

DECISION

No 920 of 7 November 2014 concerning the approval of the Research and Development Strategy for the Republic of Moldova

by 2020

Official Gazette No 386-396/1099 of 26 December 2014

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In accordance with the provisions of Law No 166 of 11 July 2012 approving the National Development Strategy “Moldova 2020” (Official Gazette of the Republic of Moldova, 2012, Nos 245- 247, Article 791), Article 73(a) of Code No 259- XV of 15 July 2004 on Science and Innovation of the Republic of Moldova (Official Gazette of the Republic of Moldova, 2004, Nos 125-129, Article 663), as subsequently amended and supplemented, the Government

DECIDES:

1. Hereby approves:

The Research and Development Strategy for the Republic of Moldova by 2020 according to Annex 1;

The action plan for the implementation of the Research and Development Strategy for the Republic of Moldova by 2020 according to Annex 2;

2. The ministries and institutions concerned:

shall take the measures necessary to achieve the stated Strategy;

shall submit on a yearly basis to the Academy of Sciences in Moldova information on the outputs of the Action Plan achieved for the implementation of the Research and Development Strategy for the Republic of Moldova by 2020 according to their competences.

3. The Academy of Sciences in Moldova shall prepare the consolidated follow-up report and shall submit it to the Government for a review, including therewith, where appropriate, coordinated proposals concerning the implementation of amendments and supplements as Annexes 1 and 2 to this decision for the smooth functioning of the research and development field.

4. Mr. Gheorghe Duca, the president of the Moldovan Academy of Sciences, shall oversee the enforcement of this decision.

PRIME MINISTER

Iurie LEANĂ

Countersigned by:

Vice Prime Minister, Minister of Economy

Andrian Candu

Minister of Finances

Anatol Arapu

Minister of Agriculture and Food Industry

Vasile Bumacov

Minister of Health

Andrei Usatîi

No 920. Chişinău, 7 November 2014.

Annex 1
to Government Decision

RESEARCH AND DEVELOPMENT STRATEGY

for the Republic of Moldova by 2020

Chapter I

CURRENT STATE OF PLAY

1. Implementation in the Republic of Moldova of the components of the “knowledge triangle” – education-research-innovation is an imperative for the country’s development process. Since education has been declared as a national priority, it is highly necessary to enhance the role of research and development and to develop a strategy regarding research and development in the Republic of Moldova as a means to increase the capital productive stock and to extend the knowledge for the use of that stock. The paradigm of economic development shall provide for the attraction of investments, the development of exporting industries, the promotion of knowledge-based society, also by strengthening the research and development, innovation and technological transfer activities focused on efficiency and competitiveness.

2. Research and development in the Republic of Moldova is challenged by the need to apply efficiently some austere budgetary resources in order to ensure an excellence based research process, which is integrated in the international research circuit and focused on satisfying the ever growing demands of society and national economy.

3. The reform of the research and development field by breaking down the monopoly on the funding thereof, removing the administrative barriers to the entry and access to funding (the accreditation procedure) by applying some consistent and relevant rules in order to sustain excellence in education and science will boost the quality of studies for a career.

4. The development and implementation of the Research and Development Strategy for the Republic of Moldova by 2020 (hereafter referred to as Strategy) is aimed at creating an appropriate environment for the research and development activity, at establishing the necessary conditions for the implementation of innovative products in the real sector of the economy - key elements for building a veritable society and knowledge-based economy in the Republic of Moldova.

5. This strategy shall be based on the vision of expanding the research and development field by 2020, which was prepared under an extensive Foresight FOR MOLDOVA exercise, which was carried out in the period 2011-2012, with the participation of national and international experts.

6. The vision prepared under the Foresight exercise has been subject to public debates within 7 workshops which were attended by about 400 individuals.

7. In order to sustain this Strategy, in the period 2010-2011, a comprehensive analysis of the current state of play of the research and development field in the Republic of Moldova was carried out by a team of international experts from 5 countries.

8. The summary analysis of the economic situation in the Republic of Moldova has shown that the economy is constrained by the limited production capacities; demand is largely satisfied by the import of goods and services. The current economic growth model based on remittances and consumption has proven to be unfavourable for the sustainable development of the country. The new economic growth model, undertaken by the Government of the Republic of Moldova through the Activity Programme 2011-2014 European Integration: Liberty, Democracy, Welfare, provides for a change in the development paradigm of the country from a consumption-based economy to an economy based on investment, innovation and competitiveness, so that the national economy would create highly-qualified and high paid jobs and the entire society and each and every individual would benefit from the effects of a significant, organic and balanced economic growth. Achieving this objective shall entail increasing the share of science-intensive products resulting from the research and development activity.

9. After the Republic of Moldova has gained its independence, the research and development infrastructure has faced a tremendous crisis triggered by financial inadequacy and instability, the

decay of the facilities and technical - scientific resources, which caused a massive exodus of the human potential from the research field.

10. During the first transitional period (1990-1999), GDP in Moldova fell by 64%. In this period, public funding for research and development decreased dramatically from 0.73% of the GDP in 1990 to 0.22% in 2004 (exacerbated by a sharp drop in the GDP). The funding returned to 0.6% of the GDP in 2008 and dropped again to 0.4% in 2011 due to the international economic and financial crisis, which required new constraints on the national public budget.

Research management trends in the Republic of Moldova

Figure 1. Research management trends in the Republic of Moldova.

11. In 2004, the legal framework for research and development activities was revised by the enactment of the Code on Science and Innovation. Subsequently, through the preparation and enactment of the Partnership Agreement between the Government of Republic of Moldova and the Moldovan Academy of Sciences, prerogatives concerning the preparation and implementation of research policies were delegated to the Moldovan Academy of Sciences and the research and development funding has increased significantly. Moreover, premises were set in order to strengthen the scientific community under certain research strategic lines.

12. The reform has strengthened the autonomy of the research and development management in the Republic of Moldova, which was ensured by the representative bodies of the scientific community - Assembly of the Moldovan Academy of Sciences, the Supreme Council for Science and Technological Development.

13. In 2006, as a result of the enactment of Law No 138-XVI of 21 June 2007 on scientific-technological parks and innovative incubators, the Agency for Innovation and Technology Transfer was established and subsequently, the scientific-technological parks and innovative incubators were developed.

14. In order to ensure international cooperation, the International Projects Centre was established in 2009 and its remit is to organise competitions for projects under the international treaties to which the Republic of Moldova is a party and to coordinate the activity of national contact points network and of the representatives of the scientific community in various European structures.

15. In order to increase the efficiency of the financial resources management mechanism, the Centre for Fundamental and Applicative Research Funding was established in June 2012 as a self-governing body and it organises competitions for fundamental and applicative research programmes and projects under conditions of transparency and openness for all the stakeholders. The financing decisions are based on the evaluations of independent experts.

16. Between 2004 and 2008, public funding for research and development has been significantly increased. This trend has been reversed and starting with 2009, after the financial crisis, funding was cut down not only as a share of the GDP, but also as an absolute value. Several competitive funding instruments were introduced at operational level in the past years (state programmes, institutional projects, technological transfer projects, projects for young researchers, projects for the procurement of scientific equipment, projects for the organisation of scientific events) with 100% funding rate for research activities.

17. Most of the research and development activities are performed in the public sector. In 2009, the government sector accounted for 77.1% of the gross expenses for research and development (72.8% in 2005). Performance in the private sector (the business environment) in terms of research and development is insignificant based on the national statistics.

18. The drop in the funding amount in the 1990s triggered a drop in the number of researchers and the average age has risen simultaneously. The low level of interest for research has led to qualitative losses of human potential and has hindered the opportunity to attract young people to this area.

19. The reduced attractiveness of a career in the research field requires a comprehensive

approach through a series of stimulating actions undertaken at the national level. Doctoral programs should be less bureaucratic, without moderating the stringent conditions, in order to enhance the attractiveness for gaining a scientific degree.

20. As regards age distribution, the share of researchers aged over 65 years increased from 4.8% in 1999 to 14.2% in 2010 (3 times), whereas the share of researchers aged 35 to 45 years decreased significantly from 26.5% in 1999 to 15% in 2010 (1.8 times). In other words, about one fourth of researchers are of retirement age. At the same time, the rate of Habilitated Doctors aged over 65 years increased from 27.1% in 1999 to 45.5% in 2010, and the number of same aged between 36 and 45 years and between 46 and 55 years dropped 2.5 times and 1.7 times respectively. The share of Doctors of Science over 65 years increased from 6.5% in 1999 to 16.9% in 2010, or 2.6 times, and the share of DSc aged between 36 and 45 years and between 46 and 55 years decreased 1.2 times.

Table 1.

Development in the number of research and development researchers in the Republic of Moldova

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Habilitated Doctors (total number)	162	169	176	180	244	342	420	405	418	450	441	440
Doctors of Science (total number)	576	560	554	540	722	1095	1300	1356	1398	1453	1450	1470

21. The rate of new equipment (up to 5 years of age) accounts for 38%. However, the weighting of the equipment over 10 years of age is still significant, still accounting for about 42% of the entire equipment, and this is why efforts are further required in order to refurbish it. The relatively small rate of equipment of 6 to 10 years of age (20%) indicates a low level of investment in equipment, which was made prior to the implementation of the Code on Science and Innovation. However, there are significant differences between the research and development organizations and usually institutions in the area of biology, chemistry, physics and engineering own more valuable equipment.

22. Owing to the actions taken by the research and development administrative bodies, noticeable performance has been achieved in terms of international cooperation. As from 1 January 2012, the Republic of Moldova has become the first country in the Eastern Partnership associated to the EU 7th Framework Programme for Research and Technological Development. At the same time, in the past years, bilateral programs were launched with research and development organisations in Belarus, Germany, the Russian Federation, Romania, Italy and Ukraine.

23. Although national research and development organisations have recorded noticeable results, one of the main issues for the efficiency of the system pertains to the implementation of scientific results in the real economy sector. Not more than 2 to 3% of the total number of applications for patents is submitted by undertakings and businesses. Interest for patenting inventions abroad is low.

24. For the implementation of the research outputs, legislative reforms should provide the research establishments with the ability to set up spin-off or start-up companies. The lack of venture capitals is also listed among the weaknesses, which, if any, would foster private investments in research and development activities.

25. As from 2004, some mechanisms have been established to measure performance in the research and development area and the outputs thereof by the Moldovan Academy of Sciences, the National Council for Accreditation and Attestation, the Court of Auditors and independent

evaluations. Regular audits are conducted on the performances of the various research establishments, which were achieved in the framework of the programmes and projects funded from budgetary sources. Quantitative measurement of results should be supplemented with qualitative assessments, such as publications in international journals, citations, the implementation of research outputs (e.g. use of patents), cooperation with businesses, outputs of technology transfer projects etc. The new relevant rules provide for the ex-ante evaluation, the evaluation of progress achieved during the implementation of research projects and the ex-post evaluation.

