Information Exchange in Science and Technology between the European Research Area and Eastern European / Central Asian Countries

MOLDOVA

Country Report
(Last updated in March 2014, source: ASM)

IncoNet EaP
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## General information about Moldova:

<table>
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<tr>
<th>Country name</th>
<th>Republic of Moldova</th>
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<tbody>
<tr>
<td>Population</td>
<td>approx. 3.6 million</td>
</tr>
<tr>
<td>Area</td>
<td>33,843.5 km²</td>
</tr>
<tr>
<td>Capital</td>
<td>Chisinau</td>
</tr>
<tr>
<td>System of Government</td>
<td>Parliamentary Republic</td>
</tr>
<tr>
<td>Science Minister</td>
<td>Academician Gheorghe Duca – President of the Academy of Sciences of Moldova</td>
</tr>
</tbody>
</table>

The Academy of Sciences of Moldova (ASM) is delegated with Government competences with the view to realising state policy in the sphere of science and innovation and the President of the ASM is a member of the Cabinet of Ministers of the Republic of Moldova.

<table>
<thead>
<tr>
<th>Parliament</th>
<th>The Parliament of the Republic of Moldova (Parlamentul Republicii Moldova) is a unicameral assembly with 101 seats. Its members are elected by popular vote every 4 years. The parliament then elects a president, who functions as the head of state. The president appoints a prime minister as head of government who in turn assembles a cabinet, both subject to parliamentary approval. Speaker of the Parliament – Igor CORMAN.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative structure</td>
<td>Moldova is divided into 32 districts (raioane, singular raion); three municipalities (Bălți, Chișinău, Tighina); and two autonomous regions (Gagauzia and Transnistria). The cities of Comrat and Tiraspol also have municipality status, however not as first-tier subdivisions of Moldova, but as parts of the regions of Gagauzia and Transnistria, respectively. The status of Transnistria is however under dispute. Although it is de jure part of Moldova and is recognised as such by the international community, Transnistria is not de facto under the control of the central government of Moldova. It is administered by an unrecognised breakaway authority under the name Pridnestrovian Moldovan Republic.</td>
</tr>
</tbody>
</table>
The Republic of Moldova lies in the Eastern part of Europe and occupies an area of 33,843.5 square km.

The capital of Moldova is Chisinau. On the north, east and south Moldova is surrounded by Ukraine, and on the west it is separated from Romania by the Prut River.

The total length of the national boundaries is 1,389 km, including 939 km with Ukraine and 450 km with Romania. The most northerly point is the village of Naslavcea (48°21´ N 27°35´ E), while the most southerly point is Giurgiulesti (45° 28´ N 28° 12´ E), which is the only settlement on the bank of the Danube. The most westerly point is the village of Criva (48°16´ N 26°30´ E) and the most easterly point is the village of Palanca (46° 25´ N 30° 05´ E).

The Republic of Moldova belongs to the group of countries located in the Black Sea Basin. It maintains close mutually advantageous commercial ties with these countries as well as the countries located in the Danube Basin. The southern border of the country extends almost as far as the Black Sea, which can be accessed through the Nistru Liman and the Danube River.
Research structure

S&T Background

2004, when the new Code on Science and Innovation was adopted, marked a turning point for the development of science and innovation in Moldova.

An analysis of the development in the field of science in Moldova over the last 30-40 years has shown that it was developing mainly on the basis of both social requests and direct and indirect industrial needs. Historically, Moldova has been an agrarian republic, which reached good achievements in large-scale agricultural production. Mild and moderate climate and its advantageous geographical location in the Central part of Europe contributed to the increase in population. Mechanisation in the agrarian sector led to an increase in those people that were not involved in this kind of production.

Since the 1990s Moldovan science has passed through a period of degradation. This has led to the exodus of scientists abroad and the ruin of the scientific and technical patrimony. The scientific potential was reduced by around 70% from about 20 to about 6 thousand researchers. The number of habilitated doctors and doctors of science decreased by about 60%.

As a result of the conservative procedures and lack in flexibility with regard to the development of science and social changes in the Republic of Moldova, science was not in demand. Consequently, during the first years of independence, the field of science and innovation was not progressing and completely ignored the needs of society and its responsibility for the quality and condition of research elaborations, and thus degraded significantly. The material research base, with no capital investments in science and no improvement through new research instruments and tools, was rapidly destroyed. However, the intellectual level of Moldovan scientists and researchers remained rather high. This situation was the result of the lack of balanced state policy in the sphere of science and innovation at that time, as well as no successful forms of organisation or transparent budget financing. The prestige of research and innovation activity was extremely low, its connection with the educational system was only formal, the organisational forms for science remained unchanged and conservative, and the legislative framework had a regressive rather than stimulating character.

The main reason for the scientific potential decline was the sudden reduction of investment in science. In conditions where investment in scientific research constitutes less than 1% of GDP the degradation of science and innovation is the inevitable result. Thus, after gaining independence, the science funding in the Republic of Moldova varied...
between 0.73% (in 1990) and 0.18% (2000-2001) of GDP, and this figure continuously decreased.

The need for a reform in the field of Moldovan science matured and this reform finally began in 2004. The Code on Science and Innovation was ratified by Parliament on the initiative of President of the Republic of Moldova on 15 July 2004.

Research structure

Characterisation of the research system

The main legal act which regulates activities in the field of S&T in the Republic of Moldova is the Code on Science and Innovation. This document regulates legal relations related to the elaboration and implementation of state policy in science and innovation, activity in the field of scientific research, innovation and transfer of technologies, scientific-technological information, accreditation of organisations in science and innovation, attestation of scientific and scientific-pedagogical personnel of highest the qualification, protection of intellectual property rights, and the legal status of organisations in science and innovation.

The Code was adopted on 15 July 2004 and marked a pivotal year in the development of science and innovation in the country. The Code introduced two essential changes to the role of the Academy of Sciences in science and innovation, specifically:

1) The Academy of Sciences became the sole public institution of national importance in the field of science and innovation, the plenipotentiary coordinator of the scientific and innovational activities, the supreme scientific forum and scientific adviser to the public authorities.

