European Commission

Mapping Montenegro's potential in the context of Smart Specialisation

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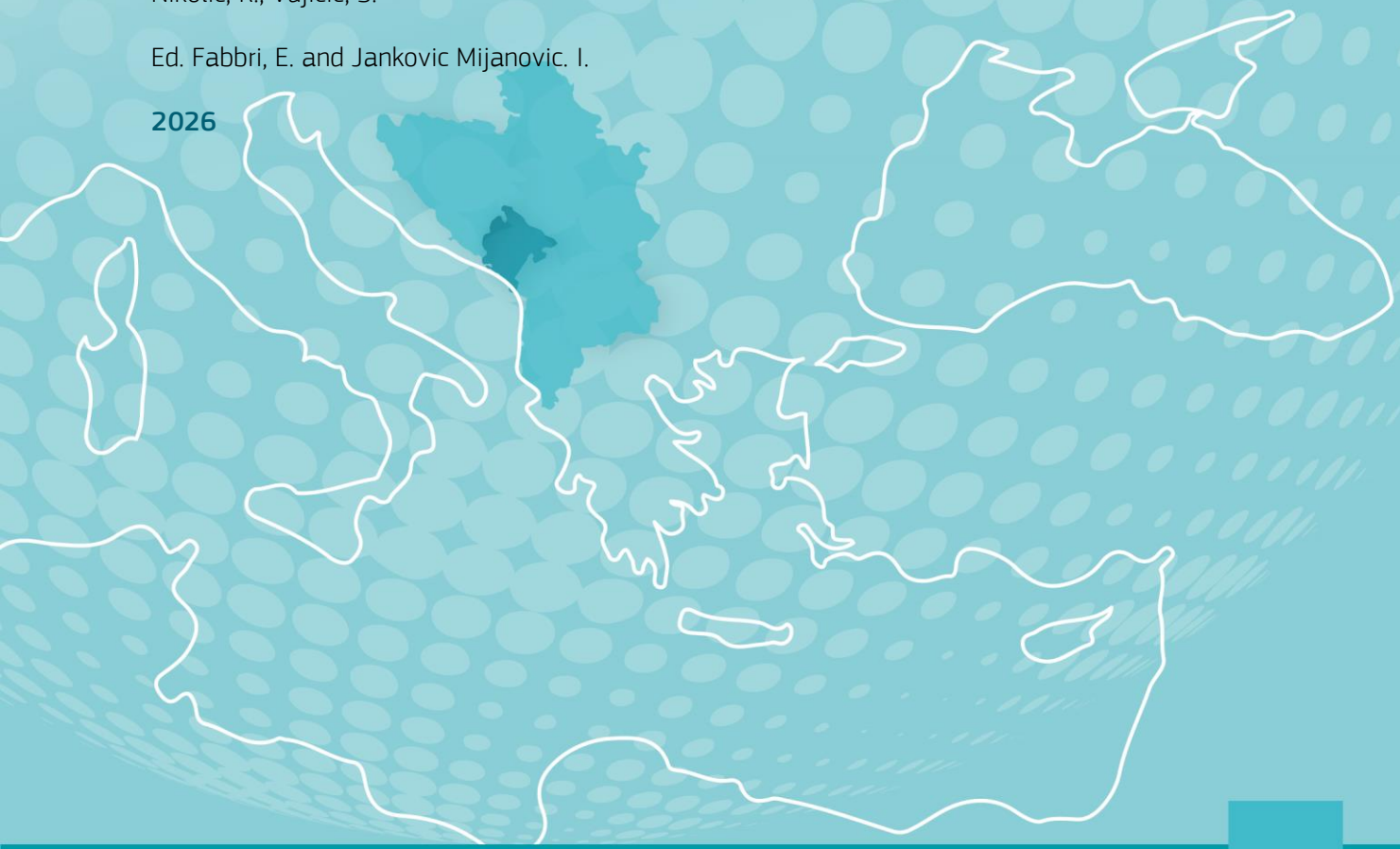
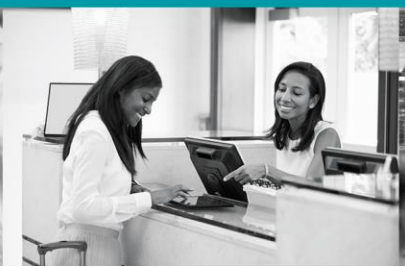


SMART SPECIALISATION



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Contents

Abstract

The Smart Specialisation Strategy (S3) is a place-based economic agenda that Montenegro, as the first non-EU country to adopt a strategy based on this framework, is now updating for the 2026–2031 period. This new iteration elevates S3 to a national 'umbrella' strategy, utilizing comprehensive quantitative and qualitative mapping to identify the country's economic, scientific, and innovative strengths. This report serves as an analytical foundation for the upcoming Entrepreneurial Discovery Process (EDP), where stakeholders collaborate to finalize Montenegro's strategic priority domains. The analysis identifies five preliminary priority areas for Montenegro's 2026–2031 S3 strategy: Construction, Energy and Sustainable Environment, Sustainable Agriculture and Food, Digital Innovation and Transformation, and Innovative and Sustainable Tourism. While sectors like Construction and Energy are highlighted for their roles in infrastructure and green transitions, the ICT and Tourism sectors stand out as high-growth pillars, contributing significantly to GDP and export potential.

Executive Summary

This report provides the analytical foundation for the development of Montenegro's Smart Specialisation Strategy (S3) for the period 2026-2031. Building on Montenegro's pioneering role as the first non-EU country to adopt and fully align an S3 framework with Joint Research Centre (JRC) methodology, the new strategy represents a qualitative step forward. The forthcoming S3 is positioned as a national-level umbrella strategy, enabling stronger alignment with broader development policies and more effective coordination across government interventions.

The report focuses on the "diagnosis and mapping" phase of the S3 design process. It integrates comprehensive quantitative and qualitative analyses to assess Montenegro's economic structure, scientific capabilities, innovation performance, and sectoral specialisation patterns. The quantitative mapping, conducted in 2024, draws on national and international datasets to identify areas of critical mass, growth dynamics, and competitive advantage. This was complemented by qualitative analysis carried out in 2025 through expert teams, interviews, and focus groups involving quadruple helix stakeholders from business, academia, government, and civil society. Together, these methods provide a robust evidence base while ensuring sensitivity to contextual and emerging opportunities that may not yet be fully reflected in statistical data.

Based on an integrated interpretation of both analytical strands, the report identifies five preliminary priority areas with the strongest combined economic, technological, and innovation potential: Construction; Energy and Sustainable Environment; Sustainable Agriculture and Food Value Chain; Digital Innovation and Transformation; and Innovative and Sustainable Tourism. These areas are not presented as final strategic choices, but as analytically grounded inputs to the upcoming Entrepreneurial Discovery Process (EDP), where stakeholders will further refine priorities, define sub-domains, and co-create strategic directions.

Construction emerges as a key enabling sector, closely linked to Montenegro's anticipated long-term infrastructure investments and the need for sustainable spatial and resource management. Energy and Sustainable Environment reflects Montenegro's growing engagement with green transition objectives, renewable energy, energy efficiency, and environmental technologies, with strong links to both SME development and scientific research. Sustainable Agriculture and Food is recognised for its socio-economic importance, regional diversity, and complementarities with tourism, particularly through high-quality, autochthonous, and geographically distinctive products. Digital Innovation and Transformation stands out as one of the most dynamic and export-oriented sectors, with a rapidly growing contribution to GDP and strong innovation capacity in areas such as fintech, artificial intelligence, gaming, and cybersecurity. Tourism, already a cornerstone of the Montenegrin economy, shows significant potential for further upgrading through innovation, digitalisation, sustainability, and the development of specialised and personalised tourism experiences.

Overall, the report confirms that Montenegro possesses a diversified yet interconnected set of strengths that can underpin an innovation-driven development path. As policy implications, by elevating S3 to an umbrella strategy and grounding it in a rigorous analytical process aligned with JRC methodology, Montenegro is well positioned to use the forthcoming EDP to sharpen its strategic focus, align and prioritise policy interventions, that support competitiveness, sustainability for the 2026-2031 period.

1. Introduction

Smart Specialisation is conceived as the capacity of an economic system to generate new specialties through the discovery of new domains of opportunity and the local concentration and agglomeration of resources and competences in these domains (Foray, 2015).

On the one hand, it strongly relies on the capacity to explore and grasp emerging place-based opportunities, on the other it is firmly grounded on evidence-driven approach to policymaking, translating data and knowledge into context-specific interventions for competitiveness and sustainable development (Foray et al. 2011; Foray and Goenaga, 2013; Foray, 2025).

As a policy instrument, Smart Specialisation Strategy (S3) is therefore the attempt to pursue this goal. It represents the place-based economic transformation agenda, concentrating research and innovation investments on a limited set of priority domains with competitive advantages or emerging potential identified through an inclusive stakeholder dialogue (Foray, 2015).

In the last two programming periods of EU Cohesion Policy, S3 has been identified as key conditionality requirement and has progressively become a cornerstone of innovation policy across Europe.

In the last decade this approach to policymaking has been further extended to EU enlargement economies, and S3 now represents a key pillar in the EU accession process and regularly scrutinized as part of the Acquis Communautaire. Starting in 2016, all EU enlargement countries gradually committed to Smart Specialisation, and to support the effective adoption of this paradigm in the region, in 2018 the Joint Research Centre (JRC) developed a dedicated framework[1] for the design of S3 strategies.

The S3 design framework of the JRC is made of seven steps and sub articulated in further stages. Its log-frame is conceived as a stage-gate process, with a sequence of tasks, including mapping exercises (quantitative and qualitative) and stakeholder dialogue (so called Entrepreneurial Discovery Process - EDP). To ensure both an evidence-based and participatory approach, the design process is structured as a continuous cycle of data collection, analysis and discussion, with each stage informing the next, up to the official adoption of the strategy.

Among EU enlargement countries, Montenegro has positioned itself as a frontrunner in the EU accession process, demonstrating consistent commitment to EU policy frameworks, including the implementation of Smart Specialisation Strategy processes. Montenegro was the first country outside the European Union to adopt the Smart Specialisation Strategy for the period 2019-2024 with a conditionally positive approval from the EC and already committed to the design of the second round of strategy, for the period 2026-2031.

In this context, this report presents a comprehensive mapping of Montenegro's innovation landscape, serving as a critical foundation for the S3 design process for the period 2026-2031 in line with the JRC methodology, and directly contributing to the subsequent stages linked to EDP.

For the period 2019-2024 Montenegro's Smart Specialisation Strategy established four priority areas: Sustainable Agriculture and Food Value Chain, Energy and Sustainable Environment, Sustainable and Health Tourism, and Information and Communication Technologies (ICT). Complementing these priorities, the strategy outlined five strategic objectives to strengthen the innovation ecosystem: enhancing scientific research excellence and relevance, developing human resources in research and innovation, fostering

[1] For the S3 design framework see Annex 1 in 'Supporting an Innovation Agenda for the Western Balkans: Tools and Methodologies' (Matusiak and Kleibrink, ed., 2018)

collaboration within the innovation system, supporting business innovation, and improving the overall framework for an innovative ecosystem.

In February 2024, Montenegro made a formal decision to launch the new S3 process for the period 2026-2031. Given the country's size and the fact that Montenegro does not have separate administrative and implementation bodies at the regional level, it was decided that the Smart Specialisation Strategy 2026-2031 would be a national-level strategy, as was the case in the previous strategic cycle.

In April 2024, the Government of Montenegro adopted the Roadmap for the Development of the new Smart Specialisation Strategy in alignment with the S3 design framework developed by the JRC.

Since the Smart Specialisation Strategy 2019-2024 was positioned as one of the sectoral strategies within the national strategic framework, the Government of Montenegro decided that the new Smart Specialisation Strategy 2026-2031 would become one of the umbrella strategic documents at the national level. This decision will significantly facilitate policy and measure alignment with other strategies at the national level.

After the institutional capacity-building and awareness-raising initiatives foreseen in the first phase of S3 design framework, Montenegro committed to the phase of Diagnosing/Mapping Potential, involving quantitative and qualitative system analyses, with the goal of defining an initial proposal of priority areas.

The quantitative analysis of potential was conducted in 2024 by the JRC, serving as initial step for subsequent qualitative analyses, conducted by the Ministry of Education, Science, and Innovation of Montenegro in 2025 through the involvement of expert teams and of an international expert.

Both quantitative and qualitative analyses are based on specific methodological approaches aiming at investigating economic scientific and innovative potential as well as at collecting qualitative evidence from quadruple helix stakeholders[2].

This report aims to present the main findings from Montenegro's S3 quantitative and qualitative analyses as an integrated contribution for the subsequent stages of the S3 design process. As such, the domains detected and further analysed in the present Report do not represent the final priority selection for the S3 strategy of Montenegro, but just an analytical contribution to the participatory process maximally expressed by the EDP.

The report is structured into two parts. The first part aims to provide a general overview of Montenegro's main economic indicators, such as GDP, entrepreneurship, territorial disparities, and sales, and a detailed examination of Montenegro's economic, scientific, and innovative strengths, using various national and international data sources. The second part covers the main findings of the qualitative analysis developed in 2025, following the results of the quantitative mapping.

The conclusions present the results of an integrated interpretation of the data and evidence collected, offering a comprehensive perspective that can serve as a valuable input for the subsequent phases of strategy design. By synthesizing insights across different dimensions, these conclusions aim to support informed decision-making, facilitate the identification of priority areas, and guide the formulation of targeted policy interventions.

[2] For quantitative methodologies see 'Measuring territorial innovation strengths' (Hollanders et al., 2024) and for qualitative methodologies see 'Methodological guidelines for qualitative analysis of economic, innovation and scientific potential in the EU enlargement and neighbourhood' (Radovanovic and Bole, 2023)

2. Quantitative mapping

2.1. Economic context

Montenegro's economy is a small, open, middle-income transition economy characterized by its high reliance on the services sector, a commitment to European integration, and the use of the euro as its currency. Based on annual data, Gross Domestic Product (GDP) in Montenegro was estimated at EUR 6.96 billion in 2023, representing an increase of approximately EUR 1 billion relative to 2022 (Monstat, 2023). GDP per capita reached EUR 10,998 in 2023, growing from EUR 9,598 in 2022 (Monstat, 2023). The Montenegrin economy is predominantly service-based, accounting for 61.5% of its GDP. Industry and agriculture contribute 13% and 6% to GDP, respectively (World Bank, 2024). A review of GDP values at current prices over the last decade reveals substantial growth, with the 2023 value almost doubling that of 2014.

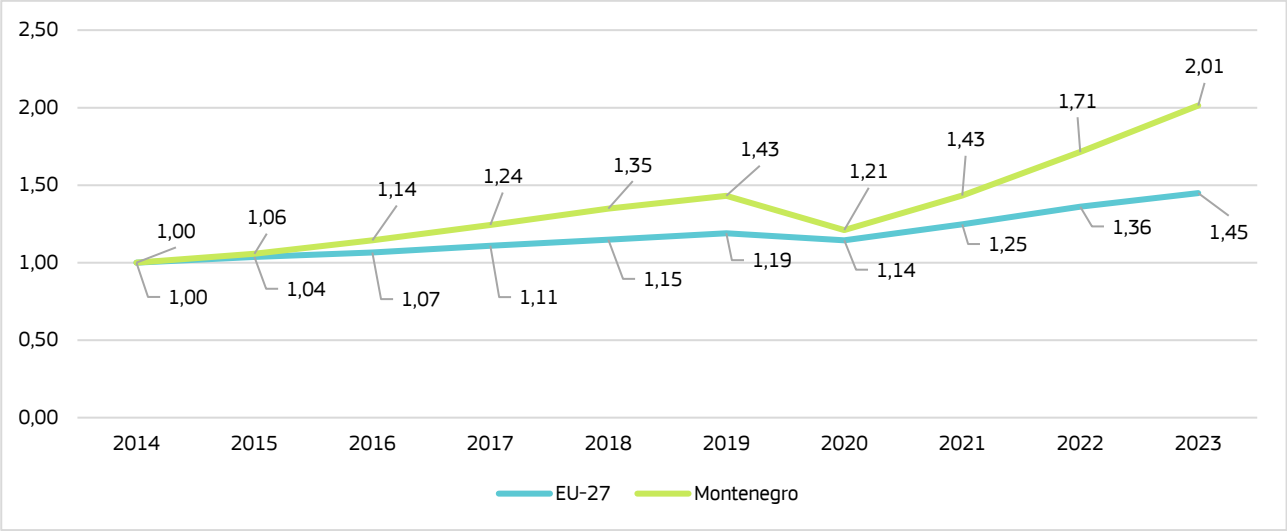
Table 1. Gross domestic product at current prices EUR billion (2014-2023)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
EU - 27	11,868	12,307	12,640	13,168	13,628	14,122	13,580	14,794	16,143	17,193
Montenegro	3.5	3.7	3.9	4.3	4.7	4.9	4.2	5.0	5.9	7.0

Source: *Author's elaboration on EUROSTAT*

This is even more clearly shown in Figure 1, where the value of 2014 is used as a reference year and the GDP evolution of Montenegro compared to the EU-27; in this case, it shows in EU-27 the 2023 value is 1.45 times higher with respect to 2014, while in Montenegro it is 2.01 times higher. GDP shows a sustained growth, particularly after the drop occurred in 2019-2020 due to the Covid-19 outbreak.

Figure 1. Evolution of Gross domestic product at current prices reference year 2014 (2014-2023)

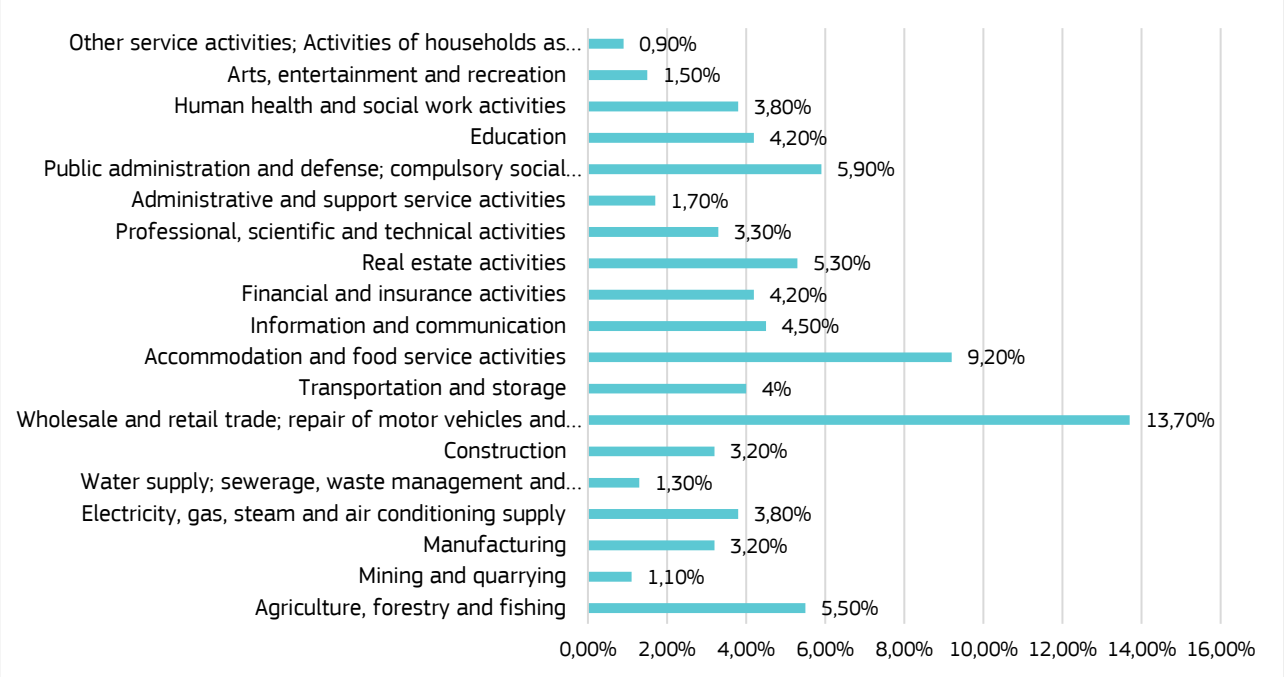


Source: *Authors' elaboration on EUROSTAT*

Figure 2 illustrates the GDP composition of Montenegro, highlighting that Wholesale and Retail Trade accounts for 13.7% of GDP, followed by Accommodation and Food Services at 9.2%. Public Administration, Agriculture, and Real Estate each contribute approximately 6%, while Information

and Communication, Financial and Insurance Activities, and Education each represent around 4.5%. This clearly demonstrates that the majority of the country's GDP is generated by the service sectors.

Figure 2. GDP structure at current prices (2023)



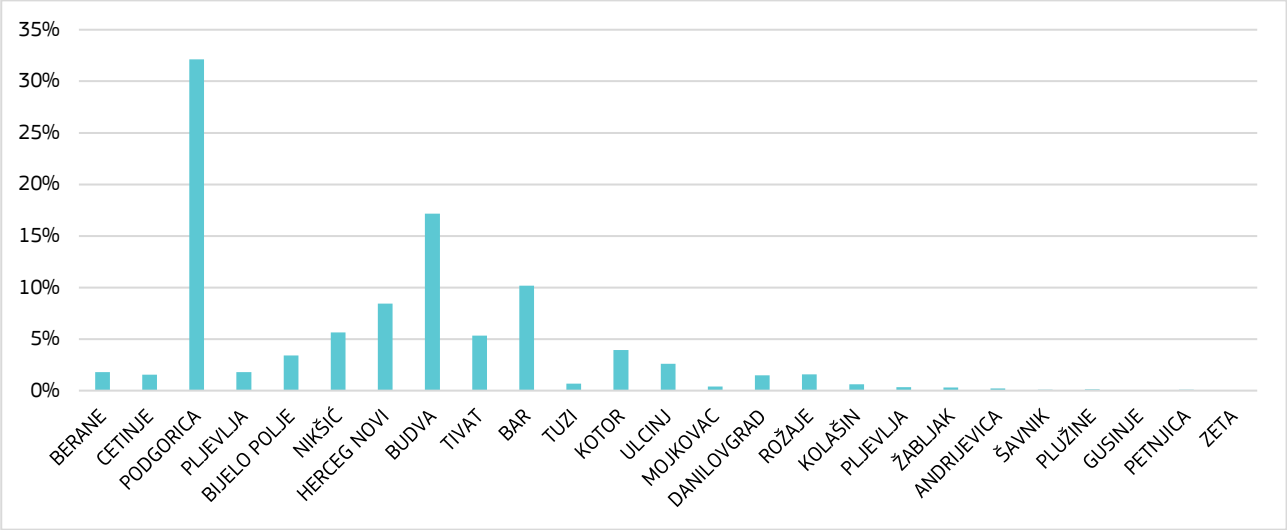
Source: *Authors' elaboration on Monstat data*

2.2. Regional disparities

As of 2023, Montenegro has a population of just over 630 thousand inhabitants. Due to its relatively small size, the country is not divided into regions (NUTS-2 or NUTS-3). To address regional disparities, the analysis focuses on differences at the municipal level. Montenegro comprises 25 municipalities, with the capital city, Podgorica, home to nearly one-third of the population.

Figure 3 shows the distribution of the business entities in Montenegro. 32% of them are located in Podgorica, while only two other municipalities, Budva and Bar, account for at least 10% of the total business entities, with 17% and 10% respectively. This leaves the remaining 22 municipalities with just 41% of the business entities, many of which contribute approximately 1% each.

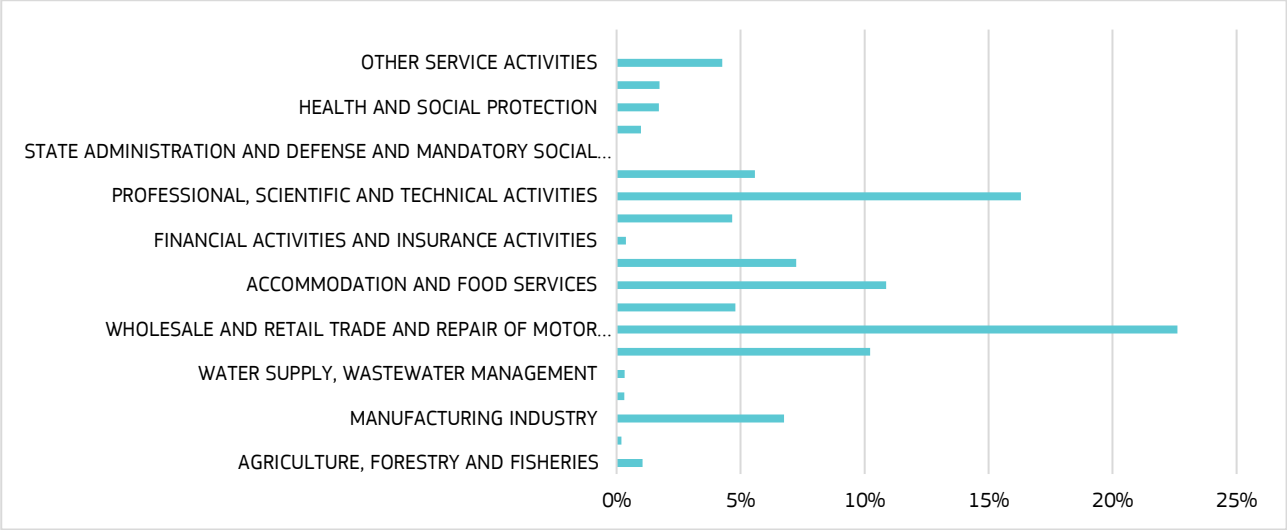
Figure 3. Distribution of business entities by municipality



Source: *Author's elaboration on Monstat data*

Regarding the sectoral distribution of business entities (see Figure 4), there is a slight deviation from the GDP representation (see Figure 2). The Wholesale and Retail industry maintains its leading position with a share of 23%. Following that, the second, third and fourth positions are occupied respectively by Professional scientific and technical activities at 16%; Accommodation and food services at 11% and Construction at 10%.