Figure 2. Contribution of the national scientific community to the total number of scientific publications at world and regional level (%)

26. Following the depletion of the input resources within the system, the research environment in the Republic of Moldova has had a decreasing contribution to the world and regional scientific and cultural heritage, with temporary, short-time and low intensity sudden changes.

Table 2

Ranking of countries in Eastern Europe according to the number of scientific publications collected in the period 1996-2012

27. In terms of scientific productivity, the Republic of Moldova is ranked 20th out of 24, along with many countries having similarities in the population size, the size of the economy and the level of government research and development investments, which are ranked significantly higher in terms of scientific publications. For example, Armenia, with a population of about 2.9 million inhabitants and GDP of 9.9 billion US dollars in 2012, is ranked 16th with scientific publications of more than twice the number of same in the Republic of Moldova, whereas Georgia, with a population of 4.5 million inhabitants and GDP of 15.8 billion US dollars is ranked 17th with about 65% more scientific publications than the Republic of Moldova.

Table 3

The research and development funding rate in 2012

(source: www.worldbank.org)

Country name	GDP (billion US dollars)	Number of inhabitants (millions)	Rate in GDP
Armenia	9.91	2.969	0.26
Azerbaijan	67.197	9.297	0.24
Belarus	63.267	9.464	0.64
Georgia	15.829	4.511	0.17
Ukraine	176.308	45.593	0.85
Republic of Moldova	7.254	3.559	0.40

Figure 3. The chart of published scientific works

28. Based on the examination of the data provided by SCImago, in the same period both Armenia and Georgia recorded significant development with a 3 to 4 times increase in the scientific publications, whereas the Republic of Moldova recorded a marginal increase in scientific publications, not even doubling the aforementioned increase despite the period of significant investment in research between 2004 and 2008.

29. At the same time, having reviewed the amount of scientific publications provided in the SCOPUS database, we can note that between 2001 and 2012, the amount of scientific publications increased 2.1 times in Moldova, 2.6 times in Armenia and 2.9 times in Georgia. It is noteworthy that in the reference period, the amount of scientific publications doubled and it is measurable with the same index in Armenia and Georgia. (Source: www.scopus.com).

Figure 4. Publications by researchers in the Republic of Moldova in partnership with authors from abroad compared to Armenia and Georgia (%)

30. A higher internationalization rate of research in the Republic of Moldova compared to Armenia and Georgia is gratifying, although an inconsistency of this index can be observed, as well as a falling trend between 2006 and 2012.

31. Fundamental research conducted under the 6 strategic lines of the activity within the ambit of research and development in the period 2006-2012 have materialized in 1 026 monographs, 11 954 scientific articles published in national journals, 6 645 scientific articles in international publications and 1 381 patent certificates.

32. As a result of the applicative scientific research, the following have been prepared: technology of testing hygroscopic pyrotechnic compositions intended to artificially cause additional rainfalls in droughty years, which will enhance the security of the agricultural sector; the industrial prototype of the micro-hydropower station with hydro-dynamic rotor and of low-power wind turbines; the Moldovan Satellite; new pharmaceutical preparations, including based on the active biological substance Enoxil; the analysis of the seismic risk distribution over the entire territory of the Republic of Moldova; the prototype of a new main device for decoding the magnetic labels with enhanced protection based on magnetic - bistable microfibers; new varieties of tree plants, vines, field crops, medicinal and aromatic plants; new technologies for cultivation and harvesting of various agricultural crops; new machines and equipment units; the database of medicinal plants in the spontaneous flora in the Republic of Moldova; new methods for assessing vulnerability to underground water pollution and preparation of the digital map for monitoring groundwater mineralisation within the territory of the Republic of Moldova; the automated system for Doppler reception and ionosphere drilling; new structures of micro- and nanolasers as well as information systems etc.

33. The electrochemical technologies developed at the Institute of Applied Physics are implemented at the TOPAZ plant; the technologies for processing waste from plastic masses and making new products, which are prepared by the Chemistry Institute, are to be implemented at the UISPAC SRL undertaking; agricultural technique units, which are prepared at MECAGRO, are marketed on a regional scale; the pressure transducer, which is prepared by the Institute for Electronic Engineering and Nanotechnologies, is implemented at SRL Chişinău-Gaz; the results of the Institute for Geology and Seismology, which pertain to the evaluation of land seismicity, were sent to the seekers for use in anti-seismic design and construction works etc. Fundamental works with an impact on the development of science were published in international renowned journals in areas like material science, chemistry, physics, mathematics etc. One of the convincing

examples is the field of nanotechnologies, where several outputs have become known at international level.

34. SWOT analysis of the research and development area.

SWOT matrix of the research and development area

Strengths:	Weaknesses:
<p>1) Highly qualified researchers belonging to fundamental scientific schools.</p> <p>2) Beginning to establish a research infrastructure (technical facilities, laboratories, equipment, computers) in various fields such as physics, chemistry, biology, mathematics etc.</p> <p>3) Preparing young researchers through doctoral and postdoctoral studies at universities and research and development organisations.</p> <p>4) Participating in international research programmes (the status of FP7 associated country).</p> <p>5) Existence of an institutional platform to implement the status of FP7 associated country (national and regional contact points, programme-based representatives in committees, the Moldovan Office for Science and Technology in Brussels).</p> <p>6) Establishing the ORIZONT 2020 National Committee.</p> <p>7) The strategic lines approved by the Parliament and the thematic research priorities defined by the entire scientific community in the Republic of Moldova.</p> <p>8) The autonomy of the scientific community in the administration of the research and development sector.</p> <p>9) Strengthened research and development sector managed by the scientific community through the Assembly and the Supreme Council for Science and Technological Development (CSSDT).</p> <p>10) Widespread and advanced knowledge of the Russian language, which allows to develop close scientific cooperation with Russia, Ukraine, Belarus and other states in the Community of Independent States (CIS).</p> <p>11) Knowledge of the Romanian language, which allows establishing close connections with peers in Romance-speaking countries (Romania, Italy, Spain etc.).</p>	<p>1) Shortage of scientific staff.</p> <p>2) Exodus of qualified scientific staff, partially because of the barely flexible remuneration system and low wage levels, in particular for young researchers.</p> <p>3) Aging of the scientific human potential.</p> <p>4) Shortage of technological transfer specialists.</p> <p>5) Modest funding of research and development.</p> <p>6) Excessive concentration of research funding based on the principle of institutional membership, not on the quality of research project proposals.</p> <p>7) Insufficiently developed system for impact assessment and control of research projects.</p> <p>8) Poorly developed interdisciplinary research networks including several research institutes (including international ones).</p> <p>9) Limited financial, technological and human resources for promoting local scientific outputs abroad.</p> <p>10) Weak connection between education, research, the business environment and public authorities at various levels (central, local).</p> <p>11) Scarce provision of a performant research infrastructure required for the preparation and implementation of international projects, in particular in various regions across the country.</p> <p>12) Poor knowledge of the English language by scientific researchers.</p> <p>13) Moderate experience in the management of European and international extra-budgetary funds.</p> <p>14) Poor media coverage of the research and development activities and achievements.</p> <p>15) Poor visibility of the local science at international level.</p> <p>16) Lack of experience in marketing, as</p>

	<p>well as in the establishment of spin-offs and development of public - private partnerships.</p> <p>17) Shortage of foreign and independent experts trained in the evaluation of national projects.</p>
Opportunities:	Risks:
<p>1) Developing a participatory environment for identifying research priorities, with the involvement of representatives of various stakeholders and beneficiaries.</p> <p>2) Establishing a national legal framework that allows for identical remuneration under international projects and at European level.</p> <p>3) Having the possibility to take part in the new EU Framework Programme for Research and Innovation (Horizon 2020) as an associated country.</p> <p>4) Having access to bilateral grant programmes (France, Germany, Italy, the Russian Federation, Romania, Belarus, Ukraine).</p> <p>5) Strengthening international cooperation through a strengthened national scientific potential (research and mobility programmes, grants, traineeships).</p> <p>6) Co-opting the scientific diaspora for the improvement of the scientific performance level.</p> <p>7) Having possibilities of disseminating outputs internationally and of enhancing visibility by hosting European events.</p> <p>8) Changing the attitude of young people towards the training and career development opportunities in research and development.</p> <p>9) Establishing partnerships with research establishments and companies abroad for bilateral cooperation with the national scientific institutions.</p> <p>10) Improving the remuneration of employees in the research and development area, especially of young researchers, by associating them to projects funded by national and international business partners, as well as by involving them in international co-funded projects.</p>	<p>1) Disregarding research and development as a national priority for development.</p> <p>2) Cutting down on the research funding.</p> <p>3) Outdated research infrastructure.</p> <p>4) Weak attractiveness of a career in research.</p> <p>5) Introducing some reforms in the relevant area without any prior impact assessment studies.</p> <p>6) Low level of participation and the low quality of project proposals submitted under the calls launched under the programmes, funds and other international funding instruments.</p> <p>7) The low success rate of project proposals approved for funding under Horizon 2020 due to the underdeveloped business area in the Republic of Moldova and to the absence of partners needed for research activities respectively.</p> <p>8) Not applying the professional qualification acquired under international mobility programmes in the country of origin.</p> <p>9) Deficiently managing the mobility of researchers and occurrence of the intelligence exodus phenomenon.</p> <p>10) Impossibility to develop scientific research papers due to the deficient and counterproductive system of purchasing laboratory equipment and consumables through the public procurement system.</p>

Chapter II

DEFINING THE CHALLENGES REQUIRING THE INVOLVEMENT OF THE GOVERNMENT BY THE APPLICATION OF THE STRATEGY

35. In broad lines, the identified challenges relating to research and development may be classified into some categories:

- 1) Shortage of scientific staff:
 - a) the need to strengthen the human potential with staff that have the ability to conduct research at world level;
 - b) the advanced median age in the research environment;
 - c) the shortage of young researchers, which fails to provide continuity to research educational establishments;
 - d) the low prestige of a researcher's carrier and the unclear career requirements in research and development in the Republic of Moldova etc.
- 2) Institutional capacities of research and development organisations with the following particularities:
 - a) organisational structures focused on functioning under public funding terms based on institutional allocation and less on a competition;
 - b) the inadequately defined role of research laboratories.
- 3) The current research infrastructures are not entirely consistent with the requirements put forth by the respective research fields.
- 4) The research projects are prepared in the context of the current capacities and less in the context of the societal needs, a tight connection being needed with the main stakeholders in the society.
- 5) The efforts, including the financial ones, are scattered over a wide range of fields, which does not allow creating critical masses, not even in the fields with actual capacities and opportunities.
- 6) The connection with the private sector is poor and reduced to a limited number of possibilities enabled by the transfer of knowledge and, in some cases, by technological transfer. However, the society neither perceives nor is fully aware of the impact of research for the society.
- 7) Although the scientific community has associated with FP7, the scientific community in the Republic of Moldova and the business environment do not use yet the full range of opportunities arising in this respect.
- 8) Moderate accessing of funds from international programmes.
- 9) Due to the relatively moderate number of publications in rated journals, visibility of research in the Republic of Moldova is still reduced.
- 10) The government of research is based on the model approved in 2004, which currently needs to be upgraded. The specific issues relating to government may include the following:
 - a) concentration of functions related to policy defining, funding and evaluation of research;
 - b) conservative management of research and development institutions;
 - c) faulty management of assets held, including that of research infrastructures;
 - d) low competitiveness in the access to funding, which is also reduced because the private sector is not admitted freely to the public research funding means;
 - e) the low competitiveness of research projects under national competitions, which is conditional on the inadequate restricted participation in the competition and restricted access to the public means of private organisations;
 - f) the deficient research funding mechanisms, in particular institutional funding, which are not based on performances but rather on the remuneration needs of the staff and overheads.
- 11) The project evaluation process must be essentially improved and foreign experts need to be involved more extensively in order to prevent the conflict of interests and to increase the relevance and quality of projects.
- 12) The reporting system is too bureaucratic and complicated and the statistics used do not provide the society with comprehensive information.
- 13) The partners from the civil society and from the central and local public authorities are insufficiently involved in the planning and establishment of priorities and objectives, as well as in the assessment of results.

