

# GLOBALIZATION OF EDUCATION, SCIENCE AND INNOVATION: QUO VADIS RESEARCH AND UNIVERSITY COMMUNITY OF R.MOLDOVA?

Valeriu Canțer

National Council for Accreditation and Attestation of Republic Moldova  
valeriu.canter@cnaa.gov.md

**Abstract:** Some aspect of reseach and education of R.Moldova are analysed in the context of UE integration. Selected Challenges for Research and Education in R.Moldova induced by Globalization are highlighted. For sustainable science and education development in R.Moldova the integration in the European Area of Research (ERA) and the European Higher Education Area are the unique opportunity a lot of arguments are delivered. Comments dealing with priorities of ERA and EHEA in connection with research and education activities in R.Moldova are discussed. Doctoral studies are analysed as a interface between higher education and research.

## I. Introduction

Sustainable development of the world require sustainable high education, science and technological development.

**Selected Challenges for Research and Education in R.Moldova induced by Globalization are:**

- Research is global – what can little R.Moldova do? How can we work together more effectively?
- Globalization has different effects on different regions of the world: Brain gain, brain drain, or brain circulations
- Grand challenges are pressing – what is the role for small scale research of R.Moldova?
- There are enough sub-critical universities. How many can be supported at the international level?
- Worldwide university ranking schemes are becoming a motivational factor for quality improvements- a step towards further homogeneity of accepted knowledge production.

**Local Challenges faced in the Research and University community of R.Moldova:**

- Deficits of all kinds of resources
- (human, infrastructure, funds, etc.);
- Critical mass required to sustain development;
- Under-preparation of students;
- Consistency of policy.

**Big Question:** How to maintain and develop sustainable research and education in R.Moldova?

**Single answer** – integration at the European level of research and innovation.

**What are the opportunities to be integrated at the European level of research and education?**

- Legal foundations – European community treaties (Lisbon and Bologna treaties), Directives etc
- Institutional and infrastructure foundations – European Research Area and European High Education Area
- Developed tools and instruments – FP7, followed by Horizon 2020
- Clear visions concerning role of science and innovation in society modernization – Europe 2020 and others
- Flexibility of the framework of integration – balance of small and big country interests

## Why not global research area?

- governance of global projects is complex and can benefit from single European representation
- Europe may gain more negotiating weight from a combined position
- global approach may not emerge until there is regional leadership
- many issues which specifically European (either pan-European or applying to a sub-set of nations or regions) .

**But .... How and what can we do ?**

The first steps are done – R.Moldova is a member of Bologna process and associated member of UE FP7 Program.

**What should be the next long period actions?**

*The first next steps are to know all aspects of UE research landscape and to adjust our national research and education policies and actions*

*To promote our initiatives in different European actions and structures*

Investment in R&D is part of the solution to exit from the economic crises (Fig.1).

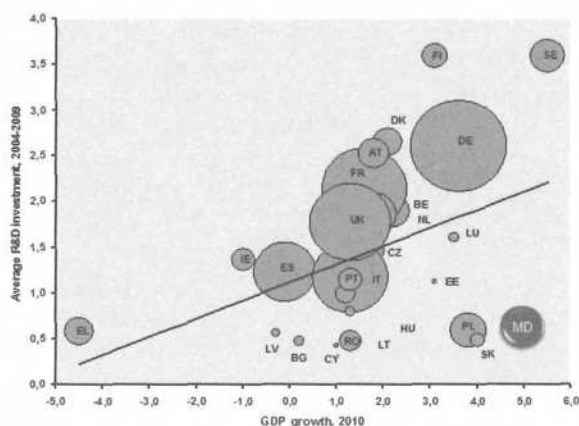


Fig. 1. Clear visions concerning the role of science and innovation in the society

Development of higher education systems is another requirement, in particular PhD education. The last is highlighted by data related to doctoral degrees.

