

Enhancing Regional Collaboration in Smart Specialisation: Priorities, Opportunities and Excellence in R&I

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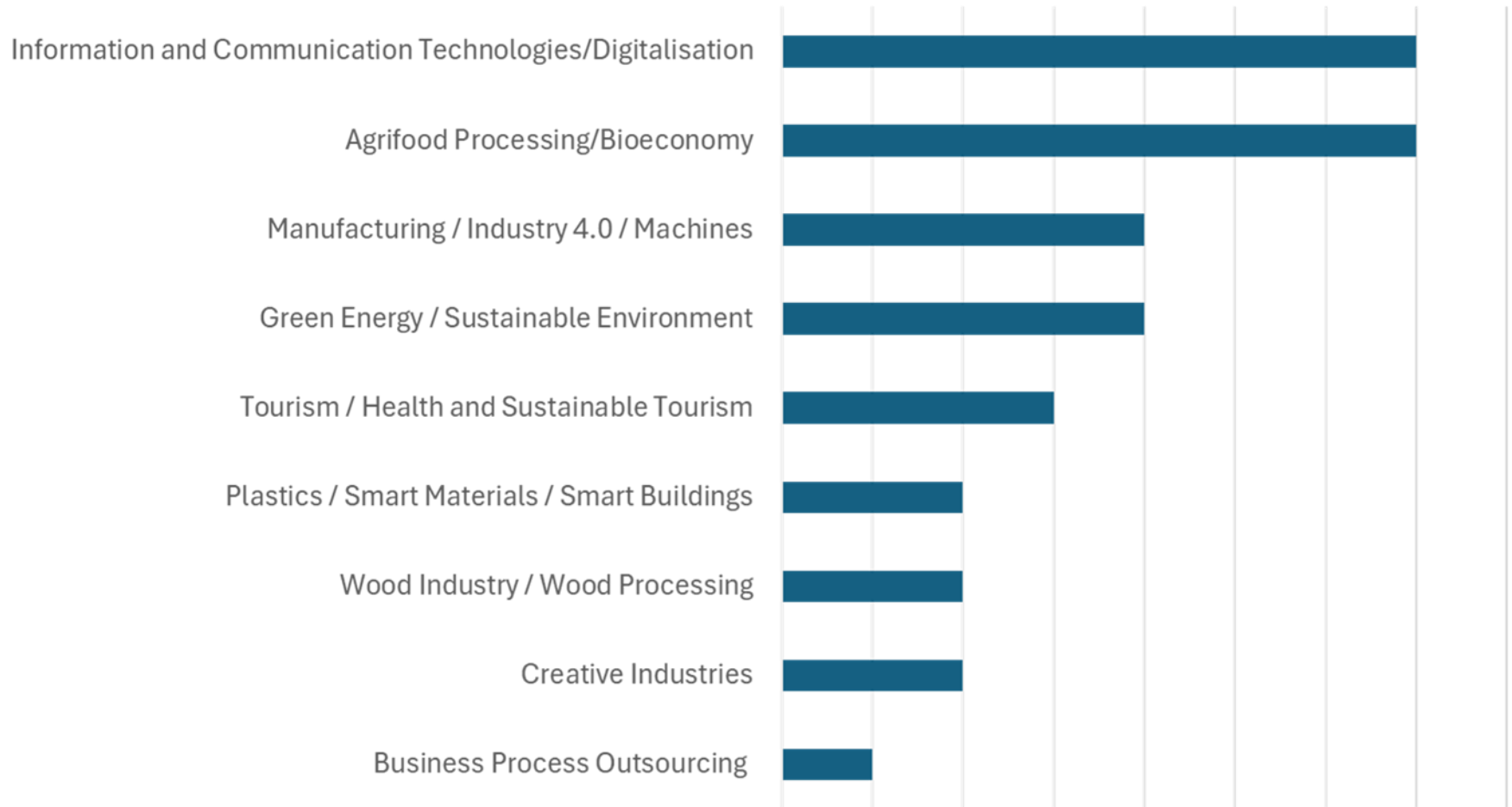


Shared S3 priorities as a basis for regional cooperation

- The overlap in S3 priority areas across the region presents a valuable **opportunity for regional cooperation**.
- When neighbouring countries focus on similar sectors they can pool resources, align innovation efforts, and create synergies that amplify impact.
- Cross-border collaboration in research and innovation can:
 - Achieve critical mass to compete at the EU and global level,
 - Avoid duplication of costly infrastructure and efforts, and
 - Tackle shared societal and economic challenges more effectively.
- Regional cooperation also enhances visibility, improves access to funding, and accelerates integration into European innovation ecosystems.