The challenges set forth are systemic in nature and they need to be approached in the

implementation of this Strategy.

Section 1

Need to prepare the Strategy

36. The need to prepare a vision and some clear objectives in order to expand the research and development activity is indisputable. The strategy puts forward solutions for solving the identified challenges and their application will significantly add to the social, economic and cultural development of the Republic of Moldova.

37. The starting points are the national policy documents: The Activity Programme 2011-2014 European Integration: Liberty, Democracy, Welfare and the National Development Strategy "Moldova 2020", which defined the general development lines of the country and outlined the premises underlying the preparation of the Strategy:

1) The reform of the research and development field by breaking down the monopoly on the funding thereof, removing the barriers to the entry and access, ensuring transparency, competition and relevance, applying consistent and relevant rules in order to sustain excellence in education and science shall boost the quality and impact of the research activity.

2) As a means to increase the productive capital stock and deepen the knowledge of use thereof, the paradigm of economic development will provide for the attraction of investments, the development of exporting industries, the promotion of the knowledge-based society, also by strengthening the research and development, innovation and technological transfer activities focused on efficiency and competitiveness.

3) Assuring the quality of the research process in higher education establishments by having an appropriate motivating and financing system in place, by developing some comprehensive structural and essential reforms, by fostering the university self-governing spirit. It is important to increase the research activity weight in the teaching process by involving the academic teaching staff and applicants to master's and doctoral studies in this process.

4) Ensuring the structural and financial balance between the higher education establishments and the research establishments in order to ensure competition and consequently enhance the quality of the research and innovation process.

5) Refocusing the policies in the scientific and innovation field on enhancing competitiveness in the research and development field according to the knowledge-based economy principle.

38. In the framework of the European integration of the Republic of Moldova, this Strategy streamlines, ensures the consistency and complementarity of the national research and development policies with the Community policies - "Europa 2020" Strategy, the EU Framework Programme for Research and Innovation "Horizon 2020" (2014-2020) - taking into account the national specificity of the research and development activities.

39. Specific tendencies have been outlined at European level for various fields of research and innovation and they are defined by the challenges facing humanity, the main tendencies being listed below.

1) Health, demographic change and welfare. Efficient promotion of healthcare, which is based on a solid and reliable database, prevents diseases, improves the quality of life and yields a good efficiency/cost ratio. Promotion of health and prevention of diseases also depends on the understanding of the determinants of health, on effective preventive and supervision tools, such as vaccines, and on effective preparedness in terms of health and the prevention of diseases, and on effective disease diagnosis programmes.

2) Food security, sustainable agriculture, marine, maritime and bioeconomic research. The research and innovation provide various options to integrate the agronomic and environment objectives in sustainable production, such as: increasing the productivity and efficiency of agricultural resources; reducing greenhouse gas emissions, reducing the leakage of nutrients from the cultivated plots into the terrestrial and aquatic environments; reducing dependence on the imports of plant proteins; increasing the level of biodiversity in primary production systems.

3) Safe, clean and efficient energy sources. The energy sources and consumption habits of European industries, transport systems, buildings, localities and municipalities are largely unsustainable, leading to significant environmental and climate change impacts. The construction of buildings with minimised emissions, the development of an advanced industry and the massive application by enterprises, natural persons, communities and localities/municipalities of some energy efficient solutions will require not only technological progress, but also non-technological solutions, such as the new consulting and funding services and demand management services. Thus, energy efficiency may provide one of the most cost-effective ways to reduce the energy demand, thereby enhancing the safety of energy supply, the impact on the environment and on the climate, as well as to boost competitiveness.

4) Smart, clean and integrated transport. Research and innovation will substantially contribute to the development and adoption of the necessary solutions to reduce significantly the emissions caused by transport activities, which are harmful to the environment (such as CO₂, NO_x and SO_x); in order to reduce dependence on fossil fuels, and hence to mitigate the impact of transport on biodiversity and climate change and to preserve natural resources.

5) Fighting climate changes, efficient use of resources and raw materials. Current CO₂ concentrations in the atmosphere are close to 40% higher than those at the start of the industrial revolution and have reached the highest level recorded. Other greenhouse gases also influence climate change and play an increasingly harmful role in this respect. Without decisive action, climate change could cost the world at least 5% of GDP each year and up to 20% under some scenarios. In contrast, with early and effective action the net costs will be limited to around 1% of GDP per year. Meeting the "2° C" target and thus avoiding the worst impacts of climate change will require developed countries to cut greenhouse gas emissions by 80-95% by 2050 compared to 1990 levels.

6) Inclusive, innovative and safe societies. Current trends at play in European societies bring with them opportunities for a more united Europe but also risks. The opportunities and risks need to be understood and anticipated in order for Europe to evolve with adequate solidarity and cooperation at social, political, economic and cultural levels, taking into account an increasingly interconnected world.

40. In this context, the objective is to facilitate social, economic and political inclusion, to combat poverty, to enhance human rights, as well as digital inclusiveness, equality, solidarity and inter-cultural dynamics by supporting interdisciplinary research, indicators, technological advances, organisational solutions and new forms of collaboration and co-creation.

Section 2

Purpose and vision of the Strategy

41. The purpose of this Strategy is to develop a system with a capacity to generate advanced scientific knowledge in order to increase competitiveness in the national economy and the people's welfare.

42. By 2020, the research and development field in the Republic of Moldova is to have research priorities management focused on establishing an efficient interaction with the society and the business environment, the implementation of outputs and dissemination of knowledge, while the internationalization of research and integration in the European research space will become a priority for the research governing policy, which will be focused at that time on performance and excellence with adequate human, institutional and infrastructural capacities.

43. The research and development governing units by 1 January 2016;

1) The National Research and Development Agency is a structure having the core mission to provide competition-based public funding for research and development projects;

2) The Advisory Committee for Research and Innovation as body representing organisations

with an interest in research, more specifically organisations in the ambit of research and innovation, higher education establishments, enterprises with an innovative activity, the non-governmental sector etc.;

- 3) The Assembly of Scientists in Moldova;
- 4) The National Certification Council;
- 5) The Moldovan Academy of Sciences (subordinated institutions).

Chapter III

GENERAL OBJECTIVES

44. A number of 5 general objectives of reforms have been identified within the foresight exercise, as follows:

- 1) Governing the research and development field based on a consensual governance model focused on performance and excellence.
- 2) Developing the human, institutional and infrastructure capacities.
- 3) Defining and managing research priorities.
- 4) Ensuring permanent dialogue between science and the society, disseminating knowledge and putting into practice the research outputs.
- 5) Internationalizing research, ensuring integration in the European research space and enhancing international visibility.

General objective 1. Governing the research and development field based on a consensual governance model focused on performance and excellence

45. The reforms for the research and development governance will be aimed at settling the current challenges, as well as at increasing the management efficiency, improving the funding methods and instruments in order to foster research performances; increasing the efficiency of the reporting processes and minimising the bureaucracy in the system; redesigning and rebuilding the system for the evaluation of research projects and outputs overall. As a distinctive aim, equal conditions will be created for the participation of private entities in the research field, along with public entities, being entitled to apply for the dedicated funds.

46. Autonomy and self-governance of the research and development field. The principle of autonomy is decisive for a scientific community. The freedom to create and conduct scientific research implies granting the right of community self-governing whereas preserving the principle of accountability towards the society for settling the challenges facing it.

47. At institutional level, the principle of self-governance will be applied through the Assembly of Scientists that will comprise representatives of all the relevant stakeholders. At the same time, at procedural level the field will be governed under clear rules based on the principle of efficiency, performance and deontological ethics.

48. New knowledge can only be acquired if good quality and accessible research infrastructures are in place. The research infrastructures allow for the creation of new environments where different researchers can have access to distributed scientific facilities. Therefore, the research infrastructures are the core of the triangle of knowledge, along with research, education and innovation.

49. Performance and excellence in research and development will be fostered by the following mechanisms:

- 1) involving at least 50% foreign experts in the evaluation of project proposals;
- 2) monitoring and evaluating ex-post the previous outputs of the respective team under the allocation of new funds;
- 3) involving beneficiaries in the evaluation of scientific outputs;
- 4) conditioning the institutional funding by the results of the regular institutional evaluation.

50. The increased efficiency of the research management will lead to an increase in the efficiency of the actual research activity, an attractive professional space will be ensured for specialists and the development of interdisciplinary research teams will be promoted.

General objective 2. Developing the human, institutional and infrastructure capacities

51. The human capital is the main premise for research development. This is the reason why the primary effort must be to attract and promote the persons who are capable of producing ideas, absorbing new knowledge and creating.

52. Research and development governance in the Republic of Moldova will have to strengthen the connection between education and research. The professional training of human resources for research should start as early as possible, from the very school education system. Essential specialists in schools are the teaching staff who is also involved in the development of their students' research skills - the future specialists who will be more efficiently integrated in the society.

53. There will be a strengthened synergic interaction between the specialised departments in the higher education establishments and the laboratories of research institutes by promoting joint projects at national and international level, organising joint doctoral studies, organising scientific forums and publishing journals and monographs in various fields.

54. Thus, students, Master's Degree and PhD students will have the opportunity to benefit from this potential and, furthermore, they will attend intellectual property courses to enable them to capitalise these assets afterwards. Creativity and innovation will underlie the educational process.

55. Only by using the research outputs in the educational process will it be possible to raise a well-trained human capital in accordance with the current stringent demands. On the one part, researchers will be involved in the educational process predominantly in higher education establishments, employing cumulatively students, masterate and doctoral candidates as trainee researchers in the research projects. On the other hand, in order to raise awareness of the role of education in the training of the human potential that will accede later on to research, the quality of its training process is extremely important and decisive for the quality of research and development processes.