2) The Academy of Sciences is invested with the Government’s competence in the field of scientific research, reinforced by the Partnership Agreement with the Government of the Republic of Moldova (presently for the 2009-2012 period, and prolonged for 2013 and 2014). The Agreement authorises the Academy to distribute all budgetary funds designated for scientific research and allocated on a competitive basis.

In addition, the Agreement stipulates the strategic priorities in the development of science and innovation, which are co-ordinated with the strategic directions stipulated by the European Union:

- Consolidation of the State of Law and utilisation of cultural heritage with the aim of European integration;
Efficient utilisation of human, natural and information resources for sustainable development;
Biomedicine, pharmaceutics and human health;
Agricultural biotechnology, soil fertility and food security;
Nanotechnology, industrial engineering, new materials and products;
Efficient growth of the energy complex, assurance of energy security, including the use of renewable resources.

These important transformations brought about a qualitative advance of the Moldovan R&D sector. However, it can be observed that research and innovation in the Republic of Moldova is challenged by the issue of the efficient application of some austere budgetary resources in order to ensure an excellence-based research process that is integrated in the international research circuit and focused on satisfying the ever growing demands of society and the national economy. Thus, while the financing of science and innovation activities from budgetary sources rose considerably in 2004-2008, the share of GDP allocated to science has decreased over the last few years due to the widespread economic and financial crisis that has affected the Moldovan economy among others.

The financial constraints caused by the global economic crisis over recent years has caused ASM to rethink the existing R&D management system. For this purpose ASM carried out, with the assistance of international experts, two exercises:

- Mix Peer Review: need for improvement of S&T policy;
- Foresight exercise for Moldova RDI system.

The S&T policy Mix Peer Review was carried out between March and June 2012 by six experts from Austria, Belarus, Greece, Estonia and Germany. This exercise resulted in the publication of a comprehensive report regarding the current situation in the RTDI sector in Moldova and the measures that are required to improve it. We took the international peer reviewers’ conclusions as a starting point for setting up a new vision on policy and initiatives. The Foresight exercise for Moldova, developed by our national experts with the assistance of our colleagues from Romania, was an important step for the implementation of a new knowledge paradigm.

According to the vision identified within the FOR Moldova foresight project, by 2020 the research and development sector of Moldova will have:

- Management of research priorities based on the establishment of efficient interaction with society
- Adequate tools for the implementation of results and the dissemination of knowledge
- A good record of internationalisation of research and integration into the European Research Area
The outcomes of the Mix Peer Review and Foresight for Moldova exercises were used to develop the draft of the National R&D Strategy until 2020, which was launched for public discussion on 13 September 2012. The strategic document was approved by the Government and, in accordance with legal procedures, is waiting to be voted on by the Parliament.

According to the draft of the Strategy, the R&D system development will be based on five pillars:

- Capacity
- Priorities
- Connectivity
- Internationalisation
- Governance

The implementation of these pillars is expected to contribute significantly to the social, economic and cultural development of the Republic of Moldova.

The internationalisation pillar is focused on the full integration of the Moldovan scientific community into the European Research Area. From the point of view of the ASM, this process will help the Moldovan scientific community to:

- Integrate into European networks
- Participate in all EU Framework Programmes
- Benefit from European scientific excellence
- Attract European investment in R&D
- Protect domestic intellectual activity results abroad
- Facilitate scientific mobility
- Access European research infrastructure

**Structure of the Academy of Sciences of Moldova**

The Assembly is the supreme leading body of the Academy of Sciences. It consists of full and corresponding members; habilitated doctors elected for a term of four years, representing the scientific community of the Republic of Moldova. The Assembly approves the by-laws of the Academy of Sciences and elects the President of the Academy of Science.

It approves the Partnership Agreement every four years, confirms the policy of the Academy of Science in the field of science and innovation and implements the strategy of this policy. It is competent to approve representatives of divisions in the Assembly and to elect representatives from the scientific community, including higher education
institutions, as members of the Supreme Council for Science and Technological Development.

The Assembly examines and decides on the annual report regarding the results of activity in science and innovation and examines and approves strategies and programmes related to science and innovation. It determines strategic directions in the field of science and innovation.

The Supreme Council for Science and Technological Development (SCSTD) is the executive body of the Assembly. It consists of the President of the ASM, the First Deputy President, two Deputy Presidents, the General Scientific Secretary, co-ordinators of ASM divisions and six representatives of the scientific community, including higher education institutions and state agency for intellectual property, elected by the Assembly for a four-year term.

SCSTD co-ordinates the elaboration of both state programmes and international scientific and scientific-technical programmes in science and innovation and mechanisms for their implementation and monitoring. It co-ordinates and stimulates activity in the field of innovation and technology transfer.

It is tasked with distributing, on the basis of the Partnership Agreement, the budget allocations according to the strategic direction of the science and innovation field. SCSTD also organises the competition for the projects, financed from the state budget, and draws up mechanisms for the monitoring, stimulation and implementation of state programmes in science and innovation and the development of markets for products in this field, etc.

Within the Academy of Sciences of Moldova there are six scientific divisions as follows:
- Division of natural and exact sciences
- Division of technological sciences engineering
- Division of medical sciences
- Division of agricultural sciences
- Division of social and economic sciences
- Division of art and humanities sciences

The evaluation of institutions and the attestation of scientists are carried out by the National Council for Attestation and Accreditation (NCAA). The accreditation system for institutions in the field of science and innovation gives them the possibility of obtaining financial support from the state budget.

The State Agency on Intellectual Property (AGEPI) is established on the basis of the Code of Science and Innovation. It represents the Republic of Moldova at the World Intellectual Property Organisation and other international and interstate organisations for
intellectual property protection. The AGEPI supports and develops co-operation relationships with these as well as with profile establishments of other states.

The Agency on Innovation and Technology Transfer (AITT), created in accordance with the Code on Science and Innovation and authorised to implement innovation and technology transfer policies and strategies, promotes the development of innovation infrastructure within the country.