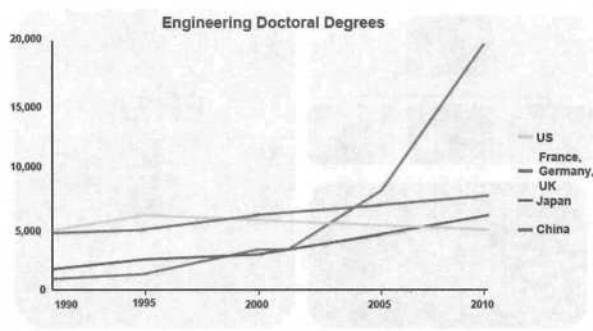


Fig. 2. Engineering doctoral degrees. In the world

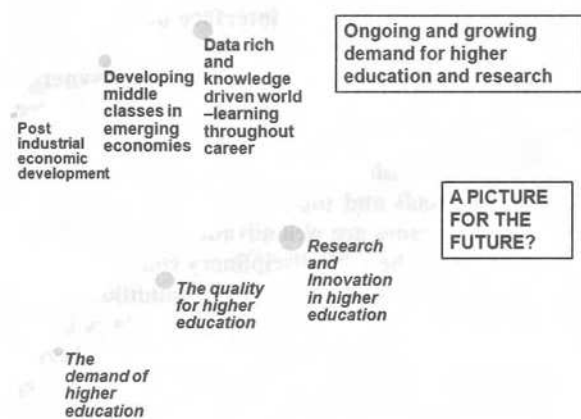


Fig.3. Society and Reserch and Education evolution.

Science provides information to make better policy. A nation's strength depends on its commitment to science and Education (Fig.3).

Sometimes and somewhere policymakers distort science: Manipulating data,Censoring, suppressing, and editing reports; Placing unqualified people in powerful positions;Placing people with conflicts of interest in positions;Ignoring scientific advice; Misleading the public.

**The main objectives are to grow Research Area of Moldova – RAM and Higher Education Area of Moldova – HEAM on the ERA and EHEA trees.** Research and education index (scientific paper, level of universities etc ) versus Socio-economic index ( GDP per capita and others) offers such opportunity

## II. RAM and ERA

**Three interlinked ERA core elements and 3 types of European Challenges:**

➤ Engage research system in Europe's response to a series of Grand Challenges

➤ Develop a research-friendly ecology to allow actors and institutions to work together in productive networks

➤ Achieve a step-change in the quality of dialogue and linkages between supply and demand for research to re-orientate strategic and applied research in close support of policy and regulation at EU level

• Focus continued effort on ERA by engaging with a series of Grand Challenges that are

☐ Economic challenges

• correspond to the agenda set out by the Aho Group and need to engage

- business through a combination of supply-side measures for promotion of RTD
- and demand-side measures to create innovation-friendly markets
- ☐ Social and environmental challenges
- ☑ Science and technology

In order to cope with the challenges ahead ERA need a 'New Renaissance', which is a **paradigm shift in how we think, live and interact, as well as a paradigm shift regarding the role and place of science in society.**

Six strategic approaches for ERA – A united ERA across Europe; An ERA driven by societal needs; An ERA shared responsibility by science, policy and society; An ERA open innovation between public and privat sectors; An ERA to deliver excellence; An ERA of coehision across the continent - are more than suitable for R.Moldova. New ERA paradigm deals with Horizon- 2020,which is a New EU Framework Programme For Research And Innovation (2014-2020).

**What's new?**

**A single programme bringing together three separate programmes/initiatives.**

**Coupling research to innovation - from research to retail, all forms of innovation**

**Focus on societal challenges facing EU society, e.g. health, clean energy and transport**

**Simplified access, for all companies, universities, open to institutes in all EU countries, associated countries and beyond..**

**Three Horizon 2020 priorities:**1.Excellent science 2.Industrial (Economic) leadership; 3. Societal challenges.

**Three R.Moldova Science 2020 priorities:**

1. Research at the European level (2-3 ISI papers/per researcher – 0.1 today)

2. Applied Science and Innovation for R.Moldova and UE Economy (non-public funding from 10% of public today to 50% in the future)

3 Societal challenges.

**Priority 1** Excellent science. Why?

- World class science is the foundation of tomorrow's technologies, jobs and wellbeing
- Europe needs to develop, attract and retain research talent

- Researchers need access to the best infrastrucur

**Why for R.Moldova ?**

- World level science must be the standarde for public funding of researchers in R.Moldova
- Taking into account demographic problems the challenges to grow and retain research talent are more than important

• Researchers of R.Moldova need minimal national research capacity and acces to the european infrastructures.