Most common priority areas in the Western Balkans + Moldova



ICT and digitalisation as a shared priority

- All six Western Balkan economies and Moldova have identified **ICT as a strategic S3 priority**
- The region is home to **strong and active ICT cluster organizations** that drive innovation and business cooperation.
 - **Strengthening regional cluster networks** can accelerate cross-border partnerships. A coordinated cluster-led approach can position the **Western Balkans as a leading regional ICT hub**.
- A great example of bottom-up regional collaboration
 - **Western Balkan Startup Alliance** – brings together startup support organizations, tech parks, accelerators, and entrepreneurs from across the region to strengthen the startup ecosystem and foster cross-border innovation.
- **Established Digital Innovation Hubs** in the Region, supported by the Digital Europe Programme



<https://publications.jrc.ec.europa.eu/repository/handle/JRC140887>



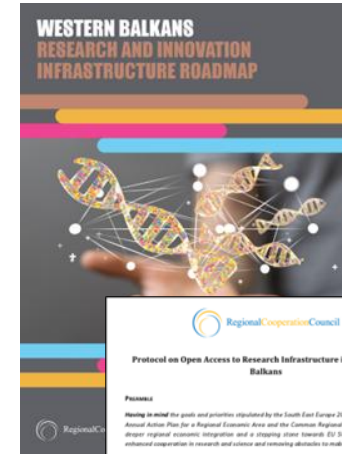
Regional Collaboration in Research Infrastructure

- Strengthening collaboration in research infrastructure can support innovation ecosystems and improve the competitiveness of researchers and businesses.
 - More efficient use of resources: Avoids redundancy in infrastructure investments.
 - Increased research quality and output: Shared access to high-tech labs, data centers, and testing facilities.
 - Attracting external funding: Joint research infrastructure projects are more attractive for EU funding (e.g., Horizon Europe, European Research Infrastructure Consortia - ERIC).



Important regional initiatives enabling open access to research infrastructures

- **Western Balkans Research and Innovation Infrastructure Roadmap**
 - Strategic policy document outlining vision and priorities. Identifies existing capabilities and connectivity gaps.
 - Recommends joint planning, coordinated investments, and capacity building.
- **Protocol on Open Access to Research Infrastructure in the Western Balkans**
 - Signed: 22 February 2021
 - Enables researchers to access facilities across the region.
- **Mobility programs are essential to maximize the impact of shared research infrastructures.**
 - Regional mobility programs to allow researchers to work in top labs across the region.
 - Cross-border PhD programs and joint research fellowships.
 - Industry-academia exchange programs for innovation transfer



Agri-Food and Bioeconomy: A Strong Foundation for Regional Cooperation

- All Western Balkan economies have identified agriculture, food processing, or the bioeconomy as key Smart Specialisation priorities.
- This reflects both the region's strong agrarian roots and the increasing shift toward value-added production, food innovation, and agrotechnologies.
- The bioeconomy offers a natural extension — linking agriculture with biotechnology, sustainability, and circular economy principles.
- **A notable example is Serbia's BIO4Campus:** a major research and innovation infrastructure focused on biomedicine, biotechnology, bioinformatics, and biodiversity. It has strong potential to serve as a regional hub for bioeconomy-driven innovation..



