practice of entrepreneurial activities in Moldova during the past two decades has not given any real grounds for conclusions of this kind. Moreover, the absence of a mature competitive environment, the significant level of monopolization of a number of sectors, ineffective anti-monopoly activity of the State have provided an open playing field for

excessively profitable entrepreneurial activity, without the need to make additional risky investments of capital in innovation development.

Thus, the developing of the innovation sphere was influenced by a lot of factors and preconditions that almost of the time stalled the modernization and promotion the role of innovative ideas in Moldova.

- *Weak link of relationship between science and business*

When Moldova received its independence the link between scientific research and real sector of economy have not existed. In one hand scientific discoveries were not responsible to the laws governing the economic sector. In another - enterprises have been focused on receiving the wanted results without involving some innovation ideas. The practice of conducting joint research and development began to develop only in recent years.

- *Absence of a clear understanding of development priorities research and innovation policy at both the national and regional level*

Incompleteness of the legal framework, particularly normative legal acts regulating the innovation cycle as a completed process. In reality, in all these normative acts, the terms related to the innovation field were defined confused and the priorities were not put in the right way so, all these factors formed a nonfunctional system.

- *Lack of business innovation funding mechanism, including the procedure for the allocation and distribution of budgetary and extra-budgetary funds, borrowed and borrowed*

Wasn't developed an effective state program for supporting the innovational initiatives, more than this, wasn't named a responsible institution for developing this sphere. In this case, were not clear what to do if you have an innovational idea, which public institution can help and how it can do it.

- *Low developed National innovation market*

In absence of foreign or national support, companies aren't ready to invest its profit in developing the research activities in interested fields in order to obtain some innovations that can be used in future.

- *Low receptivity of the real sector of the economy to innovate, mainly due to lack of their own financial resources and skill gaps.*

Another big problem that affected the developing of the innovational sphere in Moldova is the fact that companies are not ready to accept the importance of innovations in growing and modernization of economy.

All these factors have stalled the development of innovational sphere in Moldova. Modernization of the system was initiated in 2004, when was adopted the Code of the Republic of Moldova on Science and Innovation. This Normative act changed the construction of the system and initiated a new way of developing the innovative system in our country. The most important things that were changed when the code enter in to the force were that Academy of Science was named as the responsible institution for developing the research and innovational system, also were created some new institutions, like Agency for Innovation and Technology Transfer Agency on Intellectual Property and National Council

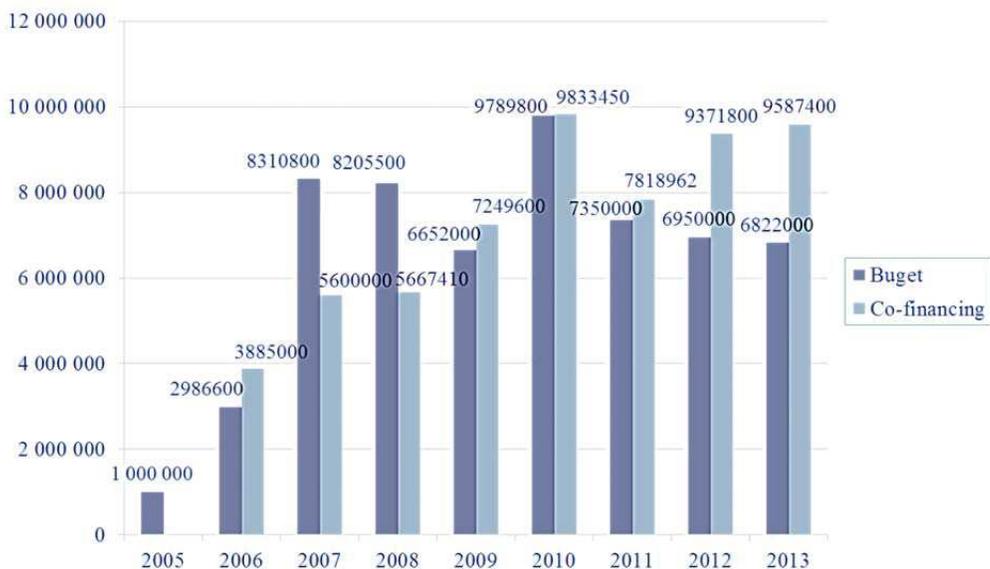
for Accreditation and Attestation, that were directly involved in innovation developing the system.