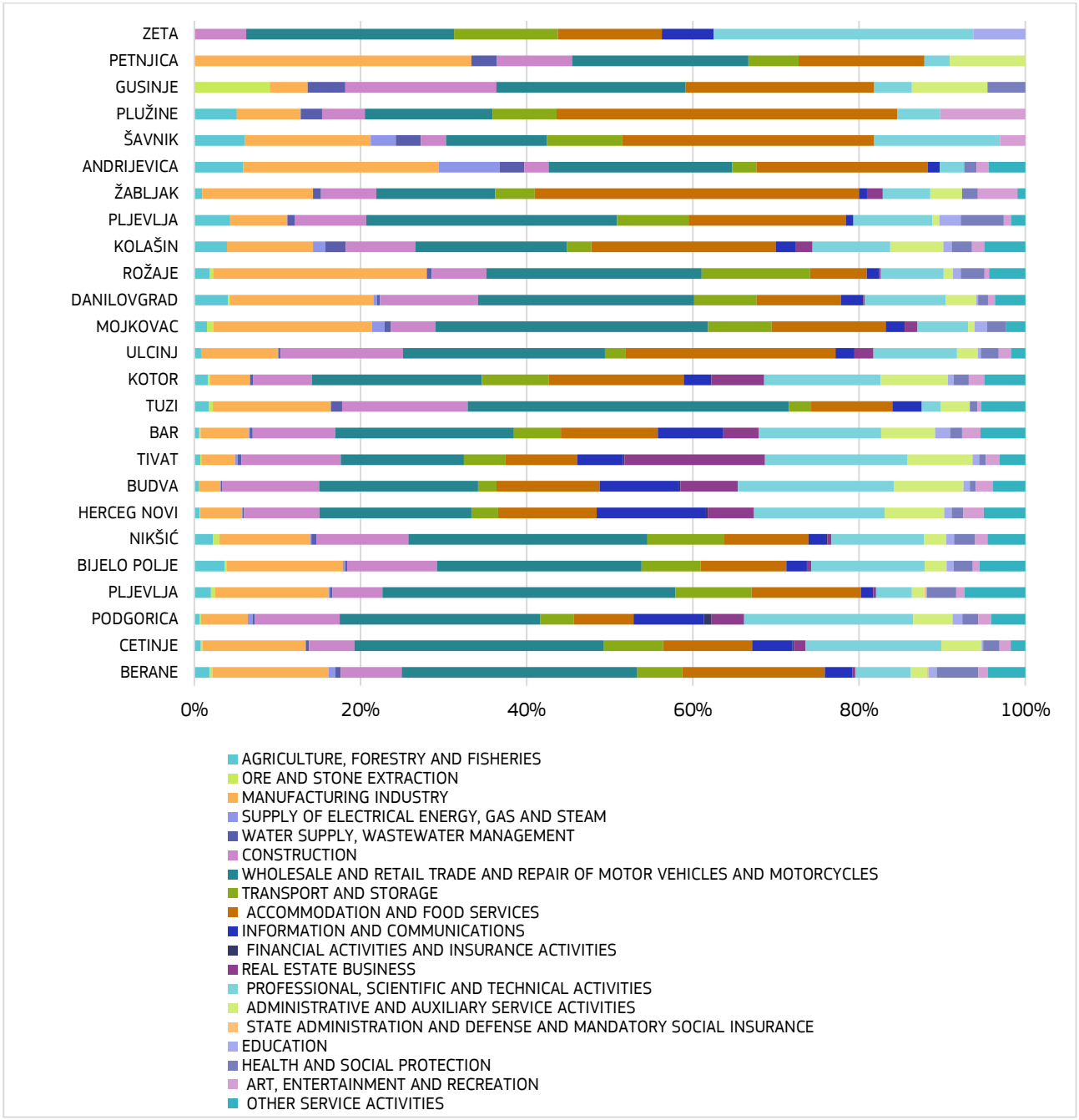
Figure 4. Percentage of business entities by sector



Source: *Authors' elaboration on Monstat data*

Figure 5 illustrates the distribution of business entities by sector across each municipality. It highlights that Kotor, Ulcinj, Kolasin, Žabljak, Šavnik, and Plužine exhibit a significant concentration of business entities in the Accommodation and Food Services sector. In contrast, the Manufacturing sector shows notable percentages in Petnjica, Rožaje, and Andrijevica.

Figure 5. Percentage of business entities by sector and municipality

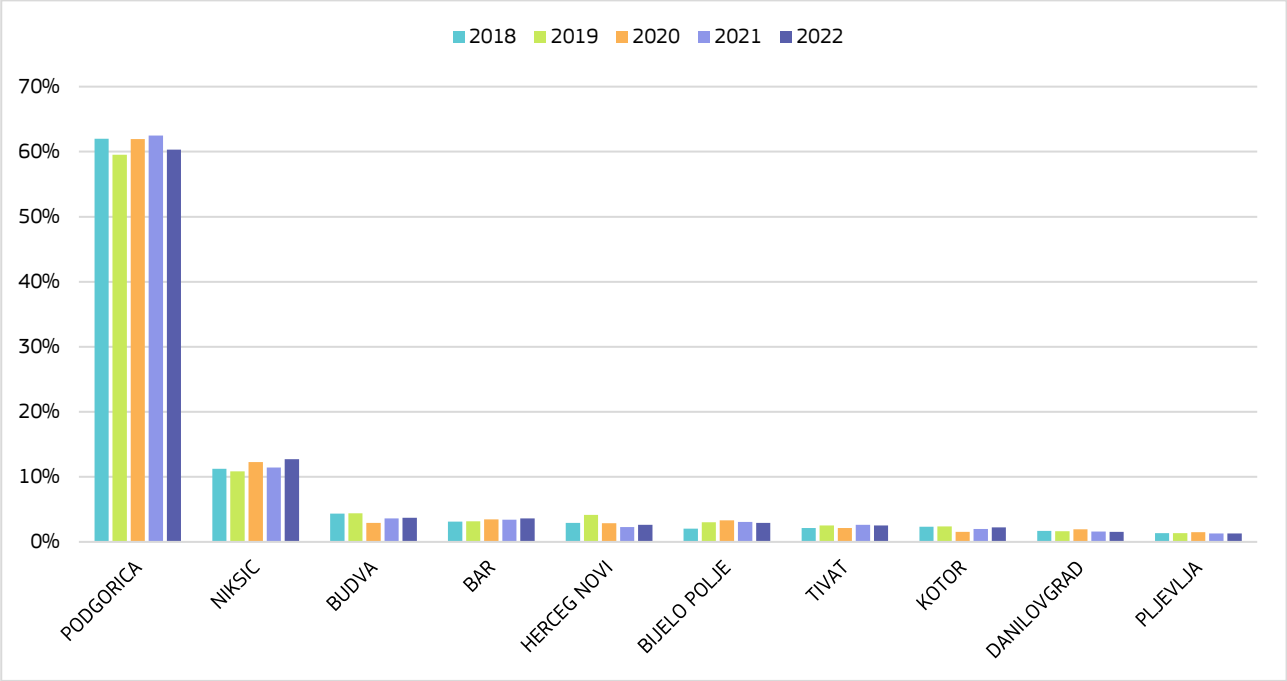


Source: *Authors' elaboration on Monstat data*

Figure 6 clearly shows the differences between Podgorica and the other cities in terms of firms' sales[3] and also their evolution over the last years. This shows an interesting growth in all major cities. However, the capital outperforms all the others by far.

[3] In this case the data are drawn from ORBIS database which are slightly different from Monstat or more institutional data. However, this is largely considered a good proxy and frequently used also for scientific purposes.

Figure 6. Firms' sales percentage by city (2018-2022)



Source: *Authors' elaboration on ORBIS*

2.3. Entrepreneurship and sales

One other key element for the evolution of a country is represented by the entrepreneurial dynamics. For this reason, in the following table 2 and Figure 7, are shown respectively the evolution of new venture creation in the country over the period 2014-2023 and the most dynamic sectors in terms of new capital companies.

Also, in this case, it is possible to notice the acceleration of new ventures creation after the COVID-19 outbreak, with a value that increased from 3-4 thousand of the periods 2014-21 to values of around 8800 new companies for the last two years.

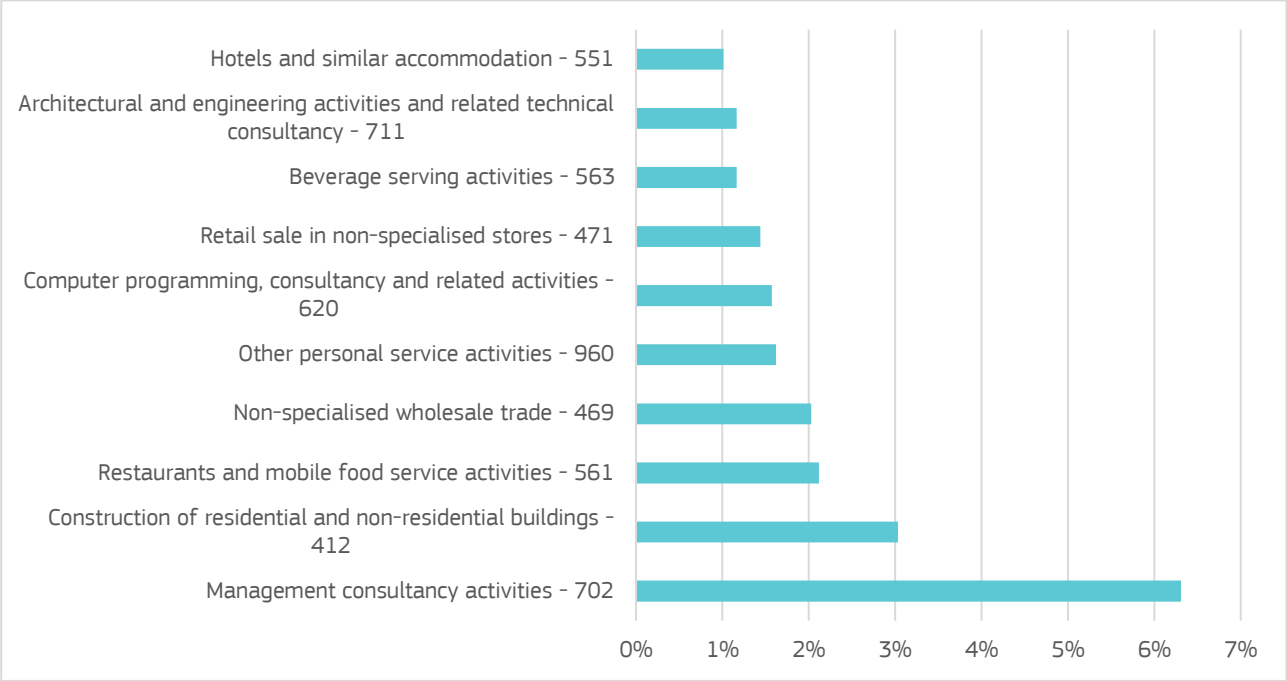
Table 2. Number of new companies in the country (2014-2023)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
New companies	3,382	3,864	3,703	2,154	3,780	3,887	3,758	4,531	8,933	8,827

Source: *Monstat data*

The three most dynamics sectors, considering the birth of new ventures appears to be the *702 – Management consultancy activities*; *412 – Construction of residential and non-residential buildings* and *561 – Restaurants and mobile food service activities*.

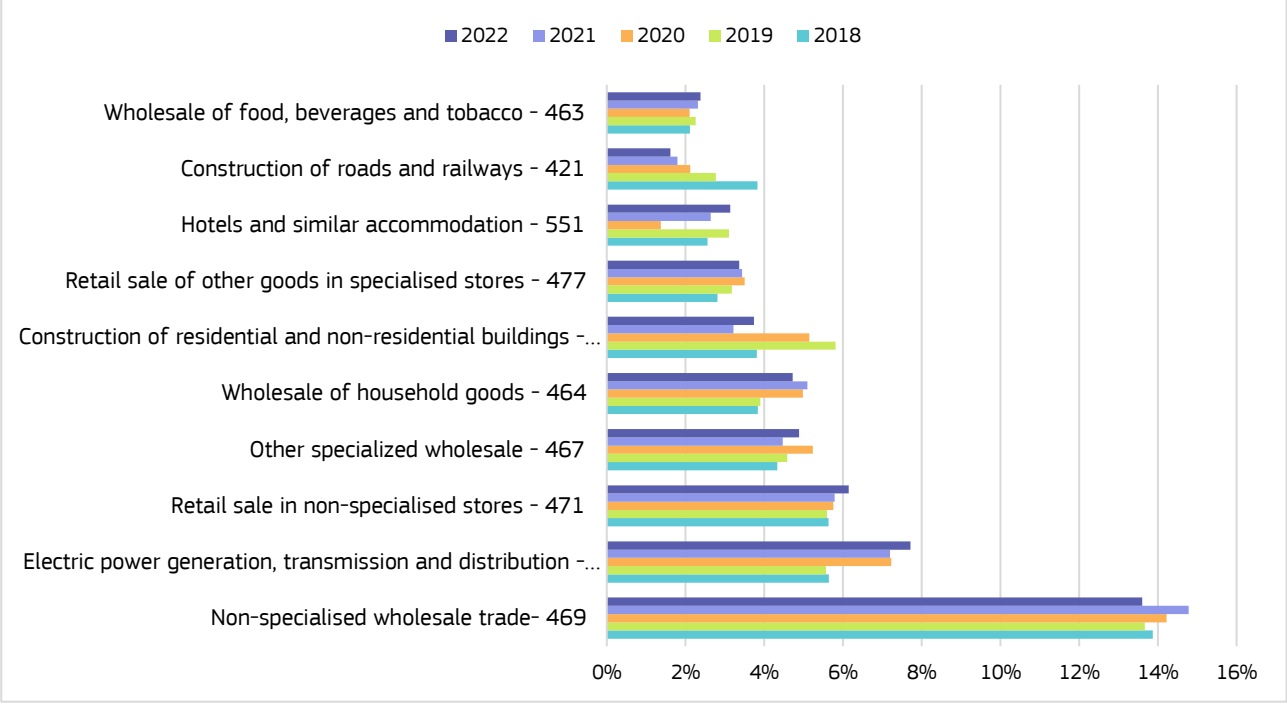
Figure 7. Most dynamic 3-digit sectors in terms of new firms (2017-2019)



Source: *Authors' elaboration on ORBIS – data extracted in September 2024*

Finally, following the perspective of sales, the sectors with highest levels are *469 – non-specialised wholesale trade*; *351 – Electric power generation, transmission and distribution* and *Retail sale in non-specialised stores*.

Figure 8. Sales by industry – in percentage (2018-2022)



Source: *Author's elaboration on ORBIS – data extracted in September 2024*

2.4. Economic Potential

2.4.1. Methodology

The mapping exercise is represented by an identification of industries with a current economic potential which are already highly specialised using the location quotient indicator (LQ) and that present a relatively high presence in the country defined as critical mass (CM).

Industries with a current economic potential are established industries in which Montenegro is already specialised compared to the EU-27 and that are not too small. Identifying the industries where the country has a specialisation and where there is a minimum value of critical mass, is a first step to identify industries with the potential to contribute to the country's overall economic development. These industries can be identified by examining their overlap with the other two potentials, scientific and innovative, and through a detailed qualitative analysis, which can provide a clearer projection to complement this quantitative analysis.

The Economic Potential has been analysed at the NACE 2-digit level for the year 2023, using indicators based on the number of employees as a measure of size (such as critical mass and location quotient) using data from EUROSTAT for the values at the EU-27 level and data provided by Monstat for Montenegro. Specifically, the following indicators have been calculated.

2.4.2. Results

The results that can be drawn from the mapping exercise identify those industries presenting both a critical mass and a specialisation in terms of employment, following are reported the results based on two different thresholds level for both indicators, the first one more narrow (LQ above 1.5 and CM above 1%) and a second one more broad (LQ 1.25 and CM 0.5%). This will help to have a picture of the sectors with an economic potential at two different levels that will be then complemented with the Scientific and Innovative potential to identify the preliminary domains in Montenegro.

Following the narrow perspective and thus using the stricter threshold, there are 24 industries showing a critical mass and 24 industries that showed a specialisation. However, the industries, at the NACE2-digit, that showed both a critical mass, using the 1% threshold and a specialisation, using a LQ threshold above 1.5, are only 10.

These 10 industries are the following:

- D35 Electricity, gas, steam and air conditioning supply.
- F41 Construction of buildings.
- F42 Civil engineering.
- G46 Wholesale trade, except of motor vehicles and motorcycles.
- I55 Accommodation.
- I56 Food and beverage service activities.
- L68 Real estate activities.
- M70 Activities of head offices; management consultancy activities.
- N78 Employment activities.

— R92 Gambling and betting activities.

While using a broader perspective, thus the less strict thresholds, there are 41 industries showing a critical mass and 27 industries that showed a specialisation. While those showing both a critical mass, using the 0.5% threshold and a specialisation, using a LQ threshold above 1.25, are only 19.

These 19 industries are the following:

— C16 Manufacture of wood and of products of wood and cork, except furniture, manufacture of articles of straw and plaiting materials.

— D35 Electricity, gas, steam and air conditioning supply.

— E36 Water collection, treatment and supply.

— E38 Waste collection, treatment and disposal activities; materials recovery.

— F41 Construction of buildings.

— F42 Civil engineering.

— G46 Wholesale trade, except of motor vehicles and motorcycles.

— I55 Accommodation.

— I56 Food and beverage service activities.

— J60 Programming and broadcasting activities.

— J61 Telecommunications.

— L68 Real estate activities.

— M70 Activities of head offices; management consultancy activities.

— M71Architectural and engineering activities; technical testing and analysis.

— N78 Employment activities.

— N79 Travel agency, tour operator and other reservation service and related activities.

— N80 Security and investigation activities.

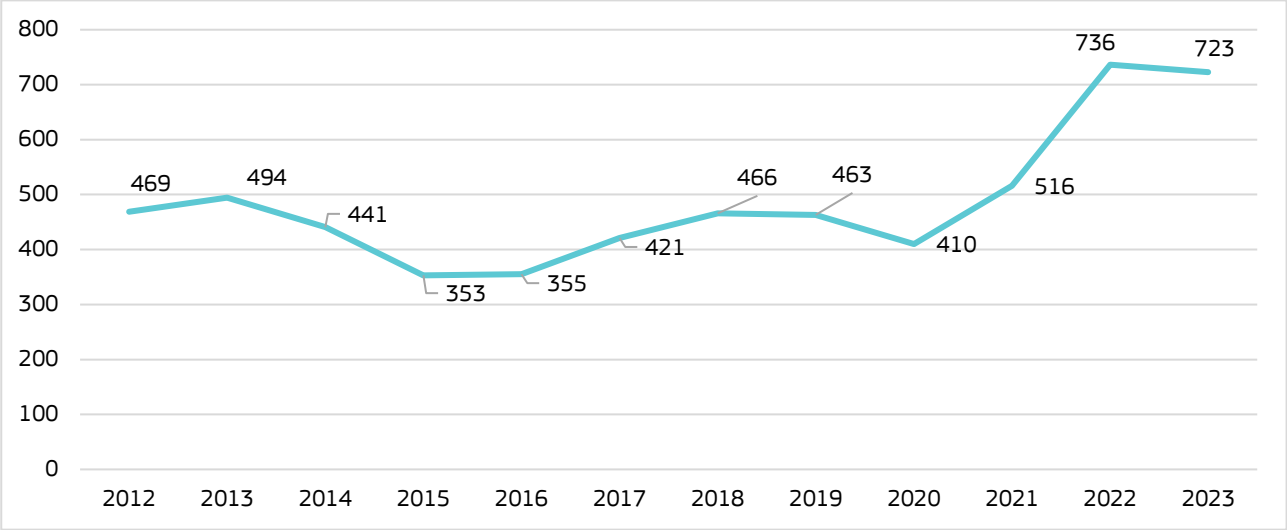
— R91 Libraries, archives, museums and other cultural activities.

— R92 Gambling and betting activities.

2.4.3. Exports of goods analysis

An additional step of the economic analysis has focused on Exports of goods in order to assess the competitiveness of Montenegro's industries and their capacity to be attractive also on the international market. Through this analysis, goods exports are used to identify in which products Montenegro has a trade capacity. Export data are available at the HS-17 4-digit level from UN Comtrade. Figure 9 below illustrates the value of goods exports from 2012 to 2023. It reveals a downward trend between 2013 and 2015, followed by modest growth until 2019. There was a brief decline during the Covid-19 pandemic, but a robust recovery ensued afterwards, culminating in a peak in 2022, when the exports reached USD 723 million – more than double the lowest value recorded in 2015 (USD 353 million).

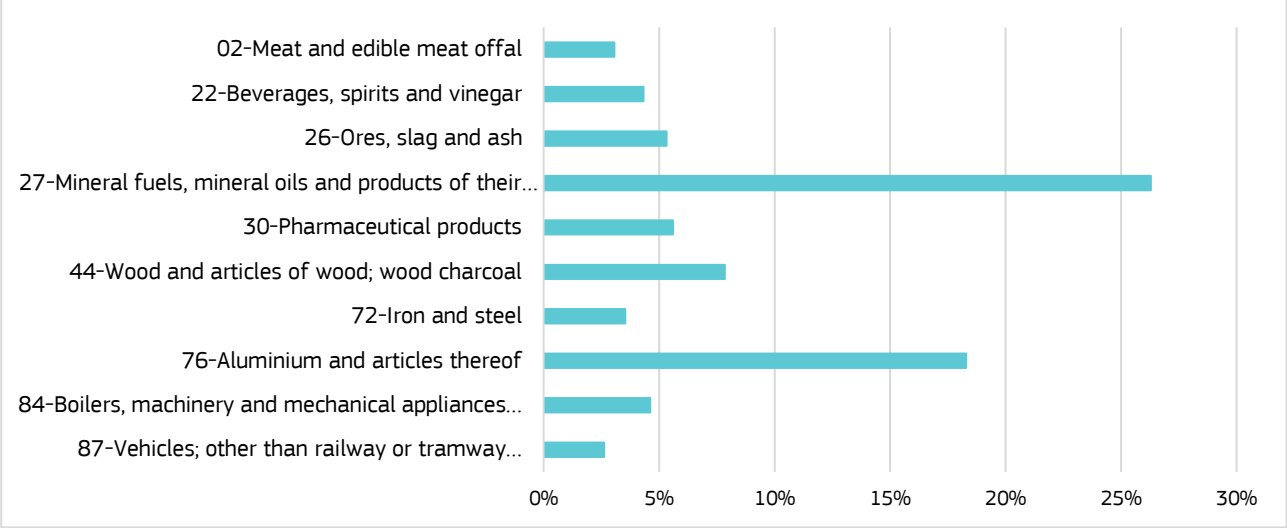
Figure 9. Total Exports (2012-2023) (USD million)



Source: *Authors' elaboration on UN Comtrade data*

Figure 10 shows the 10 largest export categories based on export values over the period 2019-2023. The leading export industry is *HS-27 – Mineral fuels, mineral oils and products of their distillation* with 26%, *HS-76 – Aluminium articles and thereof* with 18% of total goods exports followed by strong drop to the third export industry that is *HS-44 – Wood and articles of wood…* with 8%.

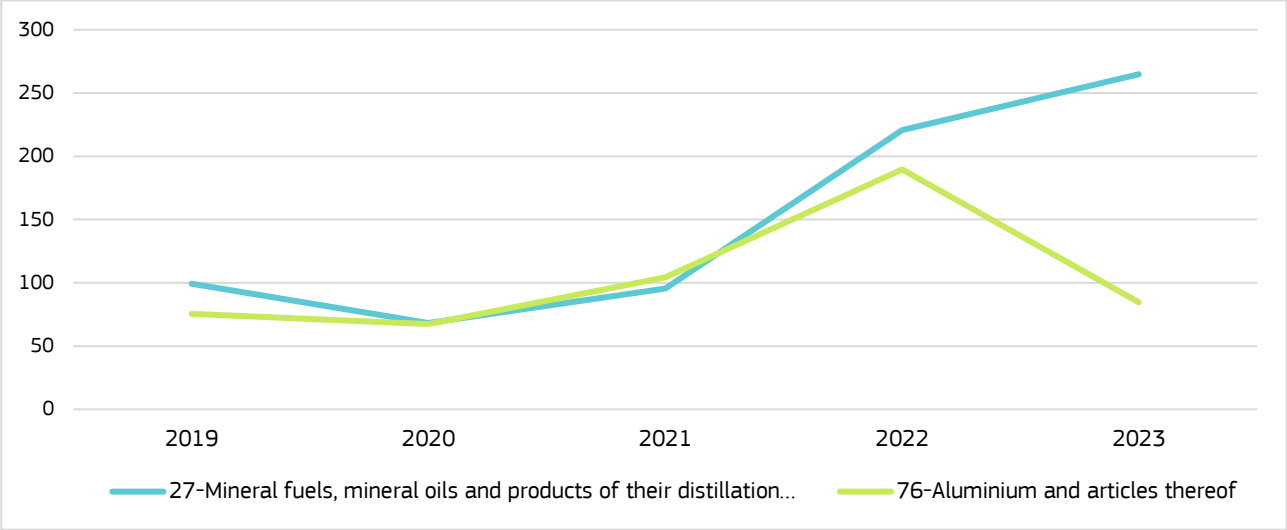
Figure 10. Top 10 exports per product category (HS Classification 2-digit) for the period 2019-2023 in percentage



Source: *Author's elaboration on UN Comtrade data*

Concentrating on the two most exported product category is interesting to notice the two opposite trends while sector HS-27 is still growing and reached a value of more than USD 250 million in 2023, the sector HS-76 suffered a strong drop over the last year from almost USD 190 million in 2022 to approximately 85 in 2023 according to UN Comtrade data.

