WESTERN BALKAN'S RESEARCH AND INNOVATION INFRASTRUCTURE ROADMAP

Đuro Kutlača, PhD
Head of Science and Technology Policy Research Centre, Institute Mihajlo Pupin

Lazar Živković
Reseach Associate, Institute Mihajlo Pupin

Good.
Better.
Regional.

Western Balkan's Research and Innovation Infrastructure Roadmap

- **DEFINITION:**
  - WB Roadmap is a strategic policy document that sets out an overall vision for research and innovation infrastructure and the major steps needed to achieve it.
  - It identifies R&I capabilities, opportunities for increasing interconnectivity, promotes the WB as a reliable partner in R&I, and set out the key recommendations to reach the long-term vision.
- **PURPOSE:**
  - to identify the potential for collaboration between the WB economies in the area of R&I,
  - to highlights existing R&I resources and infrastructure that can support the launch of joint initiatives by the WB economies in the area of R&I.

The current state of development of Ris in the WB Region

- Limited R&D funding
- Insufficient integration into the large pan-European RIs
- Existing RI facilities are outdated
- Research facilities owned by laboratories within the faculties are mainly used for educational purposes
- Research institutes are focused on their research projects with a very limited application in the industry.
- Most research institutions do not have an official access policy to RIs
- WB economies are participating only in a few high-level European Ris.

Number of participations in ESFRI RI projects and Landmarks
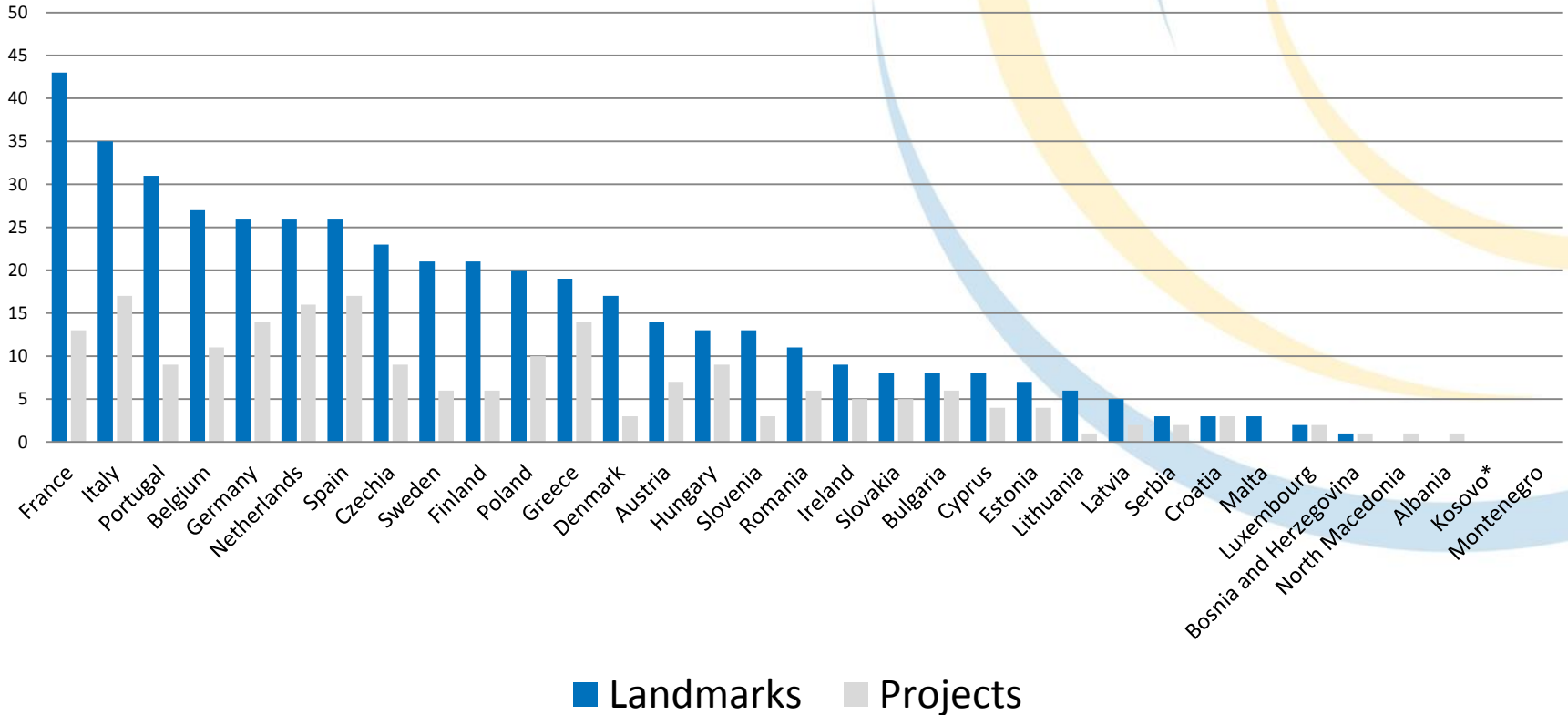
The current state of development of RIs in the WB Region