Serbia's BIO4Campus

BIO4 Campus will be home to a multidisciplinary set of tenants, creating an **ideal ecosystem for innovation**

300+ labs & research facilities

8 Core facilities

1,000+ PhDs
4,000+ students

Serbia's BIO4Campus

BIO4 Campus will be home to a multidisciplinary set of tenants, creating an ideal ecosystem for innovation

9 Institutes

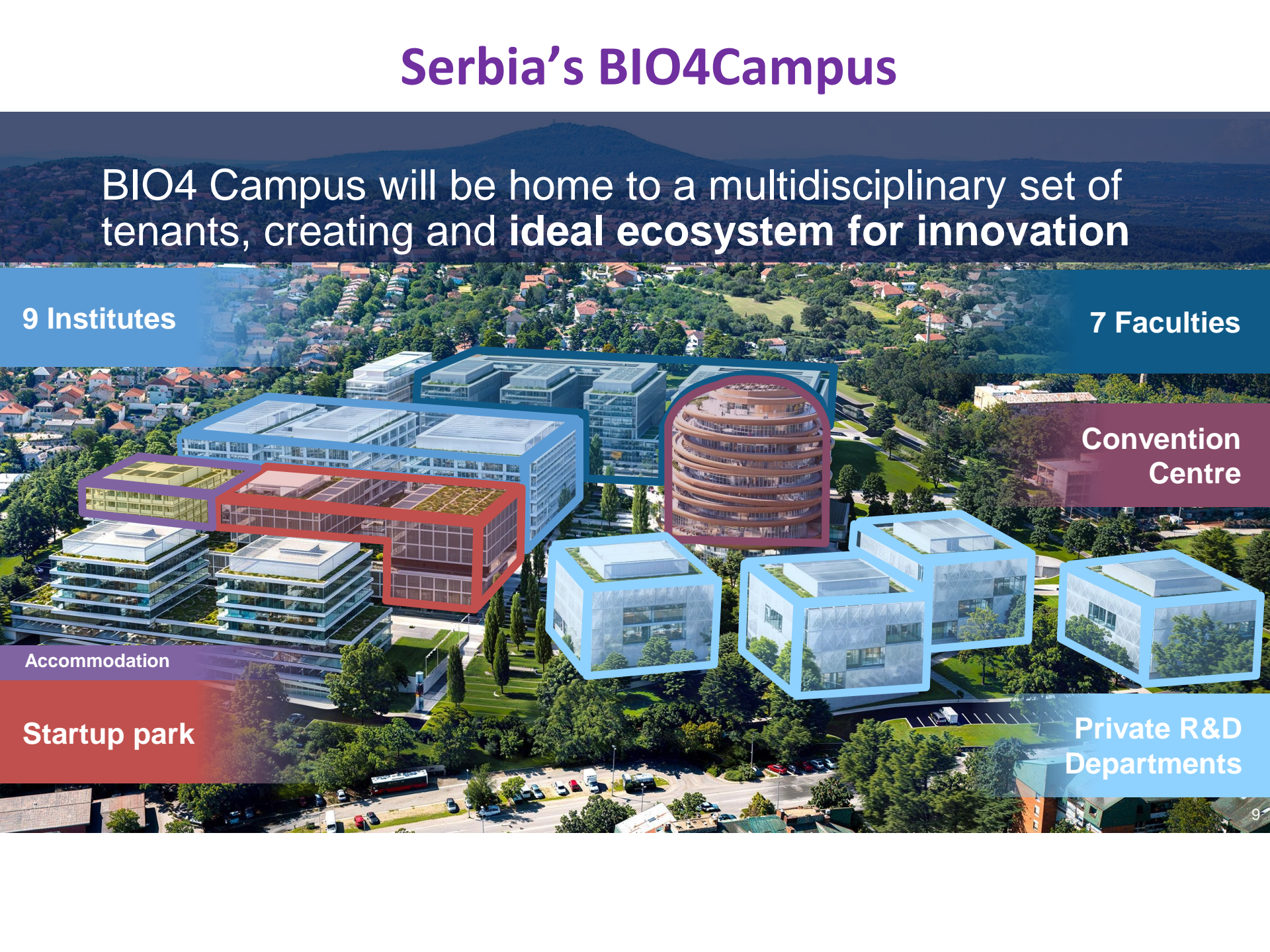
7 Faculties

Convention Centre

Accommodation

Startup park

Private R&D Departments



BIO4Campus as a Driver of Regional Cooperation in Bioeconomy

- BIO4 Campus - a **multidisciplinary R&D complex** for life sciences
- BIO4 Campus - a vibrant **concentration of people, knowledge and infrastructure** in BIO4 fields