Figure 11. Top 2 exports per product category (HS Classification 2-digit), breakdown 2019-2023 (USD million)



Source: *Authors' elaboration on UN Comtrade data*

2.5. Scientific Potential

Following the analysis of the economic potential of Montenegro the report deals with the scientific potential of the country. This may help to identify possible overlaps that reinforce the identification of relevant industrial sectors or other sectors that appear to be promising, even if at the moment, these sectors are not among those showing Economic potential - following the stricter approach used in the previous analysis.

For this purpose and to explore Montenegro's scientific potential have been considered the following areas.

The Scientific production was computed by analysing the number of scientific publications and citations received by scholars affiliated with institutions based in Montenegro over the period 2010-2023. This part includes the analysis of the most productive (in terms of publications) research areas and then a comparison with the reference area, in this case, the Western Balkans (WB) Montenegro, Albania, Bosnia and Herzegovina, North Macedonia, Serbia. These data are analysed in terms of total production for the different subject areas. However, the main focus, similar to the previous chapter is on LQ. The LQ helps identify whether there is a specialisation in a specific scientific field compared to the WB.

The Educational system was calculated based on the number of students enrolled in higher education and particularly the number of students who graduated in the different higher education studies (basic, specialist, master, doctoral) for the period 2018-2023.

The Scientific research system was obtained by analysing the data regarding the participation in national scientific programs and Horizon projects.

2.5.1. Scientific production

Table 3 presents the number of scientific productions in Montenegro and the relative percentage of the 25 most frequent research areas over the period 2010-2023.

Engineering has the highest value with 16.2% of total publications, followed by Physics 7.7% and computer science 7.3%.

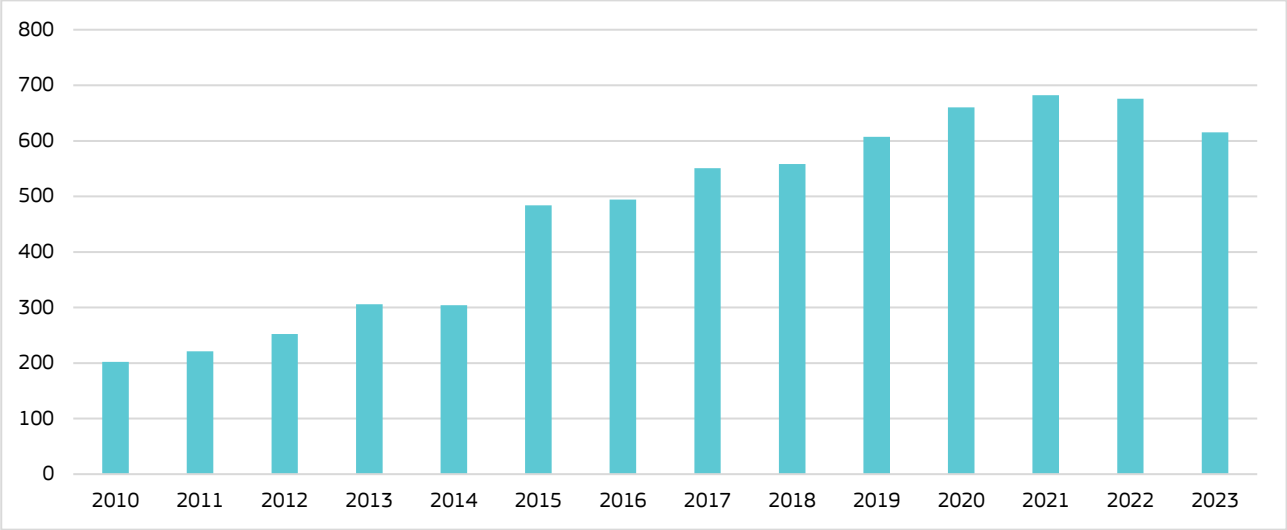
Table 3. Scientific publications by research area (2021-2023)

	RESEARCH AREAS	NUMBER OF SCIENTIFIC PUBLICATIONS (2010-23)	%
1	Engineering	1,071	16.2%
2	Physics	509	7.7%
3	Computer Science	482	7.3%
4	Environmental Sciences Ecology	380	5.7%
5	Mathematics	368	5.6%
6	Linguistics	299	4.5%
7	Business Economics	295	4.5%
8	General Internal Medicine	267	4.0%
9	Telecommunications	259	3.9%
10	Chemistry	215	3.3%
11	Arts Humanities Other Topics	204	3.1%
12	Science Technology Other Topics	178	2.7%
13	Marine Freshwater Biology	170	2.6%
14	Zoology	153	2.3%
15	Plant Sciences	151	2.3%
16	Agriculture	143	2.2%
17	Materials Science	141	2.1%
18	Pharmacology Pharmacy	136	2.1%
19	Public Environmental Occupational Health	133	2.0%
20	Astronomy Astrophysics	102	1.5%
21	Cardiovascular System Cardiology	92	1.4%
22	Education Educational Research	91	1.4%
23	Entomology	86	1.3%
24	Biochemistry Molecular Biology	85	1.3%
25	Psychiatry	84	1.3%

Source: *Authors' elaboration on ISI Web of Science.*

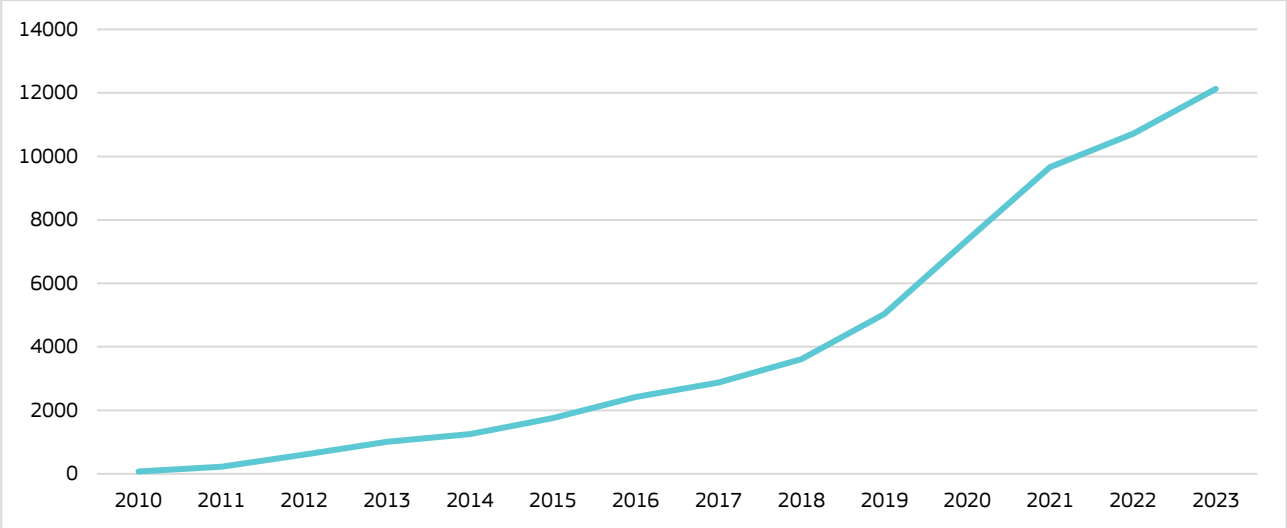
Figures 12 and 13 show the number of publications over the period considered (2010-2023) and the number of citations received by these publications. It is possible to notice the strong increase in terms of scientific publications, with a huge jump in 2015 from 304 to 484, to a peak in 2021 at 682 and then a small decline to 615 in 2023.

Figure 12. Scientific publications (2010-2023)



Source: *Author's elaboration on ISI Web of Science*

Figure 13. Yearly citations of the Scientific publications (2010-2023)



Source: *Authors' elaboration on ISI Web of Science*

To deeply analyse the scientific specialisation in Montenegro compared to the Western Balkan region (Montenegro, Albania, Bosnia and Herzegovina, North Macedonia, Serbia), a LQ has been measured following the procedure already used for the economic potential.

Table 4. Specialisations by research area on the most frequent fields compared to Western Balkans (2010-2023)

RESEARCH AREAS	PUBLICATIONS MONTENEGRO	SUM OF PUBLICATIONS WB	LQ COMPARED TO WB
Agriculture	143	4,869	0.59
Arts Humanities Other Topics	204	1,418	2.91
Business Economics	295	4,726	1.26
Chemistry	215	10,664	0.41
Computer Science	482	8,986	1.09
Engineering	1071	21,091	1.03
Environmental Sciences Ecology	380	7,181	1.07
General Internal Medicine	267	8,114	0.67
Linguistics	299	1,062	5.70
Marine Freshwater Biology	170	571	6.03
Materials Science	141	6,353	0.45
Mathematics	368	7,655	0.97
Pharmacology Pharmacy	136	4,432	0.62
Physics	509	9,931	1.04
Plant Sciences	151	2,680	1.14
Public Environmental Occupational Health	133	2,573	1.05
Science Technology Other Topics	178	5,016	0.72
Telecommunications	259	3,884	1.35
Zoology	153	1,207	2.57

Source: *Authors' elaboration on ISI Web of Science*

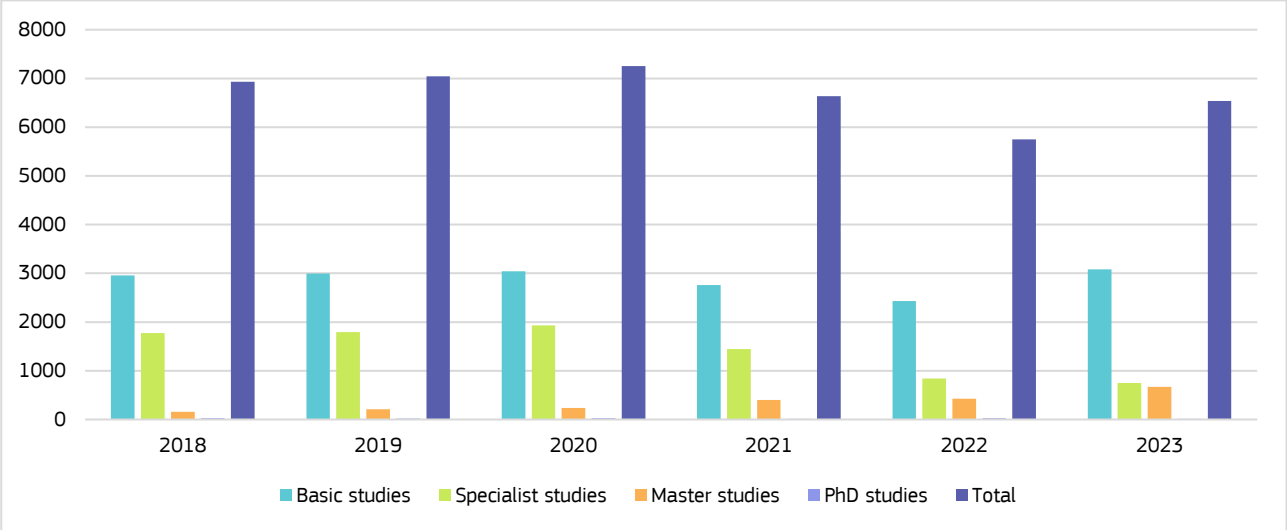
Some of these specialisations are more difficult to intersect with the economic potential (e.g. linguistic). However, there are some specialisations that are clearly synergic with the results obtained in the previous analysis, for instance, Telecommunications and Computer Sciences that may overlap with sector J60-Programming and broadcasting activities and J61-Telecommunications and Business Economics with sector M70-Activities of head offices, management consultancy activities.

2.5.2. Educational system

Over the last years the number of students enrolled at basic studies at University in Montenegro showed a slight decrease from around 20,000 in 2017 to around 16,000 in 2023.

Figure 14 reports the graduated students over the period 2018-2023 divided by basic, specialists, masters and PhD. It is possible to notice how the total amount of students declined, particularly between 2021 and 2022, with a relative recovery for 2023. This fall is particularly relevant for the specialist studies, and PhD while it is less relevant for the basic studies, which comprise the largest number of students graduating (approximately 3,000 per year).

Figure 14. Graduated at university divided by basic, specialists, master and PhD (2018-2023)

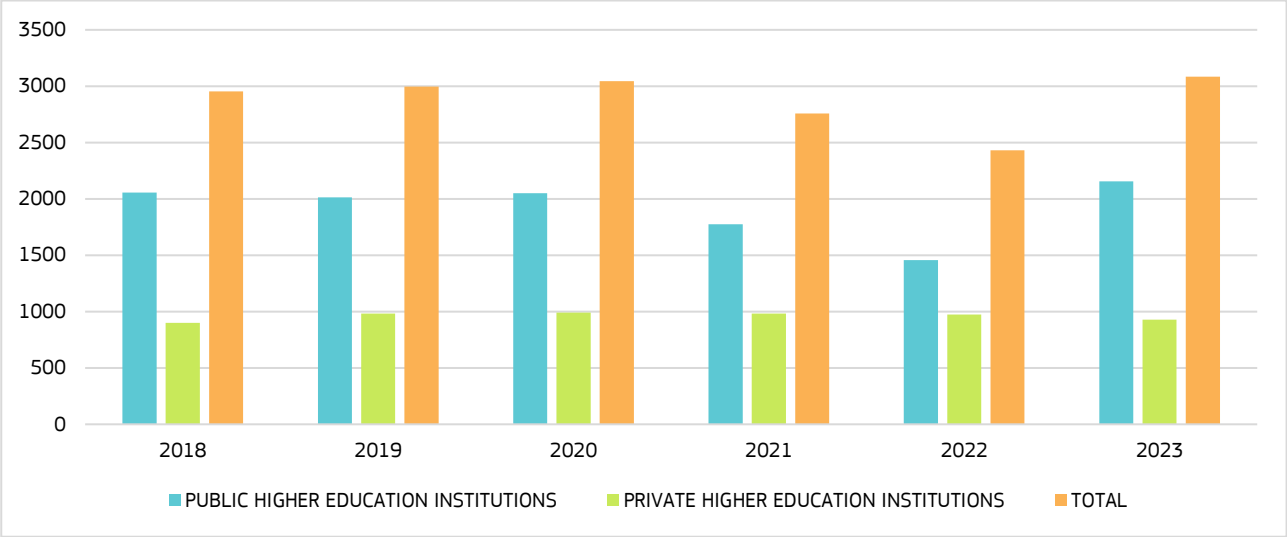


Source: *Authors' elaboration on Monstat data*

The following Figures 15 and 16 show the numbers of graduated students in basic studies in Higher Education (divided by public or private institutions in Figure 15 and by gender in Figure 16). The total graduations show a stable number of around 3,000 per year but with a drop during the years 2021 and 2022, probably because of the Covid-19 pandemic and a subsequent recovery in 2023. Figure 15 shows a general prevalence of public institutions even if, the largest part of the drop, during the period 2021-2022, pertains mainly to this category but with a growth in 2023 which did not occur for the private institutions.

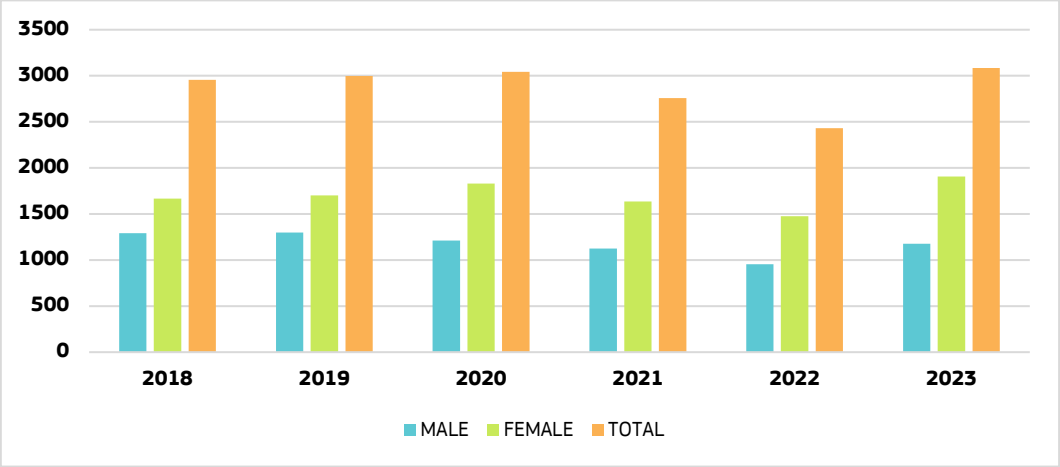
Regarding figure 16, showing the gender of the graduated students, it appears clearly a prevalence of female graduates over the whole period.

Figure 15. Graduated at university basic studies divided by public or private institutions (2018-2023)



Source: *Authors' elaboration on Monstat data*

Figure 16. Graduated at university basic studies by gender (2018-2023)



Source: *Authors' elaboration on Monstat data*

The data retrieved showed that in 2023, only 15 doctoral students graduated, a lower number with respect to previous years, which, however, never showed values higher than 28 graduations of doctoral students. Conversely, the number of doctoral students enrolled showed an interesting increase to more than 200 students in the academic year 2023-24. In relation to S3 priorities, 12 scholarships for PhD students have been released for a total amount of EUR 0.52 million (10 belonging to universities located in Podgorica and 2 in Kotor) mainly in the S3 areas of ICT (48% of the total amount) and Energy and Sustainable Environment (20 % of the total amount).

2.5.3. Scientific research system

Montenegro has financed 25 projects across three national scientific research programmes: COVID-19, National Scientific Research Projects (2019-2022), and National Scientific Research Projects (2023). The latter has received the largest allocation, amounting to EUR 1.5 million, which is more than double the funding provided to the same programme during the 2019-2022 period. Considering the three frameworks together, universities ('institutions of higher education') participate in 20 projects with a total of EUR 1.96 million (83% of the total) (see table 5).

Table 5. Financing received by type of user for each national scientific program (EUR million)

TYPE OF USER\TYPER OF PROGRAMME	COVID-19 PROGRAMME	NATIONAL SCIENTIFIC RESEARCH PROJECTS (2019-2022)	NATIONAL SCIENTIFIC RESEARCH PROJECTS 2023	TOTAL
Business entity			0.08	0.08
Institution of Higher Education	0.08	0.52	1.36	1.96
Public Institution	0.04	0.11	0.08	0.23
Research Institute		0.07		0.07
Total	0.13	0.69	1.53	2.35

Source: *Ministry of Education, Science and Innovation*

Considering S3 priorities, Energy and sustainable environment and Sustainable agriculture and the food value chain have received the largest amount, approximately EUR 800 thousand each (see Table 6). The total amount received by the former can be similarly divided between National Scientific Research Projects (2019-2022), and National Scientific Research Projects (2023). The total amount received by the latter instead is concentrated for the 88% in the National Scientific Research Projects (2023). While the Covid-19 program has financed other priorities such as ICT. Considering industrial sectors, Agriculture, Forestry and Fishing (NACE A) and Information and Communication (NACE J) are the most financed sectors, capturing together almost 70% of the allocated budget (50% by sector A).

In terms of the capabilities of cities/municipalities to attract funds, Podgorica, as expected, leads the group with EUR 2 million, followed by significant distance by Kotor and Berane, respectively, with EUR 0,84 and EUR 0,166 million.

Table 6. Financing received by S3 priority for each national scientific program (EUR million)

	S3 priority areas						
Type of programme	Energy and sustainable environment	ICT	ICT; Sustainable and Health Tourism	Sustainable agriculture and the food value chain	Sustainable agriculture and the food value chain; ICT	Sustainable and Health Tourism	Total
Covid-19 programme		0.04	0.04			0.04	0.12
National scientific research projects (2019-2022)	0.34	0.14		0.10	0.12	0.00	0.70
National scientific research projects 2023	0.46	0.36		0.71		0.00	1.53
Total	0.80	0.54	0.04	0.80	0.12	0.04	2.34

Source: *Ministry of Education, Science and Innovation*

Table 7. Financing received by location for each national scientific program (EUR million)

	Location			
Type of programme	Berane	Kotor	Podgorica	Total
COVID-19 Programme			0.13	0.13
National scientific research projects (2019-2022)		0.07	0.63	0.70
National scientific research projects 2023	0.08	0.10	1.34	1.52
Total	0.08	0.17	2.09	2.34

Source: *Ministry of Education, Science and Innovation*

Concerning European Fundings, Montenegro registered 66 organisations involved[4] (0.04% of the total number at the European level), with a success rate of 16.36% (almost 7% more than the European Average) receiving EUR 4.7 million (0.01 of the total amount at the European level). Two SMEs participated in at least 1 Horizon project receiving a contribution of 204.3 thousand (4.35% of the total European budget taken by SMEs). The Public University of Montenegro in Podgorica (Javna Ustanova Univerzitet Crne Gore Podgorica) is the organisation with more participations (21), followed by the Directorate of Maritime Safety and Port Management with 5 participations. In terms of received budget, the Public University of Montenegro in Podgorica still leads the rank with 757.13 thousand, followed by another public institution, the Univerzitet Donja Gorica, with 726.84 thousand and Crnogorski elektroprenosni system – an electric power transmission system operator with 592.14 thousand.

In terms of international collaborations, it is interesting to observe that the top ties are composed of a pool of Mediterranean countries (Spain, Italy, Greece and France)[5].

2.6. Innovative Potential

With respect to the innovative potential of Montenegro, we integrate different data sources to capture multiple aspects of the phenomenon, namely the overall level of innovation and knowledge, capability to produce innovation and digitalisation level, nowadays crucial to monitoring conditions of countries. Finally, we reported innovation projects and grants financed at the National level.

To have a general comprehension of the innovation level of Montenegro, we used the Global Innovation Index by WIPO, comparing the performances of Montenegro with the other Western Balkans countries with available data, namely Albania, Bosnia and Herzegovina, North Macedonia and Serbia. The Global Innovation Index is based on 80 indicators, useful to benchmark income groups or macro-regions. It includes different pillars related to enabling conditions for innovation (such as political environment, education, infrastructure and knowledge creation of each economy) and it is available for 130 economies.

To understand the capacity of Montenegro to produce innovation, we rely on information from WIPO, which has a general profile for each country and EPO to compare the rate of patent production with the other Western Balkans countries with available data. Furthermore, to conduct part of the analyses on the production of innovation, we extracted from the ORBIS platform, focusing on private companies headquartered in Montenegro. ORBIS is a private database frequently used by researchers in economics and management for micro-level analyses due to its extensive information availability (in our case related to patents). We identified 63,076 firms, excluding those without recent financial data and public authorities. However, it should be noted that many companies report minimal information in several areas of their balance sheets. Moreover, we acknowledge the limitation of this data source, which is more representative of larger and more productive firms. Therefore, the results obtained from this data should be interpreted with caution. ORBIS dataset has also been used as the main data source to proxy the digitalisation level of firms in Montenegro, exploiting the information on the presence of businesses equipped with websites. Following the scientific literature (Kinne and Axenbeck, 2020; Mazzoni et al., 2024), websites can be interpreted as signals of the digital behaviour of firms. As a complementary data set, we use the Business opinion part of the Balkan Barometer, an annual survey launched in 2015 and

4 One organisation participating in multiple projects is counted N times for each participation.

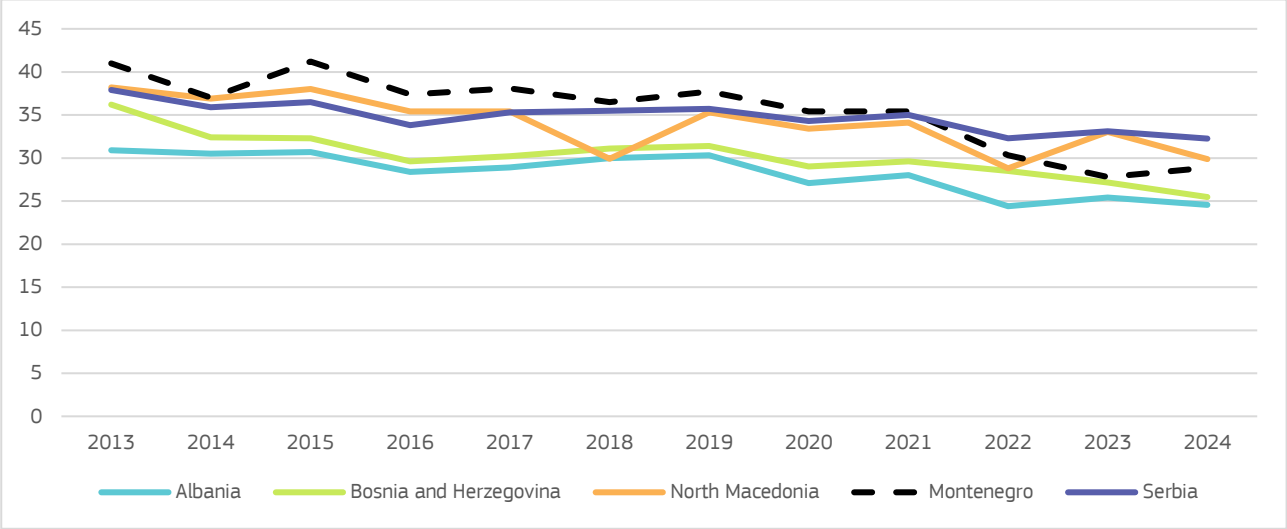
5 More detailed information are available here: https://dashboard.tech.ec.europa.eu/qs_digit_dashboard_mt/public/extensions/RTD_BI_public_Country_Profile/RTD_BI_public_Country_Profile.html?Country=ME#participation

conducted in 6 western Balkan economies, namely Albania, Bosnia and Herzegovina, Kosovo*, North Macedonia, Montenegro and Serbia. The survey, commissioned by the Regional Cooperation Council (RCC), is based on a representative sample of 1,200 firms of different segments across the Western Balkans.