•Regarding the current state of RIs in ESFRI thematic areas, the general conclusion is as follows:

•**Energy:**
- WB economies are not participating in ESFRI projects and landmarks
- highly underrepresented in H2020 programme's thematic priority "Secure, Clean and Efficient Energy" compared to other EU economies
- connected with CERN in different ways
- not eligible to apply for calls under Euratom Research and Training Programme

•**Environment:**
- Serbia is a member of one distributed RI: eLTER (Long-Term Ecosystem Research in Europe)
- WB economies have participated in 63 H2020 projects, receiving an EC contribution of 10.68 million euros (only 0.34% of the total EC contribution in this thematic priority)

The current state of development of RIs in the WB Region

•**Health and Food Sciences**:
- most prioritised research fields in all WB economies
- North Macedonia is participating in one ESFRI project: Infrastructure for Promoting Metrology in Food and Nutrition (METROFOOD-RI)
- Regional RI: The South East European International Institute for Sustainable Technologies
- Good Examples: Antares project (Serbia); BIO-ICT Centre of Excellence (Montenegro)

- **Physical Sciences and Engineering**:
  - the WB region lacks large RIs in the area of Physical sciences
  - Serbia participates in the CERN's project of high importance: High-Luminosity Large Hadron Collider (HL-LHC).
  - the participation in H2020 projects within this thematic area is low

The current state of development of RIs in the WB Region

• **Social and Cultural Innovation:**
- WB economies are well represented in large European Ris in this area.
- Serbia is participating in CESSDA, ESS-ERIC, DARIAH and OPERAS.
- BiH has recently become a member of DARIAH
- Bosnia and Albania are participating in the project OPERAS.
- most WB economies conducted at least one Social survey coordinated by ESS-ERIC.

• **E-Infrastructures:**
- WB region is lagging behind the EU in terms of using High-Performance Computing
- WB economies are participating in important EU projects, related to e-infrastructure: GEANT; The European Open Science Cloud; The EGI Federation.

Innovation Infrastructures in the WB Region

• The innovation ecosystem has been developing rapidly in the last few years in all WB economies.

• The WB region lacks venture capital on the level of individual economies as well as on the macro-regional level.

• The future of the startup ecosystem of the region lies in the greater availability of venture capital markets.

• Innovation infrastructures are mainly providing their clients with pre-incubation services, training and education activities, networking, advice on the development of new products and services, etc.

• The least commonly reported services are services related to the venture capital market and business angel networks access services.

Innovation Infrastructures in the WB Region

• There is low cooperation between innovation infrastructures in the WB region.
• However, given that some innovation infrastructures have reported tight cooperation with universities, their models and approaches should be explored further to identify possible models and space for cooperation between universities and innovation infrastructures in the region.
• ICT and Creative Industries are the most supported areas.
• Innovation infrastructures are mainly focused on providing support to startups in these sectors.