- Opens opportunities for **cross-border access to infrastructure, knowledge exchange, and regional mobility programs.**



R&I Excellence: Key Achievements and Areas for Improvement



Gross domestic expenditure on R&D as % of GDP

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
EU-27	2.08	2.09	2.10	2.10	2.14	2.17	2.21	2.28	2.24	2.21
Bosnia and Herzegovina	0.32	0.26	:	:	:	:	0.19	0.20	0.19	:
Georgia	0.08	0.17	0.30	0.29	0.27	0.28	0.28	0.30	0.25	0.24
Moldova	0.30	0.31	0.31	0.28	0.26	0.26	0.24	0.24	0.23	0.23
Montenegro	0.37	0.36	0.37	0.32	0.35	0.50	0.36	:	:	:
North Macedonia	:	:	0.44	0.44	0.35	0.36	0.37	0.37	:	0.37
Serbia	0.66	0.69	0.78	0.81	0.84	0.88	0.85	0.86	0.95	0.92
Türkiye	0.81	0.86	0.97	1.12	1.18	1.27	1.32	1.37	1.40	1.32
Ukraine	0.73	0.65	0.61	0.48	0.45	0.47	0.43	0.40	0.38	0.33

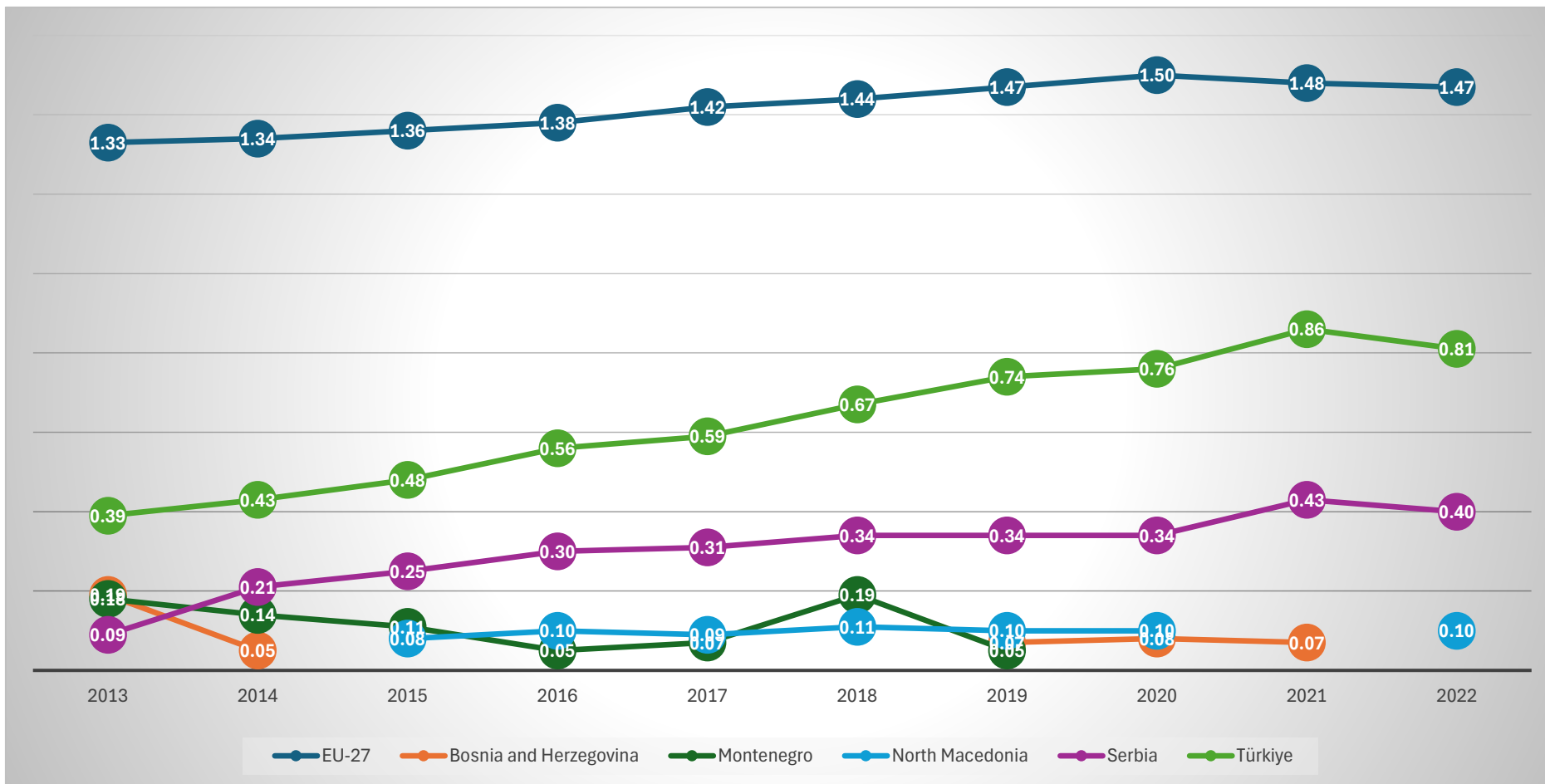
Note: No data available for Albania and Kosovo*

* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Source: Eurostat & World Bank (World development indicators)



Business enterprise expenditure on R&D as % of GDP



Note: No data available for Albania, Georgia, Kosovo*, Moldova and Ukraine

Source: Eurostat



Researchers FTE per million inhabitants

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bosnia and Herzegovina	228.01	283.74	353.67	406.85	471.51	459.77	451.01	446.12	445.69	540.15
Georgia	599.64	1126.78	1359.02	1383.74	1381.93	1544.72	1788.43	1799.17	1702.96	1809.00
Moldova	736.90	925.31	946.48	912.01	923.49	903.42	823.53	774.68	781.24	768.02
Montenegro	637.60	665.31	830.63	716.88	708.80	775.02	764.42			
North Macedonia	693.85	867.52	897.16	901.84	778.17	862.45	858.75	868.88	843.87	730.90
Serbia	1718.62	1822.70	2060.15	2121.89	2067.73	2075.99	2087.28	2149.85	2206.71	2349.68
Türkiye	1175.90	1163.54	1136.18	1263.79	1420.60	1585.08	1737.58	1964.66	2209.70	2478.68
Ukraine	1139.62	1002.51	1006.00	1037.24	994.08	988.08	880.55	846.25	774.07	586.08

Note: No data available for Albania and Kosovo*

Source: UNESCO Institute for Statistics



Patent resident applications per million inhabitants in 2023.