2.6.1. Innovation outlook: comparison with Western Balkans countries

Interestingly, by analysing the Global Innovation Index across Western Balkans from 2013 to 2024, we can observe how Montenegro has been the leading country up to 2021, a year in which Serbia has overcome its performance (see Figure 17).

Figure 17. Global Innovation Index Western Balkans



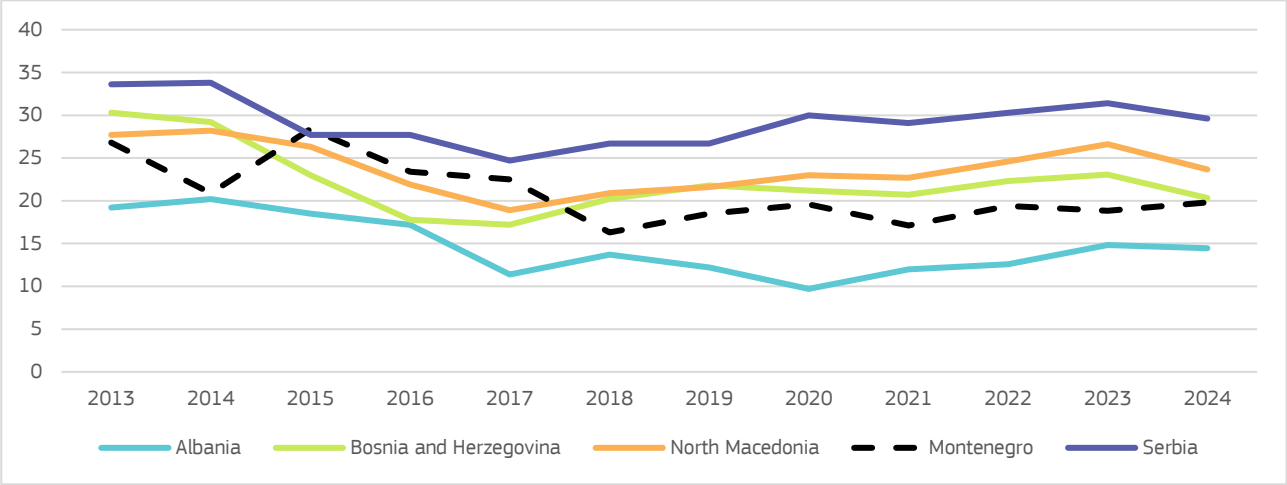
Source: *Global Innovation Index, WIPO*

Examining sub-components of the index, such as the Knowledge and Technology outputs, which measure knowledge creation, impact and diffusion[6], we can observe a leading role of Serbia and North Macedonia lagging behind Bosnia, Montenegro and Albania (Figure 18). Considering the percentage of software spending on the total GDP, we interestingly see Montenegro well above all the other Western Balkans, showing particular attention devoted to such a crucial mechanism of the digital economy (see Figure 19). Lastly, figure 20 shows how R&D levels between Montenegro and Serbia were very similar in 2013 and 2014, creating a progressively bigger gap in the subsequent period.

* 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.

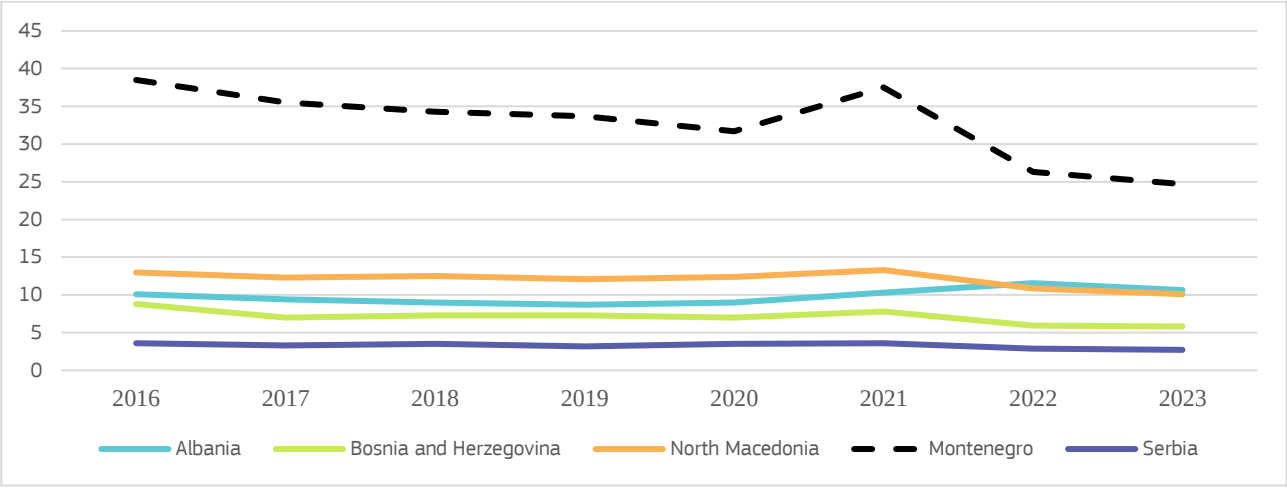
6 A detailed discussion of sources and sub-index is available here: https://www.wipo.int/web-publications/global-innovation-index-2024/en/appendix-iii-sources-and-definitions.html

Figure 18. Knowledge and Technology Output Index Western Balkans



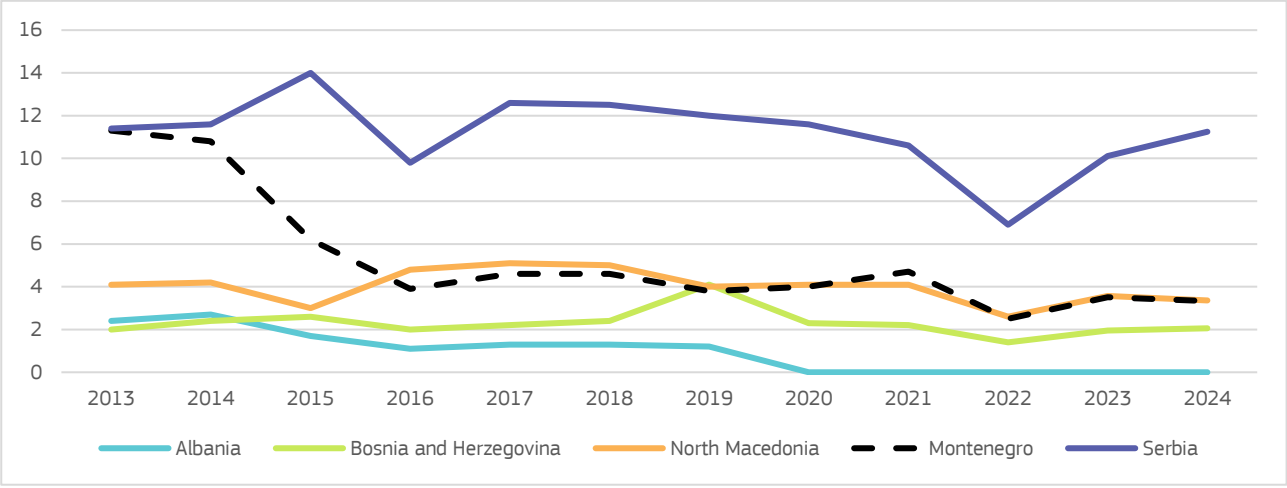
Source: *Global Innovation Index, WIPO*

Figure 19. Software spending % of GDP Western Balkans



Source: *Global Innovation Index, WIPO.*

Figure 20. Research and Development Score Western Balkans



Source: *Global Innovation Index, WIPO*

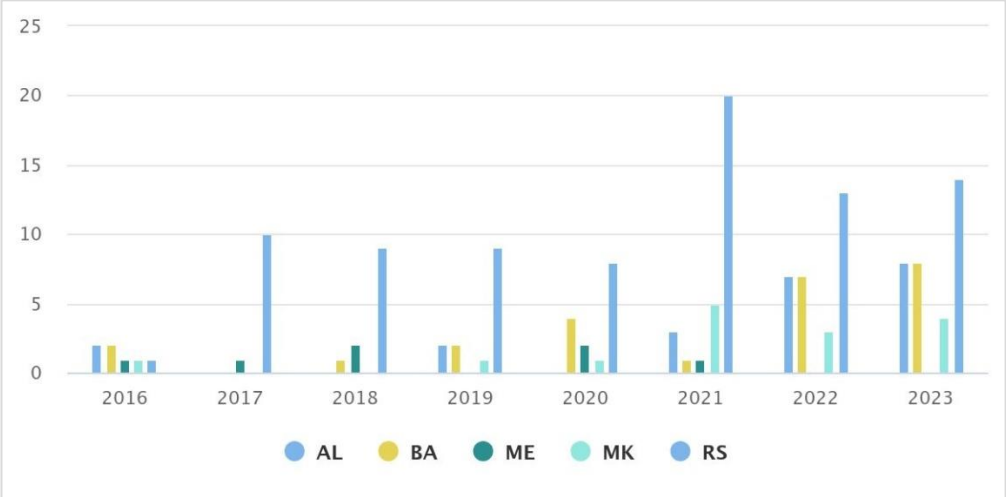
2.6.2. Production of Innovation – Intellectual Property

According to the WIPO profile for Montenegro in 2023, the country ranks 119th globally, having filed 18 patent applications - a gain of 3 patents compared to 2022, thus returning to pre-COVID-19 levels. The overall trend in patent applications has remained steady from 2014 to 2023, with the exception of 2015, which saw the highest number of applications at 30. The leading technical fields for these patents include Handling (25%), Computer Technology (12.5%), Control (12.5%), Biotechnology (12.5%), and Pharmaceuticals (12.5%). Notably, 24% of non-resident applications originate from the USA.

In terms of industrial design, the trend is even more pronounced, with a steady average production of 1 application per year from 2018 to 2022 and an increase to 11 applications in 2023, of which 60% pertain to furnishings. In contrast, trademark activity is experiencing a decline, positioning Montenegro at 166th in the global ranking, with a significant decrease of 39% compared to 2022.

However, when examining statistics from the European Patent Office (EPO), it is evident that Montenegro has demonstrated very low performance over the last three years (2012-2023) compared to other countries in the Western Balkans, which have established a substantial gap in patent activity—especially considering that in 2016, all were more or less on similar ground.

Figure 21. European Patent applications of Western Balkans from 2016 to 2023



Source: *EPO*

To assess Montenegro's capacity for innovation, we examined the patent portfolios of firms, although we were unable to separate patent production by year. We identified a total of 30 patent-holding firms with a combined total of 173 patents (see Table 8). Approximately half of these firms hold only a single patent, while 11 firms possess between 3 and 10 patents. Notably, only 4 firms have more than 10 patents in their portfolios. Among the 30 firms, 21 have been in operation for over 15 years (see Table 9), and 17 are concentrated in Podgorica (see Table 10).

Table 8. Patents portfolio of firms from Montenegro

NUMBER OF PATENTS	NUMBER OF PATENTING FIRMS	TOTAL NUMBER OF PATENTS
1	14	14
2	1	2
3	5	15
4	2	8
7	1	7
8	1	8
10	2	20
13	1	13
16	1	16
24	1	24
46	1	46

Source: *ORBIS – data extracted in September 2024*

Table 9. Age of patenting firms (considering 2023 as the final year)

COHORT OF BIRTH	NUMBER OF PATENTING FIRMS
Before 20	13
20-16	8
15-11	5
10-05	1
04-0	3

Source: *ORBIS– data extracted in September 2024*

Table 10. Location of patenting firms

LOCATION	NUMBER OF PATENTING FIRMS
Podgorica	17
Bar	4
Budva	3
Herceg Novi	1
Niksic	1
Pljevlja	1
Tivat	1
Ulcinj	1
Zabljak	1
Total	30

Source: ORBIS– data extracted in September 2024

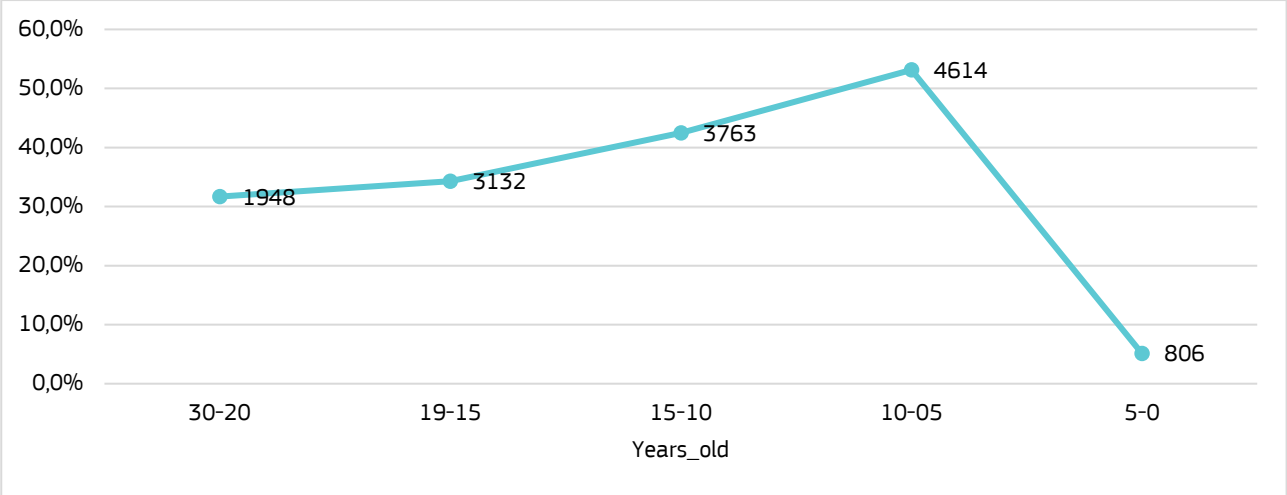
2.6.3. Digitalisation

In the initial phase of analysis, it is essential to emphasise that in the aftermath of the COVID-19 pandemic, Montenegro has made substantial advancements in its digitalisation strategy. Notably, these developments pertain to network enhancement, particularly in the deployment of 5G technology, as well as the digital transformation of businesses, representing both critical areas for supporting economic growth (OECD, 2024).

Despite the significance of the digital economy, quantifying the level of digitalisation among firms, regions, and countries proves to be surprisingly complex. The lack of micro-level data specific to digital economy statistics, such as investments in ICT, the export of digital goods and services, or digital capabilities, complicates this mapping process. Consequently, there is a lack of data-driven tools capable of monitoring the evolution of this phenomenon. Recently, websites have been proposed as a proxy to assess the digital readiness of businesses, given the abundant yet unstructured information that is readily available and updated, allowing for a customisable and unobtrusive data-gathering process (Kinne and Axenbeck, 2020; Mazzoni et al., 2024). For the purposes of this report, we rely on information on the presence or absence of a website for each firm in the ORBIS database headquartered in Montenegro, calculating the percentage of firms by cohort and industry.

Figure 22 depicts the percentage of website adoption among firms according to their birth cohort. The adoption curve peaks within the 5-10 year-old cohort at 50%, but swiftly declines for newer ventures (those less than 10 years old). This trend is consistent with existing literature on digitalisation and website adoption, which suggests that the costs associated with establishing and maintaining a website are seen as an investment that many startups are reluctant to make, especially due to their liability of newness as they first seek to validate market demand for their products or services.

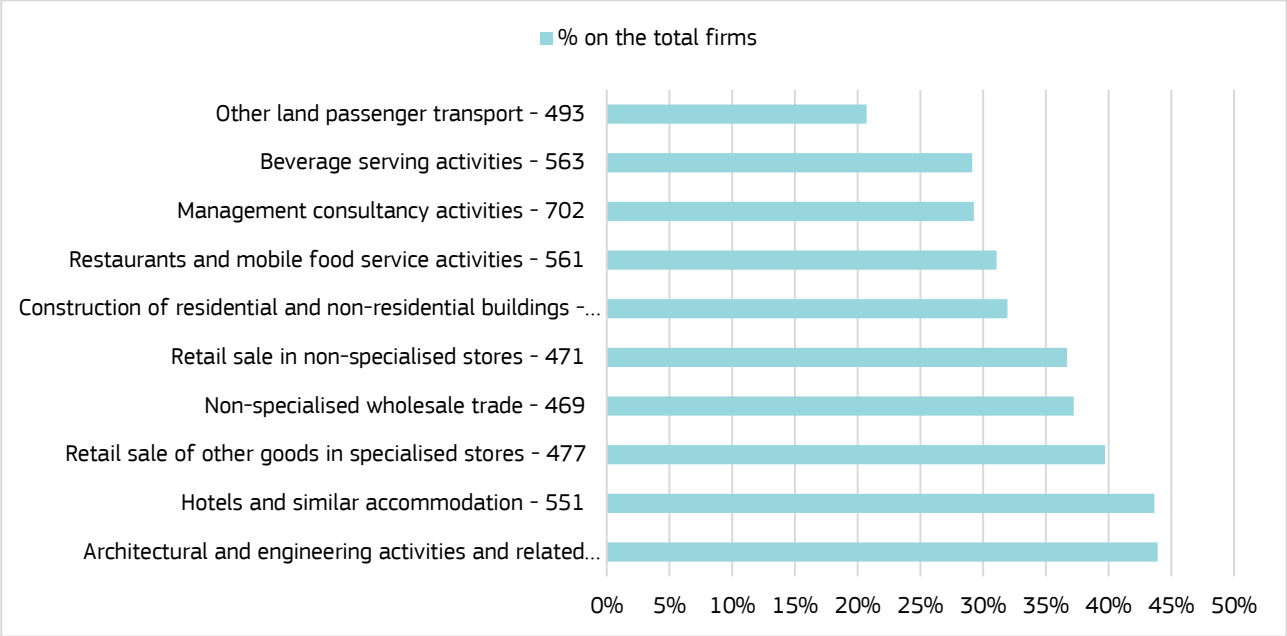
Figure 22. Percentage of firms with a website – considering year of birth



Source: *ORBIS– data extracted in September 2024*

When examining various industries, Architectural and Engineering Activities along with Related Technical Consultancy (NACE code 711) and Hotels and Similar Accommodation (NACE code 551) emerge as the sectors with the highest percentage of firms having websites, each at 44%. They are followed by the Retail Sale of Other Goods in Specialised Stores (NACE code 477), in which 37% of firms are equipped with a website (Figure 23).

Figure 23. Most dynamic industrial sectors in terms of websites



Source: *ORBIS– data extracted in September 2024*

Table 11 completes the framework showing the municipalities with the highest digital presence, considering firms with websites on the total number of firms. Although Podgorica, Budva, and Bar have the most firms with websites in absolute terms, the top three rankings are occupied by Bijelo Polje, Podgorica, and Cetinje, with 43.3%, 32.0%, and 28.8% of their respective firms having a website.

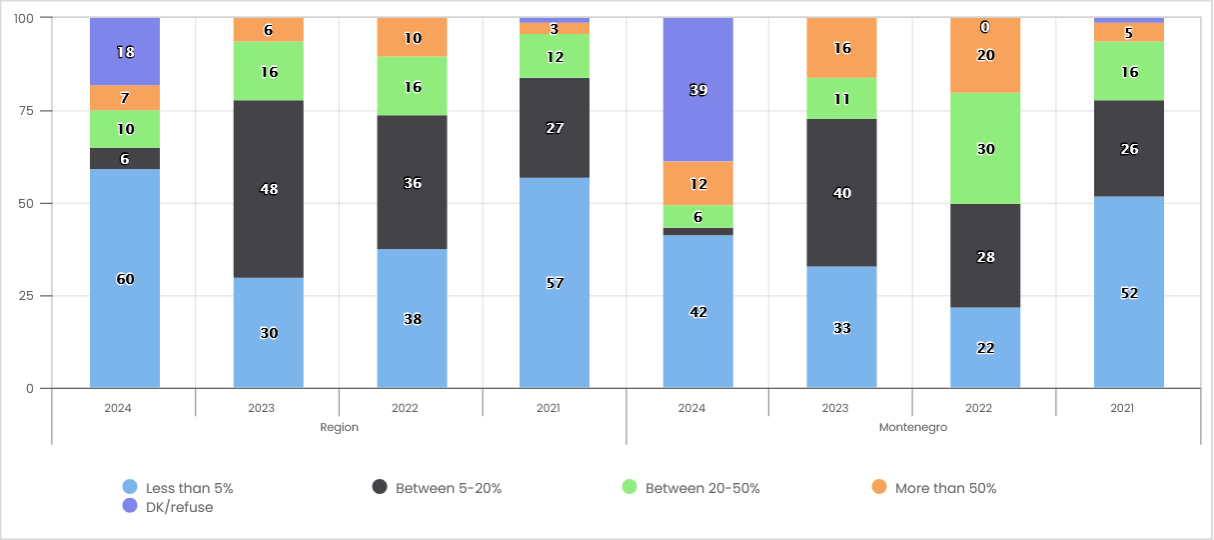
Table 11. Percentage of firms with a website by location

LOCATION	PERCENTAGE
Bijelo Polje	43,3%
Podgorica	32,0%
Cetinje	28,8%
Pljevlja	28,5%
Tivat	27,5%
Kotor	26,4%
Herceg Novi	26,2%
Rozaje	24,3%
Niksic	22,6%
Berane	20,8%
Budva	19,5%
Bar	18,4%
Ulcinj	10,9%
Total	25,7%

Source: *ORBIS– data extracted in September 2024*

Analysing data from the Balkans Barometer, which highlights online sales trends among firms in Montenegro and the wider Western Balkans, it becomes evident that top-tier sellers in Montenegro are increasingly significant. Notably, in 2022 and 2023, 20% and 16% of the sample firms, respectively, generated more than 50% of their sales through online channels. This performance is impressive when compared to the regional averages for the same years, which stand at 10% and 6%. These statistics resonate well with the software spending data shown in Figure 19 (section 2.6.1).

Figure 24. Percentage of online sales - comparison between Montenegro and Western Balkans



Source: *Balkan Barometer – Business opinion part*

2.6.4. Innovation Projects and Grants

In 2020, the Government of Montenegro enacted a new law aimed at regulating incentives for research and innovation development (OECD, 2024). This initiative seeks to establish an innovation system grounded in strategic priorities and designed to promote public-private collaborations. The outcomes from the initial years of these efforts, covering the period from 2019 to 2022 and involving a total budget of approximately EUR 2.9 million, are discussed in the following sections, which details innovative projects funded by the government. The types of projects financed fall into three broad categories: Pre-acceleration programme, Early-stage start-ups, and Collaborative Innovation, with funding predominantly directed toward business actors.

Another significant outcome of this new vision has been the creation of the Innovation Fund of Montenegro, a specialised institution tasked with facilitating technology transfer and encouraging the alignment of private initiatives with the strategic priorities outlined in the Smart Specialisation Strategy (S3). The results achieved by the Innovation Fund are detailed in the subsequent section, covering the years 2022 to 2024, with a total budget of about EUR 5.9 million. The financing lines encompass ten distinct areas, closely aligned with those co-financed directly by the Ministry of Montenegro. In addition to focusing on the startup lifecycle, a noteworthy portion of the funding is also dedicated to SMEs.

2.6.5. Innovation Projects financed by Ministry of Education, Science and Innovation

A total budget of approximately EUR 2.9 million has been earmarked for innovation projects, with 72% of this amount designated for the 'Collaborative Innovation Projects 2019-2021' fund. When examining the distribution by user type, businesses have received around EUR 2.4 million, accounting for 84% of the total budget allocated for this category of funding (see Table 12).