56. In order to ensure a smooth research and development process, an adequate infrastructure is required for consistency with the strategic lines, as approved by Parliamentary Decision No 150 of 14 June 2013. National technological platforms will be developed by fields of a major importance for the economy and the society as a whole.

57. The technological platform is based on a network of laboratories fitted with state-of-the-art technological and scientific equipment, design centres, innovative incubators and highly qualified staff with skills to develop fundamental, applicative research and technological transfer in essential areas for a prosperous economy and society overall. At the same time, the respective research infrastructure shall be a fundamental element in attracting young researchers.

58. The efficient use of performant e-infrastructures, informational and computer resources is important and the aim is to create human resources with the requisite competences to innovate and turn knowledge and ideas into future products and services. The use of e-infrastructure enables to approach scientific and technological challenges (cloud computing, GRID etc.), which require cooperation between various scientific disciplines and communities.

59. By providing for facilities for the private sector, namely granting income tax reliefs and deductions, as well as VAT exemptions on the import of machinery and equipment for the research activity, the public investment in research shall add to the increase in the number of researchers in the business environment.

General objective 3. Defining and managing research priorities

60. The management of research priorities shall involve a few important issues. They are the following: selecting the actual priorities that would be consistent with the societal needs,

international tendencies, the capacities of current research educational establishments; maintaining dialogue with the main stakeholders in the society (partners, politicians, beneficiaries); the current management for focusing efforts and resources on achieving the proposed purposes.

61. In order to overcome the inertia in the research and development field, research priorities need to be identified and approved for a wider timescale. Such an approach shall allow ensuring the professional training of the required capacities as well as the transfer of outputs to the society.

62. In order to complement the research strategic lines and thematic priorities with the community research programmes (the EU Sectoral Strategy Horizon 2020), in the light of the Republic of Moldova's accession to the European Research Area, the research and development strategic lines for the Republic of Moldova between 2014 and 2020 shall be congruous with the six key lines in the Horizon 2020 EU Sectoral Strategy:

- 1) health, demographic change and welfare;
- 2) food security, sustainable agriculture, marine, maritime and bioeconomic research;
- 3) secure, clean and efficient energy sources;
- 4) smart, green and integrated transport;
- 5) fighting climate changes, efficient use of resources and raw materials;
- 6) inclusive, innovative and secure societies.

63. The Partnership Agreement between the Government and the National Research and Development Agency shall be the consensual instrument whereby the Government delegates the power to implement the research and development state policy to the National Research and Development Agency for at least 4 years under the research and development strategic lines approved by the Parliament.

General objective 4. Ensuring permanent dialogue between science and the society, disseminating knowledge and putting into practice the research outputs

64. All the specific programmes of the national framework for funding these activities shall include a dissemination component (also by the free access of end users, citizens, businesses, the civil society organisations and political decision-makers to the research outputs).

65. The general public shall be informed of the importance of research and innovation in the overall development process.

66. Thus, a fundamental principle in the governance of research and technology in the Republic of Moldova is to ensure permanent dialogue between science and the society, which shall be established simultaneously in both directions. Researchers shall be trained as opinion multipliers in their specialisation fields in order to avoid promoting erroneous and scientifically unfounded information among the mass information sources.

67. Real dialogue entails participation of the general public, not only the traditional unidirectional communication, which entails stakeholders' participation in defining the lines for the evolution of scientific research and innovation in the Republic of Moldova, and it shall sustain dialogue between science and the society at a higher level. A more advanced dialogue between science and the society shall lead to enhanced social cohesion, better management of uncertainties and social inclusion. This strategic objective shall be reachable through the promotion of the principle of responsible research and innovation. The responsibility for making some appropriate decisions includes 3 main aspects: ethical acceptance; the benefit of the company; the management of relevant risks.

68. Widespread involvement of stakeholders within the ambit of research and development and opening of a permanent dialogue shall ensure their responsibility for the planning, implementation and efficiency of the research and development activities.

69. A major objective in the promotion of responsible research and development is to identify and involve all the stakeholders in defining the research priorities. In this respect, it is important to aggregate the parties in the society who have converging interests, to establish a dialogue with

them and based on this dialogue, to identify the relevant scientific priorities. In order to enhance public trust in science, a transparent commitment by citizens and the civil society shall be encouraged in connection with the research and development topics by promoting scientific education, facilitating access to scientific knowledge, developing responsible research and development agendas in order to ensure consistency with the expectations of the civil society and citizens, as well as by widely spreading the research outputs.

70. The promotion of industrial doctoral studies in the professional training of highly qualified specialists shall aim at training highly qualified specialists who are capable of settling applicative issues occurring in various production processes. Under this scheme, the training through doctoral studies shall be ensured jointly by the respective doctoral school and the business operator interested in the outputs of the research conducted by the PhD student concerned.

71. Cooperation between science and the business environment shall enhance the variety and quality of the products and services developed as a result of scientific research. For this purpose, it shall be necessary to put in place some incentives in order to set up new innovative businesses and to foster such activities in the current business environment.

72. The bodies in charge with research and development management must ensure a strategic alliance between science and the business environment in order to gain competitive advantages on the national and international market.

73. The scientific activity, in particular in the social and human area, shall impact directly the conservation and valorisation of the national material and non-material cultural heritage. To provide scientific expertise on the topics pertaining to the national cultural values shall be one of the desirable research outputs with sustainable impact on the protection and promotion of the national cultural heritage.

74. On the one hand, the research project outputs are geared towards settling the national social and economic challenges (at local level), with significant results in the settlement of major social and demographic challenges and the increase of social cohesion in the Moldovan society. On the other hand, by fostering public - private partnerships in the development of research projects, science shall be introduced to the market of goods and services, with a focus on the internationalization of science and enhanced competitiveness of the national economy.

75. The development of scientific - technological parks and innovation incubators leads to the valorisation of the research and development outputs. In these environments, the research outputs are tested experimentally and applied to goods and services, leading to a large extent to a higher professional quality of human resources for scientific research and to an increase in their number.

76. Development and implementation of innovative technologies produced through research and development:

- 1) provide real benefits for citizens, consumers and active persons;
- 2) are the key to creating new jobs, building a sustainable green society and improving the quality of life and, at the same time, enhancing the competitiveness of the Republic of Moldova at a global level.

77. In order to achieve these goals, the capacity of the research and development system in the Republic of Moldova needs to be improved in order to turn scientific research into innovative products, services and technologies.

General objective 5. Internationalizing research, ensuring integration in the European research space and enhancing international visibility

78. As from 1 January 2012, the Republic of Moldova has become an associated country to the EU 7th Framework Programme (FP7). This status confers the Republic of Moldova the right to start up research projects and to set up European consortiums, to take part in all the supplies of finance, to appoint representatives in the steering committees and work groups under FP7 and the European Research Area, to benefit from the Commission's support for strengthening the network

of FP7 National Contact Points, to take part in the research initiatives falling under Articles 185 and 187 of the Treaty on the Functioning of the European Union and it has the same rights and obligations as the participating Member States in terms of intellectual property etc. The experience gained under FP7 will be also used under a new "Horizon 2020" EU Framework Programme for Research and Innovation.

79. At the same time, the unlimited access to the European research area implies the following facilities for the research and development field in the Republic of Moldova:

- 1) having access to state-of-the-art research infrastructure, attracting additional funding sources for interdisciplinary research;
- 2) using expertise in the fields where there is a shortage of essential mass;
- 3) ensuring the researchers' mobility in both directions and their reintegration in the country of origin;
- 4) implementing European and international quality standards in the research and development management in the country;
- 5) extending the possibilities for researchers and organisations acting in the research and development field to participate in the international grant programmes;
- 6) enhancing the visibility of local science abroad by creating international partnerships;
- 7) approaching national challenges by attracting external expertise;
- 8) including regional and global challenges in the local scientific research area;
- 9) integrating the local scientific infrastructure in the world research area;
- 10) increasing the number of local scientific articles in renown journals and raising the society's awareness of the role of knowledge as a driving force for development.

80. The priorities of the Republic of Moldova in the process of integration in the European research area for the period 2014-2020 and in its association to the EU Framework Programme for Research and Innovation "Horizon 2020" consist in:

- 1) integrating the scientific community in the Republic of Moldova in the European networks of scientists, of the business environment and of decision-makers defining the European objectives and priorities in the area of research and innovation;
- 2) encouraging and assisting researchers in the Republic of Moldova for their equal participation in all the EU framework programmes in the area of research and innovation;
- 3) benefitting from the European potential and scientific excellence in order to settle the internal issues of the Republic of Moldova;
- 4) attracting European investments to the scientific and innovation research activities, as well as to the local implementation of innovative products and services;
- 5) promoting and protecting abroad the outputs of the local intellectual activities;
- 6) facilitating scientific mobility and access to the European research infrastructure;
- 7) strengthening traditional relations with the partners in the CIS area and valorising the existing partnerships in the preparation of project proposals to be submitted under the EU Framework Programme calls launched.

81. Closer cooperation with the EU in research and development, which is an external priority line in research and development, is aimed at boosting the efforts of the scientific community joined in the research policies and at ensuring full participation in "Horizon 2020". In this context, the following are required:

- 1) to promote the advantages and remarkable results obtained by the research teams in the Republic of Moldova at European level;
- 2) to strengthen the capacities of researchers in the Republic of Moldova to participate in the EU framework programmes;
- 3) to valorise partnerships/national and international bilateral and multilateral projects for the development of projects for the EU Framework Programmes;
- 4) to increase the researchers' mobility through the actions under the Marie Curie Programme of the 7th Framework Programme;

5) to connect the local research and development infrastructure to the European networks;
6) to strengthen the network of National Contact Points of the 7th Framework Programme and their extension under the "Horizon 2020" Framework Programme.

7) to connect the internal financial procedures for the adequate project management under the 7th Framework Programme and the "Horizon 2020" Framework Programme;

8) to enter into cooperation agreements with the pan-European research centres.

82. Regional cooperation within the Community of Independent States (CIS), the GUAM Organization for Democracy and Economic Development, the Central and Eastern European Networking Association (CEENet), the Central European Initiative (CEI), the South-East European Cooperation Process (SEECp), the Black Sea Economic Cooperation Organisation (OCEMN), the Regional Cooperation Council (RCC) and other relevant regional organisations will be strengthened by:

1) valorising traditional partnerships with the CIS states and reviewing the new regional cooperation opportunities, as well as exploiting the advantages of the Republic of Moldova as a connecting bridge between CIS and the EU;

2) ensuring closer multilateral cooperation within the International Association of Science Academies (MAAH) and the Unified Institute in Dubna;

3) ensuring closer cooperation within regional organisations: the Central and Eastern European Networking Association (CEENet), the Central European Initiative (CEI), the South-East European Cooperation Process (SEECp), the Black Sea Economic Cooperation Organisation (OCEMN), the Regional Cooperation Council (RCC).

