Strengths and bottlenecks of Moldova's R&I framework

Gheorghe Cuciureanu

Information Society Development Institute (IDSI), Moldova / National Council for Accreditation and Attestation (CNAA)

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General national framework
Transition to an efficiency-based economy and EU integration

+ Moldova’s rapprochement with the EU (Association agreement and DCFTA, Visa free travel, EU – biggest trade partner, Horison 2020);

+ Tradition of Education & Science.

- A small country with 12% uncontrolled territory (Transnistria);
- The lowest GDP per capita in Europe ($ 2,234 in 2014);
- High emigration (about 30% of labour force);
- Remittances make 26.1% of GDP (2014);
- Unstable political situation;
- Corruption as an important problem.
R&I strategic vision

Research-development Strategy of the Republic of Moldova until 2020 (2014);
Innovation Strategy of the Republic of Moldova for the period 2013-2020 (2013);

+ First strategies in R&I in the Republic of Moldova;
+ Elements of a more strategic, coherent and integrated framework for R&I

- Documents do not meet the requirements of S3 strategies (neither as strategic approach nor as identified priorities);
- Lack of regional / thematic specialisations and of actions for maximising the social and territorial cohesion.
Thematic priorities

In R&D Strategy the six societal challenges of Horizon-2020 are mentioned as priorities;

**Five strategic directions** of science and innovation for 2013-2020, approved by Parliament:

1) Materials, technologies and innovative products;
2) Energy efficiency and use of renewable energy;
3) Health care and biomedicine;
4) Biotechnology;
5) National heritage and development of the society.

+ An explicit orientation towards addressing major societal challenges in R&I strategies

- Priorities are formulated rather broadly and it is not clear how its were identified;
- Lack of the well-defined science and technology areas to focus financial efforts.
Framework for regional development

Great difference in the R&D governance and activities between the capital Chisinau and the rest of the country

Chisinau: 21% of population; 50% of GDP; 94% of accredited R&D organisations; more than 90% public R&D funding and of R&D personnel

- Development of a framework for regional development in the last years.

- Documents relating to R&I poorly take into account social, economic and territorial disparities;

- Framework for regional development includes insufficiently innovation and smart specialisation aspects.
Organogram of the Moldovan R&D system

President
Government
Parliament
Committee on Culture, Education, Research, Youth, Sports and Media

Ministries:
EDU, MAIA, MEC, Media, MF

Academy of Sciences (ASM)
Assembly of ASM
Supreme Council for Science and Technological Development

CICFA, CIP
Transnistria - local administration

CNAA, AGEPI
ODIMM, FEN, AITT
Technoparks, Incubators

Research institutes
Institutes of ASM
Research institutes
One HEI

Business & Enterprise sector: private & state enterprises

Operational level

Research performers

Policy level

Branch research institutes
Public and Private Higher Education Institutions
Organisation of R&I system

R&I system is centralised and has a rather academic character

+ A stable framework for promoting R&I policies;
+ Autonomy of research community, „protection” against political changes;
+ Possibility of pro-science lobby by the president of ASM.

- The current model of governance does not ensure the involvement of all relevant stakeholders;
- Innovation policy coordination is generally at a fairly low level;
- It is difficult to effectively manage conflicts of interest;
- Inefficiency of governance model is mentioned in international (OECD, UNESCO, EECA Policy mix...) and national (Expert Group...) reports.
R&I Funding

GERD – 0.35% of GDP (€23m) in 2014; financing of R&I de facto is not a national priority

GERD by sector of performance in R.Moldova

Source: UNESCO / UIS, 2016
## R&I funding schemes from public budget

### Institutional Projects – semi-competitive

<table>
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<tr>
<th></th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
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<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional projects, million €</td>
<td>6.9</td>
<td>10.6</td>
<td>13.3</td>
<td>12.6</td>
<td>13</td>
<td>13</td>
<td>13.8</td>
<td>12.7</td>
<td>13.2</td>
</tr>
<tr>
<td>Share of governmental GERD, %</td>
<td>63.0</td>
<td>60.8</td>
<td>59.4</td>
<td>63.7</td>
<td>66.6</td>
<td>73.7</td>
<td>72.8</td>
<td>76.0</td>
<td>74.8</td>
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### Main competitive funding schemes and amounts of funding allocated (million €):

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<tr>
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<th>2006</th>
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<th>2014</th>
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</thead>
<tbody>
<tr>
<td>State programmes for R&amp;D</td>
<td>0.68</td>
<td>1.25</td>
<td>1.11</td>
<td>1.10</td>
<td>0.61</td>
<td>0.36</td>
<td>0.34</td>
<td>0.08</td>
<td>0.20</td>
</tr>
<tr>
<td>Independent projects*</td>
<td>0.08</td>
<td>0.13</td>
<td>0.27</td>
<td>0.28</td>
<td>0.32</td>
<td>0.31</td>
<td>0.38</td>
<td>0.18</td>
<td>0.16</td>
</tr>
<tr>
<td>International projects</td>
<td>-</td>
<td>0.33</td>
<td>0.41</td>
<td>0.52</td>
<td>0.48</td>
<td>0.42</td>
<td>0.28</td>
<td>0.36</td>
<td>0.35</td>
</tr>
<tr>
<td>Innovation and Technology Transfer Projects</td>
<td>0.19</td>
<td>0.52</td>
<td>0.72</td>
<td>0.75</td>
<td>0.86</td>
<td>0.69</td>
<td>0.62</td>
<td>0.45</td>
<td>0.54</td>
</tr>
</tbody>
</table>
Distribution of public R&D funding on thematic priorities in 2014