Table 12. Financing received by type of users for each project category (EUR million)

TYPE OF USERS	COLLABORATIVE INNOVATION PROJECTS 2019-2021	EARLY-STAGE START-UPS 2021	EARLY-STAGE START-UPS 2022	PRE-ACCELERATION PROGRAMME 2019(2)/2021(3)	TOTAL
Business entity	1.71	0.25	0.21	0.26	2.43
Institution of Higher Education	0.10				0.10
Licenced scientific Research Institution (Institution of Higher Education)	0.28			0.06	0.34
NGO			0.02		0.02
Total	2.09	0.25	0.23	0.32	2.89

Source: *Ministry of Education, Science and Innovation*

When examining the financing allocated according to S3 priorities, it becomes evident that ICT and the Agriculture and Food Value Chain are the two most funded areas, receiving EUR 1.7 million (59% of the total budget) and EUR 0.4 million (15% of the total budget), respectively. Notably, ICT is the sole S3 priority that has received support from three distinct innovation project funds (refer to Table 13).

Table 13. Financing received by S3 priority for each project category (EUR million)

S3 PRIORITIES	COLLABORATIVE INNOVATION PROJECTS 2019-2021	EARLY-STAGE START-UPS 2021	EARLY-STAGE START-UPS 2022	PRE-ACCELERATION PROGRAMME 2019(2)/2021(3)	TOTAL
All S3 areas				0.31	0.31
Energy and Sustainable Environment	0.26				0.26
ICT/Sustainable Agriculture and Food Value Chain	0.09		0.03		0.12
Information and communication technologies	1.33	0.22	0.17		1.72
Sustainable Agriculture and Food Value Chain	0.41		0.02		0.43
Sustainable and Health Tourism		0.03	0.02		0.05
Total	2.09	0.25	0.24	0.31	2.89

Source: *Ministry of Education, Science and Innovation*

Analysing the place distribution of funds, it appears evident how Podgorica, without surprise, attracts almost 72% of the total innovation funds, followed by remarkable distance by Nikšić (12%) and Bar (7%) (see Table 14).

Table 14. Financing received by location for each project category (EUR million)

LOCATION	COLLABORATIVE INNOVATION PROJECTS 2019-2021	EARLY-STAGE START-UPS 2021	EARLY-STAGE START-UPS 2022	PRE-ACCELERATION PROGRAMME 2019(2)/2021(3)	TOTAL
Bar	0.22				0.22
Berane	0.11		0.03		0.14
Bijelo Polje		0.02			0.02
Herceg Novi		0.02			0.02
Kolašin		0.02			0.02
Nikšić	0.15	0.02		0.19	0.36
Pljevlja		0.01			0.01
Podgorica	1.62	0.15	0.18	0.13	2.08
Tuzi			0.02		0.02
Total	2.10	0.24	0.23	0.32	2.89

Source: *Ministry of Education, Science and Innovation*

2.6.6. Innovation Grants financed by Innovation Fund of Montenegro

The total amount available for innovation grants in the period 2022-2024 is ca EUR 5.9 million (90% allocated to business entities)[7]. The three programme lines most financed are 'Collaborative grants' (ca EUR 1.7 million), 'Programme for encouraging innovations in the function of energy efficiency in industry' (ca EUR 1.6 million) and 'Programme for strengthening the innovation of newly established or existing micro, small and medium-sized enterprises' (ca EUR 1.2 million), representing the 78 of the total available budgets.

Considering S3 priorities, the two most financed are 'ICT' and 'Energy and Sustainable Environment', respectively, with EUR 2.5 and EUR 1.7 million, respectively, accounting for 70% of the available budget (see Table 16).

Analysing the distribution of Innovation grants in relation to S3 priorities, Podgorica ranks first with EUR 2.78 million, followed by Nikšić with EUR 1.37 million. However, a closer examination of the specialisations in these municipalities reveals Podgorica's strong focus on ICT, while Nikšić leads in two critical S3 priorities: Energy and Sustainable Environment, as well as Sustainable Agriculture and Food Value Chain (see Table 17).

[7] Data are updated up to August 2024, and a relevant quota of other projects has been contracted in December 2024.

Table 15. Total amount of the approved projects for each programme line (EUR million)

	YEAR			
PROGRAMME LINE	**2022**	**2023**	**2024**	**Total**
Encouraging innovation culture		0.08		0.08
Implementation of educational programmes in the areas of smart specialisation		0.09		0.09
Collaborative grants	1.74			1.74
Innovation voucher	0.09	0.04		0.13
Pre-acceleration of start-ups		0.13		0.13
Programme for encouraging innovations in the function of energy efficiency in industry			1.64	1.64
Programme for strengthening the innovation of newly established or existing micro, small and medium-sized enterprises		1.23		1.23
Proof of innovative concept		0.30		0.30
Support for the early phase development of start-ups		0.52		0.52
Vouchers for the protection of invention		0.03	0.02	0.05
Total	1.83	2.42	1.66	5.91

Source: *Innovation Fund of Montenegro*

Table 16. Total amount of the approved projects by S3 priority for each programme line (EUR million)

	S3 PRIORITY AREAS							
PROGRAMME LINE	**Energy and Sustainable Environment**	**ICT**	**Other**	**Other-nautica**	**Other: construction**	**Sustainable Agriculture and Food Value Chain**	**Sust. health tourism**	**Total**
Encouraging innovation culture	0.01	0.04	0.03					0.08
Implementation of educational programmes in the areas of smart specialisation	0.02	0.05				0.01	0.01	0.09
Collaborative grants	1.10	0.63						1.73
Innovation voucher	0.02	0.06			0.02	0.02		0.12
Pre-acceleration of start-ups			0.13					0.13
Programme for encouraging innovations in the function of energy efficiency in industry	0.47		0.77			0.40		1.64

Programme for strengthening the innovation of newly established or existing micro, small and medium-sized enterprises	0.00	1.11				0.12		1.23
Proof of innovative concept	0.04	0.21				0.06		0.31
Support for the early phase development of start-ups	0.06	0.37	0.09					0.52
Vouchers for the protection of invention	0.01	0.00	0.03	0.02		0.01		0.07
Total	1.73	2.47	1.05	0.02	0.02	0.62	0.01	5.91

Source: *Innovation Fund of Montenegro*

Table 17. Total amount of the approved projects by location for each S3 priority (EUR million)

	S3 PRIORITY AREAS							
LOCATION	**Energy and Sustainable Environment**	**ICT**	**Other**	**Other-Nautica**	**Other: construction**	**Sustainable Agriculture and Food Value Chain**	**Sustainable health tourism**	**Total**
Bar	0.13	0.01	0.01			0.13		0.28
Berane	0.47							0.47
Bijelo Polje		0.03						0.03
Cetinje		0.11						0.11
Danilovgrad			0.26					0.26
Herceg Novi	0.01	0.08						0.09
Kolašin		0.21						0.21
Nikšić	0.98		0.18			0.21		1.37
Petrovac		0.01						0.01
Podgorica	0.13	2.02	0.52		0.02	0.08	0.01	2.78
Tuzi	0.01		0.07	0.02				0.10
Zeta			0.20					0.20
Total	1.73	2.47	1.24	0.02	0.02	0.42	0.01	5.91

Source: *Innovation Fund of Montenegro*

2.7. Main results from quantitative mapping

The previous sections presented the findings from the analysis of the economic, scientific, and innovation potential for Smart Specialisation in Montenegro. Overall, the availability of data varied across the three potentials. Data was mainly obtained from national sources (such as Monstat), while other sources were

from international organisations (including EUROSTAT, EPO, and the World Bank), as well as from various public and private sources (like ISI WOS and ORBIS). Additionally, both the unit of analysis and classifications differed not only between the potentials but also within the same potential.

For economic potential, data on employment and new ventures were available at the NACE 2-digit level, whereas exports were classified using HS codes at the 2 to 4-digit level. In terms of scientific potential, the data were categorised by scientific field (as per ISI-WoS standards). Lastly, while some data pertaining to digitalisation was accessible at the NACE 3-digit level, information regarding innovation projects could be found at either the NACE 1 or 2-digit level.

Despite the economic potential identified, the achievement of a full alignment between scientific and innovative capabilities in the 10 industries aligned with stricter thresholds and the 19 industries aligned with broader thresholds remains highly complex. This difficulty arises from various factors, including the diversity of data types, disparities in data availability and coverage, as well as differences in classifications (for instance, in scientific mapping, the unit of analysis is the field of science rather than the industry). Nevertheless, a match between Economic, Scientific, and Innovative potential has been identified in the following five sectors: Construction, Energy, Food, ICT and Tourism.[8]

A separate reflection is needed for the *Management Consultancy* and *Wholesale* sectors, both of which demonstrate strong economic indicators. Management Consultancy (M702) stands out for its high volume of new ventures and dynamic digitalization, while Non-specialised Wholesale (G469) exhibits significant critical mass and one of the highest specialization levels relative to the EU-27. Despite these promising signals, both sectors show low level of scientific and innovation potential. In the case of Consultancy, the high entrepreneurial activity does not translate into R&D collaborations or knowledge-based growth. Similarly, while the Wholesale sector is strong in terms of sales and market presence, its role is primarily intermediary, lacking the innovative depth required to drive a research-led economic transformation. Ultimately, because these sectors fail to align across all three pillars of the JRC methodology - economic, scientific, and innovative potential - they have not been identified as preliminary target domains, though further qualitative insights could be used to re-evaluate this position and investigate deeper innovation synergies

Given the main analytical results, a summary of the key characteristics of the above mentioned five sectors follow. In line with the JRC methodology, findings from quantitative mapping only serves as initial filtering exercise to be further complemented and validated with subsequent qualitative analyses and stakeholder dialogue. These activities will delve into deeper qualitative perspectives and inform decision-making, priority selection and strategy design.

— **Construction**, represented by the 2-digit industrial sector *F41 – Construction of buildings* and *M71 – Architectural and engineering activities; technical testing and analysis.* Within this area, the 3-digit most relevant industries are *412 – Construction of residential and non-residential buildings* and *711 – Architectural and engineering activities and related technical consultancy*. The first one emerged following the strictest thresholds regarding the economic potential and is one of the most dynamic

[8] A separate reflection is needed for the Management Consultancy and Wholesale sectors, both of which demonstrate strong economic indicators. Management Consultancy (M702) stands out for its high volume of new ventures and dynamic digitalization, while Non-specialised Wholesale (G469) exhibits significant critical mass and one of the highest specialization levels relative to the EU-27.

However, despite these promising signals, both sectors show low level of scientific and innovation potential. In the case of Consultancy, the high entrepreneurial activity does not translate into R&D collaborations or knowledge-based growth. Similarly, while the Wholesale sector is strong in terms of sales and market presence, its role is primarily intermediary, lacking the innovative depth required to drive a research-led economic transformation. Ultimately, because these sectors fail to align across all three pillars of the S3 methodology - economic, scientific, and innovative - they have not been identified as preliminary target domains, though further qualitative insights could be used to re-evaluate this position and investigate deeper innovation synergies

sectors in terms of new firms' births, sales and level of digitalisation. While the second exceed critical mass and specialisation thresholds, demonstrating also a high volume of new ventures and digitalisation. Furthermore, it represents one of the most pertinent scientific fields within the country—engineering—marked by a substantial number of publications and a notable level of specialisation compared to the broader Western Balkans region. Finally, both these sectors present, two of the few companies that hold a patent.

- **Energy** is represented by the 2-digit industrial sector *D35 – Electricity, gas, steam and air conditioning supply*. Within the sector, the 3-digit most relevant sector is *351 – Electric power generation, transmission and distribution, w*hich emerged following the strictest thresholds, showing a relative specialisation with respect to EU-27 and a good critical mass. In addition, it appeared as one of the 10 sectors with the highest sales in the country and it is included with the label *Energy and sustainable development* among the most financed S3 priorities.

- **Food** is composed primarily of the 2-digit industrial sector *I56 – Food and beverage service activities*. Where the 3digit most relevant sector is *561 – Restaurants and mobile food service activities*. This sector exhibits specialisation values that significantly surpass the EU-27 average, along with a critical mass well above the established threshold. It ranks among the top 10 sectors for new venture creation and digitalisation within the country. Potentially, it has a strong link with the S3 priority, Sustainable Agriculture and Food Value Chain. Furthermore, it presents significant potential synergies with another identified sector – tourism - as well as with some of the nation's agricultural scientific specialisations.

- **ICT** is composed primarily of the 2-digit industrial sectors *J60 – Programming and broadcasting activities* and *J61 - Telecommunications.* Where the 3-digit most relevant sector are respectively *602 – Television programming and broadcasting activities; 611 – Wired telecommunications activities* and *619 – Other telecommunications activities,* all of which exhibit a specialisation value that exceed stricter threshold and a critical mass that exceed the broader threshold. Moreover, the J sector is one of the few that benefits from research grants in the country, specifically within the S3 priority area of ICT. Additionally, this sector demonstrates noteworthy performance in terms of scientific potential, particularly in the field of telecommunications, which shows significant strengths compared to the Western Balkans.

- **Tourism** is composed primarily of the 2-digit industrial sectors *I55 – Accommodation* and *L68 – Real estate activities*. Where the 3-digit most relevant sectors are respectively *551 – Hotels and similar accommodation* and *682 – Rental and operating of own or leased real estate.* Sectors showing values of specialisation and critical mass largely above the threshold. In addition, it is among the 10 sectors showing the highest sales in the country and with the highest values of new ventures. It also shows high values of digitalisation and includes one of the few companies that hold a patent.

3. Qualitative mapping

3.1. Methodological insights

Qualitative analysis is a key step in defining priority areas within the Smart Specialisation Strategy. Building on quantitative analysis, it provides a deeper understanding of a country's economic, innovation, and scientific potential and supports the transparent identification of preliminary priority areas for the Entrepreneurial Discovery Process (EDP). This phase requires alignment with national and regional policies, stakeholder perspectives, the chosen territorial scope of the strategy, and the identification of sectors with smart specialisation potential. Its results serve as the foundation for an active stakeholder involvement.[9]

The qualitative analysis is crucial for identifying sector-specific characteristics, key stakeholders, and well-justified priorities for innovation policy development. When properly implemented, it ensures transparency, reliability, and broad stakeholder engagement, providing a solid methodological foundation for subsequent S3 phases and contributing to effective and sustainable innovation-driven economic policies.

The preparatory phase began in November 2024 with workshops and intensified after the Quantitative Analysis Report was received in December 2024. The S3 team of the Ministry of Education, Science, and Innovation established Qualitative Teams in early January 2025, each consisting of academic and business representatives for five preliminary priority areas (Construction, Energy, Food, ICT, and Tourism). As part of results from quantitative analysis, qualitative insights on for Consulting and Wholesale were conducted with a dedicated additional expert. The Ministry prepared manuals, templates, and a collaboration platform, while further training was delivered by an international expert. Following approval of harmonised stakeholder lists, the teams initiated in-depth interviews, ensuring balanced representation and adherence to the recommended number of interviews per priority area. Building on the qualitative analysis framework, this section of the report provides a general overview of the main results from the first round of strategy along with an overview of the national innovation ecosystem and presents the main results of the qualitative mapping of potential across the identified priority areas: Construction, Energy, Food, ICT, and Tourism. An in-depth analysis on Consulting and Wholesale, is reported in Annex 2.

The following sections provide contextual information on first round of Smart specialisation and on the Montenegrin Innovation ecosystem, as well as key findings on the above-mentioned sectors Construction, Energy, Food, ICT, and Tourism. Detailed methodological, procedural, and operational aspects of the qualitative analysis are described in Annex 1.

3.2. First round of Smart specialisation and Innovation ecosystem

Montenegro is the first non-EU country to adopt the Smart Specialisation Strategy (2019–2024). As of December 2021, it is also the first to fully align its implementation with the European Commission's DG JRC guidelines.

The main goal of the Smart Specialisation Strategy 2019-2024 was to enable the accelerated development of priority areas by concentrating available research, natural, and economic resources on

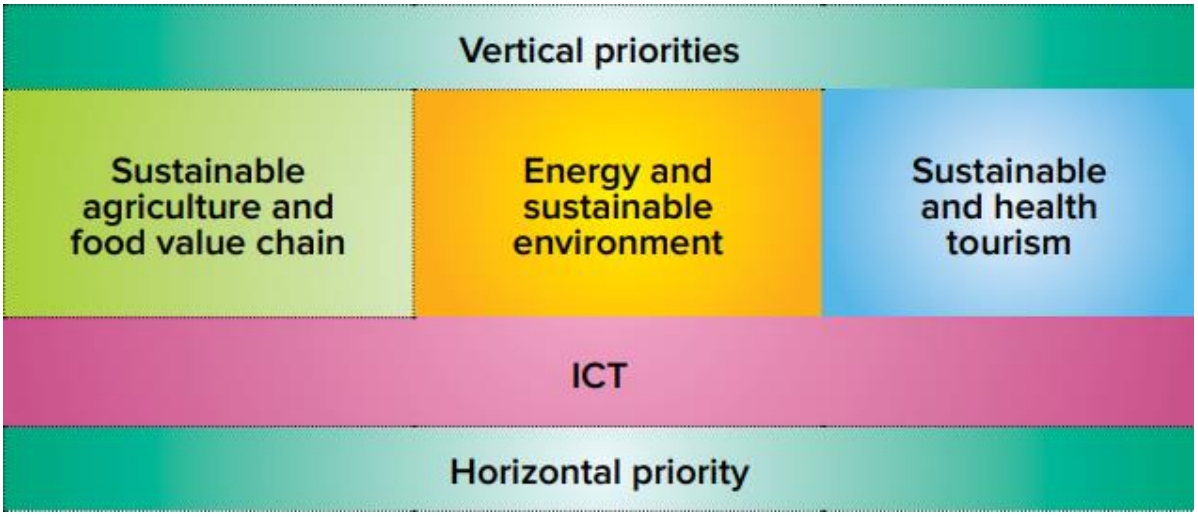
[9] According to the latest JRC guidelines, the qualitative analysis follows a structured five-stage approach. It begins with mapping value chains and trends through expert interviews, supported by capacity-building and methodological preparation. This is followed by in-depth stakeholder interviews, with at least 50% of participants from the business sector and 10–15 interviews per priority area, conducted using standardized documentation. The collected data are then analysed to identify patterns, validate preliminary priorities, and detect gaps, which are further verified through focus groups. The process concludes with a formal decision on final EDP priority areas, adopted at a joint panel meeting with national experts and JRC representatives.

a limited number of key sectors, while also fostering the development of new sub-sectors within them. Achieving the main goal of S3 – a modernized and competitive Montenegro – is based on three key strategic directions, which represent the long-term vision for the country's development: a healthy, sustainable, and digitalized Montenegro.

The Smart Specialisation Strategy 2019-2024 defined four key priority areas: Sustainable Agriculture and Food Value Chain, Energy and Sustainable Environment, Sustainable and Health Tourism, and Information and Communication Technologies (ICT). Additionally, it outlined five strategic objectives aimed at strengthening the innovation ecosystem, including improving excellence and relevance of scientific research activities, strengthening human resources in research and innovation, enhancing collaboration within the innovation system, supporting innovative activities in the business sector, and improving framework conditions for an innovative ecosystem.

These priorities and objectives serve as the foundation for fostering innovation-driven economic growth and positioning Montenegro as a competitive and knowledge-based economy in the regional and global markets.

Figure 25. Priority Areas of the Smart Specialisation Strategy 2019-2024



Source: *S3 Montenegro*[10]

As part of the first Smart Specialisation Strategy, several support measures were implemented across the four priority areas, and key implemented measures by priority areas are presented below.

When it comes to the sustainable agriculture and food value chain, several strategic measures were implemented to enhance food safety, promote agricultural innovation, and strengthen research excellence. Notably, the Centre of Excellence 'FoodHub' was established to support the digitalisation of risk assessment in food safety and precision certification of food authenticity, receiving EUR 921,402 in support within a total programme value of EUR 1,256,045. Furthermore, a dedicated programme for the introduction of innovations in the agricultural sector was financed with EUR 450,176.13. Complementing these efforts, a separate grant scheme for fostering research excellence in 2024 was launched with a total allocation of EUR 2,100,000.

10 https://s3.me/wp-content/uploads/2025/03/SmartSpecialisationStrategyofMontenegro2019-2024.pdf

In the area of energy and sustainable environment, implemented measures aimed at increasing energy efficiency and promoting innovation in both industrial and tourism sectors. The Innovation Support Programme for Industrial Energy Efficiency provided EUR 1,289,479.62 in funding, with an additional EUR 2,300,000 under evaluation. Complementary support programmes focused on enhancing energy efficiency in the hotel industry (EUR 3,000,000) and in rural and household-based hospitality services (EUR 500,000), contributing to both environmental sustainability and the competitiveness of the tourism sector.

When it comes to sustainable and health tourism, this domain was strengthened through the establishment of the Centre of Excellence for Biomedical Research – CEBIMER, with a total project value of EUR 1,309,216 and public funding of EUR 986,110. Additionally, the Innovation Boost Programme supported micro, small and medium-sized enterprises (MSMEs) with EUR 986,488, including innovative initiatives such as the digital transformation project 'Crnogor.Ski.' A Pilot Programme in this domain was also launched, providing EUR 500,000 to test new development and innovation approaches in sustainable and health tourism.

In the domain of information and communication technologies (ICT), implemented measures focused on supporting cluster development, early-stage startups, and collaborative innovation. The ICT cluster initiative 'ICT CORTEX' received EUR 750,000 in direct support, within a broader programme valued at EUR 1,110,000. Moreover, startups were backed with EUR 1,226,166.01 through early-stage development grants. Finally, the Collaborative Innovation Grants Programme contributed EUR 2,915,705 and served as a horizontal measure with high impact across all S3 domains, significantly strengthening cross-sectoral cooperation and innovation capacity.

With regard to ongoing activities, the Final *Report on the Implementation of Montenegro's Smart Specialisation Strategy 2019–2024 for the year 2024* is currently being prepared, along with the *Smart Specialisation Implementation Plan for Montenegro for 2025*, which aims to ensure the continuity of measures from the previous strategic cycle until the launch of a new one.

3.3. Montenegro Innovation Ecosystem

Besides implementation of S3 policy mix, the focus during the first strategic cycle was on building a stable innovation ecosystem based on the principles of the quadruple helix model, which enables adequate monitoring and continuous support to the S3 process in Montenegro. The development and successful implementation of the Smart Specialisation Strategy largely depends on a functional, interconnected, and synchronized innovation ecosystem that integrates key institutions, operational bodies, research and innovation infrastructure, as well as all relevant actors from the spheres of policy, business, science, and civil society. This approach enables not only cross-sectoral coordination and knowledge exchange, but also evidence-based policymaking aimed at sustainable economic development and structural transformation.

At the core of the institutional framework there is the *Government of Montenegro*, as the highest executive authority responsible for adopting key decisions related to the implementation of the Strategy, based on the recommendations of the Council for Innovation and Smart Specialisation. This Council acts as the central advisory body, managing coordination processes, shaping policies in the field of innovation and technological development, and promoting the importance of innovation for socio-economic progress. The Council provides opinions on legislative and strategic documents, proposes public-interest programmes and measures, monitors the implementation of strategies, participates in identifying investment priorities, and encourages coordination of innovation policy instruments.

During the first strategic cycle, the day-to-day implementation of S3 during the first S3 strategic cycle was overseen by the Interinstitutional S3 Group, chaired by the Ministry of Education, Science and

Innovation, while the *S3 Organisational Unit – Department for Smart Specialisation – the Secretariat* – provided technical and administrative support to the Council, coordinated target groups, prepared reports, managed the IT platform, and developed analyses necessary for evidence-based decision-making.

Furthermore, the *innovation working groups* played a crucial role; they were established for each priority area and composed of representatives from the business sector, academia and research community, NGOs, and intermediary organisations. Their work ensured continuity of the Entrepreneurial Discovery Process (EDP) and facilitated the two-way flow of feedback to decision-makers.

Mechanisms such as the innovation working groups and the *Interinstitutional S3 Group* have certainly proven to be an extremely useful component of the innovation ecosystem, and it is therefore recommended that these mechanisms continue in the next strategic cycle.

The *Innovation Fund of Montenegro* was established in 2021, which represented a significant institutional step toward strengthening the innovation and S3 support system. Today, it represents the key implementing body in the field of innovation. A key component of innovation policy implementation is the Innovation Fund of Montenegro, established to support innovative entrepreneurship, strengthen absorption capacities, and improve readiness for the use of EU funds, including structural and cohesion funds.

An essential part of the innovation ecosystem is also the research and innovation infrastructure. The *Innovation and Entrepreneurship Centre Tehnopolis* in Nikšić is one of the most prominent actors in supporting start-ups and entrepreneurial initiatives based on innovation and new technologies. Through the implementation of more than thirty projects and cooperation with over 150 partners, Tehnopolis actively contributes to the enhancement of the innovation system and the sustainable development of the country.

Similarly, the *Science and Technology Park of Montenegro (STP)* plays a key role in supporting high-tech sectors, the establishment and growth of teams and companies, and the commercialisation of innovative ideas and solutions. Its work focused on developing a robust technology development centre that, through various programmes and mechanisms, strengthened the overall innovation and entrepreneurial ecosystem. In June 2024, the Science and Technology Park received a new, modern building in Podgorica and is now fully equipped to provide support to innovative start-ups and companies.

Cluster organisations gained increasing importance, especially in light of the strategic decision to fully align cluster development policy with S3 priority areas. Consultative processes further emphasised the need for stronger involvement of incubators in the planning and implementation of policies, thus reinforcing the structural interconnectedness of innovation actors on the ground.

Additionally, there is an active *IT platform* that provides all relevant information related to S3 in one place and offers an overview of all available instruments and projects.