Chapter IV

SPECIFIC OBJECTIVES

83. Starting from the 5 general objectives, specific objectives are actually identified to be achieved in the implementation of the Strategy.

84. The governance of the research and development field based on a consensual governance model focused on performance and excellence shall involve the following specific objectives:

1) to optimise the research and development governing system;

2) to finance motivating and advanced research and development;

3) to improve the efficiency of the reporting process;

4) to adjust the evaluation and expertise process to the requirements of the European research area;

5) to ensure equal participation of public and private institutions in the research process;

6) to develop the participative research and development management by central and local public authorities.

85. Developing human, institutional and infrastructure capacities shall involve the following specific objectives:

1) human potential in advanced research and development at international level;

2) organisations in the area of competitive research and development, which involves:

a) strategic and current management capacities;

b) operational functionality in order to achieve the assumed goals;

c) favourable conditions for free creation and research;

d) a limited but efficient bureaucratic system;

e) a competitive research and development infrastructure at international level.

86. Defining and managing research priorities shall involve the following specific objectives:

1) research priorities defined in accordance with the societal needs;

2) management of priorities to ensure their congruence with the state economy and societal needs;

3) efforts focused on achieving the objectives corresponding with the defined research priorities;

4) dialogue with the main stakeholders in order to identify needs and expectations, to express priorities and to have them accepted by the society.

87. Ensuring permanent dialogue between science and the society, disseminating knowledge and putting into practice the research outputs shall involve the following specific objectives:

1) permanent dialogue with the society in order to identify needs and to inform on performances;

2) implemented scientific outputs to ensure the social and economic efficiency of the research processes;

3) transfer of knowledge to the society through intelligent development;

4) scientific outputs disseminated under a free access regime;

5) access of the private sector to the research outputs, infrastructure and funds.

88. Internationalizing research, ensuring integration in the European research space and enhancing international visibility involve the following specific objectives:

1) access to the international research area and association in the EU Framework Programme for Research and Innovation "Horizon 2020";

2) participations in regional and international research projects;

3) international visibility;

4) competitive scientific outputs.

Chapter V

NECESSARY MEASURES TO ACHIEVE THE EXPECTED OBJECTIVES

89. Governing the research and development field based on a consensual governance model focused on performance and excellence:

1) implementing the optimised model of the research governing system;

2) increasing the transparency of administrative functions of the central government in research and development, of public policy preparation processes and of the processes involving the submission and evaluation of research and development projects;

3) liberalising the accreditation of research and development organisations;

4) adapting the current regulatory documents and preparing new ones in order to ensure the implementation of the new research government model;

5) changing the research funding principles, decreasing the amount of institutional funding and focusing on competitive project funding;

6) improving the (financial) reporting system;

7) preparing the framework methodology for the evaluation of R&D projects and establishing clear rules in order to avoid conflicts of interests in the competitive project evaluation procedures;

8) developing a single information system in order to prepare and evaluate research and development projects as part of a research and development Strategic Information System;

9) improving the project evaluation system by widely involving experts from abroad, including the diaspora;

10) promoting the international evaluation of research establishments;

11) constantly adapting the evaluation indicators at all levels in order to ensure the visibility of the research and development field in the Republic of Moldova, the interoperability with other national and international systems and the development of benchmarking studies;

12) introducing a new funding model to foster competition, the deployment and application of the scientific outputs to the economy and the society;

13) establishing conditions for the organisations in the private and public sector to participate in the research and funding;

14) funding as a priority projects co-funded by businesses and beneficiaries established at the time of submission;

15) involving central and local public authorities in the research and development strategic management system.

90. Developing the human, institutional and infrastructure capacities. Establishing the human capital is a long-term objective and the measures to be taken shall have a long-lasting impact. In this context, the applied measures shall be focused on impactful action points and on the establishment, in time, of self-control mechanisms, depending on the dynamics of the processes to be developed in the economy, the society overall and worldwide.

91. Thus, the implemented measures shall be focused on raising the researchers' interest in developing themselves and in being more innovative, the interest of enterprises in investing in human resources, which shall ensure their better performance in business, the interest of universities in preparing the necessary staff for the business environment, which are competitive on the global labour market, and the interest of organisations operating in the research field in order to produce knowledge that the society may draw on.

92. The proposed measures also have synergic effects and their implementation shall ensure compliance with the following performance indicators that shall be monitored during the implementation:

- 1) increasing wages for young researchers;
- 2) recognising and fostering researchers' performance by granting awards, gratifications, titles, diplomas and by other means;
- 3) starting to use modern methods and technologies designed to constantly develop and improve creativity and knowledge in innovation;
- 4) updating the content of educational programmes in education, taking into account the world level of scientific and technological knowledge, in particular in the area of innovative engineering and technologies;
- 5) ensuring the participation of representatives of the technological (high-tech) entrepreneurship, of researchers and innovators in the professional training and development of educational programmes for higher education;
- 6) organising and fostering attendance to traineeships abroad in order to prepare specialists and to take over advanced experiences;
- 7) creating digital content based on the scientific research outputs and disseminating it through ICT solutions;
- 8) strengthening cooperation with the pan-European research and education network (GEANT) and other national research and education networks (NRENs) in order to ensure favourable conditions for research and development and national education; extending the NREN optical e-infrastructure throughout the territory from north to south with operating nodes in Chişinău, Bălţi, Cahul şi Comrat;
- 9) ensuring equal conditions of connectivity between all the research and education establishments in the country;
- 10) developing the management capacities at all levels in the research and development organisations;
- 11) optimising the structure of research and development organisations;
- 12) ensuring information support for project evaluation;
- 13) listing national scientific journals in the international databases;
- 14) implementing policies in the field of electronic communications, information technologies and services pertaining to the knowledge-based society;
- 15) ensuring the interoperability of research applications through electronic means;
- 16) increasing the penetration rate of broadband connections up to 100% in institutions;
- 17) upgrading the research infrastructure and research laboratories.

93. Defining and managing research priorities:

- 1) setting up platforms for dialogue with the representatives of the society in order to identify the needs and problems requiring to be settled;
- 2) organising debates on the societal challenges and identifying the research and development involving points;
- 3) focusing the research efforts on the approved priorities;
- 4) evaluating the implementing stage of the strategy by 2017 in order to set forth corrective measures;
- 5) developing a foresight methodology for the settlement of social challenges at local, regional and national level (as a research and development product);
- 6) connecting national priorities to the regional and European ones.

94. Ensuring permanent dialogue between science and the society, disseminating knowledge and putting into practice the research outputs:

- 1) developing platforms for dialogue with the society;
- 2) creating the infrastructure for the implementation of research outputs, including the transfer of knowledge and technologies;
- 3) further developing scientific and technological parks and innovation incubators;
- 4) establishing reliable partnership with the society, which is based on support for the settlement of challenges;
- 5) fostering the protection of research outputs;
- 6) fostering the marketing of intellectual property;
- 7) developing statistics in the research and development field, their putting into practice and taking over the European statistics;
- 8) developing specific instruments to carry out science diffusion activities, activities promoting science days etc.;
- 9) regularly informing the society on the research and development performances;
- 10) creating the instruments to facilitate the implementation of research outputs;
- 11) encouraging the private sector to use the research infrastructure and the research and development laboratories;
- 12) developing partnerships with the small and medium enterprises and companies;
- 13) establishing conditions for the private sector to access funds intended for research and development;
- 14) implementing instruments for access to the research infrastructure;
- 15) creating the premises (negotiating institutional positions - possibly by actor - actor and actor - objectives analyses) to develop a public - private dialogue space in research and development;
- 16) developing a database of scientific journals in the Republic of Moldova with standardised functions of peer-review, citation, drafting, publication, evaluation and monitoring.

95. Internationalizing research, ensuring integration in the European research space and enhancing international visibility.

- 1) association to the "Horizon 2020" EU Framework Programme for Research and Innovation;
- 2) organising the competition for the selection of national contact points in accordance with the requirements of the "Horizon 2020" Framework Programme;
- 3) disseminating information on the "Horizon 2020" Framework Programme;
- 4) using the possibilities of EEN (European Enterprise Network) in order to involve the businesses in research and the implementation of outputs;
- 5) developing specific instruments to fund complex research projects with international participation in national consortiums (implicitly a project evaluation methodology with the participation of foreign evaluators);
- 6) developing specific instruments to encourage researchers' participation in international projects;

- 7) constantly adapting the evaluation indicators at all levels in order to ensure the follow-up on the research and development field in the Republic of Moldova, the interoperability with other national and international systems and the development of benchmarking studies;
- 8) fostering research and development journals and developing a single evaluation methodology (including for using criteria for the professional promotion of researchers and the teaching staff);
- 9) marketing the scientific outputs on the international market;
- 10) promoting the advantages and remarkable results obtained by the research teams in the Republic of Moldova at European level;
- 11) strengthening the capacities of researchers in the Republic of Moldova to participate in the EU framework programmes;
- 12) valorising partnerships/national and international bilateral and multilateral projects for the development of projects for the EU Framework Programme;
- 13) co-opting the members of the scientific diaspora in the Republic of Moldova in the research and development activities in the country;
- 14) facilitating the mobility of researchers from abroad to the national research system;
- 15) increasing the researchers' mobility through the actions under the Marie Curie Programme of the 7th Framework Programme;
- 16) connecting the local research and development infrastructure to the European networks;
- 17) entering into cooperation agreements with the pan-European research centres.

Chapter VI

IMPACT ASSESSMENT OF THE STRATEGY IMPLEMENTATION

96. The implementation of this Strategy shall entail speeding up the development of the research and development field in the Republic of Moldova, improving the impact of the research and development on the society, facilitating the turning of research outputs into innovative products and services and their marketing, ensuring new quality of the knowledge-based economic growth, innovative culture, human capital and, overall, adding to the quality of life of the citizens in the Republic of Moldova. The positive impact of the Strategy implementation shall be reflected in:

- 1) the clear separation of the activities involving the preparation of state policies from the policy implementation activities;
- 2) the separation of science management activities from the scientific research activities;
- 3) the return of the Moldovan Academy of Sciences to the status of coordinator of fundamental scientific research and scientific consultant of public authorities;
- 4) the full representation of all the research and development stakeholders and their participation in the development of the authorities' nominal competences:
 - a) the management of the research and development activity;
 - b) the self-governing, accreditation of higher education establishments and certification of the scientific and scientific - teaching staff;
 - c) consultation with the Government;
 - d) expertise; management of national programmes/projects of fundamental and applicative scientific research from financial means allocated from the state budget;
 - e) the management and promotion of European and international research and development projects;
- 5) enhanced applicative scientific research outputs with a direct impact on the development of the economy and the country overall;
- 6) enhanced international visibility of the Republic of Moldova through scientific excellence research.

Section 1

National funding mechanisms

97. The internal and external public and private financial means shall be attracted to the research and development field. The national financial means shall be:

- 1) public funding within the defined stage budget limits, including from the revenues accrued from the provision of services for a consideration;
- 2) private funding;
- 3) private investments for developing the research and development infrastructure;
- 4) public - private partnerships in the research and development field.

