



## **Moldovan R&D&I system: a general overview**

**dr. Aurelia Hanganu,  
general scientific secretary, ASM**

# Overview

- **General Information on Moldova and Moldovan Science**
  - **Structure of scientific community**
  - **Research and innovation funding and performing bodies.**
  - **Research and innovation human resources**
  - **Research and innovation and business**
  - **Impact of the research and innovation**

## General information's about the country

- Republic of Moldova is a small country located in south-eastern Europe, between Romania and Ukraine.
- Population: cca. 3,5 mln, majority Romanians, but also with small minorities: Ukrainians, Russians,
- Gagauzians , Bulgarians, etc.
- Has the lowest GDP per capita in Europe.

# General information's about Research System

- Research, development and innovation (RDI) system of RM is highly centralized, with the Academy of Sciences of Moldova (ASM) being the central, key actor.
- According to the Code of Research and Innovation, ASM is the main policy-making institution, the main RDI funding organization, the main research organization
- Most of public R&D funding, cca. 80 % is allocated as block institutional funding in a semi-competitive mode. Competitive funding makes cca. 15 %.
- Most of R&D (cca. 70 %) is performed in the governmental sector (institutes of ASM and branch institutes of ministries). Business enterprise 19 %, Higher Education—11 %.
- R&D funding is dominated by the government sector.
- R&D funding by business and higher education is low.
- In 2013 a new mechanism of financing Higher Education Institutions was introduced. It granted a financial and managerial autonomy to the HEI's

## **Most important documents are:**

- Code on Science and Innovation approved in 2004.
- Innovation Strategy of the Republic of Moldova for the period 2013-2020: "Innovations for competitiveness" was approved on 27.11.2013.
- Strategy of research-development of the Republic of Moldova until 2020 was approved on 26.12.2013.



# Moldova

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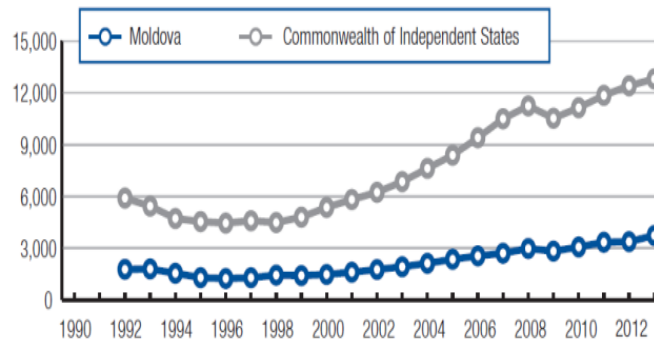
moldova

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## Key indicators, 2013

Population (millions).....	3.6
GDP (US\$ billions).....	7.9
GDP per capita (US\$).....	2,229
GDP (PPP) as share (%) of world total.....	0.02

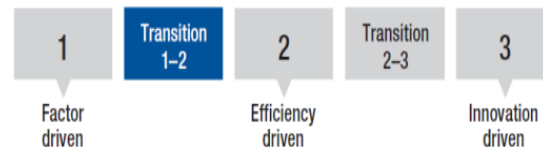
GDP (PPP) per capita (int'l \$), 1990–2013



## Global Competitiveness Index

	Rank (out of 144)	Score (1–7)
GCI 2014–2015.....	82.....	4.0
GCI 2013–2014 (out of 148).....	89.....	3.9
GCI 2012–2013 (out of 144).....	87.....	3.9
GCI 2011–2012 (out of 142).....	93.....	3.9

## Stage of development



# Moldova – Country Figures

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- GDP per capita:
- 107 Moldova .....2,229

# Science Indicators

## – SCImago Country and Journal Rank

SJR - Country Search - Windows Internet Explorer

http://www.scimagojr.com/countrysearch.php?country=MD

Search

Canon Easy-WebPrint EX Drucken Vorschau Ausschneiden Autom. ausschn. Ausschnittliste

Suchen Go

hp

SJR - Country Search

EST MODUS IN REBUS  
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**SJR** SCImago  
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Rank

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Select Region > Eastern Europe >

**Moldova**

Subject Area: All Refresh

	1996-2013
H Index	68
Documents	5.022
Citable Documents	4.953
Citations	33.645
Self Citations	6.399
Citations per Document	6,70

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# Science Indicators

## – SCImago Country and Journal Rank

Cited vs Uncited Documents (in %)		
Year	Cited Documents	Uncited Documents
1996	60	40
2001	69	31
2006	80	20
2010	61	39
2012	43	57
2013	22	78

# EU-Republic of Moldova collaboration

- October 11, 2011 a Memorandum of Understanding signed between EU and RM on the association of the RM to FP7.
- January 1, 2012, RM became an associate member to FP7 (more than 300 proposals, 58 received financing).
- July 1, 2014, Republic of Moldova became an associated country to the Horizon 2020.
- Article 22 from the Agreement (2014)