3.4. Montenegro Education system

One of the key strategic objectives of Montenegro's Smart Specialisation Strategy (S3) is the development of human capital aligned with the needs of priority areas: *sustainable agriculture and food value chain, energy and sustainable environment, sustainable and health tourism, and information and communication technologies (ICT).*

In this context, Montenegro's education system played a central role in supporting S3 implementation through multi-level alignment with national innovation priorities. Higher education, vocational education, and lifelong learning, together with technological infrastructure and research centres, constitute the foundation of the national innovation ecosystem.

Higher education institutions such as the University of Montenegro (UoM), University of Donja Gorica (UDG), Mediterranean University, and Adriatic University were key in aligning academic programmes with smart specialisation priorities. These institutions introduced and reaccredited study programmes in fields such as ICT, energy, tourism, and agriculture, enabling stronger science-business linkages and reinforcing Montenegro's position in the European Higher Education Area.

In line with the 2024–2028 Research Infrastructure Roadmap[11], higher education and research institutions have developed capacities across S3 priority domains:

- Sustainable Agriculture and Food Value Chain – UDG established laboratories in biotechnology, agroecology, and food technology. The Biotechnical Faculty of UoM developed facilities for research in plant and animal production, including soil and food analysis. The Institute of Marine Biology in Kotor operates laboratories, a research vessel, and infrastructure for aquaculture and marine resource monitoring.
- Energy and Sustainable Environment – The UoM's Faculty of Electrical Engineering and Faculty of Civil Engineering developed laboratories for renewable energy, waste and water analysis, and green construction materials. National centres such as the Centre for Sustainable Development, the Centre for Ecotoxicological Research, and the Centre for Climate Change and Energy Efficiency provide interdisciplinary expertise and equipment for supporting green transition.
- Sustainable and Health Tourism – The Institute of Public Health of Montenegro, the Faculty for Sport and Physical Education, the Faculty of Tourism and Hospitality (UoM), and UDG developed laboratories and research capacity in public health, sports medicine, and sustainable tourism. UDG's interdisciplinary approach integrates social sciences, healthcare, and tourism, enabling innovative, health-oriented tourism offerings.
- Information and Communication Technologies (ICT) – The UoM's Faculty of Electrical Engineering operates labs in IT, telecommunications, and automation. UDG hosts labs for robotics, artificial intelligence, and the Internet of Things (IoT). The UoM's Centre of Excellence in Digital Technologies and Transformation develops infrastructure for big data, cloud systems, and digital platforms. In addition, a Science and Technology Park is planned in Podgorica.

When it comes to aligning education with the needs of the Smart Specialisation Strategy, vocational education at levels III and IV1 in Montenegro has been systematically adapted to respond to the evolving demands of the labour market in priority sectors. New and revised programmes have been developed to provide specialised training in key domains. In the field of agriculture and food, education now includes profiles such as agrotechnician, food technician, food production worker, and forestry technician. In the domain of energy and environmental sustainability, students can pursue training to become energy technicians, renewable energy system installers, environmental protection technicians, or mechanical energy technicians. For the ICT sector, vocational education offers programmes for web and mobile application developers, computer service technicians, and network technicians, many of which are implemented in cooperation with private ICT companies such as ICT Cortex and Logate Academy. The field of health and sustainable tourism is also covered, with training for hospitality and tourism technicians, physiotherapy technicians, pharmacy technicians, and cosmetology technicians.

Lifelong learning has also been significantly strengthened, particularly during the period 2021–2022, through collaboration among higher education institutions, private training providers, and the Centre for Vocational Education. A wide range of programmes was introduced to address skills gaps across several domains. In the area of digital skills, courses were offered in digital literacy, web development, artificial

11 https://www.gov.me/en/documents/d05902d9-8093-4285-9a68-3e99d22512a7

intelligence fundamentals, and server administration. Green and tourism-related competencies were addressed through training in sustainable development in the yachting industry, urban agriculture, and educational programmes such as summer and winter schools. In the energy sector, specialised workshops for energy auditors and technical training delivered through IPC Tehnopolis and the Faculty of Mechanical Engineering supported workforce development. Furthermore, the Digital Academy and Digital School supported learners and employees in acquiring practical STEM skills aligned with market needs.

Centres such as IPC Tehnopolis and ICT Cortex played a central role in strengthening applied knowledge and technical competencies by offering specialised training in digital skills, mechatronics, robotics, and programming. These initiatives reached a wide target group, including students, young professionals, and adults seeking to improve their employability and innovation potential.

In parallel, the Strategy for the Digitalisation of Education (2022–2027) introduced systemic improvements in the formal education system. These included the implementation of digital platforms such as Digionica, the provision of ECDL-based training for teachers, and the integration of digital learning content into curricula at all levels of education, further supporting the digital transformation of the educational ecosystem in Montenegro.

3.5. In-depth qualitative insight on 'Construction'

3.5.1. General overview

The construction sector in Montenegro is a major pillar of the national economy, identified as a key area with significant economic, scientific, and innovative potential. Despite Montenegro's GDP being primarily driven by service industries, the construction sector, encompassing building construction (F41) and architectural/engineering activities (M71), accounted for a robust 3.2% share of GDP in 2023, making it the highest contributor among productive, industrial sectors. Furthermore, with a 10% share of all enterprises, it ranks fourth overall and is the best-positioned productive industrial sector in terms of enterprise distribution across the country.

This sector is characterized by dynamism and growth, marked by:

- Significant growth in recent years, fuelled by major infrastructure projects (like the Princess Ksenija Highway), substantial investments in high-end residential and tourism complexes (e.g., Porto Montenegro, Luštica Bay), rising employment, and stable company revenues. The subsector for construction of residential and non-residential buildings (412) is particularly dynamic in terms of new business formation and sales.
- Engineering, including Construction, is the most active scientific discipline in Montenegro, accounting for 16.2% of scientific publications between 2021 and 2023. The Faculty of Civil Engineering at the University of Montenegro consistently demonstrates high academic achievement, securing a substantial portion of national doctoral scholarships, highlighting a strong scientific base with approximately one-third of current valuable PhD research relating to construction.
- The sector is recognized for its innovative capacity, with companies holding patents and engaging in high levels of digitalization, particularly in subsectors 412 and 711 (Architectural and engineering activities). Although not an S3 priority in the past, Construction-related projects were funded through programs promoting energy efficiency and sustainable environment. More recently, the sector is increasingly featured in co-financed innovation projects, confirming its relevance and cross-sectoral innovative connections with areas like ICT. The biennial 'Construction – Science and Practice' (GNP) conference further serves as a significant regional platform for science, practice, and S3-related synergy.

The Montenegrin construction sector excels in both design and execution/construction across a wide range of structures, demonstrating high-quality products and services despite the absence of the large, powerful companies of the former era.

The country's challenging terrain has necessitated and showcased significant engineering expertise, with Montenegrin companies proving themselves both as designers and contractors.

- Roads and highways: the flagship project is the Princess Ksenija Highway (Smokovac-Mateševo section), which features specific technical characteristics like steep inclines and numerous major structures, including the Moračica Bridge, standing nearly 200 meters high and almost 1 km long. Extensive reconstruction has also taken place on the main road network, including urban bypass roads and the addition of third lanes on key intercity routes.
- Tunnels: notable tunneling projects include the Sozina Road Tunnel (over 4 km) and the older, longer Sozina Railway Tunnel (about 6 km).
- Water engineering: a crucial ongoing project is the Regional Water Supply System for the Montenegrin coast, sourced from the Bolje Sestre spring, which continues to expand its capacity.

The sector has successfully completed several large-scale projects, essentially creating entire 'mini-cities' along the coast and introducing advanced technologies in urban centers.

- Coastal development: projects like Porto Montenegro, Porto Novi, and Luštica Bay stand out. Notably, Luštica Bay holds a LEED (Leadership in Energy & Environmental Design) Silver certification, a significant environmental achievement for a residential project in Europe.
- Modern structures (Podgorica): the capital features modern buildings utilizing advanced smart building technologies and cutting-edge thermo-technical solutions (e.g., groundwater-based heating/cooling, solar panels, smart systems). Examples include The Capital Plaza, the Eco-Building for State Institutions, and the Science and Technology Park of Montenegro.

The future development of the Montenegrin construction sector will rely on enhancing the synergy between the sector's numerous subfields and related disciplines (architecture, geodesy, electrical, mechanical, and thermotechnics). For strategic planning, particularly for the Smart Specialization Strategy (S3) process, the sector is most logically divided into two primary subfields based on their distinct work processes and outputs:

- Planning and design (output: plans/projects).
- Execution of construction Works (output: constructed object).

Looking ahead, a third subfield, Construction Materials and Products Industry, is considered for future (re)development within the S3 strategy, as it is currently under-developed in Montenegro but complementary to the two highlighted subfields.

3.5.2. Main markets and level of internationalization

Construction is a universal discipline, with a global market spanning the entire world. However, interviewed experts largely agree that the primary market for Montenegrin construction companies remains Montenegro itself, with some limited presence in the regional market. In design and planning, there is a greater opportunity to work outside Montenegro, primarily for individual professionals, rather than firms, due to administrative and technical restrictions. In construction execution, working abroad is even more challenging due to various organisational and administrative barriers. The main obstacles lie in the legal and organisational framework that limits Montenegrin firms from operating in other countries. Although

none of the interviewed stakeholders represented companies currently working abroad, they pointed out several Montenegrin firms engaged in construction projects in the region (Serbia and Slovenia).

On the other hand, Montenegro attracts a certain level of foreign capital, primarily from companies investing in construction projects. A smaller percentage of foreign firms have also launched production of construction materials and/or products in Montenegro. Foreign investors frequently employ local workers in design, construction, and manufacturing. While the potential to attract more foreign capital is high, investment levels directly depend on government policies.

Given the complexity of the Construction sector, it is essential to separately analyse:

— Building Construction (mainly residential)

    - Mostly private investments.

— The civil sector believes Montenegro lacks a clear strategy on what is being built and for whom, suggesting that planning and construction are currently driven by capital and profit instead of by strategic planning, as it should be.

    - Several interviewed experts argue that Montenegro is 'overbuilt', making it crucial to carefully reconsider land/space use and future development.

— Infrastructure

    - Higher investment levels than in building construction, having even greater future investment potential, especially with announced upcoming highway and express road projects.

    - Since the state is the main investor in infrastructure projects (traffic and water infrastructure systems), it is also the largest overall investor in Montenegrin Construction.

Private sector stakeholders view the State as the most reliable investor, since it will eventually pay for completed projects, whereas foreign investors often fail to respect domestic contractors.

Montenegro does not have a developed construction materials and products industry, meaning almost everything is imported. Local raw materials (stone and wood) are used to some extent, but nearly all construction products are sourced from abroad. Some business representatives claim that even the small number of locally manufactured products (e.g., prefabricated concrete elements) are expensive and of insufficient quality, leading companies to rely on imported goods. Montenegrin construction companies often purchase imported materials from domestic wholesalers. However, they frequently bypass Montenegrin intermediaries and buy directly from foreign manufacturers to avoid additional costs local wholesalers. In two interviews, it was mentioned that foreign investors or contractors (who hire Montenegrin firms as subcontractors) often insist on importing all materials and products from their home country.

The interviewed and focus group experts generally agree that the current level of internationalization is low. However, there are diverging opinions on whether it has the potential to grow significantly. Differences in perspective may stem from personal outlooks (optimism, realism, or pessimism), but the essential reason lies in different viewpoints, needs, and habits across different helixes (business vs academia), as well as in the availability of information.

As possible ways to raise the level of internationalization, some experts cite knowledge (which is already in circulation) and the possible export of construction products. Instead of importing, Montenegro could manufacture its own construction products, creating jobs and adding value to local raw materials. Once a local industry is established, exports could follow, further increasing economic value. Wood processing and planned exploitation of stone would have great potential in this sense.

Currently, there is a high level of internationalization only when it comes to the imported labour force, mainly in skilled trades (craftsmen), which outnumbers the domestic workforce in Construction.

3.5.3. Source of competitiveness, Strengths and Weaknesses

The main competitive advantage of Montenegro's Construction sector is high-quality knowledge and skills, a point on which most experts agree. High educated staff are capable, applying EU norms and standards for design. Still, some stakeholders note that Montenegro's Construction sector is not fully aligned with regional and EU regulations for execution. Skilled tradespeople (Montenegrin craftsmen) are highly sought after in the region and EU markets. One interviewed expert suggested that the craftsmen workforce currently employed in Montenegro is not up to the required quality standards. A thought arises: How to attract high-quality local professionals to return to Montenegro and become leading supervisors and master craftsmen in the domestic workforce?

Experts do not agree on whether price is a competitive advantage in Montenegro's Construction sector. Individuals and small firms (especially in design) can be competitive with the price of work, since their main working infrastructure is ICT equipment. Larger companies, particularly contractors, find price competition difficult due to high operational costs. Big firms find it financially unfeasible to relocate their working infrastructure (e.g., plants for processing and separation of aggregates, concrete factories etc.) abroad. Because of these costs, they prefer to work within Montenegro rather than seeking opportunities in foreign markets.

Several more restrictions limit the ability of Montenegrin construction firms and professionals to work officially outside Montenegro. Licenses & Authorizations necessary for work in Construction sector – requirements vary by country, and Montenegrin firms/professionals may not always qualify under foreign regulations. Partial use of BIM Technology – while BIM (Building Information Modelling) is used in some design segments, it isn't fully implemented across the Construction in Montenegro. BIM enables digital modelling of information on construction projects/objects, allowing all stakeholders (investors, designers, auditors, contractors, supervisors, and end-users) to collaborate in planning, design, construction and later maintenance of the object, through an intelligent 3D model, which provides real information in real time about each phase of the process and improves efficiency. While regulations in other countries are beyond Montenegro's control (except, to some extent, through interstate, regional and international agreements on the recognition of professional qualifications), the state can and should actively promote and incentivize BIM adoption to enhance competitiveness of its Construction sector in the global market.

Strengths

- Strategic orientation towards the EU: Montenegro has made significant progress on its EU accession path, which includes aligning legislation and standards with European norms across all sectors, including construction. European design and construction standards are widely applied both in education and professional practices in Montenegro.
- Significance of the construction sector in the economy: construction is among key sectors of Montenegro's economy. There is strong investment interest for this sector, which plays a crucial role in the development of other sectors such as tourism and energy.
- High intensity of infrastructure investment: the announcement of a major investment wave in civil engineering works (traffic infrastructure) presents an opportunity for growth. This could serve as a foundation for the development of the construction materials industry, focusing on the principles of sustainability and the use of recycled materials (rubber, ash, slag), which can enhance the competitiveness of the Montenegro's construction sector.

— Natural resources: Montenegro possesses certain raw materials, such as stone (including specific types, e.g., high-quality marl) and wood, which present significant potential for the local production of construction materials and products.

— Staff education: the education system produces a sufficient number of high educated professionals to meet the needs of the Construction sector in Montenegro. The quality of this workforce is high.

— Good supply and demand balance: the volume of work in Montenegrin construction, both in design and construction works execution, aligns well with the capacity of the local construction sector.

Weaknesses

— Workforce shortage: Montenegrin construction faces a shortage of skilled labour, primarily in the trades (i.e., craftsmen), which can affect work efficiency and quality. Additionally, there is a noticeable brain drain, as high educated professionals leave to work in Western countries.

— Reliance on imported construction materials and products: Montenegro has an extremely low level of domestic production of construction materials and products, with minimal involvement of local companies in this sector. As a result, there is a heavy reliance on imports, leading to increased construction costs and higher final prices of buildings.

— Economic instability: due to Montenegro's small market size, the Construction industry is highly sensitive to external and internal geopolitical and economic crises. In recent years, this has resulted in a decline in foreign direct investments and a slowdown in project implementation.

— Weak internationalisation: high costs and a lack of workforce limit Montenegrin construction companies from expanding into foreign markets.

— Lack of vision and reluctance to innovate: spatial planning often lacks a long-term vision, with projects driven by current circumstances, or even individual interests, rather than future needs and public benefit (e.g., construction within future transport corridors). There is significant inertia and reluctance to adopt innovations, particularly within the business sector and even in the helix of government when the state acts as an investor, who decides (non) to accept innovative solutions.

— Slow bureaucracy and inefficient administrative procedures: the process of adopting new laws that define the Construction sector has been prolonged, which in turn delays the development of new spatial plans. The procedures for obtaining building permits, expropriation, etc., are also slow and inefficient.

3.5.4. Global trends, Opportunities and Threats

Based on the results from interviews and focus groups, the main global trends in contemporary construction that Montenegro should consider can be grouped into several key thematic areas.

— Technological and process innovation - the primary focus is on digitalization, automation, and AI (artificial intelligence) implementation, which are seen as critical for enhancing efficiency and precision throughout construction processes. This technological push extends into building methods with a strong emphasis on prefabricated and modular construction, effectively shifting the industry from on-site construction toward the industrialized production of housing. Furthermore, 3D-printed houses represent a cutting-edge technology poised to reduce costs and significantly accelerate construction timelines.

— Sustainability and resource management - a major theme centres on sustainability, beginning with sustainable and energy-efficient construction aimed at reducing energy consumption and

environmental impact. This is supported by the development of innovative construction materials, with a specific focus on eco-friendly, recycling-based materials. Resource efficiency is also addressed through water management, specifically the reuse of wastewater by directing treated wastewater toward the irrigation of agricultural and park areas, and the use of plant-based wastewater treatment as natural purification systems for rural areas. A holistic approach to waste is promoted via sustainable waste management, adhering to the 5R principles (reduce, reuse, recycle, recover/repurpose, refuse) and the waste management pyramid, coupled with raising public awareness.

— Urban resilience and infrastructure - global trends highlight the need for safer, smarter, and more resilient infrastructure. This includes the development of smart cities, focusing on intelligent transportation, water infrastructure, and other sophisticated urban systems. In the transport sector, this translates to improved traffic safety through the creation of smart roads—infrastructure specifically designed to minimize driver errors. For resilience against natural threats, there is a focus on landslide and rockfall protection, particularly implementing geotechnical solutions suitable for seismically active areas. Crucially, the deployment of blue and green infrastructures (BGI & Nature-Based Solutions - NBS) is emphasized for enhancing urban resilience against climate change and natural disasters, offering numerous benefits across social, economic, and ecological aspects of human well-being.

— Future-proofing and social housing - Finally, the trends reflect changing needs in housing and urban development. This includes creating adaptive and multifunctional buildings that prioritize repurposing and renovation over complete demolition to reduce the environmental footprint. Socially, there is a drive toward implementing models of social housing and co-housing, which are shared living concepts intended to reduce costs and optimize space usage. Complementing this is the rise of the tiny house concept, promoting compact and efficient living spaces. Underlying all construction efforts is a focus on comprehensive risk management, actively mitigating financial, environmental, and safety risks throughout all project phases.

Opportunities

Montenegrin construction can certainly recognise its opportunities among the above-mentioned global trends. In line with the current circumstances in Montenegro and the region, it can effectively utilize these trends to create new value through collaboration between the business and academic sectors, supported by government programmes.

Examples:

— Digitalisation, automation, and the AI application in multiple areas: implementation of BIM technologies in practice, utilising their full capacity; increasing the efficiency of state administration and enhancing transparency (i.e., reducing corruption) through the digitalisation of the construction permit process (e-permit), e-monitoring of inspections on-site, e-integration of projects, land registry, and tax administration, etc.; digitalisation and automation of various administrative activities, such as site reporting, keeping construction log, etc.

— Environmentally friendly recycling of raw materials and industrial by-products (construction waste, rubber, plastic, glass, ash, slag, etc.), which could replace natural raw materials in construction materials (concrete, asphalt, etc.), thereby addressing waste management while conserving natural resources.

— Development of the green construction materials industry based on local natural resources – an opportunity already recognized by foreign investors in Montenegro. Planned exploitation of stone and timber as part of the sustainable development of local resources.

— Development and guidelines for foundation engineering in coastal areas, where soil has poor characteristics, combined with strong seismic influences.

— Considering climate changes, Montenegro faces risks of excessive heating and urban flooding, which are becoming more frequent. Future urban development should focus on implementing BGI & NBS. E.g., UHIs (Urban Heat Islands) significantly help in urban flood management (UFM).

— Due to climate changes, water sources are becoming less abundant. Treated wastewater should be redirected for irrigation of parks and agricultural land (reuse of wastewater). Additionally, sludge from water treatment plants can be processed and used as humus in agriculture.

— Recycling of buildings and spaces – giving new value to old structures. A significant number of buildings in Montenegro, representing cultural heritage and national or city identity, dating back several hundred years or from the 20th century, are currently out of use. Through appropriate 'recycling', i.e., reconstruction and repurposing, they can gain and generate new value.

— Recycling of shipping containers, available in the port of Bar, which could be repurposed for tiny houses or modular/mobile capsule offices.

— Education and certification of the workforce to operate with new technologies.

The announced investments in infrastructure, primarily in roads (highways and expressways), represent a strong wave of investment that Montenegro will experience in the next 10-15 years. This should be utilised as a platform for innovation and a catalyst for the revitalization of the Construction industry on modern and ecological foundations, including the development of the construction materials and products industry in Montenegro, which would have multiple positive effects (increasing the value of raw materials that Montenegro currently does not process; providing employment opportunities for the workforce that is currently migrating to foreign markets; reducing the CO2 footprint by using local raw materials, thereby minimizing transportation-related emissions; enhancing skills, strengthening capacities, and further developing the Montenegrin construction sector to make it more competitive in the international market, both in terms of products and services).

On the other hand, climate changes and natural disasters, which are largely interconnected, remind humanity of the need for a smarter approach to nature and the planet, including the management of living spaces. Montenegro must recognize that land and space are not inexhaustible resources and must be treated with much greater care – preserved, planned, and managed responsibly. A significant part of this responsibility falls on the Construction sector. Therefore, this field has numerous opportunities to act responsibly and effectively through the Smart Specialization Strategy.

Threats

The opportunities mentioned also come with certain challenges and potential obstacles during or after their implementation. The current challenges for Montenegrin construction and major threats to the successful realization of innovations in this sector include:

— Slow adaptation of state institutions to new technologies and materials, which delays the implementation of innovations.

— Lack of a legislative framework for the standardization and regulation of new materials and processes.

— High initial costs for introducing digitalisation or new technologies, and especially for launching local production of construction materials and products. A new domestic manufacturer needs time to gain

market trust with quality and price, both in Montenegro and the region, which raises concerns about the profitability and justification of such investments.

- Limited availability of qualified workforce for the application of advanced technologies.
- Climate changes and seismic activity, which may increase risks for infrastructure.
- Unplanned exploitation of natural resources, such as wood and stone, which can threaten ecosystems.
- Dependence on imported technologies, materials, and products, instead of fostering local innovations – leading to full reliance on the global market.
- Management of certain facilities/object/structures – if not done properly, a facility/object/structure can lose its value instead of generating new one.
- Risk of non-transparency and corruption – as a high-value industry, the Construction sector is particularly vulnerable to corruption and lack of transparency.

Stakeholders recognize both the need and the space for innovations that are still insufficiently represented in Construction engineering practice, for various reasons. For the business sector, especially large companies with high workloads but often insufficient workforce, the main concern is that 'new stuff' (materials, technologies etc.) come at a cost. This raises questions about the return on investment in advanced technologies and the training of personnel required for their implementation. If companies are already profitable with existing methods, they may wonder – is it really worth the investment? However, there are also business leaders willing to embrace innovation in their operations. Some changes require system solutions, such as legal framework to ensure standardized practices across the sector. On the other hand, academia and the civil sector tend to be several steps ahead, viewing these issues from broader perspectives than just business profitability. Their focus extends to spatial planning, quality of life, environmental protection, and sustainability, making them strong advocates for introducing innovations in the Construction sector

3.5.5. Main development trajectories

Based on the sources of competitive advantage and the main opportunities and challenge this is the main development potential for the existing VCs

- '*From raw material to construction product*': Montenegro possesses abundant, high-quality raw materials, including natural resources (stone, wood, etc.) and secondary materials (construction waste, thermal power plant ash). However, the country currently underutilizes these resources, selling them largely in their raw form. National players remain at the low end of the value chain, exporting raw materials or selling them to foreign entities that establish processing operations, meaning the significant added value and profit are captured elsewhere. Crucially, Montenegro has the expertise to process these materials - both natural resources and waste by-products - into higher-value semi-final and final products for the construction, agriculture, and energy sectors. This move not only addresses waste disposal issues but unlocks new economic potential. Foreign investors have already recognized this gap and are increasingly developing domestic construction material industries to capitalize on this untapped resource value.
- '*Workforce – from craftsmen to high educated personnel*': Montenegro faces a dual crisis in its labour market: a lack of sufficiently skilled craftsmen and the growing 'brain drain' of highly educated engineers. The country fails to produce enough skilled tradespeople and sees many existing ones migrate abroad for better opportunities, leading to a reliance on imported, often lower-quality, labour. Interest in engineering studies is also declining, and trained professionals are increasingly leaving. This situation financially harms the state: it invests in educating local talent who benefit foreign markets,

and then pays to import replacement labour. To resolve this, Montenegro must first promote vocational education and enhance the quality of its skilled workforce. Secondly, it must focus on retention, providing domestic opportunities and fair compensation for both craftsmen and professionals, thereby eliminating the need for local talent to seek work abroad and ending the cycle of exporting skills and importing labour.