The main tasks of the AITT include:

a) Implementing policies in the field of innovation and technology transfer
b) Providing consultation on policy and legal framework development for innovation infrastructure
c) Establishing strategic directions for innovation and technology transfer activities, reflected in programmes and projects at all levels
d) Participating in strengthening the relationship between research institutions, universities and entrepreneurship
e) Co-ordinating the process of creating innovation and technology transfer infrastructure
f) Providing business assistance in the field of innovation and technology transfer

In July 2007, the Law on Science and Technology Parks and Innovation Incubators No. 138-XVI of 21 June 2007 was approved and fiscal incentives were granted to the residents of science and technology parks and innovation incubators:

1. Exemption from payment of VAT (20%) on goods and services imported from abroad and on those bought in the Republic of Moldova
2. Exemption from payment of customs taxes (5%) on imported goods and services
3. Exemption from payment of income tax during three tax periods
4. Low tariffs on premises leasing and on public utilities for residents situated on the premises of science and technology parks or innovation incubators

Additionally, these residents also benefit from reduced rent rates, production facilities and offices as well as 95% of patent costs covered by the AGEPI.

The Scientific-Technological Park “Academica”, created in 2007, currently houses 13 residents – small and medium innovation enterprises from different areas. Although the park was originally designed to be broad in scope, many residents of the Park are focused on the energy field, energy efficiency and renewable energy sources.
The Innovation Incubator “Inovatorul” which is tasked with creating favourable conditions for the establishment and development of innovation start-ups, houses two residents.

The establishment in 2008 of the Science Technology Park “Inagro” in the field of ecologically intensive and organic agriculture was necessitated by the imperatives of the environment and agricultural reality and currently houses 13 residents. This park is based on a large and valuable set of assets consisting of buildings, plantations and agricultural land with multi-potential recovery potential (in Chisinau and Cahul).

Since the Agency on Innovation and Technology Transfer was created, the number of technology transfer projects has increased from one in 2004 to 30 in 2009. The financing scheme stipulates that 50% of the costs are covered by the AITT and 50% by the beneficiary (private sector).

In 2013, the Government of the Republic of Moldova adopted the Innovation Strategy of the Republic of Moldova “Innovations for competitiveness” for the period 2013-2020. This strategy defines a vision, objectives and measures for developing innovation activities in the Republic of Moldova. The overarching aim is that innovation should contribute to achieving a sustainable and competitive knowledge-based economy. The strategy assesses the current situation and the development potential in the area of innovation. It includes an analysis of strengths, weaknesses, opportunities and threats, and identifies strategic innovation priorities. The strategy perceives innovation as transforming new ideas into successful products, or known ideas into new products.

In the strategy it is planned that innovation will be stimulated in SMEs as well as in the society in general. The strategy formulates that Moldovan firms should be supported to absorb, generate and disseminate innovation. Business should be better connected to universities and research centres. A list of practical measures for implementing the strategy has been compiled and annexed to the strategy in an Action Plan. These measures include support for innovation and technology transfer projects, introducing an innovation voucher scheme, etc.

In order to ensure a high level of transparency in the decision making and funds distribution processes, the Academy of Sciences of Moldova has established three new auxiliary science supporting institutions:

- Advisory Expertise Council
- Center for International Projects
- Center for Fundamental and Applied Research Funding of Moldova

The public institution Advisory Expertise Council (AEC) was founded in 2004. It is a national consulting body. Its main task is to promote excellence in research by selecting scientific projects on a competitive basis for funding. The evaluation procedures foresee the scientific peer review of projects performed by independent experts.

The Center for International Projects (CIP) was created in 2009. It promotes and manages bilateral and multilateral programmes in science and innovation launched within Co-operation Agreements between the ASM and various international organisations and foundations. Since its inception, CIP has managed around 250 bilateral projects under Co-operation Agreements. CIP provides managerial, technical, informational assistance to members of the Moldovan scientific community, as well as for Moldovan Diaspora members, including consultation activities, seminars, training courses and other activities as part of international and bilateral projects. CIP is also the host institution of the network of the National Contact Points of the EU Horizon 2020 Programme for research and innovation.

The Center for Fundamental and Applied Research Funding of Moldova (CFCFA), established in June 2012 by the Academy of Sciences of Moldova, is a science support organisation responsible for all the steps in the project lifecycle of national programmes funded by the state budget.

Scientific-educational cluster “UnivER SCIENCE”
Within the Academy of Sciences of Moldova, a scientific-educational cluster was created on the basis of the University of the Academy of Sciences of Moldova, the ASM’s Lyceum for gifted children, research institutes, scientific parks and innovative incubators, and represents an association of specialised and competitive structures in research and education that can ensure excellence in science and establish premises for the integration processes of research with education, as well as innovation premises between research and education institutes, state and private sector, commercial associations and other structures.

Specific objectives of the scientific-educational cluster:

- Professional education of researchers
- High performance
- Competitiveness based on scientific criteria, insuring specialisation in domains
- Growth of innovative capacity through programme expansion
- Management experience
- Obtaining of management and marketing capacity in research development

The Lyceum for gifted children was founded in 2006 by the Government of the Republic of Moldova with the aim of providing a modern and quality education to gifted children from Moldova. Gifted children should be able to benefit from special educational
conditions that allow them to fully develop their abilities, for their own benefit and for the benefit of society as a whole.

University of the Academy of Sciences of Moldova (UnASM) was created as a performance centre for the training of scientific staff. The main goals of UnASM are:

- Identifying and supporting gifted young people
- Training scientific staff at high performance, using the most successful achievements of the national and foreign systems of university and post-university education
- Strengthening the synergy between science and education
- Integrating educational activity and academic science
- Training in managerial skills and communication of scientific research, including the basic elements
- Fostering the development of relationships between science and the business sector
- Involving young people in research during their training as specialists
- Attracting renowned researchers within the country and beyond in the process of youth education in Moldova
- Developing younger scientific-didactic staff within ASM
- Establishing the new strategy of science development in Moldova

The main activities include:

- Implementing university (1st stage) and post-university (2nd and 3rd stage) training programmes
- Carrying out fundamental and applicative scientific research, technical-scientific, experimental papers in different areas of physics, chemistry, biology, physiology, experimental medicine, electronics, material engineering, energy, etc.