*“Cooperation shall cover the following areas:*

- (a) the institutional and functional development of public authorities, in order to increase the efficiency of their activity and to ensure an efficient, participatory and transparent decision-making and strategic planning process;*
- c) creation of a professional civil service based on the principle of managerial accountability and effective delegation of authority, as well as fair and transparent recruitment, training, assessment and remuneration;*
- (d) effective and professional human resource management and career development;*

# Structure of Scientific Community

Parliament

Government

Ministry of Education

Academy of Sciences of Moldova

Other ministries

Center for funding basic and applied research

Center of International Projects

Agency for Innovation and Technological  
Transfer

**Supreme Council for Science  
and Technological  
Development**  
17 members (ASM-8,  
Others-9)

**Consultative Council of  
Expertise**

**State Agency on Intellectual  
Property of RM (AGEPI)**

**Assembly of the Academy of Sciences of Moldova**  
174 membri

**National Council for Accreditation  
and Attestation (CNAA)**

Section/Departement  
of Agricultura  
Sciences

Section/Departme  
nt of Natural and  
Exact Sciences

Section/Department  
of Economical and  
Social Sciences

Section/Departmen  
t of Humanities and  
Arts

Section/Department of  
Engineering and  
Technological Sciences

Universities

Research Institutions

Institutes of ASM

# Research, innovation and development of Republic of Moldova

- As a former Soviet Republic, Moldova inherited a mainly centralized system of Research and Development.
- Code of Science and Innovation, adopted in 2004, stipulates that the Academy of Sciences is the whole authority in carrying out the state policy in science and innovation.
- According to the decision of Parliament Nr.150 from June 14, 2013, the new strategic directions of activities from science and innovation area had been adopted.
- Also, in recent years took place discussions about modification and completion of the Code of Science and Innovation.

## Some of the modifications and completions formulated during consultations

- Creation of the National Agency for Research and Development– central, autonomous authority responsible for elaboration and implementation of the policies in the research and development area.
- Reorganization of the Agency for Innovation and Technological Transfer.
- Creation of the National Council for Research and Development.
- Reorganization of the National Council for Accreditation and Attestation.
- Reorganization of the Academy of Sciences of Moldova.

*These and also other modifications are needed in order to join European Research Area.*



# Management of scientific research after the reform (project)

**Parliament**

**Government**

*Advisory committee for Science and Innovation beside Prime-Minister*

Ministry of  
Education

Ministry of Economy

Ministry of  
Agriculture

Academy of Sciences  
of Moldova

National Agency for Research and Development

Sectorial Funds

Institutes of  
ASM

Universities

Research  
Institutions

NGO's

SME's

# Research and innovation funding

- *Investment in public R&D are key in generating the knowledge and talent needed by innovative firms and leverages business investment in research and innovation, crucial elements to fulfill the ambitions of Europe 2020 strategy.*

(source:[http://ec.europa.eu/research/innovation-union/pdf/state-of-the-union/2014/iuc\\_progress\\_report\\_2014.pdf](http://ec.europa.eu/research/innovation-union/pdf/state-of-the-union/2014/iuc_progress_report_2014.pdf)).

- In the last 24 years, Science in Republic of Moldova was underfinanced, mainly due to the economical stagnation, and the absence of political will.
- Even so, the finance received didn't helped to achieve the goals of developing a strong and performing economy through research and innovation because of the poor management and corruption.

## Funding of the R&I in the last 4 years

	2011	2012	2013	2014
Summ	325,3 mil/lei	356,7 mil/lei	333, mil/lei	401,4 mil/lei
% of GDP	0,40	0,40	0,35	0,39

Despite of the some reforms and strategies adopted, especially in the recent years, Republic of Moldova still didn't achieve its goals, concerning a sustainable development of its economy and the welfare of its citizens.

That's why, Republic of Moldova wants to have this exercise in order to address the following questions that represents the main problems regarding R&I&D:

- 1. *R&I funding and performing bodies and instruments assessment.***
- 2. *R&I human resources capacity development.***
- 3. *Business & R&I.***
- 4. *Increasing R&I impact.***

# 1. RDI funding and performing bodies and instruments assessment.

## Overview:

- Main funds for RDI in Republic of Moldova are from governmental sources.
- In recent years, R. Moldova spent on R&D between 0.3-0.5 % of GDP. This is far below 3% of GDP agreed in the Europe 2020 strategy.
- Other sources of funding. Examples: EU-- in FP7 (more than 300 proposals submitted, 58 received total funding of about 4 mln €) and Horizon 2020 since 2014.
- Non-EU funding
- Bilateral cooperation



## Issues:

- Inefficiencies and lack of reform within the public research system.
- Insufficient funding of the public research system.
- Absence of a coherent and transparency policy regarding funding of RDI.
- Lack of competitiveness for accessing funds.
- The inadequacy of public research capacities vis-à-vis the needs of economy and society.
- Lack of mobilization of the capacities to efficiently address the needs of the society and economy.
- Bureaucracy and corruption.