— *'From planners (through designers and auditors, contractors and supervision) to investors'*: Montenegro is undermined by a strategic gap in spatial planning, with a lack of urban planners and a focus by local players only on design and execution, rather than long-term planning that adds societal value. While major foreign companies (like CRBC, Pizzarotti, and Strabag) dominate large construction projects, Montenegrin firms act as successful subcontractors, gaining valuable experience and raising quality standards. However, local firms are generally too small to meet the financial and administrative prerequisites to lead these major projects independently. To address this, Montenegro must strengthen its state apparatus in spatial planning to reverse the decline in land value and quality of life; enhance domestic capacity by enabling the formation of consortia. This will allow smaller local companies to combine their experience and financial power to compete effectively for, and independently undertake, complex, high-profile construction projects.

Experts and focus group members overwhelmingly recognize that the Construction sector is fundamentally interconnected with Montenegro's other preliminary economic priorities, particularly Energy and Tourism, and can also significantly support the Food sector. Furthermore, innovations within Construction are heavily reliant on the ICT sector.

This highlights a high potential for cross-innovation, as illustrated by several examples:

— Infrastructure as the Foundation: no economic sector - including Tourism or Agriculture/Food - nor life in Montenegro in general, can develop without adequate foundational infrastructure, specifically in traffic, water, and energy.

— ICT integration: digitalization and the application of AI in Construction, notably through BIM technologies, smart cities, and smart building systems, inherently necessitate cross-sectoral innovation with the ICT sector.

— Energy and ICT: The construction of modern, large-scale hydro and other energy facilities involves significant cross-sectoral innovation with the Energy sector, simultaneously incorporating an ICT component for automated and digitalized systems.

— Tourism Synergy: Projects focused on the repurposing of spaces and buildings, as well as the smart construction of tourist accommodation facilities, require cross-sectoral innovation with Tourism. These efforts also involve ICT for automation and digitalization, and the Energy sector for rational energy use and energy efficiency.

— Food and Resource Management: Innovations such as using treated wastewater to irrigate agricultural land or utilizing sludge from wastewater treatment plants as humus in agriculture, require cross-sectoral innovation with the Food sector. This process concurrently involves the ICT sector for automated systems and the Energy sector for efficiency and rational use.

Cross-sectoral innovations are rarely limited to pairing Construction with just one other strategic priority area. Instead, numerous examples demonstrate complex relationships that encompass three or more sectors simultaneously.

3.6. In-depth qualitative insight on 'Energy'

3.6.1. General overview

The Montenegrin energy sector, led by the dominant state-owned Elektroprivreda Crne Gore (EPCG), is rapidly transitioning toward an integrated business model that connects electricity production (historically dominated by hydropower and thermal power but now shifting to renewables like the new Gvozd wind farm), environmental protection, and energy efficiency, positioning itself as a strategic actor in regional energy trade, particularly since the installation of the undersea transmission cable linking the Balkans to the EU.

The Montenegrin energy and environmental sector is strategically vital, confirmed by its achievements in energy production, efficiency, and resource management. There is strong growth potential driven by a high corporate readiness to adopt global-value innovative solutions, particularly focused on the green energy transition, renewables, and energy efficiency. This potential is externally validated by the European Commission, which has designated specific Montenegrin projects under its Flagship-4-RENEWABLE ENERGY initiative.

The sector is highly dynamic, supported by institutions like the Innovation Fund, Eco Fund, and various technology parks, which foster start-up development. Companies are actively implementing innovations, such as using landfill gas for energy and adapting power networks (CEDIS) for solar integration. Despite challenges in fully recognizing and scaling start-ups, the sector's evolution continues, with green entrepreneurship and innovation in sustainable development steadily gaining importance. Most of the interviewees represent an integrated business model that connects energy production, environmental protection (waste management), sustainable energy, energy efficiency, infrastructure, and regulatory frameworks. Their focus on innovation, regional expansion and energy transition positions them as significant actors in Montenegro's economic development and beyond. In summary, the conclusion suggests that further development in this sector relies on continued investment in renewable energy sources, digitalization, and strengthened cooperation with international partners.

The key business areas identified are:

— Electricity production and supply – As mentioned Elektroprivreda Crne Gore (EPCG) is the dominant electricity producer in Montenegro. In addition to electricity production, EPCG is engaged in electricity supply, trading, construction and maintenance of power facilities, design, and supervision. By carrying out its core activities, EPCG ensures the reliable and high-quality supply of electricity to consumers across all voltage levels. EPCG has a total installed capacity of 874 MW, of which 649 MW (74.3%) comes from the 'Perućica' and 'Piva' hydropower plants, while 225 MW (25.7%) is generated by the 'Pljevlja' thermal power plant. Recently, construction began on the 'Gvozd' wind farm, Montenegro's first state-owned wind farm, with a capacity of 54.6 MW. Additionally, efforts have been initiated to establish a battery energy storage system (BESS), an innovative solution for sustainable managing energy from renewable sources, which will help balance the electrical grid. EPCG also sees significant potential in further utilizing hydropower by constructing large reservoirs, with a focus on the Komarnica and Kruševo (pumped-storage) hydropower projects. At the end of 2023, the total installed capacity of all power plants in Montenegro, including prosumer installations, was 1,067.238 MW (source: Regagen). The key energy entity is Elektroprivreda Crne Gore (EPCG), the state-owned electricity company, which accounts for 82% of the total installed capacity. The remaining capacity is distributed among 29 private entities, including: 19 small hydropower plants (SHP), 2 wind power plants, 7 solar power plants and various prosumers (customers who produce energy that consume).

— Energy efficiency and renewable energy sources - Projects such as 'Solari 3000+, 500+, and 5000+' (which have so far generated 30–40 MW) aim to reduce C02 emissions, accelerate the green energy transition, and enhance Montenegro's energy independence by capitalizing on its solar potential. Additionally, investing in pumped-storage hydropower plants is seen as an important measure for stabilizing Montenegro's power system. With the gradual phase-out of coal-based energy production and declining hydro potential due to climate change, investments in such an infrastructure are essential for ensuring long-term energy security. A significant breakthrough in the market has been achieved through Eco Fund projects promoting energy efficiency, which have influenced consumer preferences, shifting demand toward heat pumps and inverter-based heating systems instead of solid fuel. However, approximately 110,000 households in Montenegro still rely on traditional solid-fuel heating. The subsidization of energy efficiency programs by the Eco Fund has demonstrated that well-designed regulatory measures can activate market mechanisms and bring about lasting positive changes in supply and demand dynamics. Stakeholders in this sector expect the Eco Fund to continue this trajectory in the coming years.

— Environmental sustainability and waste management - Several interviewed companies actively participate in the management of hazardous and non-hazardous waste, including collection, recycling, and the reuse of packaging materials. Particularly notable is the treatment and export of hazardous waste–such as oil from power installations and kitchens, chemicals, and medical waste. These projects reflect both strong environmental responsibility and innovation, exemplified by the transformation of used oil into fuel (biodiesel). Regarding environmental sustainability, some companies have implemented energy efficiency projects with support from Montenegro's previous Smart Specialisation Strategy (S3). These initiatives focus on optimizing energy consumption through the installation of heat pumps, which serve as the most efficient heating system in winter and, thanks to inverter technology, as a cooling system in summer. Additionally, one company has developed a fully integrated system that has been widely adopted in the region. Several successful Montenegrin companies specialize in the production and distribution of professional ventilation grilles, diffusers, kitchen hoods, and other specialized components in this field. Among the best practice examples are the 'Solari 3000+, 500+, and 5000+' projects, which enhance energy efficiency and the prosumer model in Montenegro, as well as initiatives focused on the rehabilitation of historical waste sites and the ecological revitalization of industrial areas. With the installation of an undersea electricity transmission cable, Montenegro has become a strategic energy hub in the Balkans, linking its grid to Italy and, through it, to other EU countries.

3.6.2. Main markets and level of internationalization

The company's primary markets are Montenegro, particularly the central and southern regions (Podgorica, Budva, Kotor), and the broader Balkan region, including Serbia, Bosnia and Herzegovina, North Macedonia, Bulgaria, and Slovenia. At the European level, key markets include Germany, France, Spain, Italy, the United Kingdom, Sweden, the Netherlands, and Finland, primarily due to the increasing demand for energy efficiency, green building, and smart grid solutions. Several companies already collaborate with numerous partners across the Balkans and the European Union, with a strategic goal of strengthening their presence in the EU market due to high demand and competitive product pricing. In the electricity sector, the market can extend regionally, encompassing the Balkans and the EU.

The electricity sector in Montenegro demonstrates a high level of internationalization, particularly in the field of renewable energy, where the country already operates a functional electricity exchange and plans to integrate further with neighbouring markets. However, for other companies, except EPCG, internationalization remains relatively low to moderate, with significant growth potential. Currently, exports constitute about 25% of total production, but the underdeveloped manufacturing sector limits broader market expansion. Nonetheless, the rising demand for specific waste management services and

products, especially within the EU, presents opportunities for expansion. A key conclusion is that there is a positive trend toward international growth and a clear strategic orientation toward stronger EU market engagement.

3.6.3. Sources of competitiveness, Strengths and Weaknesses

The interviews identified that competitiveness at both the international and regional levels is primarily driven by price, quality, knowledge and innovation. Many companies rely on competitive pricing as a key advantage, particularly in sectors such as renewable energy production and waste management.

The quality of products and services also plays a crucial role, with companies investing in new technologies, digitalization, and automation to enhance their competitiveness. While competitiveness in certain business areas remains low or poses a limiting factor, significant improvement potential exists through increased investment in innovation, quality enhancement, and optimization of production processes.

Strengths

When it comes to comparative strengths, the companies identified their experience and expertise, strategic geographic location, and proximity to regional and EU markets as their primary strengths. Additionally, Montenegro's abundant natural resources, such as water, wind, and solar potential, present a strong opportunity for renewable energy development. The availability of primary energy resources for electricity production is another advantage. Namely, Montenegro has significant potential for renewable energy sources. Hydropower currently accounts for two-thirds of the country's total energy production, yet only 17% of its theoretical hydropower potential has been utilized so far. The theoretical hydropower potential in Montenegro is estimated at approximately 11 TWh/year, of which 5.7 TWh/year is economically viable for use. Wind energy also holds substantial potential, particularly in areas with high wind speeds exceeding 7 m/s. Wind power (capacity of 925 GWh) has the potential to supply up to 25% of the country's annual energy consumption. Solar energy is particularly promising, as the average annual solar duration in Montenegro exceeds 2,000 hours per year, with coastal regions receiving more than 2,500 hours per year. Additionally, Montenegro has great potential for utilizing wood waste energy, presenting further opportunities for sustainable energy development.

A notable strength is the high flexibility and adaptability of companies, which allows them to rapidly adopt new technologies and innovations. Access to EU funding opportunities provides additional potential for investment and sectoral growth. Furthermore, competitive pricing is a significant advantage in regional and international markets.

Weaknesses

As for comparative weaknesses, the main example is underdeveloped and outdated production processes, particularly in terms of limited digitalization and automation. A shortage of specialized professionals, a weak financial environment, and strong foreign competition–especially in the manufacturing and recycling sectors–are additional challenges. One of the most critical weaknesses is the lack of a comprehensive energy strategy, which should be addressed within Montenegro's S3 smart specialisation framework. Inefficient resource utilization, slow adaptation to technological and legislative changes and inadequate energy infrastructure–such as insufficient network capacity and outdated substations–are further barriers to competitiveness, that should be eliminated by S3 as an umbrella or, through special measures, some niche strategy. The implementation of advanced production management software could significantly improve efficiency. Some companies have already launched initiatives to enhance productivity, but they lack access to modern technologies. In addition to digital skills, company representatives identified human

resource capacity, business environment improvements, workspace utilization, and production methods as key areas requiring enhancement to boost competitiveness. Finally, a complex and bureaucratic regulatory environment, characterized by long and unclear procedures, was highlighted as a major weakness, leading to project delays.

3.6.4. Global trends, Opportunities and Threats

Global trends are shifting toward sustainable development, energy transition, and the circular economy, with environmental protection and responsible waste management becoming priorities in many countries. The green transition and the shift to renewable energy sources have no alternative.

Opportunities

Regarding opportunities in Montenegro's energy market, respondents noted a clear increase in demand for energy-efficient solutions and a growing need for products that reduce energy consumption and optimize resources. The diversification of energy sources is crucial, as Montenegro has the potential to compete in the electricity market by leveraging solar, wind, and hydro resources. Moreover, innovation and digitalization are key drivers of research and development in energy efficiency and decarbonization[12].

Several outstanding research initiatives, RDI collaborations, and joint projects in Montenegro's energy sector were identified among the respondents. One of the most significant initiatives is the European Commission's support under the Flagship-4-Renewable Energy program, which has identified four specific projects focused on renewable energy sources.

Additionally, Expeditio Architects has conducted independent research, while Hemosan collaborates with university departments within the framework of international projects. Representative of CEDIS emphasize the need for greater collaboration between technical faculties and businesses to enhance innovation and research in the technology sector.

The Eco Fund is also actively engaged in improving waste management, recycling, and the application of new technologies for sustainable development. EPCG participates in international RDI projects, such as HORIZON-CL5-2024-D3-02-06, which focuses on innovations in integrating PV systems into communities. This project, called SOLIDARITY, involves renowned international partners from Malta, Spain, North Macedonia, Italy, the United Kingdom and other countries, aiming to promote solar energy as a sustainable, affordable and clean energy solution. Furthermore, the Chamber of Commerce of Montenegro maintains strong cooperation with institutions such as the Innovation Center Nikola Tesla (Croatia),

[12] Numerous notable achievements have been highlighted in this segment. EPCG and Eko-fond have established significant cooperation on the Solari 3000+ project. To accelerate the development of renewable energy projects, EPCG has signed Memoranda of Understanding with European and global companies, emphasizing the importance of international cooperation in driving the energy transition and achieving a sustainable future in Southeast Europe. Deponija d.o.o. has also achieved remarkable results through its collaboration with international institutions such as the EBRD, UNDP, GIZ, the World Bank, and IFC, as well as leading companies in recycling and sustainable development, including WEM SRL, FINS, and Euro Atlantic. Several companies included in the research have demonstrated significant achievements in energy efficiency, particularly in managing EU projects, conducting studies, and providing consulting services related to building energy efficiency. One notable example is Expeditio Architects, which has contributed to projects such as touristic signage for the Kotor ramparts, cultural heritage protection, and the development of management plans. The company Hemosan has received numerous awards, including the European Manager and Best Company award, presented by the European Association of Managers and Euromanager magazine. Additionally, the company holds a Certificate of Business Excellence, recognizing its creditworthiness and outstanding business performance, as well as the Plaque of the Chamber of Commerce of Montenegro for successful business operations in 2021. Furthermore, Hemosan d.o.o. played a key role in the disposal and processing of waste for ENI Montenegro, which conducted oil and gas exploration activities in the Montenegrin seabed. Enning has also been recognized for its long-standing stable business performance. In 2023, Enning was ranked among Montenegro's largest medium-sized enterprises based on revenue generated

Synsoft LTD d.o.o. (Serbia), Universidad Politécnica de Madrid (Spain), and numerous other companies and universities across Europe.

Threats

A particularly important trend that companies in this sector should be aware of is the increasing adoption of ESG standards (Environmental, Social, and Governance). As businesses with a significant impact on the environment, society, and corporate governance, it is essential for them to stay well-informed and prepared for compliance with ESG regulations. In the case of EPCG, a challenge is the upcoming EU Carbon Border Adjustment Mechanism (CBAM), which will become mandatory from 2026 and will impact electricity, among other sectors.

Although challenges such as regulatory barriers, a shortage of professional staff, and strong competition persist, with proper strategic development, Montenegro can leverage global trends to become a sustainable and competitive player in the European market.

3.6.5. Main development trajectories

The European energy market is interconnected; however, a key challenge is that individual companies lease power capacities and manage energy transmission systems, meaning that sometimes it happens that everything depends on their decisions. In such cases, energy storage solutions could play a huge role. For Montenegro, energy storage should not follow the traditional model of storing finished energy but rather focus on utilizing natural resources for energy production. Specifically, the artificial lakes 'Krupac' and 'Slano' could serve as energy reservoirs, acting as a form of battery by accumulating potential energy that can be converted when needed.

In the area of sustainable waste management, Montenegro, as a small market, should prioritize the development of a proper waste selection system. This would allow a portion of the waste to be reused through recycling, thereby reducing the need for imports. This primarily applies to packaging materials such as paper, cardboard, and wood. Other types of waste, if properly sorted and adequately prepared, could be sent to larger recycling centres in the region for further processing (e.g., rubber, plastic, glass, etc.). Certain waste fractions, such as rubber and plastic, could be repurposed for the construction industry–for example, as a base material for asphalt after undergoing shredding and microbial treatment.

Organic waste, which accounts for more than 50% of total waste during the tourist season, could be treated and converted into fertilizer for use on both public and agricultural land. This approach would achieve two key benefits - reducing the overall amount of waste and lowering the cost of imported fertilizers and plant protection products. This model would also serve as a good foundation for primary waste separation.

With the global expansion of solar and wind power plants, a long-term solution must be established for the disposal and recycling of waste generated after these systems reach the end of their lifecycle.

In the field of energy efficiency, Montenegro has the potential to strengthen its domestic production capacity by focusing on manufacturing its own energy-efficient products while importing only essential raw materials instead of finished goods. This could be further supported by a public awareness campaign and targeted incentives, aimed at promoting the purchase of domestic products, like the approach already applied in other sectors, such as food production.

All interviewed experts highlight significant potential for cross-sectoral innovation, particularly in the IT sector, energy, agriculture, tourism, and construction. Key areas of cross-sectoral innovation include IT and waste management, where the development of smart applications and digital solutions for monitoring waste flows and optimizing primary material selection would be highly beneficial. In the field of energy

and transport, there is potential to advance e-mobility by leveraging Montenegro's favourable terrain and short distances between cities. In the field of agriculture and green technology, the focus should be on organic farming, eliminating artificial fertilizers and pesticides, and developing sustainable agricultural systems.

This demonstrates significant potential for synergy between sectors, particularly in areas aligned with global trends in digitalization, energy efficiency and sustainable development. The development of smart solutions, infrastructure improvements and the application of new technologies can enhance Montenegro's competitiveness and foster innovative products and services that align with smart specialisation strategies.

A particularly promising area for cross-sectoral innovation within the Smart Specialisation Strategy (S3) is the just energy transition of the Pljevlja coal region. A just energy transition must be carefully managed to ensure energy security and independence for Montenegro, support for employees in the energy and mining sectors and the timely fulfilment of Montenegro's international obligations. The process of just energy transition should be accompanied by a strategic plan to create new businesses and jobs (e.g, green jobs, green knowledge, and skills) within a diversified local economy. Potential economic areas for Pljevlja's transition include sustainable construction, low-CO_2 cement industry, renewable energy sources (RES), IT sector, organic agriculture, science and research, rural tourism and wood industry. By effectively utilizing by-products from these new industries (e.g, plaster), Pljevlja has the potential to become a leading example of a circular economy.

3.7. In-depth qualitative insight on 'Food'

3.7.1. General overview

The food sector in Montenegro, which is closely linked to agriculture, plays a notable role in the economy and is deeply interwined with the country's rapidly growing tourism. In 2023, the country's Gross Domestic Product (GDP) was estimated at €6.96 billion, with agriculture contributing 6% and industry contributing 13%. The core of the food industry is composed primarily of the 2-digit sector I56 - Food and beverage service activities, with the 3-digit sector 561 – Restaurants and mobile food service activities being the most relevant. This specific sector shows specialization values and a critical mass that significantly surpass the EU-27 average. Despite being characterized by many small-scale producers and some reliance on imports, the sector is considered dynamic and is a top national priority for investment, especially in sustainable agriculture and the food value chain, supported by significant national and international research funding.

The Montenegrin food sector is distinguished by its proven product quality and a strong foundation in scientific innovation. Montenegrin products consistently achieve high honors at international competitions. The wine industry is particularly celebrated, with both large producers (like '13. jul Plantaže') and private wineries receiving numerous awards at major events (e.g., Decanter London). Similarly, olive oil producers ('Barska uljara', 'Maslinovo ulje Davidović', etc.) and leading meat producers ('Mesopromet', 'Mesna industrija Goranović') have secured multiple gold medals and recognitions at regional and international fairs (e.g., Novi Sad, Frankfurt).

The role of the country's academic and research institutions is critical for future development the Biotechnical Faculty of UCG and the Faculty of Food Technology, Food Safety and Ecology (and FoodHub Center) are key players. They execute key national research on topics ranging from the genetic diversity of grapes and olive trees and climate change adaptation for wine, to the genomic basis of local livestock breeds and bio-waste management. These faculties are highly active in major international programs (Interreg, Horizon Europe, IPA), collaborating with global partners to advance food safety, develop innovative products, and strengthen the entire food value chain in Montenegro.

3.7.2. Main markets and level of internationalization

The main market for all business entities is the domestic market. At the national level, demand is focused on retail chains, the hospitality sector and tourism. At the regional level, markets in the countries of the Western Balkans (Serbia, Croatia, Bosnia and Herzegovina) have significant potential due to geographical proximity and cultural similarities. On the international scene, the EU is the main market, with a focus on countries such as Italy, Germany and Austria, which value authentic and high-quality products. For the wine and meat sector, the domestic market is more than 60% of the total production, while products from the olive growing sector and dairy products are 100% marketed on the domestic market. For export products (wine, alcoholic beverages, meat), the market of the region (Serbia, Bosnia and Herzegovina, Kosovo*) is the most important, and a part of meat is exported to EU countries, while wine is also exported to countries in Asia, North America and even to some countries in Africa. Apart from Podgorica and the most frequented tourist spots in Montenegro, craft breweries also sell their products on the Serbian market.

For distributors of food products, the central regions (Podgorica, Tuzi, Zeta, Danilovgrad, Nikšić and Cetinje) are certainly the most important along the coast, whose participation is growing significantly due to the improving pre-season. For this reason, the coast has higher sales than the north of Montenegro for 7 months (Apr-Sep) despite the fact that a much larger number of the population of Montenegro lives in the north. Bearing in mind the tourist season in our country, 'silent export', i.e. the sale of domestic products to tourists through Agrotourism, as a service within only local products would be marketed, is also one of the recommendations on how to shorten the food chain and get the most value.

The most important suppliers that are in focus are agricultural producers in Montenegro. However, the demand for different row materials is significantly higher than the supply, and due to limited quantities of domestic production, part of the raw materials (milk, meat, grains in brewing), as well as the means used during processing (enological means, etc.) are imported from the surrounding countries and the European Union. All companies have multi-year contracts with foreign partners with whom they cooperate for a long time. All equipment for production and processing is imported from CEFTA countries and the European Union.

Out of the total number of interviewees, 80% rated it as high. It is particularly high in terms of cooperation with international partners within the framework of innovative and scientific research projects, but also in terms of the procurement of processing equipment, as well as the impact of global trends on the world market, which are also monitored on the Montenegrin market. The low level of internationalization particularly refers to the primary production sector. It can be concluded that in general, the level of internationalization of agriculture and the food industry in Montenegro is currently at a medium level, with the potential for further growth. There is a significant connection with international partners within the scientific and research projects however, when it comes to products on the market, there is a connection with regional markets but there is room to work on strengthening cooperation.

3.7.3. Sources of competitiveness, strengths and weaknesses

The quality of Montenegrin products stands out as the main factor of competitiveness at the international and regional level (100% of interviewees). In regional markets, where competition is often based on price, Montenegrin products stand out with an excellent price-quality ratio. Montenegro manages to highlight authentic products that surpass standard industrial offers. Products with designations of geographical origin, such as Njeguški prosciutto, have a strong position in the Balkans, the wines of the Plantaže company are a very recognizable brand not only in the region, but also beyond. The export of meat is constantly growing, and it is believed that with the marks of origin, that export will be further strengthened.

Strengths

Comparative strengths for 70% of the interviewees refer to autochthonous varieties, the wealth of genetic diversity and the quality of traditional products. The indigenous variety is especially valued in the production of wine and olive oil. As a crucial strength in the production of food products, business entities state a rounded cycle within their company, i.e. their own primary production, processing and placement through some of the types of tourism (wine tourism, agritourism, etc.). The interlocutors (20%) also mention significant areas of inactivated land and geographical location as a comparative strength. Currently in Montenegro, only 20% of the land is cultivated, which represents a huge potential, especially if part of land would be activated and marketed through some form of agritourism, through which domestic products of a higher price category can also be marketed. The fact that we are a tourist destination is why distributors of food products achieve up to 40% of their annual results in a period of three months (June-August). For almost 20 days during the tourist season (July 25-August 15), over a million people stay in Montenegro, that is, almost twice as many.

Weaknesses

Weaknesses of agricultural production include non-association of producers and the inability to act together both on the domestic and regional and international markets, import dependence when purchasing raw materials, a growing problem with the workforce, insufficient quantities of products and the increasingly frequent consequences of climate change. Also, insufficient infrastructure and water availability are important challenges faced by domestic producers. Failure to use available technologies to solve irrigation in some parts of Montenegro is certainly a weakness, but also an opportunity that should be used to overcome the problems that have arisen. One of the weaknesses for small producers is the very demanding procedures in applying for IPARD funds.