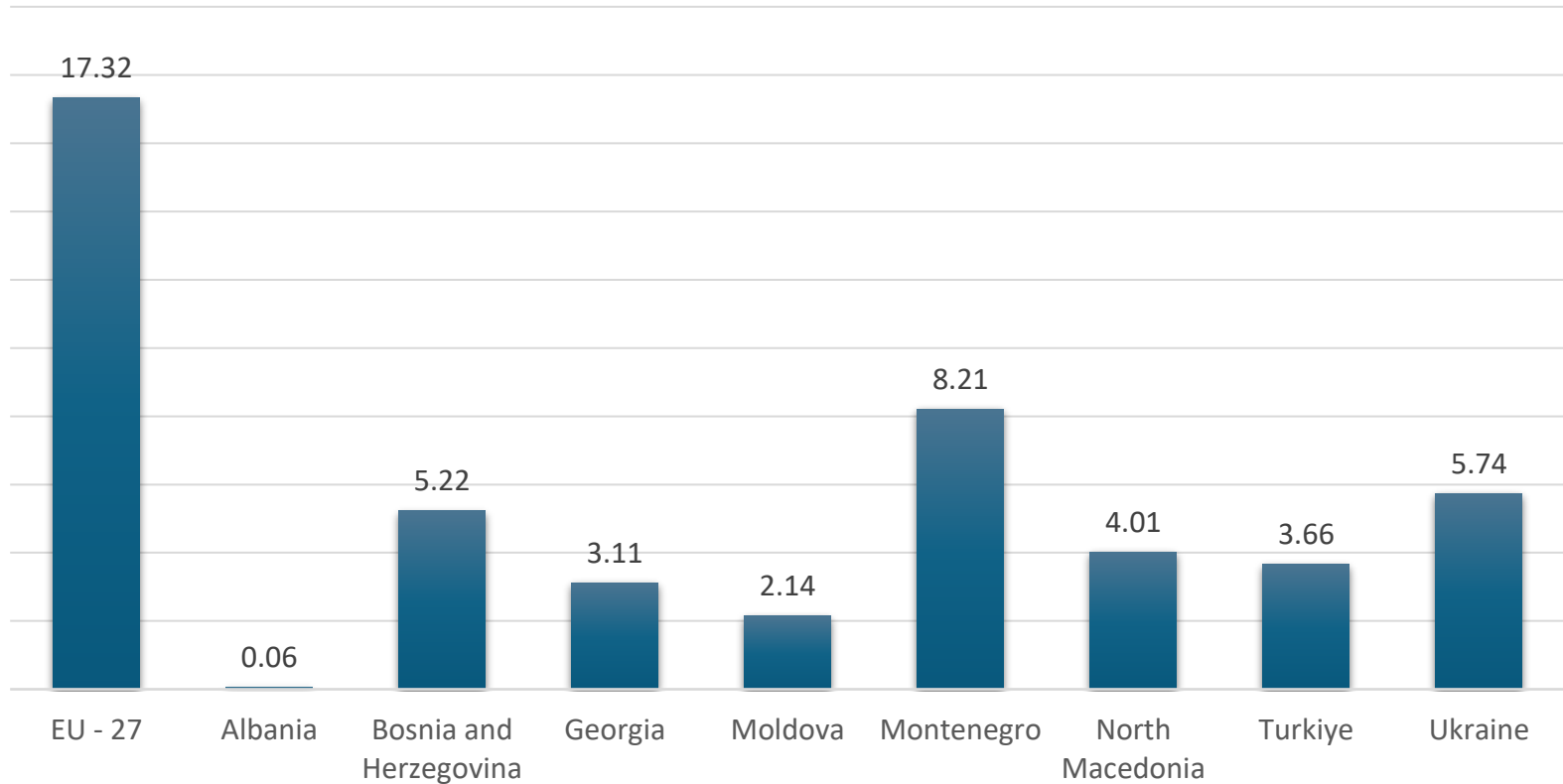
	Number of applications per million inhabitants	Global rank
Albania	6.2	77
Bosnia and Herzegovina	13.7	62
Georgia	25.5	51
Moldova	12.1	64
North Macedonia	12.7	63
Serbia	19.9	59
Türkiye	106	24
Ukraine	27.3	50

Note: No data available for Kosovo* and Montenegro

Source: WIPO statistics database



High-technology exports (% of manufactured exports) in 2022



Source: Bank (World development indicators) & Eurostat



Performance in Horizon Europe

	Net EU contribution (in mil EUR)	Success rate	Signed grants	Unique organisations	SME participation	ERC principal investigators
Albania	6.94	11.14%	39	28	4	0
Bosnia and Herzegovina	9.02	12.30%	43	34	5	0
Georgia	1.51	15.79%	43	35	1	0
Kosovo*	6.19	13.06%	14	10	0	0
Moldova	6.77	19.94%	56	29	4	0
Montenegro	4.45	11.84%	24	20	3	0
North Macedonia	12.25	12.52%	62	34	12	0
Serbia	123.7	16.36%	346	182	81	1
Türkiye	299.2	13.14%	557	381	137	23
Ukraine	59.68	14.90%	213	208	40	0

Source: Horizon Europe dashboard



Areas for improvement and policy recommendations

R&I Data Collection and Monitoring

- **Issue:** Limited availability and reliability of R&I statistics in some EU enlargement countries.
- **Implication:** Without comprehensive data, policymakers cannot make evidence-based decisions, evaluate policy impact or compare performance with EU benchmarks.