In contrast to other higher education institutions in Moldova, the process of training in the UnASM is undertaken through integration of teaching with research, of science with technologies, of theory with innovation experience. The training programme of UnASM includes: Communication Programme, Teaching and Learning Programme, Business Administration, Technology and Society.

The **Association of Young Researchers of Moldova “PRO-Science”** (ATCM PRO-Science), registered by the Ministry of Justice in 2004, started as an initiative group in 2000. The association is dedicated to the public benefit and takes the national legislation and internal rules as its legal basis. The ATCM PRO-Science represents a non-governmental, non-political and non-commercial association, and its main goal is the creation and development of an open framework for the junior researchers in order to implement the values of social democracy in the following activity areas: education, teaching-learning, science, research and development, and international co-operation.
### Research indicators

<table>
<thead>
<tr>
<th>NBS indicators(^2)</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D allocation in % of GDP*</td>
<td>0.53</td>
<td>0.51</td>
<td>0.45</td>
<td>0.37</td>
</tr>
<tr>
<td>Organisations conducting R&amp;D activity</td>
<td>68</td>
<td>62</td>
<td>64</td>
<td>69</td>
</tr>
<tr>
<td>Personnel employed in R&amp;D activity</td>
<td>5,315</td>
<td>5,114</td>
<td>5,216</td>
<td>5,121</td>
</tr>
<tr>
<td>Scientific researchers</td>
<td>3,471</td>
<td>3,267</td>
<td>3,372</td>
<td>3,338</td>
</tr>
<tr>
<td>Granted patents(^3)</td>
<td>312</td>
<td>316</td>
<td>221</td>
<td>184</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ASM indicators(^4)</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of projects (financed by state budget), including:</td>
<td>571</td>
<td>535</td>
<td>449</td>
<td>386</td>
</tr>
<tr>
<td>- Institutional</td>
<td>314</td>
<td>314</td>
<td>269</td>
<td>268</td>
</tr>
<tr>
<td>- Projects as part of state programmes</td>
<td>96</td>
<td>66</td>
<td>42</td>
<td>46</td>
</tr>
<tr>
<td>- Independent projects for young researchers</td>
<td>51</td>
<td>42</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>- Technology transfer projects</td>
<td>30</td>
<td>29</td>
<td>25</td>
<td>33</td>
</tr>
<tr>
<td>Scientific researchers, including:</td>
<td>3,279</td>
<td>3,469</td>
<td>3,366</td>
<td>3,352</td>
</tr>
<tr>
<td>Habilitated doctors</td>
<td>418</td>
<td>450</td>
<td>441</td>
<td>440</td>
</tr>
<tr>
<td>Doctors of sciences</td>
<td>1,398</td>
<td>1,453</td>
<td>1,450</td>
<td>1,470</td>
</tr>
<tr>
<td>Young researchers (up to 35 years)</td>
<td>985</td>
<td>1026</td>
<td>986</td>
<td>933</td>
</tr>
<tr>
<td>Young researchers by total number of researchers (%)</td>
<td>30%</td>
<td>29.6%</td>
<td>29.3%</td>
<td>27.8%</td>
</tr>
<tr>
<td>PhD students</td>
<td>1,747</td>
<td>1,860</td>
<td>1,682</td>
<td>1,578</td>
</tr>
<tr>
<td>Number of publications, including</td>
<td>3,044</td>
<td>2,825</td>
<td>4,802</td>
<td>5,553</td>
</tr>
<tr>
<td>- Articles in national peer reviewed journals</td>
<td>1,273</td>
<td>1,480</td>
<td>1,610</td>
<td>1,813</td>
</tr>
<tr>
<td>- Articles in international peer reviewed journals</td>
<td>1,771</td>
<td>1,345</td>
<td>1,601</td>
<td>1,853</td>
</tr>
<tr>
<td>- Reports at international conferences</td>
<td>n/a</td>
<td>n/a</td>
<td>1,591</td>
<td>1,887</td>
</tr>
<tr>
<td>Patents</td>
<td>251</td>
<td>203</td>
<td>196</td>
<td>163</td>
</tr>
<tr>
<td>Organisation of international events, including</td>
<td>133</td>
<td>189</td>
<td>176</td>
<td>225</td>
</tr>
<tr>
<td>- national</td>
<td>92</td>
<td>146</td>
<td>102</td>
<td>145</td>
</tr>
<tr>
<td>- international</td>
<td>41</td>
<td>43</td>
<td>74</td>
<td>89</td>
</tr>
</tbody>
</table>

\(^2\) According to National Bureau of Statistics (NBS) reports  
\(^3\) According to State Agency on Intellectual Property (AGEPI) reports  
\(^4\) According to the Academy of Sciences of Moldova (ASM) annual reports
The statistical system of the Republic of Moldova, co-ordinated by National Bureau of Statistics, is now undergoing a process of reform in accordance with the European Strategy for the Republic of Moldova.

However, due to the fragmentation of the statistical system in the Republic of Moldova (in addition to the National Bureau of Statistics, R&D data is collected by the Academy of Sciences of Moldova, the State Agency on Intellectual Property and the National Council for Attestation and Accreditation. These all use different methodologies and statistical forms; some indicators are calculated only at ASM for annual reports) it is rather difficult to have a clear overview on R&D in Moldova from a statistical point of view.

**Research funding system**

The Academy of Sciences is authorised with the Government’s competence in the field of scientific research. This means that all budget funds designated for scientific research are allocated only through the Academy of Sciences on a competitive basis.