98. Funds shall be allocated from state budgetary sources in a transparent manner, under a public procurement procedure, with the involvement of independent experts, including experts from abroad.

99. The amount of funding from budgetary and private sources for the research and development field shall increase by up to 1.0% from GDP towards 2020.

Table 4.

Investments in research and development, % GDP, compared to the EU

Indicators	The EU		The Republic of Moldova	
	2008	2020	2008	2020
Investments in research and development, % GDP	1.9	3.0	0.6	1.0

Section 2

International funding mechanisms and external technical assistance

100. In order to fund the research and development activities, international funds shall be attracted, in particular European funds.

101. The European integration potential shall be used in research and innovation with the aim to foster the economic growth of the country by participating in a series of EU funding programmes, namely:

- 1) The "Horizon 2020" EU Framework Programme for Research and Innovation;
- 2) The regional and international programmes for research and development funding.

102. The opportunities to support and foster the innovative activities offered by foreign and international organisations such as UNECE, UNIDO, the European Commission programmes TAIEX and TWINNING, OCEMN, Science and Technology Centre in Ukraine (STCU), SCOPES (Scientific co-operation between Eastern Europe and Switzerland), the NATO Science for Peace and Security Programme etc., shall be used.

103. Particular importance shall be given to the new "Horizon 2020" EU Framework Programme for Research and Innovation, which is the main financial instrument for the implementation of the "Innovation Union" European programme, a top initiative of Europe. The objectives of the programme seek to ensure global competitiveness and bring together the whole distribution structure of the EU research and development funds under a single programme. The available resources under the programme account for EUR 80 billion and shall be valorised between 2014 and 2020. The use of multidimensional funding shall allow reaching the proposed general and specific objectives.

Chapter VII

EXPECTED OUTPUTS AND PROGRESS INDICATORS

Section 1

Expected outputs

104. The following shall be outlined as expected outputs:

- 1) developing and implementing a consensual research and development governance model, with a focus on performance and excellence;
- 2) improving legal framework governing the ambit of research and development in the Republic of Moldova;
- 3) ensuring unrestrained access of various actors to public funding;
- 4) transferring the activity management to researchers;
- 5) increasing the number of PhD students, in particular in the engineering specialisations at the average number of 28 in the EU;
- 6) increasing the number of employees trained under the lifelong learning programme up to at least 15 out of 100 employees;
- 7) increasing the number of scientific publications with at least one co-author from the business environment;
- 8) increasing the number of PhD students from abroad by 5%;
- 9) alluring researchers from abroad in order to develop research activities in the Republic of Moldova;
- 10) increasing the rate of young researchers up to at least 40% from the total number of researchers;
- 11) increasing the penetration rate of broadband connections in institutions;
- 12) implementing a single information system for research and development project preparation and evaluation (and related methodology) as an integral part of a research and development strategic information system (with default functions for data collection and benchmarking);
- 13) developing the entrepreneurial and innovation culture;
- 14) increasing the visibility of research and development activity in the society;
- 15) ensuring the active participation of researchers from the Republic of Moldova in international projects;
- 16) increasing the amount of funding sources attracted to the country under international programmes;
- 17) reducing the time limit from the submission of project proposals until the signing of the grant contract.

Section 2

Progress indicators

105. The following progress indicators shall be quantified:

- 1) the rate of the research and development product in GDP;
- 2) the rate of the research and development product in the export;
- 3) the rate of young researchers;
- 4) the rate of new equipment (up to 5 years of age);
- 5) the rate of publications in international impactful journals;
- 6) the number of spin-offs;
- 7) the number of start-ups;
- 8) the number of consortium set up for European projects;
- 9) the number of research projects awarded under a competitive procedure by foreign

organisations;

10) the number of projects submitted under a competitive procedure in EU research programmes;

11) the number of projects submitted under other competitive procedures in international programmes.

106. These indicators cannot be considered outside a statistical system which is consistent with the requirements of the European research space and which ensures a multidimensional reflection of the development of the knowledge-based economy in the Republic of Moldova.

Chapter VIII

STRATEGY IMPLEMENTATION, MONITORING AND EVALUATION

Section 1

Strategy implementing stages

107. This Strategy shall be implemented by a complex mechanism involving several stakeholders. The role of each stakeholder shall be defined by the means and action instruments that it has available and that it can apply in an efficient manner.

108. The Strategy shall be implemented through the Action Plan for the implementation of the Research and Development Strategy of the Republic of Moldova by 2020.

109. The actions shall be expressed according to the proposed objectives and shall include the entire scope of research and development, starting from the legal framework to the preventive evaluation of the need for fundamental and applicative research topics for the society.

110. The Strategy shall also be put into effect under the Partnership Agreement.

111. The Strategy shall be implemented in the following stages:

- 1) preparation of the regulatory framework;
- 2) approval of the regulatory framework;
- 3) development of the monitoring and evaluation system for the research and development outputs;
- 4) organisational reform of the research and development governance system;
- 5) development of research and development performances.

112. Implementation shall be achieved through the actions in the Action Plan for the implementation of the Strategy and each action shall have the deliverables and the completion deadlines defined.

113. Completing the research and development structure and setting it out in regulatory acts involves:

1) inventorying the whole spectrum of capacities (the legal framework, human resources, assets, the research infrastructure, relations, achievements, performances etc.) of the national research and development field for optimisation and enhanced efficiency through the SWOT analysis (strengths, weaknesses, output);

2) preparing and implementing the regulatory acts in compliance with the transparency rules, promoting good practices and achievements and the principle of "single rules for all";

3) taking over EU standard for employment in administration functions in the research and development field under a competition (up to 2 mandates, until the retirement age, non-cumulating management functions etc.);

4) distinct separation of the policy preparation area from policy implementation and monitoring;

5) defining the research priorities through widespread consultation within the academic scientific community, universities, the civil society, small and medium enterprises etc., taking over

the relevant practices applied under the EU framework programmes;

6) providing for the researchers' accountability by preparing and putting into practice criteria (performance indicators) and the efficiency of research.

114. Amendments to the legislation in force shall be made in order to:

1) ensure equal access under a competitive procedure to budgetary funding of all actors in the research and development field, i.e. research institutes, higher education establishments, small and medium enterprises, NGOs etc.;

2) integrate research into the business environment;

3) develop partnerships and research and development networks;

4) prepare incentives, prepare the regulatory basis for research funding by businesses (facilities for taxes, VAT etc.);

5) market the research outputs;

6) diffuse the intellectual property value through the Intellectual Property State Agency;

7) prepare and implement motivating research programmes:

a) in this respect, implementing research programmes in accordance with programmes applied to research in the EU countries (ideas - supporting fundamental research, capacities - for supporting and developing the research infrastructure, human resources - promotion of youth, mobility etc.);

b) covering these types of programmes by adequate public funding and granting funds under a competitive procedure;

8) preparing the regulatory framework for partnerships' activity:

a) with an appropriate financial coverage;

b) with the implementation of a programme in accordance with the EU practices in order to foster partnerships in the light of the legal rules on eligibility (at least one partner from research institutes, one partner (research entity) from universities and one partner as a business operator).

Section 2

Monitoring mechanism

115. The central administrative authority in the research and development field shall perform the monitoring process and then shall report thereon to the Government. At the same time, the monitoring process shall involve the participation of relevant central public administration authorities. Monitoring, evaluation and the adjustment mechanism shall ensure the capacity of the Strategy to adapt depending on the national and international developments.

116. The Strategy shall be monitored and evaluated against the performance indicators (included with this Strategy as an Annex), the output indicators of the Action Plan for the implementation of the Strategy and against the research and development indicators relating to the specific objectives of the Strategy. A report shall be prepared and published annually, seeking to reflect the achievement level of objectives. The Strategy shall be adjusted after an external independent evaluation conducted halfway through the implementing period and shall be based on both the outputs thereof and the evaluation of the outputs achieved, the system evaluation and the prospective elements related to the development of science and technology.

Section 3

Strategy implementation evaluation

117. Evaluation shall be conducted by independent experts, preferably international experts. The Strategy implementation impact assessment shall provide the required information to formulate future policies.

118. The evaluation of research and development requires a complex procedure,

including a follow-up on the development, in time, and reporting in line with national and international standards. The specific aspects of this activity are related to the following objective requirements:

- 1) the evaluation of research must be promoted in a differentiated approach of the various fields of research (disregarding them leads to their complete removal from the research scope):
 - a) the impact of the research outputs in various fields is expressed differently in time and in terms of form and content;
 - b) by virtue of objective or subjective circumstances, some fields of research may be disadvantaged;
- 2) the evaluation of a homogenous community of researchers can be based on a few quantifiable criteria, among which:
 - a) scientific performance;
 - b) teaching performance/professional training of the teaching staff;
 - c) the financial sources attracted to research;
 - d) (local and international) cooperation agreements;
 - e) social impact and visibility of research.

119. Since these criteria are quantified differently, evaluation must also be performed separately by each of the criteria:

- 1) the performance evaluation mechanism must include the quantitative evaluation of researchers/establishments in accordance with the abovementioned criteria:
 - a) the threshold and a specific relative weighting must be applied in respect of each criterion;
 - b) thresholds and the relative weighting of criteria shall be determined according to the current priorities and the multiannual statistical data;
- 2) the adjustment of the process requires a monitoring time, which must involve the use of statistical techniques.

120. Thus, in order to have a real image of the efficiency of the research and development strategy, the evaluation activities must have a multidimensional aspect.

121. Micro-level evaluation involves the following actions:

- 1) classifying research and development entities by research fields with similar impact;
- 2) evaluating separately the entities in the identified fields against the approved criteria;
- 3) statistically processing the evaluation results;
- 4) reporting the evaluation results in accordance with the national and international standards.

122. The evaluation shall be followed by adjustments which must include fostering of research and development entities with successful results by all possible means.