**Priority 2** Industrial leadership. Why?

- Strategic investments in key technologies (e.g. advanced manufacturing, micro-electronics) underpin innovation across existing and emerging sectors

• Europe needs to attract more private investment in research and innovation

• Europe needs more innovative SMEs to create growth and jobs

### Why for R.Moldova

- Without key technologies the real economic growth is impossible
  - Private investment in research and innovation are in the incipient form
  - Innovative SMEs are far under minimal level
- Priority 3 Societal challenges. Why?**
- Concerns of citizens and society/EU policy objectives (climate, environment, energy, transport etc) cannot be achieved without innovation
  - Breakthrough solutions come from multi-disciplinary collaborations, including social sciences & humanities
  - Promising solutions need to be tested, demonstrated and scaled up

### Why for R. Moldova

- Moldova need to educate believing of society in science by engaging of scientists in all national programs and projects
- Breakthrough solutions to resolve local problems can come only with scientific support
- All applied researches should be finished by real demonstration

### III. HEAM and EHEA

Higher Education actors are the key elements to link knowledge economy and innovation economy (Fig.4).

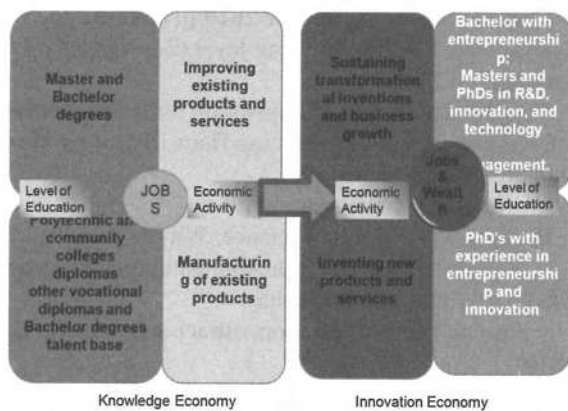


Fig.4 . Education and dual knowledge and innhovation economy.

EHEA and ERA are two pillars in the development of “Europe of Innovation” and doctoral education is the main link between them (Fig.5).

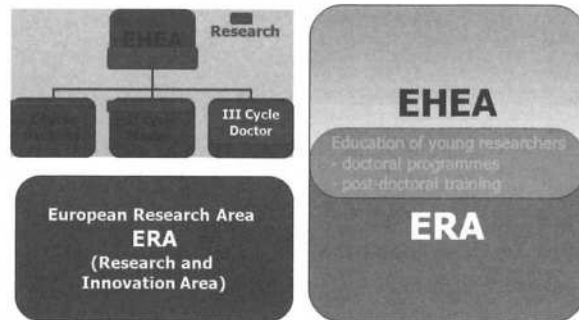


Fig. 4. EHEA and ERA – two pillars in the development of “Europe of Innovation”

Doctoral studies are the interface between higher education and research:

- Focus on doctoral studies and creating synergies between the EHEA and the European Research Area
- In doctoral education the UE has pioneered models now being adopted throughout World. The growth of graduate schools and the development of structured doctoral programmes are well advanced. They minimise isolation, increase the inter-disciplinary contact on which certain types of research thrive, impart additional transferable skills and help ensure that academia is not the only and inevitable destination for career researchers.
- The interweaving of the EHEA and the European Research Area (ERA) has critical importance for EU HEIs. Recession and cuts in public funding will impel the revision of strategic plans at precisely the moment when Bologna evolves into the EHEA and when the ERA gains in definition and substance.
- The new Treaty of Lisbon commits the EU to achieve a ‘European research area in which researchers, scientific knowledge and technology circulate freely’ and entrusts to the legislators the task of establishing the measures necessary for the ERA’s implementation.

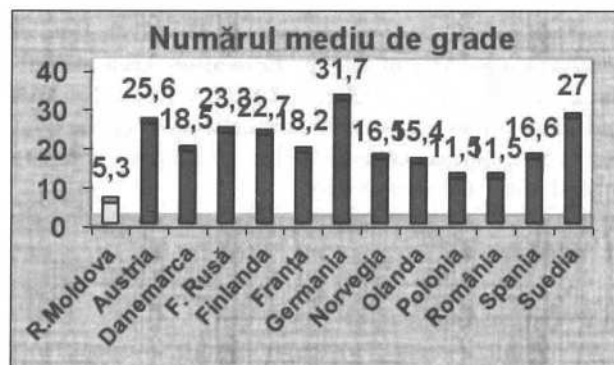


Fig 5. The number of degree conferred in R.Moldova and others countrees.