In 2013, the state budget (co)financed 395 projects\(^5\), including:

- 262 institutional projects (basic research – 92; applied research – 170)
- 15 projects as part of state programmes
- 35 grants for young scientists
- 3 grants for S&T infrastructure development
- 22 technology transfer grants
- 58 international grants in the framework of bilateral agreements with Belarus, Germany, Italy, Romania, France, Black Sea ERA NET and STCU

\(^5\) Activity indicators of the Academy of Sciences of Moldova, Annual Report 2009
Research policy

Context of research policy

The Code of the Republic of Moldova on Science and Innovation regulates legal relations related to the elaboration and implementation of state policy in the field of science and innovation, activity in the field of scientific research, innovation and transfer of technologies, scientific-technological information, accreditation of organisations in the field of science and innovation, attestation of scientific and scientific-pedagogical personnel of highest qualification, protection of intellectual property and legal status of entities in the field of science and innovation.

Research policy: objectives and priorities

The goals and tasks of state policy in the field of science and innovation

(1) The basic goal of state policy in the field of science and innovation is a stable socio-economic and human development in the Republic of Moldova, based on maximum stimulation and use of scientific, scientific-technical and technological potential, oriented to the creation and commercialisation of competitive and ecological pure products, services and processes.

(2) The tasks of the state policy in the field of science and innovation are:
   a) Complex integration of fundamental and applied research within the innovation activity from all fields of economic, social, cultural, political and informational life of the Republic of Moldova
   b) Development and efficient use of scientific and technological potential
   c) Ensuring the progressive structural reformation of the production of goods and services, increasing their efficiency and competitiveness
   d) Protection of the environment, monuments of natural and historic heritage, rational use of natural resources, saving and developing biological and cultural diversity
   e) Protection and development of national informational resources
   f) Consolidation of the interaction between science and education

Strategic directions of the activity in the field of science and innovation

(1) State policy in the field of science and innovation envisages the concentration of resources and organisation of the activity on strategic directions of the field of science and innovation.

(2) Strategic directions of science and innovation are identified under consideration of current trends at the world level, national potential and the needs of the socio-economic development of the country.
Policy making and co-ordination

The Parliament:

a) adopts legal acts, which regulate the organisation and function of the field of science and innovation;
b) approves strategic directions of the activity in the field of science and innovation;
c) approves the amount of financial resources that are allocated to support the activity in the field of science and innovation;
d) ratifies international agreements regarding co-operation in the field of science and innovation.

The Government concludes a Partnership Agreement with the Academy of Sciences, which delegates to the Academy of Sciences powers to carry out state policy in the field of science and innovation and determines:

a) the development strategy of science and innovation activity;
b) strategic directions of the activity in the field of science and innovation;
c) the budget allocated to the field of science and innovation in accordance with the law on state budget, taking into consideration the permanent increase of the need for its financing.

The Government also:

a) organises elaboration of legal acts related to science and innovation, and submits them to the Parliament for examination;
b) creates economic stimulation mechanisms of the activity in the field of science and innovation and uses the results of this activity;
c) concludes intergovernmental agreements on co-operation in the field of science and innovation;
d) supports the creation of infrastructure of the field of science and innovation;
e) awards prizes in the field of science and innovation.

The Academy of Sciences of Moldova as the sole public agency of national significance in the field of science and innovation is the plenipotentiary co-ordinator of scientific and innovation activity, supreme scientific forum of the country and scientific consultant of the public authorities of the Republic of Moldova.
Academy of Sciences on the basis of the Partnership Agreement with the Government:

a) elaborates and promotes the strategy for the development of science and innovation activity, implements state policy and performs the conceptual activity in the field of science and innovation;
b) identifies strategic directions in the field of science and innovation;
c) distributes budget allocations in accordance with the strategic directions in the field of science and innovation;
d) organises the elaboration of state programmes, international scientific and scientific-technical programmes, as well as their implementation mechanisms;
e) elaborates the mechanisms for monitoring and stimulating the implementation of the results of state programmes in the field of science and innovation and for the creation of a market for the products in this field;
f) organises competitions for projects in the field of science and innovation, financed by the state budget;
g) ensures the financing for the publication of scientific magazines and scientific works;
h) ensures the financing of subordinated scientific libraries;
i) draws up the prognosis for the development of science and innovation activity;
j) promotes the policy of the preservation, rational positioning and development of intellectual potential, property and infrastructure in the field of science and innovation;
k) supports activity in the field of innovation and transfer of technologies;
l) contributes to the implementation of the results of scientific research and advanced technologies;
m) promotes national and global values in the field of science and culture;
n) organises and if necessary, carries out scientific-methodological co-ordination of the activity of entities in science and innovation, which are part of the ASM, and entities in science and innovation, which are not a part of it but which receive subsidies from the state budget;
o) performs, on request, scientific-methodological co-ordination of the activity of entities in science and innovation, which are not a part of the ASM and which do not receive subsidies from the state budget;
p) offers consultation, performs expertise reports and reviews of bills of laws and other regulations, related to policy in science, economics, society, culture and other fields of social life;
q) performs training of scientific personnel through graduate and post-graduate education and advanced training courses; supports and promotes scientific schools;
r) collaborates on an international level with similar institutions.
The Academy of Sciences, among other things, also:

a) organises and carries out fundamental and applied scientific research; elaborates advanced technologies;
b) elaborates state concepts, projects and programmes and gives advice to public administration authorities regarding the strategic directions of the economic, social and humanitarian policy of the state;
c) submits conclusions to the Government regarding the situation in the field of research- development and recommendations for the promotion of innovation and transfer of technologies;
d) organises the activity for drawing syntheses regarding national social-economic, technological and human development trends;
e) determines the training policy for scientific and scientific-pedagogical personnel by organising an efficient system of Master, PhD and post-doctoral studies on the basis of the decision of the Supreme Council for science and technological development;
f) determines and develops its organisational structure, in accordance with the strategic directions in the field of science and innovation and national social-economic priorities, etc.

**National research programmes: state programmes in the field of science and innovation**

State programmes in the field of science and innovation represent a network of projects in this field and a format for the realisation of state policy in the field of science and innovation. However, these programmes are only open to participation by accredited Moldovan organisations in the sphere of science and innovation.