- Innovative materials, technologies and products (36.3%)
- Energy efficiency and use of renewable energy resources (26.4%)
- Health and biomedicine (19.5%)
- Biotechnology (15.3%)
- Cultural heritage and development of the society (2.5%)
Financing framework for R&D activities

R&D Strategy fixed a financial target of R&D investments only to 1% of GDP, by 2020

+ Current legal framework provides distribution of R&D public funding on a competitive basis;
+ Variety of financial instruments that address different policy objectives;
+ International collaboration was intensified and financing from abroad plays an important role.

- The distribution of public funds follows more a bottom-up approach, contributing to a weak integration of R&D into innovation system;
- The assessment of institutions and their ranking by the CNAA is not taken into account in the distribution of institutional funding;
- The design of the schemes do not stimulate research within private companies;
- The efficiency schemes to attract R&D investments from business are missing.
Human resources framework

Shrinking of the R&D personnel (to 3315 researchers, in 2014), ageing, emigration

+ Special schemes of ASM for attracting and retaining young people in science;
+ Schemes of collaboration with scientific diaspora;
+ New framework for doctoral studies and reforms in HE;
+ Efforts for moving closer to European standards (Charter & Code, EURAXESS, HRS4R)

- Mismatch between the educational supply and the needs of labour market, business, R&D;
- The employment and working environment for researchers is not attractive;
- Transparency of recruitment procedures is limited;
- Existing programmes have rather limited impact;
- Research traineeships in companies and intersectoral mobility are not available
Distribution of PhD students and researchers by scientific fields in Moldova, 2014, %

- Natural sciences
- Engineering and technology
- Medical sciences
- Agricultural sciences
- Social sciences
- Humanities

Legend:
- Researchers
- PhD students
Evaluation and monitoring system of R&I

Need for improving the evaluation and impact assessment culture

+ New instruments used in the last period (Foresight, S&T Policy Reviews by external experts, Erawatch, Think-Thanks evaluations);

+ The assessment of organisations and evaluation of projects are more developed (criteria compatible with those internationally accepted).

- The regular and comprehensive evaluation mechanisms for all elements of R&I (system, policies, organisations, projects etc.) has not yet been established;

- Insufficient interdependence between research performance and financial allocations;

- The international dimension poorly integrated into the evaluation process;

- Lack of reliable and comparable R&I statistics according to the European methodology and standards.
Innovation framework

Competence shared between the ASM and Ministry of Economy; some competition for competence

+ The R&I strategic documents: towards to an open innovation system and to an economic model based on competitiveness (not remittances);
+ Development of elements of the industrial and innovation infrastructure;
+ A relatively well-regulated framework of IP rights

- A linear conception of the innovation;
- Tools to stimulate cooperation in the knowledge triangle education-research-business are weakly developed and only slowly emerging;
- The sectoral policies and its innovation components are not well developed;
- Lack of mechanisms/funding schemes for some measures from R&I documents;
- Weak consideration of other forms of innovation than technological ones;
- Predominance of the supply-side policies.
Access to finance - the challenge for innovation policy
Schemes of public agencies; banking and non-banking instruments

+ Support schemes of AITT (ITT projects, innovation vouchers) and ODIMM (PARE 1+1”, “National Economic Empowerment of Youth”, Special Guarantee Fund);

+ Funding from abroad has a considerable importance;

- Direct public R&I funding for private entities is not yet available;
- A favourable legal environment for spin-offs and for new start-up firms is missing;
- Innovation funding through venture funds, innovation voucher and other similar are not well developed yet;
- Procedures for public procurement of innovative good and services are missing;
- The limited impact of ITTPs and the difficulty to attract private partners;
- Cancellation of financial incentives for residents of S&T parks;
- Difficulties in accessing bank lending.
Case study: Barriers for demand-side innovation policies

- Limited size of the public economy;
- Relatively low inward-outward FDI;
- Low level of economic development and the industrial structure of the country;
- Lack of awareness among the political and research elite of the relevance of such policies;
- Unsufficient informational and analytical base for demand-side policies;
- Orientation of the academic sector towards basic and applied research activities;
- Flaws in the implementation of measures restrain the effects of policies;
- Lack of adequate human resources for such policies.
Instead of conclusion:

**5 structural challenges for national R&I system**

- Inefficient innovation governance model.
- Lack of human resources for R&I.
- Low R&D investments, especially by private sector, with no clear prioritisation.
- Weak links between R&D institutes, universities and BES.
- Undeveloped evaluation and monitoring system of R&I.
THANK YOU FOR YOUR ATTENTION!

e-mail: gheorghe.cuciureanu@idsi.md
    gheorghe.cuciureanu@cnaa.gov.md