Recommendations:

- ✓ Establish **national R&I observatories** to systematically collect and analyse innovation data.
- ✓ Improve **harmonisation with Eurostat and OECD indicators** to align with EU standards.
- ✓ Promote **capacity-building programs** for national statistical offices to enhance R&I data collection and reporting.



R&D Investment

- **Issue:** GERD and BERD are generally low in enlargement countries compared to the EU average.
- **Implication:** Limited R&D funding restricts innovation, reduces competitiveness and weakens private sector engagement.

Recommendations:

- ✓ Introduce **targeted R&D tax incentives** to stimulate private investment.
- ✓ Strengthen **public-private partnerships** to increase BERD.
- ✓ Leverage **EU funds** to boost public R&D funding.



Human Capital

- **Issue:** The number of researchers is often insufficient, and many skilled professionals leave for better-funded research environments.
- **Implication:** This limits research capacity, reduces innovation potential and weakens national research institutions.

Recommendations:

- ✓ Implement **attractive career programs** (grants, salaries, tenure-track positions).
- ✓ Strengthen **international mobility programs** that allow researchers to work abroad but maintain links with home institutions.
- ✓ Promote **diaspora engagement** programs to bring back skilled researchers or involve them in projects.



Commercialization and Technology Transfer

- **Challenge:** Lack of patents suggests that research is not reaching commercialization.
- **Implication:** Limited industry-academia collaboration weakens innovation-driven growth.
- **Recommendations:**
 - ✓ Increase funding for **applied R&D and patentable research**.
 - ✓ Provide **subsidized patent application fees** for SMEs and startups.
 - ✓ Establish **more TTOs** in universities and research institutes.
 - ✓ Offer **government-backed IP advisory services** for researchers and businesses.
 - ✓ Implement **fast-track national patent procedures**.
 - ✓ Provide **financial incentives** for international patent applications



R&I impact

- **Issue:** Many enlargement countries have low levels of high-tech exports, signaling weak commercialization of research.
- **Implication:** R&D investments do not translate into market-ready innovations, limiting economic benefits.

Recommendations:

- ✓ Strengthen **technology transfer offices** and innovation hubs.
- ✓ Support **startups and scale-ups** in high-tech sectors through funding and mentorship programs.
- ✓ Promote **export-oriented industrial policies**, encouraging foreign investments in tech-driven industries.



Horizon Europe Participation

- **Issue:** Many enlargement countries have insufficient success rates in Horizon Europe, especially as project coordinators.
- **Implication:** This results in missed funding opportunities, weaker collaboration networks and lower institutional visibility in EU R&I.

Recommendations:

- ✓ Establishing **capacity building programmes for proposal writing and coordination.**
- ✓ **Strengthening NCPs** (introducing specialized advisory services, matchmaking events, and targeted assistance for first-time applicants and coordinators).
- ✓ **Incentivizing project leadership** – Introduce national funding schemes or co-financing mechanisms to encourage organizations to take on coordinator roles, reducing financial risk and administrative burden.
- ✓ **Enhancing international networking** – Support participation in European research networks, brokerage events, and strategic partnerships with leading institutions to build credibility and secure coordinator roles.
- ✓ **Targeted support for SMEs and newcomers**



Regional and International Collaboration in R&I

- **Challenge:** Weak regional and international collaboration limits knowledge exchange, reduces access to funding, and slows innovation progress.
- **Implication:** Without strong cross-border cooperation, enlargement countries struggle to integrate into the European Research Area, access Horizon Europe funding, and develop a competitive innovation ecosystem.

Recommendations:

- ✓ **Regional Innovation Networks:** Establish regional R&I platforms to facilitate joint research, patenting and knowledge exchange.
- ✓ **Cross-Border Data Harmonization:** Develop a **regional R&I statistics framework**, aligned with Eurostat/OECD standards, to improve data availability and benchmarking.
- ✓ **Joint Technology Transfer Hubs:** Create regional centers of excellence for commercialization and IP management to enhance patenting and innovation output.
- ✓ **International R&D Partnerships:** Strengthen participation in **EU programs (Horizon Europe, COST, EUREKA)** and encourage consortia-building for competitive grant applications.





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