State programmes in the field of science and innovation are developed by the Government and scientific community through the Academy of Sciences in accordance with the strategic directions of activity in this field. The list of state programmes is included in the Partnership Agreement.

State programmes in the field of science and innovation are financed partially or completely by the state budget in accordance with the results of the competition organised by the Academy of Sciences.

Projects in the field of science and innovation are a network of activities, interconnected by performers, terms and resources, which are implemented by science and innovation organisations to find a solution to a problem (achieving a common goal) and are aimed at:

- developing fundamental and applied knowledge and their application methods;
• developing infrastructure in the field of science and innovation, improving laboratory, electronic and diagnostic equipment, polygraphic, and publishing equipment;

• improving technical-economic parameters of applied technologies and/or manufactured products (works carried out, performed services) with the purpose of ensuring their competitiveness on the world market;

• creating and/or assimilating technologies and/or new types of products (works, services), which are the result of implementing an object of intellectual property (patent, industrial design, topography of integrated circuits, expertise, etc.), for which the manufacturer has necessary documents (certificate, patent, etc.) or licence issued by the owner of the object of intellectual property, or which must be elaborated for the first time in the Republic of Moldova and/or are more competitive and possessed of significantly better technical-economical parameters and increase the national scientific-technical and technological level.

Projects, as a rule, are a component part of a programme in the field of science and innovation executed by organisations, performing their respective activity.
International Cooperation

Goals and objectives

• Integration into the European Research Area
• Initiation and fostering of relationships with similar institutions abroad
• Facilitation of access to world-class research infrastructure abroad
• Participation in international grant projects and programmes
• Representation of Moldovan scientific community in international scientific organisations
• Enhancing the international visibility of Moldovan scientific accomplishments;
• Protecting national intellectual activity results abroad
• Facilitation of scientific mobility
• Involvement of the Moldovan scientific diaspora in domestic R&D activities

Co-operation with EECA-countries

The Academy of Sciences of Moldova collaborates on the basis of bilateral scientific agreements with various research institutions from the Russian Federation (The Russian Academy of Sciences, the Russian Academy of Agricultural Sciences, the Russian Fund of Fundamental Research, and the Russian Foundation for Humanities), the Belarus Republic (National Academy of Sciences, the State Committee for Science and Technologies of Belarusian Republic created on the basis of an intergovernmental agreement between the Republics of Belarus and Moldova on co-operation in science and technology, and the Republican Fund of Fundamental Research), Ukraine (Ministry of Education and Science of Ukraine, National Academy of Sciences and the Academy of Agricultural Sciences – including a convention that implied a collaboration between the Academy of Agricultural Sciences “Gheorghe Ionescu-Şişeşti” from Romania and the Academy of Agricultural Sciences from Ukraine, and the Southern Scientific Center of the Academy of Sciences of Ukraine), Azerbaijan (signed an agreement on scientific co-operation with the National Academy of Sciences in June 2007), Armenia (signed an agreement on scientific co-operation with the National Academy of Sciences on 16 October 2013), as well as international organisations such as: the International Association of Science Academies (MAAN), the Organisation of the Black Sea Economic Co-operation (BSEC), the Science & Technology Center in Ukraine (STCU) and co-operation in the framework of the Organisation for Democracy and Economic Development between Georgia, Ukraine, Azerbaijan, and Moldova (GUAM).

Thus, as part of the bilateral agreement on scientific and technological co-operation between the ASM and the Russian Fund for Basic Research signed on 18 March 2005
and additional protocols, 44 projects were financed for 2006-2007, 45 further projects were implemented in 2008-2009, and in 2010, 5 more projects were financed.

In the framework of the agreement on organisation of the joint call between the ASM and the Russian Foundation for Humanities, signed on 23 January 2009, a bilateral competition was organised in the beginning of 2009 and 9 projects were accepted for financing.

Within the co-operation agreement between ASM and the Belarusian Republican Fund of Fundamental Research signed on 3 May 2007 and additional protocols, 16 research projects were financed and implemented for 2008-2009 and another 52 bilateral projects were implemented during 2010-2013.

Based on the agreement on co-operation in the field of education, science and culture between the Parliaments of Ukraine and the Republic of Moldova, signed on 20 March 1999 and additional protocols between the ASM and the Ministry of Education and Science of Ukraine, 38 projects were implemented during 2010-2012.

**Co-operation with EU Member States and associated countries**

Policy dialogue in the field of research and development between the European Union and the Republic of Moldova continues within the framework of the EU – Moldova Co-operation Committee and Subcommittee no.4 on “Energy, Environment, Transport and Telecommunications, Science and Technology, and Training and Education” meetings. In the beginning of 2010, negotiations of the EU-Republic of Moldova Association Agreement were launched, the Chapter on “Research, Technological Development and Demonstration” was included as part of the Working Group IV on “People to People Co-operation”.

Eastern Partnership, launched in early 2009, brought new opportunities in view of enhancing the scientific co-operation between the European Union and the Republic of Moldova, Belarus, Ukraine, Georgia, Azerbaijan and Armenia. Increasing the participation of Eastern Partners in the opportunities for co-operative research, capacity building and researcher mobility, offered by the Seventh Framework Programme, was declared as the core objective of the Platform 4 ‘Contacts between People’ Work Programme 2009-2011 in the field of research.

Following the official request of the Republic of Moldova to associate with the Seventh Framework Programme expressed in May 2008, a short-term Action Plan “Moldova Knowledge Excellence Initiative” was launched, aimed at strengthening the scientific potential and management skills of RDI organisations for participating in FP7. It thus
seeks to consolidate the role of science and innovation in the general process of the country’s development. The Action Plan was approved by Decision no.230 of the Supreme Council for Science and Technological Development of the Academy of Sciences of Moldova on 27 November 2008.