Research Specializations in the WB Region: Bibliometric Analysis

• Research specialization of WB economies are placed against the Smart Specialization Strategy (S3) priorities of WB economies that adopted or have identified priority areas in the process of designing their S3. The WB economies that have identified S3 priorities are: Albania, Montenegro, North Macedonia and Serbia. For these four economies, the first twenty Web of Science (WoS) research areas with the largest stocks of knowledge in the period 2010-2021, are identified.

• **S3 priorities and most productive scientific disciplines in WB economies:**

    • **Albania**: The largest number of articles by Albanian authors in WoS in the period 2010-2021 is in the field of "Environmental Sciences", which corresponds to the S3 priority "Water and Energy". The second, "ICT", and the third S3 priority "Tourism and Agritourism" correspond to several identified WoS research areas.

    • **Montenegro**: All S3 priorities directly corresponds to the several identified WoS research areas.

    • **North Macedonia**: The second S3 priority "ICT" and the fourth priority "Electrical equipment & machinery parts" directly corresponds to the several identified WoS research areas. Other priorities, both horizontal and vertical, hardly can be found among the first twenty WoS research areas.

    • **Serbia**: All S3 priorities directly corresponds to the several identified WoS research areas.

Research Specializations in the WB Region: Bibliometric Analysis

• The analysis of scientific productivity in both WoS and Scopus indicated 7 areas of science and technology that are common to the WB economies.

• Such a large number of S&T fields indicates a significant similarity in the representation of scientists in scientific disciplines in the WB economies. All these finding points to **the potential for cooperation between the scientific communities of the WB economies**. These results justify the creation of joint RI Roadmap of the WB economies. By pooling together research resources, the WB region can reach the **critical mass** necessary for quality scientific production and, possibly, significantly contribute to development of the regional economies.

Research Specializations in the WB Region: Bibliometric Analysis

• The analysis of scientific productivity in both WoS and Scopus indicated **7 areas of science and technology that are common to the WB economies**.

• **WoS:**
- •1.01 Mathematics;
- •1.02 Computer and information sciences;
- •1.05 Earth and related environmental sciences;
- •1.06 Biological sciences;
- •2.02 Electrical engineering, electronic engineering;
- •3.02 Clinical medicine;
- •3.01 Basic medical research

Research Specializations in the WB Region: Bibliometric Analysis

• The analysis of scientific productivity in both **WoS and Scopus** indicated **7 areas of science and technology that are common to the WB economies.**

• **Scopus:**
- •Agricultural and Biological Sciences;
- •Biochemistry, Genetics and Molecular Biology;
- •Engineering;
- •Environmental Science;
- •Mathematics;
- •Medicine;
- •Social Sciences;

• Plus, two more areas that are common to at least four WB economies:
- •Computer Science;
- •Physics and Astronomy.

Recommendations for the Development of the Region's R&I Infrastructures

• Increase investments in research infrastructures.

• Ensure funding support measures at the regional level research.

• Improve policy research framework of some WB economies.

• More active participation in Large European RIs.

• Policy makers from the WB economies should address the challenge of lack of access to RIs and a low level of cooperation between sciences and industry.

• WB Roadmap should serve as infrastructural support for possible future cooperation in R&I.

• Development of the joint R&I Infrastructures in the WB region should be based on already established projects as well as future projects based on cooperation in R&I.

Recommendations for the Development of the Region's R&I Infrastructures

• The development of domestic R&I infrastructure in the WB economies should support the implementation of the S3 priorities of each WB economy.

• Support from national and EU funds for cooperation between R&I in the WB in the S&T areas identified as the S3 priorities, which correlate with knowledge stocks recorded in WoS and Scopus databases.

• To enable further growth of the innovation ecosystem, the WB economies should provide greater access to finance by startups.

• Policy measures aimed at fostering cooperation between II in the WB region should be introduced.

• WB economies should create policies for increasing the internal capacities of II

Thank you!

Regional Cooperation Secretariat
Trg Bosne i Hercegovine 1/V
71000 Sarajevo, Bosnia and Herzegovina

Tel: +387 33 561 700
Fax: +387 33 561 701
Mob: +387 61 190 601

www:rcc.int
Twitter:@rcccint
Facebook:RegionalCooperationCouncil
YouTube:RCCSec