Annex 1

to the Research and Development
Strategy of the Republic of
Moldova by 2020

Main performance indicators: initial value, intermediary and final targets

No	Indicators	Primary source of information	Initial value	Intermediary target (2017)	Final target (2020)
Development of human capacities					
1.	Scientific researchers per 100 thousand inhabitants	UNESCO Institute for Statistics, World Bank "World Development Indicators"	98.8	120	140

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2.	Researchers' median age	Moldovan Academy of Sciences	48.2	47	45
3.	Number of Habilitated Doctors employed in research and development	Moldovan Academy of Sciences	440	500	560
4.	Number of Doctors of Sciences employed in research and development	Moldovan Academy of Sciences	1470	1500	1550
5.	Graduates from doctoral/postdoctoral studies per 100 thousand inhabitants	National Statistics Office	43	70	100
6.	PhD/post-PhD theses per 100 thousand inhabitants	National Certification Council	6	10	15
7.	Rate of young researchers (up to 35 years of age)	Moldovan Academy of Sciences	28	30	34
8.	A researcher's wage in % compared to the average wage in the economy	National Statistics Office	120	140	150
Financial sources for activities					
9.	Expenses for research and development, % in GDP	UNESCO Institute for Statistics, World Bank "World Development Indicators"	0.5	0.8	1.0
10.	Budgetary expenses for research and development, % in GDP	National Statistics Office	0.42	0.5	0.7
11.	Public expenses for research and development, % in the total governmental expenses	Ministry of Finances	1.44	1.58	1.74
12.	Expenses for scientific equipment, % in the total funding amount for research and development	National Statistics Office, Moldovan Academy of Sciences	2.9	5	7
Attracting the private sector to research and development activities					

13.	Private expenses for research and development, % in the total funding amount for research and development	Moldovan Academy of Sciences	4.6	8	15
14.	Scientific publications with at least one co-author in the business environment per 1 million inhabitants	Moldovan Academy of Sciences	Data is missing	To be identified at a later time	
Increase of performances					
15.	Scientific publications, total number per 100 researchers	Moldovan Academy of Sciences	142	155	170
16.	Articles in scientific journals, total number per 100 researchers	Moldovan Academy of Sciences, the National Bibliometric Instrument	71	85	100
17.	Articles in ISI-rated journals - Thomson/SCOPUS/other international BD indexed journals, total number per 100 researchers	ISI databases - Thomson/SCOPUS	Data is missing/1.15/Data is missing	To be identified at a later time/5	To be identified at a later time/10
18.	Average number of citations of an article in ISI - Thomson/SCOPUS/other BD indexed journals etc.	ISI databases - Thomson/SCOPUS	Data is missing	To be identified at a later time	
19.	Total patents per one million inhabitants	Intellectual Property State Agency	80	90	100
20.	Patents obtained from EPO, USPTO and JPO (average in the past 15 years)	World Intellectual Property Organisation (WIPO)	0.14	0.25	0.5
21.	Patents for varieties and hybrids (agricultural, technical, leguminous, vegetable crops)	Intellectual Property State Agency	147	160	180
22.	Quality of research	World Economic	27.8	30-35	Greater than

	establishments	Forum			40
Internationalization of research and development					
23.	Foreign PhD students in the Republic of Moldova, % in the total number	National Statistics Office	14	17	20
24.	Foreign researchers in the Republic of Moldova, % in the total number	Moldovan Academy of Sciences	Data is missing	To be identified at a later time	
25.	International scientific co-publication per one million inhabitants	Moldovan Academy of Sciences	Data is missing	To be identified at a later time	
26.	Journals in ISI databases - Thomson/Scopus/other BD indexed journals, % in the total number of national accredited journals	ISI databases - Thomson/SCOPUS	1.3/4/data is missing	10/12/To be identified at a later time	15/20/To be identified at a later time
27.	Journals in DOAJ, % in the total number of accredited national journals	Directory of Open Access Journals (DOAJ)	8	100	100
28.	Successful projects under community programmes per 1 000 researchers	E-CORDA database, the Moldovan Academy of Sciences	5.14	6.71	8.28
29.	Expenses for research and development from external sources, % in the total funding amount in the relevant field	UNESCO Institute of Statistics, National Statistics Office	9.4	9.7	10
30.	Rate of the digitised and accessible scientific heritage (%)	"A. Lupan" Central Scientific Library	5	30	100
31.	Rate of online available public services in the total services that can be provided electronically (%)	Social and Information Development Institute	20	80	100
32.	Rate of public services	State Chancellery	0	50	100

	complying with the requirements of the governmental interoperability framework				
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Annex 2
to Government Decision No
920 of 7 November 2014

THE ACTION PLAN
for the implementation of the Research and Development Strategy for the Republic of
Moldova by 2020

No	Name of the action	Responsible institution	Deadline for completion	Cost of development (thousand MDL)	Result indicators
1	2	3	4	5	6
<p>1. General objective:</p> <p>Governing the research and development field based on a consensual governance model focused on performance and excellence.</p> <p>Specific objectives:</p> <p>1) to optimise the research and development governing system;</p> <p>2) to finance motivating and advanced research and development;</p> <p>3) to improve the efficiency of the reporting process;</p> <p>4) to adjust the evaluation and expertise process to the requirements of the European research area;</p> <p>5) to ensure equal participation of public and private institutions in the research process;</p> <p>a) 6) to develop the participative research and development management by central and local public authorities.</p>					
1.	Amending and supplementing the Code on Science and Innovation of the Republic of Moldova	The Moldovan Academy of Sciences, the Ministry of Economy, the Ministry of Agriculture and Food Industry, the Ministry of Health, the Ministry of Education, the Ministry of the Environment, the Ministry of Culture, the State	Second quarter 2015	No expenses are involved	Approved draft law

		Chancellery			
2.	Reorganising the Assembly of the Moldovan Academy of Sciences	Moldovan Academy of Sciences	Second quarter 2015	No expenses are involved	Establishment of the Assembly of Scientists
3.	Establishing the National Research and Development Agency and approving the Rules of functioning	The Moldovan Academy of Sciences, the Ministry of Economy, the Ministry of Education, the Ministry of Finances, the Council of Rectors, the College of Healthcare Practitioners in the Republic of Moldova, the National Federation of Farmers in Moldova, the Chamber of Commerce and Industry, the National Participation Council	Second quarter 2015	No expenses are involved	Approved draft law
4.	Establishing the Advisory Committee for Research and Innovation	State Chancellery	Second quarter 2015	No expenses are involved	Established committee
5.	Adapting the current regulatory documents and preparing documents in order to ensure the implementation of the new research government model;	Central public administration authorities	Second quarter 2015	No expenses are involved	Approved draft regulatory acts
6.	Reforming the research and development organisations at	Moldovan Academy of Sciences	Third quarter, 2015	No expenses are	Reorganised organisations

	sector level, in centres, laboratories and researchers based on predefined criteria			involved	
7.	Evaluating the organisational and financial management of research institutes	National Research and Development Agency, Moldovan Academy of Sciences	Second quarter 2015	No expenses are involved	Number of evaluated institutes
8.	Preparing the framework methodology for research and development projects	National Research and Development Agency, Moldovan Academy of Sciences	Second quarter 2015		Approved methodology
9.	Creating the database of foreign experts who can be involved in the expertise process	National Research and Development Agency, Moldovan Academy of Sciences	Third quarter, 2015	200.0	Implemented database
10.	Introducing the mandatory private co-funding rate of applicative scientific research projects	National Research and Development Agency	2015	No expenses are involved	Approved regulatory act
11.	Preparing the legislative framework for the introduction of innovation vouchers - short-term projects for the settlement of specific issues reported by business operators	National Research and Development Agency, Ministry of Economy	Fourth quarter 2015	200.0	Approved regulatory acts
12.	Developing the Expert On-line electronic platform to keep records and to perform the swift evaluation of the completion stage of research and development	The Information Society Development Institute, the National Research and Development Agency	2015	300.0	Number of modules prepared

	projects				
<p>2. General objective: Developing the human, institutional and infrastructure capacities</p> <p>Specific objectives:</p> <p>1) human capacity in advanced research and development at international level; 2) organisations in the area of competitive research and development, which involves: a) strategic and current management capacities; b) operational functionality in order to achieve the assumed goals; c) favourable conditions for free creation and research; d) reduced but efficient bureaucracy; e) a competitive research and development infrastructure at international level.</p>					
13.	Optimising the network of research and development organisations	Moldovan Academy of Sciences	Second quarter 2015	No expenses are involved	Approved optimisation plan
14.	Preparing the rules for the research staff further training	Moldovan Academy of Sciences, the National Research and Development Agency	First quarter 2015	No expenses are involved	Approved regulation
15.	Developing training modules on the management of the research process, the management of resources, intellectual property management, the research ethics and rules of ethics etc.	Moldovan Academy of Sciences	Third quarter, 2015	500.0	Approved modules and completed training cycles
16.	Developing the managerial skills among the persons with management functions within the research and development organisations	Moldovan Academy of Sciences, the State Chancellery, the Public Procurement Agency	2015	500.0	Number of courses completed, trained persons
17.	Reviewing the concept and content of doctoral studies; involving representatives of the business environment and civil society in this process	The Moldovan Academy of Sciences, the Ministry of Education, the Ministry of Economy, Chamber of Commerce and Industry, employer organisations	Second quarter 2015	200.0	Approved regulatory act
18.	Co-opting the business	Moldovan Academy	2016	1000.0	Contracts

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	environment in the training of third cycle staff through the industrial doctoral study scheme	of Sciences, the Ministry of Education, the Ministry of Agriculture and Food Industry, the Ministry of Health, the Ministry of Economy, the Ministry of Information Technology and Communications, the Ministry of Regional Development and Constructions, the Ministry of the Environment, the Ministry of Culture, the Agency for Innovation and Technological Transfer			signed between research establishments and industrial organisations/ companies
19.	Strengthening the social partnership of research and development establishments, of higher education establishments with representatives of the labour market, from the research field, experts - professionals in the design and implementation of educational programmes	The Ministry of Education, the Moldovan Academy of Sciences, the National Research and Development Agency, higher education establishments, the National Quality Assurance Agency	Fourth quarter 2015	No expenses are involved	Council established
20.	Supporting the international mobility of researchers in excellence centres abroad	The Moldovan Academy of Sciences, the National Research and Development Agency, the Ministry of Foreign Affairs and European Integration	2015	1000.0	Number of trainees, participating states
21.	Preparing PhD students through international joint participation in the latest fields where an essential mass has not been established at	The Moldovan Academy of Sciences, the Ministry of Education	2016	5000.0	Establishing cooperation relations between PhD students in the Republic of