### ***Technology transfer projects***

These data include all expenditure of research organisations accredited with the Moldovan National Council for Accreditation and Attestation, and which receive funding from the state budget. Data do not include R&D expenditure from general university funds and cover only a rather limited share of private R&D funding (only co-funding of private business in innovation and technology transfer projects supported by the Agency for Innovation and Technology Transfer (AITT)).

Gross Domestic Expenditure on R&D (GERD) does therefore not give the whole picture of R&D funding and is underestimated. Most of R&D (70.0% in 2011) is performed in the governmental sector (institutes of ASM and branch institutes of ministries), while the business enterprise and higher education sectors perform significantly less (19.0% and 11.0% in 2011).

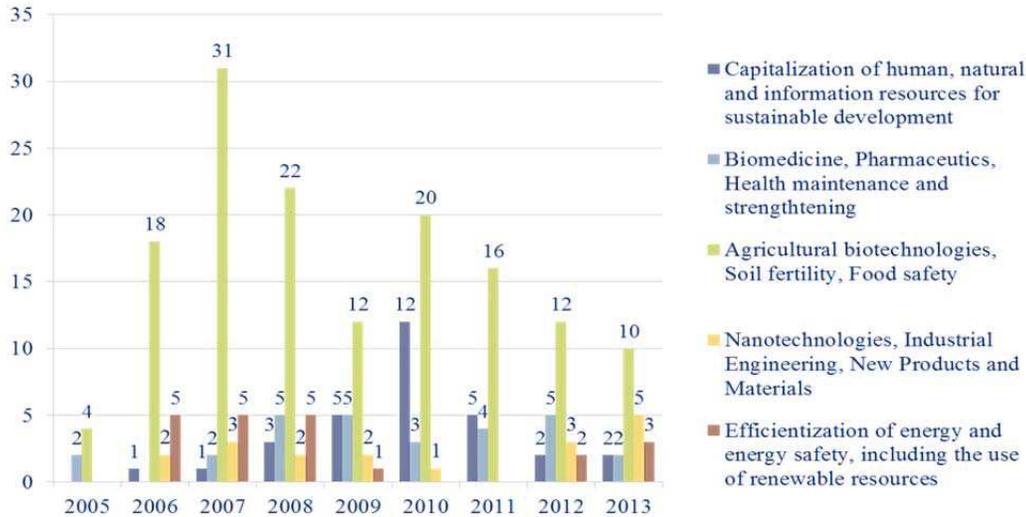
Recent trends show a strengthening of the role of R&D in higher education institutions, improvements of the innovation infrastructure (e.g. via recently established technoparks and innovation incubators) and measures to enhance business R&D. AITT monitor's projects aimed at the development of collaboration and cooperation between business and science and implementing a program of grants for the development of innovative SMEs. Modern business characterized by lack of long - standing tradition of innovation activity funding and disconnecting between accomplishments that are achieved in the laboratory and successful innovations emerging in the product and consumer marketplace.



**Fig. 3. Innovation and technology projects funding and co-financing, MDL.**

Source: [4].

Projects are selected competitively and supported for a two-year period. Public and not for profit research organizations as well as companies are funded in this measure, whereby 50% of the project cost must be co-funded either in cash or in-kind. Innovation and Technology Transfer Projects should facilitate the implementation and transfer to business of research results, inventions, new technologies, equipment, agricultural varieties, pharmaceuticals, and other intellectual property.



**Fig. 4. Evolution of Innovation and Technology transfer projects by strategic directions.**

Source: [4].

Following the adoption by the Parliament of Moldova "Law on Scientific technological parks and innovation incubators" were established Science and Technology Park" Academica "and innovative incubator" Inovatorul ". Now in the Republic of Moldova there are 3 science and technology parks and 6 innovative incubators. AITT through a network of incubators implement:

- the state policy in the sphere of innovation and technology transfer;
- elaboration of suggestions on the improvement of legal framework in the sphere of Innovation and Technology Transfer (ITT);
- determining the volume of financial resources for implementing programs and projects in the sphere of ITT;
- coordinating the process of creating infrastructure in the sphere of ITT.

Shefer and Frenkel [5] have shown that the proximity of an incubator to a university research center is great importance especially in the life science fields. Therefore, this program helps to commercialize the discoveries of scientists and at the same time to introduce innovative products and processes in the enterprises. The entrepreneur's share plays a big role by the successful realization. This keeps the entrepreneur motivated and strongly involved in the company the entrepreneur has the technological know-how needed for developing the company.