# Solutions

- Continuations of implementations of reforms and adopting strong measures, some of them even radical for achieving the goals.
- Decreasing the share of governmental funding in RDI.
- Diversifying sources of funding for RDI.
- Increasing participation in international projects for R&I, especially in Horizon 2020.
- Trainings for a better management of national and international projects.
- Competitive funding based on the originality, importance of projects.

# **R&I human resources capacity development.**

## Overview:

- As of January 1, 2015, R&I organizations had: 3250 scientific researchers: 435 dr. hab. and 1449 PhD's.
- R&D personnel decreased significantly in the last 24 years.
- Reduction in R&D spending led to very low remuneration of personnel.
- As consequence, many scientist emigrated which led to a massive brain-drain.

# Issues

- A reduced personnel for R&D.
- Very low salaries.
- A significant difference in salaries of the experienced and young researchers.
- Continuing brain-drain.
- A very low mobility between research institutes, especially between academic and non-academic, but also with universities.
- Aging personnel.

## Numbers and average age of personnel in R&D (scientific degrees and titles only)

Years	Academicians	Members correspondents	Doctor habilitates	PhD's
2011	Total Nr.: 51 Aver. Age: 73,7	Total Nr. : 48 Aver. Age: 72,8	Total Nr. : 441 Aver. Age: 64,6	Total Nr. : 1450 Aver. Age: 51,8
2012	Total Nr. : 55 Aver. Age: 71,9	Total Nr. : 43 Aver. Age: 73,2	Total Nr. : 440 Aver. Age: 64,9	Total Nr. : 1470 Aver. Age: 52,4
2013	Total Nr. : 54 Aver. Age: 72,4	Total Nr. : 42 Aver. Age: 73,5	Total Nr. : 434 Aver. Age: 64,9	Total Nr. : 1383 Aver. Age: 52,6
2014	Total Nr. : 53 Aver. Age: 73,0	Total Nr. : 41 Aver. Age: 74,6	Total Nr. : 435 Aver. Age: 64,9	Total Nr. : 1449 Aver. Age: 53,3



# Solutions

- Increasing number of R&D personnel by attracting students.
- Rising salaries and social benefits for R&D personnel.
- Reduce the importance of seniority within the salary system. The percentage for young researchers should be increased from the very beginning and, in addition, the yearly increase in the beginning of work life should be faster than at the end.
- Allow researchers who are able to attract funding from third parties (business, society) or are involved actively in these kind of projects to receive additional payment comparable to the possibilities and regulations regarding the involvement in European and international R & D projects (HG, No. 534, 20.07.2013).
- Retire the aging personnel and replace them with new personnel.
- Additional payment for knowing a foreign language should be reduced to the proven knowledge of English. (language test certification).
- Financial support to children should be provided (at least half of the monthly existence minimum; 09/2013: 800 MDLei) - Family Allowances (European Standard – Acquis Communautaire).
- Stopping brain-drain by offering promising researchers opportunities to grow at home.
- Stimulation of mobility of researchers through national, bilateral and international projects.

# Business & R&I.

## Overview/issues

- Industrial R&D potential was lost during the years.
- Business and R&D sector are disconnect from each other.
- Only a very few companies had succeed in preserving some of their R&D activities.
- Cooperation between research institutions and business is very low.
- Lack of framework conditions for business R&D and innovation, such as: inefficiencies in public incentives to stimulate business R&D, like grants, access to private and institutional funding)

# Solutions

- Framework conditions for business R&D innovation.
- Transfer of technologies from R&D to business and vice-versa.
- Stimulation by the government an intense cooperation between R&I and business.
- Common activities between business and R&I institutions.
- Accessibility of institutional funding for SME'e, etc.

# Increasing research and innovation impact

## Overview:

- According to the Code on Science and Innovation, research policy and usage of the scientific-technological potential of the country shall contribute to a stable socio-economic and human development.
- Fundamental and applied research shall be integrated with innovation activities.
- Link between education and science shall be consolidated.
- Resources shall be concentrated on strategic directions of science and innovation.
- However, in the reality, these goals were not achieved at the moment, due to different reasons

# Solutions

- Strengthening the infrastructure of science and innovation.
- Improving competitive RDI funding.
- Stimulating the creation of SME's.
- Expanding technology transfer.
- Attract direct investments in R&I.
- A better connection between science and society.