In this context, by the Decree of the Government of the Republic of Moldova no.515 of 17 August 2009, the National Committee for Association of the Republic of Moldova to FP7 was created. The newly created National Committee has the role of promoting and monitoring the process of association and the measures undertaken for the advancement of Moldova’s participation in FP7. It is composed of representatives of ministries, at the deputy minister level, other central public authorities and state institutions affected by FP7 priorities.

On 11 October 2011 the Memorandum of Understanding between the European Union and the Republic of Moldova on the Association of the Republic of Moldova to the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007-2013) was signed. The Memorandum of Understanding entered into force on 1 January 2012. Since then, the Republic of Moldova has been officially associated to the Seventh Framework Programme (FP7).

In order to make the best possible use of the status of an FP7 associated country and to start the preparations for the H2020 EU programme, the ASM has undertaken the following actions:

- Since 2012, the research teams from Germany, France, Italy, Romania and Belarus that submit bilateral project proposals together with Moldovan teams have to prove their previous experience of participation in FP7 projects, as well as their commitment to further apply for projects within EU framework programmes.
- A working group was created in order to develop legislative proposals for adjusting the national legal framework to the European standards, in the view of further integration into European Research Area;
- The Moldovan Office for Science and Technology (MOST) to the European Union, located in Brussels, Belgium was established and has started its activity;
- The network of National Contact Points (NCP) was extended by appointing and training new NCPs for each Horizon 2020 Framework Programme field;
- The NCP network organised information days in Chisinau, Bălți, Comrat and Cahul cities, regarding the newly-launched calls, as well as on the different aspects of the FP7 Programme.
- In accordance with the Memorandum of Understanding on the Association of the Republic of Moldova to FP7, the Moldova-EU Research Committee was established in order to assess the participation of Moldova in FP7. The first
meeting of the Research Committee took place in Chisinau on 5 February 2013;

- In accordance with Government Decision No. 30-d of 4 April 2013, the National Committee “Horizon 2020” was established. The aim of this committee is to co-ordinate, at national level, the process of association of the Republic of Moldova to the new Framework Programme of EU for research and innovation “Horizon 2020” (2014-2020). The first meeting will be held in June, after the European Commission adopts the legal documents establishing the Horizon 2020 Framework Programme.

The new status of an associated country to FP7 provide the Moldovan scientific community with a number of benefits, one of the most important being the opportunity to fully integrate into the European Research Area. Following association to FP7, the scientific community of the Republic of Moldova has significantly increased its participation in the open calls for project proposals announced within this framework programme. To date, institutions from the Republic of Moldova have participated in 53 FP7 projects attracting more than EUR 3.7 million to the country. In 2013 alone, the scientific community in Moldova signed 18 contracts for new FP7 projects with a total financing of more than EUR 1 million. As a result of the implementation of these projects in Moldova, the interaction of Moldovan researchers with their European partners has increased, access for Moldovan scientists to new knowledge, European research methodologies and infrastructure has become easier, the modernisation of national research infrastructure has been accelerated, and the international visibility of local scientific results has increased.

Encouraged by the results obtained by our researchers in FP7, in 2014 the ASM has officially begun negotiations with the EC to become associated to the H2020 Programme. Therefore, the ASM is undertaking a set of activities to support the scientific community’s path to Horizon 2020, including information days, training courses, video-conferences, seminars and personal consultations on the application procedures to the open calls for project proposals within Horizon 2020 Programme.

On a bilateral level, ASM has concluded an agreement on scientific co-operation with science academies from the following EU Member States and associated countries: United Kingdom, Poland, Hungary, Bulgaria, Romania, Montenegro, Turkey, Austria, Czech Republic, France, Italy and Portugal.

A Memorandum of Intentions on scientific and technological co-operation was signed between the Academy of Sciences of Moldova and the German Federal Ministry of Education and Research in March 2008. On its basis two open calls for collaborative research project proposals were conducted in 2009, 2010 and 2013 respectively. Each year, 10 different projects were accepted for funding. As agreed between funding parties, project proposals submitted must encompass two components: (1) a basic and
applied research component; and (2) a pre-feasibility study component for further collaborative research project proposals under future bilateral calls or other programmes such as the EU Research Framework Programmes (FP7).

Within the framework of the S&T Co-operation Programme between the Romanian National Authority for Scientific Research (ANCS) and the Academy of Sciences of Moldova signed on 23 October 2008, a collaborative call for proposals was announced in 2009, 2010, 2011, 2012 and 2013. In particular, the programme aims at facilitating the integration of the Moldovan scientific community into the research and development system of the European Union, preparation of Moldovan teams to participate in community programmes, especially the Seventh Framework Programme, as well as developing collaboration within regional programmes such as those of BSEC.

In 2011 and 2013 similar co-operative programmes with the Italian National Research Council (CNR) and French National Center for Scientific Research (CNRS), were launched.

Co-operative activities are also carried out in the framework of the following organisations: Organisation of the Black Sea Economic Co-operation (BSEC), NATO Science for Peace and Security Committee, All European Academies (ALLEA), Central European Initiative (CEI), International Union of Academies (UAI-IUA), the International Council for Science (ICSU), Central and Eastern European Networking Association (CEENet), International Atomic Energy Agency (IAEA), UNESCO etc.

**EU-funded co-operation/projects**

Since the 7th Framework Programme was launched, 53 project proposals with the participation of Moldovan research groups (including research institutions, higher education institutions, SMEs and NGOs) have been accepted for funding.

In 1994, Moldova joined the Tempus programme. Its initial focus was on university management, curriculum development and teaching staff retraining in the fields of social work, communication studies, modern European languages, and economics. Since 2000, Moldovan non-academic actors – in particular government organisations, and to a lesser extent, enterprises – have gradually become more active in Tempus projects. For the period of 2008-2013, 35 projects with Moldovan partners were selected for funding.