Specializing in a small number of activities has no positive impact on an incubator's ability to obtain additional private funding, compared with diversified incubators. Projects within the incubators located in the peripheral regions (Belti, Comrat) require more funding, compared with projects located in the central region - capital Chisinau. The average budget of a project located in peripheral incubator is smaller than that of projects located in the capital. Public funding for projects in the periphery is very less, compared with the projects located in central region.

### **Innovation Incubator "InnoCenter" - the initiator and leader of the regional innovation development**

Usually, the state takes the initiative to establish a regional network of economic development. Unification business, educational institutions and civil society (business service providers) results support the development of research institutions (actors of innovation development) research institutes and centers at universities, innovation incubators, technology parks, research laboratories, etc. If the research structures are the result of a symbiotic (partner) relations of business, government and educational institutions, in this model they will take the dominant position.

Model of innovative infrastructure Gagauzia with the inclusion of its basic elements - "Innovation and Education Cluster." In Comrat State University has set up structures to support scientific innovation activities: Innovation Incubator, Center for Information Technology, Center for Continuing Education, Business Center. Center, the core of IEC - Innovation Incubator will be the as an advisory body to create between the various actors and stakeholders the necessary connections. They may include the organization of seminars, conferences, group discussions, lectures while ensuring participation of the University, the relevant stakeholders both local and national industry, research institutions, civil society and the government. Since 2012 Inovation incubator InnoCenter implements 3 project residents, as well as developing the infrastructure both inside the university and outside its borders - in close cooperation with the main actors of the regional innovation space.

In the framework of IEC can be tested new disciplines and technology training with stakeholders, as well as students and teachers. These innovative schools can combine not only the members of the cluster, but also regional lyceums libraries, community centers, and research. They will provide ability to quickly develop, test, and collect data of new approaches and products to promote fundamental and application research. Close connection with partners, employers will provide the market demand of programs, teaching methods and trained specialists.

**Conclusions and recommendations.** Education in general and its innovativeness particularly are the driving force in the country development. Organizations benefits of joining of in the cluster due to synergetic effect are obvious. Symbiosis entrepreneurs, government agencies, educational institutions and business service providers in the region with the Centre - Comrat State University allows to establish exchange flows of innovative information, inventions and finished products and technologies between all the structures of the cluster and further distribute them to the whole region and beyond. Should be allocated following main challenges facing the InnoCluster [9]:

1. Creating a unified informational and educational environment between members the IOC: harmonization of curricula, the creation of resource centers, the development of scientific and innovation (the development of doctoral studies), assistance in obtaining patents and registration of innovative technologies, the growth of the number of publications in reviewed journals.

2. Forming a IEC partnership strategy with commercial, non-profit and governmental structures: prediction of demand for professional staff in order to execute the order for specialists, the signing of agreements on joint research with business representatives, the organization of work on the grant support of research priorities and shortening their commercialization, modernization of laboratories and the discovery of small innovative enterprises in the departments of and the training of innovative professionals, the introduction of R & D in the region enterprises;

3. Integration into the world educational space: the organization of the practice in foreign universities and enterprises, conducting and participating in conferences, competitions, contests, projects, etc., implementation of programs, "double degrees".

4. Creating a single center of research and ecosystem development in the region, implementation and active use of science in business operations.

At the national level is required: the creation of an independent Science and Innovation Department as part of government, which take over the functions of public policy development in the area of science, the development of science, public order and control over the compliance the actual scientific achievements the government order, the formation of the state program for cooperation between business and science institutions including extensive information on business developments, the priority needs of the state in development of scientific activity, the development of incentives to implement of science in business, and the creation of high-tech industries in the priority areas.

Moldova's economics demonstrate highly polarized development with large regional disparities. In Chisinau, in capital we see the main "pole of growth" of regional concentration of population, GDP, industrial production and services, volume of investments, quantity of innovation structures [6]. However, it needs to create peripherals centers of growth on the North and South of RM threw development of objects of innovation infrastructure.

The capacity of the business enterprise sector to implement innovations is another important challenge. In order to these, it is necessary to stimulate knowledge absorption capacity of industry with its focus on technology-based products for increasing of the export potential. It can be done through the quality assurance and standardization of the legislation of RM in the field of technology transfer.

The necessary attention to this matter and to practical implementation of scientific results will make possible to create the connection between research and innovation with real economy. Time and funds available to enterprises are limited when ideas need to developed further to products. There is necessary to bridging the gap between fundamental research and product development. This could be done by implementing tools that can foster joint research by enterprises and research institutions or universities.

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