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	national level				Moldova and doctoral degree supervisors from other states
22.	Increasing the wages of young researchers	Moldovan Academy of Sciences, the Ministry of Finances, the Ministry of Education, the Ministry of Economy	Fourth quarter 2015		Number of young researchers employed in research and development
23.	Reintegrating researchers into the national research and innovation system upon their return to the country after they have completed studies or traineeships abroad	Moldovan Academy of Sciences	Permanent	No expenses are involved	Number of reintegrated researchers
24.	Preparing research and development performance indicators and their implementation in the current practice	Moldovan Academy of Sciences	Second quarter 2015	No expenses are involved	Approved document
25.	Developing and implementing European statistical indicators in the national research field	Moldovan Academy of Sciences, the National Certification Council, the National Research and Development Agency, the National Statistics Office	Fourth quarter 2015	500.0	Approved nomenclature
26.	Signing the Memorandum of Understanding with the Eastern partnership countries and the EU Member States on the mutual use of experts' databases	Moldovan Academy of Sciences	Fourth quarter 2015	50.0	The law ratifying the Memorandum has been approved
27.	Establishing the prerequisites for gradual introduction of foreign expertise	National Research and Development Agency	2015	500.0	The foreign experts' database has been prepared and project summaries

					were concluded in English
28.	Promoting the registration of experts in the Republic of Moldova in the European experts' database and the experts' regional databases	Moldovan Academy of Sciences	Fourth quarter 2015	100.0	The number of experts introduced in foreign databases
29.	Preparing indicators for financial incentives to authors of publications rated by the Institute of Scientific Information (ISI) and of patents registered abroad	Moldovan Academy of Sciences	Third quarter, 2015	100.0	Approved document
30.	Creating the national network of excellence centres and laboratories	Moldovan Academy of Sciences, National Certification Council	Fourth quarter 2015	100.0	Number of centres and laboratories created
31.	Excluding the certification procedure for research and development organisations	Moldovan Academy of Sciences, National Certification Council	Second quarter 2015	100.0	Approved regulatory act
32.	Preparing the indicators for the evaluation of excellence centres and laboratories and of a special funding programme for them	Moldovan Academy of Sciences, National Certification Council	Third quarter, 2015	No expenses are involved	Approved document
33.	Introducing the scheme of TWINNING laboratories - the possibility to employ the members of the diaspora and foreign scholars with reputation in management positions within the laboratories in the Republic of Moldova, with the obligation to stay in the Republic of Moldova for at least 3 months per year	Moldovan Academy of Sciences	Fourth quarter 2015	No expenses are involved	Approved scheme

34.	Implementing an electronic research system with interoperable applications	Moldovan Academy of Sciences	Fourth quarter 2015	500.0	Implemented system, prepared applications
35.	Preparing a roadmap for the development of the national research and development infrastructure by 2020	Moldovan Academy of Sciences, the National Research and Development Agency	2016	500.0	Roadmap approved
36.	Strengthening cooperation with GEANT and other NRENs, extending the NREN (National Research and Education Network) optical e-infrastructure within the entire territory of the country	The Moldovan Academy of Sciences, the Ministry of Information Technology and Communications, RENAM	2016	1000.0	Number of operating nodes created, associated NRENs
37.	Amending the regulatory framework in public procurement in order to facilitate procurement procedures pertaining to the research activity and fostering innovative products under public procurement actions	Moldovan Academy of Sciences, the Public Procurement Agency	2015	100.0	Approved regulatory acts
<p>3. General objective:</p> <p>Defining and managing research priorities Specific objectives:</p> <ol style="list-style-type: none"> 1) research priorities defined in accordance with the societal needs; 2) priorities management in order to ensure that they are consistent with challenges; 3) efforts focused on achieving the defined research priorities; 4) dialogue with the main stakeholders in order to identify needs and expectations, to express priorities and to have them accepted by the society. 					
38.	Involving businesses and the associative sector, as well as other beneficiaries, in the identification and evaluation of research priorities	The Ministry of Economy, the Moldovan Academy of Sciences	2015	100.0	Joint events organised with the beneficiaries
39.	Developing a foresight methodology for	Moldovan Academy of Sciences, central	2017	500.0	Prepared methodology

	approaching social challenges at local, regional and national level (as a research product)	and local public authorities			
40.	Organising regular debates on societal challenges and identifying the research and development involving points	Moldovan Academy of Sciences, the National Research and Development Agency, research and development organisations	2015	200.0	Number of organised meetings, participating persons
41.	Publishing results of surveys or other relevant information on the webpages of research and development organisations for the societal current needs	Research and development organisations	Permanent	100.0	Number of needs identified and number of webpages with publications
<p>4. General objective:</p> <p>Ensuring permanent dialogue between science and the society, disseminating knowledge and putting into practice the research outputs.</p> <p>Specific objectives:</p> <ol style="list-style-type: none"> 1) permanent dialogue with the society in order to understand needs and to inform on performances; 2) implemented scientific outputs to ensure the social and economic efficiency of the research processes; 3) transfer of knowledge to the society through intelligent development; 4) adequate responses to the societal needs; 5) scientific outputs disseminated under a free access regime; 6) access of the private sector to the research outputs, infrastructure and funds. 					
42.	Creating the e-platform to include and display digital information on the main scientific achievements in the research and development field in the Republic of Moldova	Information Society Development Institute	First quarter 2015	No expenses are involved	The e-platform has been implemented, the number of achievements posted, access entries
43.	Creating digital content based on the scientific research outputs and disseminating it through ICT solutions	Moldovan Academy of Sciences	Quarterly	No expenses are involved	Number of disseminated outputs

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44.	Associating to the dialogue platform particip.gov.md	Moldovan Academy of Sciences, the State Chancellery	First quarter 2015	No expenses are involved	Signed agreement
45.	Cooperating with local public authorities in the settlement of local challenges involving scientific support	Moldovan Academy of Sciences	Permanent	300.0	Number of agreements signed with local public authorities. Joint projects started
46.	Creating the infrastructure for implementing the research outputs	The Moldovan Academy of Sciences, the Ministry of Economy	Permanent	5000.0	Number of Scientific and Technological Parks and II newly created parks
47.	Strengthening the capacities of research and development organisations in the marketing of intellectual property	Moldovan Academy of Sciences, the National Research and Development Agency, the State Intellectual Property Agency	Permanent	No expenses are involved	Established research and development organisations
48.	Introducing the communication component as a mandatory component for research projects through output dissemination plans	Moldovan Academy of Sciences	First quarter 2015	No expenses are involved	Approved plan
49.	Organising science diffusing activities: science days, open door days, book presentations, technical and scientific exhibitions etc.	Research and development organisations	Permanent	200.0	Number of organised events, participating persons
50.	Implementing the tools to enable the access of the private sector to the research infrastructure and research and development scientific laboratories	Moldovan Academy of Sciences, the Ministry of Economy	Third quarter, 2015	10000.0	Number of signed contracts
51.	Developing partnerships with the small and medium	Moldovan Academy of Sciences, Organisation for the Development of the	Permanent	No expenses are involved	Partnership agreements signed

	enterprises	Small and Medium Enterprise Sector			
52.	Establishing conditions for the private sector to access funds intended for research and development	National Research and Development Agency, Moldovan Academy of Sciences	2015	No expenses are involved	Approved regulation
53.	Developing a database of scientific journals in the Republic of Moldova with standardised functions of peer-review, citation, drafting, publication, evaluation and monitoring (including for national and international conferences on research and development topics)	Moldovan Academy of Sciences, National Certification Council	2016	100.0	Implemented database, number of publications, drafts, citations
<p>5. General objective:</p> <p>Internationalizing research, ensuring integration in the European research space and enhancing international visibility.</p> <p>Specific objectives:</p> <p>1) access to the international research area and association in the EU Framework Programme for Research and Innovation "Horizon 2020"</p> <p>2) participations in regional and international research projects;</p> <p>3) international visibility;</p> <p>4) competitive scientific outputs.</p>					
54.	Extending bilateral and multilateral projects	National Research and Development Agency, Moldovan Academy of Sciences	Permanent	10000.0	Number of funded projects, scientific researchers involved. Sum of financial means used
55.	Transposing and implementing EU regulatory acts on research and innovation and of the rules of the new "Horizon 2020" Framework Programme for Research and Innovation	Moldovan Academy of Sciences	2015-2017	200.0	Approved regulatory acts

56.	Strengthening the network of national contact points and ensuring participation in the programme committees under the "Horizon 2020" Programme for Research and Innovation	Moldovan Academy of Sciences	2015-2020	1500.0	The structure and composition of the network of national contact points and of programme committees are adjusted to the "Horizon 2020" Framework Programme
57.	Ensuring the functioning of the Moldovan Office for Science and Technology attached to the EU (MOST)	Moldovan Academy of Sciences	2015-2020	750.0	The MOST office is functional
58.	Ensuring the membership rate in accordance with the provisions in the Memorandum of Understanding between the European Union and the Republic of Moldova	The Government, the Ministry of Finance, the Moldovan Academy of Sciences	2015-2020	About 15 000.0 - 40 000.0	Payment of the associate membership rate
59.	Promoting the regional and international visibility of research groups	Moldovan Academy of Sciences	Permanent	100.0	Number of profiles, research groups and webpages of research and development establishments in English
60.	Establishing an e-platform for tendering the sale of scientific outputs on the national, regional and international market	The National Research and Development Agency, the Moldovan Academy of Sciences, the Institute for Information Society Development, the Electronic Governance Centre	2017	500.0	Implemented e-platform, completed tendering procedures, amounts received

61.	Strengthening the capacities of Moldovan researchers to participate in the EU framework programmes and other financing instruments for regional and international projects	Moldovan Academy of Sciences	Permanent	150.0 annually	Information programmes developed, number of projects submitted, successful etc.
62.	Developing cooperation with regional and international organisations and funds	National Research and Development Agency, Moldovan Academy of Sciences	Permanent	100.0	Activities and projects of cooperation with regional and international organisations
63.	Co-opting the members of the scientific diaspora in the Republic of Moldova in the research and development activities in the country	Moldovan Academy of Sciences	Permanent	500.0	Number of the diaspora members involved in research activities, expertise etc.
64.	Promoting international mobility of researchers through the actions of internal and external mobility programmes and the services provided by EURAXESS	Moldovan Academy of Sciences	Permanent	200.0	Number of scientific researchers participating in the academic mobility
65.	Connecting the local research and innovation infrastructure to the European networks	The National Research and Development Agency, the Moldovan Academy of Sciences	2015	250.0	Number of signed cooperation contracts, of researchers and beneficiary innovators
66.	Entering into cooperation agreements with the pan-European research centres	Moldovan Academy of Sciences	Permanent	No expenses are involved	Number of signed agreements
6. Safety measures					
67.	Developing the	Moldovan Academy	2015	3000.0	Number of

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	technical and material base for research and development activities	of Sciences	2015-2016	25000.0	equipment units, machines, installations procured
			2017-2020	45000.0	
68.	Focusing the professional training of the scientific staff and the scientific teaching staff on the basic lines of the national economy and science development at world level	Moldovan Academy of Sciences, the Ministry of Education, higher education establishments	2015	15000.0	Number of doctoral schools established. Number of scientific staff and scientific teaching staff members trained
			2015-2016	29500.0	
			2016-2020	29500.0	
69.	Strengthening the capacities of administrative systems in the preparation, analysis and evaluation of policies	Moldovan Academy of Sciences	2015	11086.0	Policy documents prepared, analysed and evaluated
			2015-2016	29500.0	
			2016-2020	55500.0	
70.	Organising, developing and evaluating the expertise activity for programmes, projects and grants in the research and development field, competitions and scientific events, as well as for their developers and the research outputs	National Research and Development Agency	2015	500.0	Number of programmes and projects subject to expertise
			2015-2016	1100.0	
			2016-2020	2000.0	
71.	Providing informational support to the research and development organisations	Moldovan Academy of Sciences, the Information Society Development Institute	2015	2500.0	Number of research and development organisations provided with informational support
			2015-2016	4500.0	
			2016-2020	25000.0	
			2015-2016	20000.0	
			2016-2020	30000.0	