The gradual integration into the European Research Area is linked in large part to the modernisation of the information access in the areas of science and innovation. The

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6 “Participation of Moldova in Tempus”
informational environment in the area of research and education in the Republic of Moldova is based on the infrastructure of the network RENAM (Research and Educational Networking Association of Moldova), created and continuously developed on the basis of grants provided by NATO (Science for Peace and Security Programme) and the European Commission (FP6 and FP7). The RENAM network has an external channel for internet traffic (capacity of 155 Mbps) that is connected to the academic cross-European network GEANT.

In the framework of the Programme on Scientific Co-operation between Eastern Europe and Switzerland (SCOPES), as a result of the first open call for the period of 2009-2012, 18 joint project proposals were submitted with Moldovan research groups (4 institutional partnerships and 14 joint research projects) out of which 10 projects were approved for financing (1 IP and 9 JPRs).

Further co-operation

Great support for the development of Moldovan science is granted by the U.S. Civilian Research & Development Foundation (CRDF) through the Moldovan Research and Development Association (MRDA) its partner organisation created in 2000 within a co-operation agreement between the Government of the Republic of Moldova and CRDF. Up to 2010, CRDF and MRDA have jointly committed about USD 8 million to support more than 300 projects in 38 grants competitions. More than 2000 scientists were involved in the implementation of these projects.

The Academy of Sciences of Moldova is one of the institutions that promote the values of NATO Science for Peace and Security Programme in the Republic of Moldova. European integration and international collaboration in the fields of fundamental and applied scientific research is an important aspect of science policy in Moldova. Various projects and workshops have been implemented in co-operation with NATO Partner Countries, in the fields of geology, agriculture, energy, environment, ICT and others.

Since the opening of the Science & Technology Center in Ukraine (STCU) Office in November 2006 in Chisinau, 45 grants have been allocated to Moldovan organisations, with a total cost of approx. USD 2.8 million.

Major international events in the S&T field

On 4-5 May 2007, the Academy of Sciences of Moldova, together with UNESCO Office in Venice (BRESCE), the UNESCO Office in Moscow and the International Council for Science (ICSU), organised the Conference of the Academies from Eastern and South-Eastern Europe with the title “Global Science and National Policies: the Role of
Main topics of the conference included: science for knowledge and sustainable development; mitigation of natural and human-induced environmental disasters; science education; gender issues in science; science and national development; role of Academies in the SEE countries. At this conference, the scholars recognised the ASM as a unique model of science management, recommending its implementation in states with similar particularities to the Republic of Moldova.

On 18-21 September 2008, the International Conference for the Central and Eastern Europe, Balkans, Caucasus and Baltic States on “Science & Education Policies” in Chisinau was organised jointly by the Academy of Sciences of Moldova and the Ministry of Education and Youth of the Republic of Moldova, with the support of the UNESCO Office in Moscow, the Central European Initiative, the U.S. Civilian Research and Development Foundation (CRDF), Office of Naval Research Global (ONRG) and Moldovan Research and Development Association (MRDA), among others.

The programme of the conference addressed several challenges affecting science and higher education policies today, focusing on strengthening the international impact of national research and education programmes; strengthening research in higher education; developing a knowledge-based economy; stemming and reversing brain drain.

As a result of the conference, two documents were issued: the Final Communique & Declaration, intended as a contribution to developing better science and higher education policies in the regions targeted by the conference and beyond. In addition, these documents constitute a contribution of the states of represented regions to the World Conference on Higher Education (Paris, July 2009) and the World Science Forum (Budapest, November 2009).

Full reports presented during both conferences mentioned above were published by the UNESCO Office in Venice and Regional Bureau for Science and Culture in Europe (BRESCE) in “Science Policy Series” Volumes no. 6 and no.7, respectively.

On 2-3 March 2012, the conference-symposium “Ecological Chemistry – 2012” took place at the Academy of Sciences of the Republic of Moldova (ASM), and was attended by more than 250 specialists from Europe, USA and CSI. The chairman of the conference-symposium was the President of the Academy of Sciences of the Republic of Moldova, Mr Gheorghe Duca, with the participation of other Presidents of the Academies of Sciences from Azerbaijan, Kazakhstan, Belarus, Kyrgyzstan, Romania and Tajikistan.

This event was a good opportunity for developing international cooperation, experience exchange and discussion of recent achievements in the study of physico-chemical and biochemical processes occurring in natural water, atmosphere and soil, affected by contaminants of human origin, their influence on human health and habitat, and discussion of the ways of preventing and reducing environmental impact and promoting a healthy lifestyle.

On 12 October 2012, the Academy of Sciences of Moldova and the École Polytechnique Fédérale de Lausanne (Switzerland), with the support of the International Organisation for Migration (IOM) Mission to Chisinau and the European Union, jointly organised the regional workshop: “Highly skilled mobility and the development of the research and innovation sector of the Republic of Moldova: the need for a structured vision”. The workshop was planned as part of the 5th Moldovan Diaspora Congress. This biannual event brings together Moldovans who are living overseas for open dialogue with the Moldovan authorities.

The main objective of the regional workshop was to offer a public platform for the presentation and discussion of the final results of two initiatives implemented by the ASM and to bring together diverse stakeholders (including scientists, regional and international experts, representatives of Moldovan R&D institutions, representatives of Moldovan public authorities, and representatives of international organisations and funding agencies), and to exchange and brainstorm on possible instruments and strategies that could be implemented to harness the skills and resources of the Moldovan scientific diasporas in order to strengthen the national research and innovation sectors.

A number of specific policy recommendations were made to ensure positive impact from co-operation with the Moldovan scientific diaspora:

1) To provide support for organised collective action (bottom-up), complemented by pro-diaspora policies (top-down);
2) To offer a suitable environment in the home country to validate the knowledge and resources transferred within the local socio-economic context;
3) To secure sustained return and the impact of transnational co-operation with improvements to the local structural situation, including: a systematic commitment to science and education; the creation of conditions to ensure good employment opportunities; ensuring that there is coherence between higher education programmes and labour market needs; enabling the transfer of skills
gained abroad after return (jobs – qualifications matching); and ensuring that the
transferred scientific research and knowledge can become useful for the local
society.

Source:
Academy of Sciences of Moldova