Weaknesses also include the lack of coordination between primary production, the processing sector and scientific research activities. Also, many products still do not meet the strict EU standards, which limits their potential for export, and a big challenge is the fact that small and medium-sized producers often do not have enough capital to invest in modernizing production or expanding to new markets. Additional state investments and targeted activities are needed to better position Montenegrin products on the global market. It was pointed out that Montenegro is struggling with the depopulation of the north and the aging of the population in that region. This is very challenging bearing in mind that the northern region, which includes 14 municipalities, belongs to predominantly rural areas (59.7% of the population lives in rural areas). Agriculture is an important source of income, especially for the population of the northern region of the country, whose possibilities are limited when it comes to generation alternative income.

3.7.4. Global trends, Opportunities and Threats

Global food production is rapidly transforming, driven by the increasing demand for sustainable, health-focused, and digitally traceable premium products. These are the lobal trends identified by local stakeholders:

- Sustainable agricultural and food production – Increasing focus on environmentally friendly production methods and reduction of food waste. Consumers and regulations are increasingly demanding sustainability through circular economy, renewable resources and emission reduction.
- Digitization and technologies – The use of technologies such as blockchain, artificial intelligence (AI) and the Internet of Things (IoT) for food traceability, security and transparency in the supply chain.
- Growth of the functional food market – Demand for foods enriched with bioactive components, such as probiotics, vitamins and minerals, which promote health and well-being.

— Health and immune support – Especially after the COVID-19 pandemic, consumers are focusing on foods that strengthen the immune system and contribute to overall health.

— The growth of vegan and plant-based diets – Demand for alternatives to animal products, such as plant proteins, plant milk and meat substitutes.

Global trends are constant premiumization in all product groups. Consumers are increasingly choosing to buy more expensive, better-quality products that they consume in smaller quantities.

Opportunities

The opportunity for Montenegrin producers is the use of local resources for the development of functional and high-quality food products, which can open the door to new markets, investment in branding and promotion of traditional Montenegrin products with designations of geographical origin can increase their value and recognition at the global level and the association of producers, in order to fight for better exposure in chains and better visibility of domestic products.

Weaknesses

Challenges in agricultural production relate to harmonization with international standards, i.e. difficulties in meeting quality and food safety standards in accordance with EU and global market regulations, but also in maintaining authenticity, i.e. preventing the risk of loss of recognition of authentic products due to global market homogenization and the need to adapt to mass production.

3.7.5. Main development trajectories

This synergy between award-winning producers and dedicated research centres firmly positions the sector for quality-driven growth.

Wine is considered an exceptional product in Montenegro, cited by 50% of the interviewees. This reflects the country's long tradition of viticulture and the internationally recognized quality of its wines, which comprise about 20% of all agricultural exports. Meat and meat products were also highlighted as important by 40% of the respondents. Producers of meat and meat products are beneficiaries of MIDAS and IPARD funds, which is supported by the increase in export. In the period from 2021 to 2024, exports increased by 130%. The potential is also to strengthen livestock breeding.

As a product with great potential, 40% of the interviewees mentioned the production of olives and olive oil, both in the coastal and in the central part of Montenegro. Dairy products especially domestic traditional cheeses were mentioned as an important product by 30% of the interviewees. Among the food products it distributes on the Montenegrin market (flour, meat products, appetizers, cereals, water and alcoholic beverages), the distribution company DMD Delta highlights the fact that international brands from their portfolio are the absolute market leaders in their respective categories. These are brands of a higher price category, which indicates the premiumization of the Montenegrin market. Although the Nikšićko pivo brand, owned by the Molson Coors group, is widely known and available in many countries, smaller craft breweries can increasingly be found on the market and are successfully positioning themselves.

All the interviewees mentioned tourism related to gastronomy as an exceptional service applicable in all regions of our country as agrotourism farms and thematic tours, such as wine routes and visits to olive groves, katuns, etc. By connecting tradition and modern technologies, Montenegro can become recognizable on the global stage as a country of high-quality products and sustainable services. Of course, with further significant investments in science and innovation, support for small producers and strengthening of the branding of national specificities.

Cross-sectoral innovation with other S3 areas can improve innovation, increase the added value of products and contribute to sustainable development, and all interviewed representatives of subjects of importance in agricultural production agree on this. Potential areas for cross-sectoral innovation:

Information and Communication Technologies (ICT): Digitization of the food sector – Application of blockchain, artificial intelligence (AI) and IoT technologies for food traceability, supply chain optimization and product quality prediction; Education and promotion - Development of applications and digital platforms for educating consumers about nutrition, sustainability and food authenticity.

Sustainable energy and renewable sources: Energy-efficient production - Use of renewable energy sources in agriculture and the food industry; Biofuels from food waste - Development of technologies for converting food waste into biofuel, thereby reducing the ecological footprint of the sector.

Tourism: Gastronomic tourism – Development of thematic tours and experiences that connect authentic Montenegrin products with stories about tradition, culture and production methods; Product branding – Creation of recognizable food brands that will be integrated into the country's tourism offer.

3.8. In-depth qualitative insight on 'ICT'

3.8.1. General overview

The ICT sector in Montenegro possesses significant economic, research, and innovative potential. In addition to a large number of employees, the economic potential is reflected in the transformation of the business model – from outsourcing to creating own products and services, which predicts export growth, an increase in employment, and higher revenues. The research potential is manifested through more intensive collaboration between the business and academic communities, resulting in new research initiatives and the potential development of new patents. On the other hand, the innovative potential is confirmed through increased projects in fintech, gaming, AI, and blockchain technology, with active support from the Innovation Fund, the Science and Technology Park of Montenegro and the Innovation and Entrepreneurship Center Tehnopolis. Although precise data (e.g., specific export growth, the number of new patents, or the exact number of innovative projects) has not been fully consolidated, preliminary conclusions point to positive trends that promise further sector development.

The ICT sector in Montenegro has experienced significant growth in recent years, both in terms of the number of companies and employees, as well as revenues and profitability. These trends are further confirmed by the facts presented in the graph, which illustrates key aspects of this growth. In 2023, the ICT sector accounted for 11% of GDP, with around 2.75% of the total workforce, confirming its growing role in the country's economy. Additionally, the sector has become the fastest growing over the past decade, not only in terms of the number of employees and companies but also in terms of total revenue, profit, and exports, where it reached 25% of Montenegro's total exports. These indicators clearly show that the ICT sector has stood out as the sector with the fastest and most efficient return on investment, positioning itself as a key pillar of further economic development in Montenegro.

A forecast for the growth of the ICT sector over the next 10 years has also been made, based on current growth trends in Montenegro and the analysis of similar markets in the region, such as Croatia, Serbia, North Macedonia, and digitally advanced countries like Estonia.

GDP Share Growth: In recent years, the ICT sector has significantly increased its share of the GDP, from 8.60% in 2019 to 10.70% in 2023. This sector is expected to increase its share by 12.60% by 2033.

Macroeconomic Impacts: An optimistic economic growth rate of 4% annually is projected to increase Montenegro's GDP from EUR 7.03 billion to over EUR 10.39 billion by 2033. This projection considers the

ICT sector's stable growth, assuming it will maintain its competitiveness and growth rate over the past 10 years. The ICT sector's participation in GDP is based on this economic growth projection.

Comparative Analysis with Regional Countries: Countries such as Croatia and Serbia have shown similar growth rates in the ICT sector, with a particular emphasis on developing digital services and exports. Estonia's focus on digitalization demonstrates how strategic investment in ICT can dramatically increase the sector's contribution to the economy.

The Innovation Fund has also recorded increased grants for innovations in the ICT sector and high demand for resources that have not been provided due to the Fund's limited funds. In addition to the aforementioned examples of finished products such as Presto, Uhura, and Flourish, the Fund has supported the following successful products: Travelaizer, Digital Controls (a platform using artificial intelligence to find the best combination of activities and create a plan for a one-day trip), ArhangelGame (a game that is sold on Sony), and numerous potential products such as One AI (a digital chip used in healthcare), Deepmark (audio and video content), IT Solutions (IoT chips), WebPower (software in energy), etc.

With the full functionality of the Science and Technology Park of Montenegro set to launch in 2024, the first public calls for tenants were announced, showing great interest from the innovation community, with 20 innovative teams, companies, and organisations becoming members of the Science and Technology Park of Montenegro. In February 2025, a new cycle of public calls was launched. Interest has already significantly exceeded the available infrastructural capacities of the Science and Technology Park of Montenegro, which indicates the maturity of the innovation ecosystem and confirms the position of the Science and Technology Park of Montenegro as a centre of infrastructural support for the development of innovation and technology in Montenegro. In addition to modern office and co-working space, the Science and Technology Park of Montenegro offers laboratory infrastructure, available to both academia and innovators for prototyping, testing, and applied research. Furthermore, a Technology Transfer Office (TTO) was established in 2024 to strengthen the commercialization of research, support intellectual property protection, and foster collaboration between academia and industry. These new services significantly enhance the Science and Technology Park of Montenegro s role in enabling a knowledge-based economy and accelerating the market readiness of innovative solutions.

The Innovation and Entrepreneurship Centre Tehnopolis is one of the key pillars of ICT sector development in Montenegro, offering robust infrastructural, programmatic, and mentoring capacities that foster the accelerated growth of technology-oriented teams and companies. Through its specialized laboratories and business incubator programme, Tehnopolis supports around 50 resident companies, including approximately 20 startups focused on artificial intelligence and machine learning. In addition to regular incubation activities, Tehnopolis is the lead implementing body of the national pre-acceleration programme BoostMeUp, which has, throughout four cycles, supported more than 70 innovative ideas and enabled the development of dozens of ICT-based startups. Recognised as a good-practice model for its strategic synergy of education, financial, and non-financial support, the programme is fully aligned with the objectives of Montenegro's Smart Specialisation Strategy. Through a structured approach to supporting ICT teams—from ideation, validation and prototyping, to scaling—Tehnopolis plays a direct and growing role in increasing the competitiveness of the national digital sector and expanding the adoption of smart technologies across industries. Moreover, IEC Tehnopolis, through its Data Centre, provides continuous support to startups developing ideas in the field of ICT, and additionally makes these resources available to the academic community to create scientific research. One of the most prominent startups in this field in Montenegro, Deep Mark, has been using the Data Centre's resources for over a year to develop its idea and is now close to closing its first significant investment round.

3.8.2. Main markets and level of internationalization

The analysis of expert responses indicates that key markets for the ICT sector are divided between local, regional, and international levels. Serbia, Bosnia, and Croatia are the most frequently mentioned destinations and are recognized as critical regional markets. In addition, markets in Western Europe, the USA, and the Middle East have been identified as having significant potential for further business expansion.

The local market is crucial for companies offering specialized solutions tailored to domestic regulations. Firms such as Logate have already established a presence across Europe. Coinis, a representative of the digital marketing sector, also has a global reach. SkySat is recognized for distributing its hardware solutions in the United States.

Regarding suppliers, most companies in the ICT sector rely on internal resources and developing proprietary solutions, with the key inputs being software engineers and developers. Specialized software is often sourced from the USA and Western Europe, while smaller hardware components are mainly imported from China and the EU. Montenegro lacks a significant supply chain for hardware components, so they are primarily imported. With the increasing popularity and growth of the gaming industry, Montenegro faces a shortage of game design specialists essential for video game development. Additionally, there is a growing demand for IT consultants with technical expertise and a deep understanding of business processes and industry-specific challenges, enabling them to provide appropriate technological solutions and support companies in digital transformation.

Despite the low level of internationalization, some companies have successfully entered international markets and achieved significant results. The trend of internationalization is on the rise, but it is still not at the desired level, indicating substantial potential for further expansion. According to the survey, 85% of experts rate the level of internationalization in Montenegro's ICT sector as low.

The main reasons for this include a lack of knowledge in sales and marketing and absence of a strategic approach at the national level. Experts also emphasized the need for systemic incentives and a clear legal framework that would enable tracking of the IT service trade on a global scale. Examples of successful internationalization include platforms and organisations such as DigitalDen and ICT Cortex, with concrete success stories such as SkySat and Coinis. It is widely accepted that the strategy of every IT company should include expanding beyond Montenegro and focusing on the global market. However, the key challenge remains creating institutional support to facilitate this process and enable Montenegrin IT companies to compete more effectively internationally.

3.8.3. Sources of competitiveness, Strengths and Weaknesses

Montenegrin ICT companies primarily compete on price, the most frequently mentioned factor. Labour costs are lower than in the EU but higher than in China and India, placing them in a unique market position. While price remains dominant, knowledge and quality are increasingly recognized as competitive and growing advantages.

While some companies leverage cost-effective pricing strategies, others rely on high expertise and specialisation, particularly in software engineering and tailored digital solutions. Additionally, quickly adapting to market conditions has been highlighted as a competitive advantage. However, the shortage of skilled professionals remains a challenge that limits growth and competitiveness. There is a clear need for stronger branding of domestic IT solutions to enhance their visibility in the international market. Experts have repeatedly emphasized that the price-to-quality ratio is a key aspect of Montenegro's competitiveness, along with high adaptability, strong work ethic, and excellent English proficiency.

Strengths

The Montenegrin ICT sector has several key strengths that contribute to its dynamism and growth. Thanks to the small market size and companies' agility, one of its main advantages is the ability to test and validate ideas quickly. The openness of the domestic market to adopting new technologies further enhances the sector's dynamism. Additionally, natural resources and Montenegro's geographic position can be leveraged to internationalize specific technological solutions. The growing interest in the ICT sector and investments in technology education provide a strong foundation for future development. The development of software solutions, particularly in industries such as FinTech and gaming, shows significant potential for strengthening the market position of domestic companies. A key advantage of Montenegro's small size is the ease of networking and collaboration. Furthermore, the ICT sector benefits from a strong community that brings together innovation initiatives and infrastructure, such as the Science and Technology Park of Montenegro (STP), the Innovation Fund, IPC Tehnopolis, and ICT Cortex–all of which play an essential role in the sector's development through collaborative efforts. Government support for incentives and investments in innovation has significantly improved, but there is still a need for further progress and investment to unlock the sector's full potential[13].

Weaknesses

Despite its strengths, the sector faces numerous challenges. The small market size limits the capacity for scaling innovations, while validated ideas struggle to transition into profitable products due to the lack of a developed SME segment. One of the key weaknesses is the shortage of skilled professionals, which restricts the growth and competitiveness of companies. Additionally, there are delays in developing AI solutions, and investments in cybersecurity and resources for testing startups and MVPs are insufficient. The factors mentioned above slow down technological advancement and the global positioning of domestic companies. Weak connections with international partners limit access to modern knowledge, technologies, and investments.

Furthermore, Montenegro lacks a recognizable technology brand, and specific subsectors (e.g., FinTech) remain underdeveloped. The low number of commercialized research projects and the absence of a systematic framework for knowledge transfer from academia to industry further weaken the sector. As mentioned earlier, the weaknesses are partly due to a small academic staff base and a shortage of specialized professionals within the education system. The small market size also results in capacity constraints, making it difficult for companies to secure and implement large projects.

Although the ICT sector accounted for 11% of GDP in 2023, employing around 2.75% of the workforce, a significant issue is that the government has yet to recognize it as a distinct economic sector. Given that this has been the fastest-growing sector over the past decade – in terms of employment, number of

[13] The Montenegrin ICT sector includes several companies with significant business accomplishments and international recognition. Logate is the most frequently mentioned company recognized for its successful technological solutions and product exports; Sky Sat – a local success story with significant revenue from the development of its product; Coinis is a globally relevant company in digital marketing and technological solutions; Amplitudo, FiveG, Čikom, and UHURA – recognized as innovative players in the ICT market.; Flourish – winner of the Butterfly Innovation Award, which confirms its recognition at the regional level; Internationalization – Logate exports its products, demonstrating the capacity of the Montenegrin IT sector to expand into the global market; International Collaboration – through projects and partnerships with universities, contributing to technological advancement and strengthening the innovation ecosystem in Montenegro; CodeLab developed 180 interactive games for UNICEF's children up to age 6, which were provided to Ukraine; The Gamified Red Riding Hood Story was awarded for improving electronic publishing; Alicorn is an award-winning company that produces its product Zuno Games; These examples confirm that Montenegrin companies have the potential for growth and competitiveness in the global market. However, additional support is needed for internationalization and developing technological solutions with high added value.

companies, total revenue, profit, and export share – the state should adjust its classification system and formally acknowledge the ICT industry as a separate sector.

At the same time, due to the sector's rapid evolution, academic programs must be updated regularly. Universities must produce qualified professionals whose skills align with market demands to ensure continued growth and competitiveness.

Finally, the analysis also shows that research and innovation collaboration between academic institutions and the private sector exists, but it is limited. Collaborative grants from the Innovation Fund promote this cooperation. Yet, the question arises as to what extent academic institutions utilize private sector resources and vice versa, with identified space for stronger integration and joint work[14].

3.8.4. Global trends, Opportunities and Threats

Participants in the analysis highlighted key global trends in the ICT sector, including artificial intelligence (AI), blockchain technology, cybersecurity, cloud solutions, and fintech innovations. AI stands out as a dominant trend, emphasizing its application in specific industries and the development of tailored solutions. Blockchain technology is increasingly being applied in the fintech sector and security solutions, while cybersecurity is becoming the foundation of digital infrastructure across all industries. Alongside these areas, cloud technologies enable scalability and optimization of business processes, and software automation solutions increase efficiency and reduce operational costs. The shift to hybrid work models and business digitalization further drives the demand for advanced technological solutions, opening up space for innovation and new business models. It was noted that, although the government often chooses closed systems when procuring ICT systems, the digitalization of public administration (a good example being MPNI e-services) presents an opportunity to move towards more transparent and interoperable platforms.

Opportunities

Montenegro can take advantage of the numerous opportunities presented by global trends:

- Developing AI solutions tailored to specific industries would enable Montenegrin IT companies to position themselves in niche areas while strengthening their presence in the fintech and blockchain sectors, opening up new business opportunities.
- The digitalization of public administration presents a significant opportunity. With examples such as MPNI e-services, there is potential to transition from closed systems to more modern and interoperable digital platforms, further utilizing the innovative public procurement system, which aligns with the appropriate regulatory framework.

[14] Outstanding Research Initiatives Include: MONUSEN (ETF) – development of underwater sensor networks; Watched Olives (PMF) is a computer vision-based digital assistant for olive oil production. Although its market potential is still in development, it has the potential to increase olive oil production significantly.; EuroCC2/EuroCC4SEE (ETF) – a national center of excellence for HPC, contributing to supercomputing development in Montenegro and a significant resource for advanced research. Further Examples of Technology Application in the Economy: UDG – sensor networks in vineyards – enabling digitization and optimization of agricultural production.; Wine Mapping – using data and analytics to improve viticulture; International Collaboration and Researcher Engagement: ETF and PMF at CERN – participation of researchers in international projects confirms the connection of the Montenegrin academic community with global scientific research. Support for Vocational High Schools: Collaboration between three vocational high schools in Montenegro and ICT Cortex resulted in receiving over one million euros from the Regional Challenge Fund for renovating and equipping schools and providing free education for students through mentorship from Cortex members.. These examples confirm that Montenegro has quality research initiatives, but strengthening the link between the research and private sectors is necessary to ensure a higher level of practical application and commercialization of scientific achievements.

— Additionally, Montenegro has the potential to become an experimental market for testing startups and innovative technologies, thanks to the flexibility of the market and lighter regulation. Increased investments in branding domestic IT solutions could improve international visibility while advancing business digitalization and the regulatory framework, further strengthening the sector.

For better connection between academia and industry, it is necessary to establish support structures for spin-off companies and institutionalize cooperation between research teams and tech firms, using accelerated models to strengthen the Office for Technology Transfer and applying tax incentives for companies collaborating with universities, as well as developing incubators and accelerators specialized in spin-off projects within the academic community

Threats

The sector faces numerous threats. The lack of skilled workforce limits the capacity for growth and competitiveness in the global market. Meanwhile, slow progress in AI solution development and insufficient investment in cybersecurity create risks for the sector's long-term sustainability. Limited resources for testing startups and MVPs hinder the rapid validation of new ideas. At the same time, the weak international visibility of domestic IT companies reduces opportunities for attracting investments and accessing foreign markets. Additionally, the limited presence of B2C solutions reduces end-user access, further limiting market penetration.

3.8.5. Main development trajectories

Experts have emphasized that Montenegro is still not recognized as a significant player in the ICT sector at the international level, which hinders access to global markets. The lack of resellers for IT products and services further slows growth. In contrast, limited knowledge of marketing and sales of high-tech products reduces companies' competitiveness in positioning themselves higher in the value chain. Weak connections with global partners and the absence of a clear technological brand make attracting investments and new business opportunities difficult.

In terms of expansion opportunities, strategic planning for developing the ICT sector is necessary, focusing on internationalization and strengthening global connections. Increased investment in the IT sector would allow for faster commercialization of products and services. Additionally, Montenegro can leverage its flexibility and less rigid regulations to position itself as an experimental market for testing innovations (so-called sandbox playground). Directing experts toward market-oriented solutions and strengthening ties with international distributors is crucial for the long-term growth and expansion of the sector.

A significant potential for cross-sectoral innovation between the ICT sector and all other S3 areas has been identified. The most mentioned sectors with opportunities for digitalization and technological development are tourism, food, medicine, energy, finance, and transportation.

Digital transformation is a key to improving user experience and more efficient resource management in the tourism sector. Opportunities for standardization in production and trade and smart agriculture have been highlighted in the food sector. In medicine, artificial intelligence and digital solutions could improve healthcare services. Digital technologies could also benefit the energy sector by optimizing consumption. At the same time, IT solutions can be used in finance, construction, and transportation for more efficient process management and resource optimization.

The general conclusion is that the ICT sector has wide applications and is already recognized as a key support for almost all areas. Different sectors must be strategically linked to create innovations with high market potential. Further research and concretization of cooperation between industries could significantly contribute to the growth and competitiveness of the Montenegrin economy.

3.9. In-depth qualitative insight on 'Tourism'

3.9.1. General overview

The tourism sector is the driving force of Montenegro's economy, typically contributing between 20% and 30% of the nation's GDP. The country is highly valued for its extraordinary compact diversity, offering both the stunning UNESCO-protected Adriatic coastline (e.g., Bay of Kotor, Budva) and the untouched nature of its mountainous north (e.g., Durmitor National Park, Tara Canyon).

The quantitative analysis shows that Montenegro's economic strength is concentrated in just 10 specialized industries that have critical employment mass, including the key tourism segments: accommodation (I55) and catering (I56). Tourism in Montenegro has high innovation potential given its interdisciplinary nature, profitability, an employment rate exceeding 10%, and a contribution of over 25% to GDP. The precise contribution of tourism to Montenegro's economy (GDP share, total employment) can only be determined through the introduction of satellite accounts for tourism, which the Montenegro Statistical Office (Monstat) plans to implement according to the official statistics development program for 2024-2028.

Although tourism is a sector in which patents are difficult to achieve due to the nature of services, progress in digitalization – particularly the improvement of network infrastructure and the implementation of 5G technology – significantly contributes to economic growth

The tourism sector in Montenegro is extremely dynamic, with a constant influx of new start-ups and innovations. Digital applications, digital guides, eco-adventures and wellness concepts, as well as platforms for personalizing the tourist experience, MICE programs, etc., are particularly developing. Initiatives in the field of ecotourism and sustainable development are increasingly connecting local production with the tourist offer, while technological solutions and digitization improve the way visitors research the destination and book services, order food, drinks, means of transport (e.g. rent-a-car), etc.

According to stakeholders a quantitative analysis of the dynamics of new business openings in the period 2017–2019 showed that the most dynamic sectors include the hotel and similar accommodation sector (code 551), as well as the restaurant and mobile food services sector (code 561). These sectors have recorded a significant increase in the number of new companies, which indicates increased entrepreneurial activity. Also, the quantitative analysis showed that the hotel and similar accommodation sector (code 551) has recorded stable growth in recent years, with slightly higher percentages in 2022 compared to previous years. These trends indicate further potential for development and investment in the field of tourism and hospitality.

Among the main achievements:

- In the field of sustainable tourism, the Tivat Tourist Organisation stands out with the international Green Destinations 2022 recognition and the nomination for Sustainable Top 100 Destinations 2020.
- Kotor and Durmitor have the status of UNESCO sites, while Montenegrin national parks have established cooperation with the Black Forest and Una National Parks to protect natural resources.
- Montenegro is among the top 5 world cruising destinations, which is confirmed by awards in the cruise industry sector.
- Montenegro's tourism sector is recording significant successes through the presence of international hotel chains such as Hilton, One&Only, Regent and Orascom, which positions the destination on the global market.

— Monte Casa Wellness & Spa, winner of the European Spa AWARD 2017, and Hyatt Regency Kotor Bay, which was awarded in 2023 and became a member of the prestigious organisation, stand out.

Individual successes include the cooperation of Montenegrin hotels with top international consultants and Michelin-starred chefs, such as Eros Picco, who created a unique fine-dining concept at the Casa Epico restaurant.

The Chamber of Commerce of Montenegro implemented the projects 'Domaći ukusi/ Local Flavours' and 'Snaga je u svima nama/ Strength Lies Within All of Us', to connect local production and tourism.

When it comes to innovation and international cooperation, the academic community and the economy are collaborating on ICT projects and the digitalization of tourism services, including the development of smart guides and block chain technologies for the ecological sustainability of destinations.

Montenegro has been recognized through the Montenegro Quality project, which improves standards in tourism.

3.9.2. Main markets and level of internationalization

The main markets are the countries of the region (Serbia), Western and Central Europe, Scandinavia, Russia, Turkey, Germany, Poland, the United Kingdom, Israel, and the USA (78.57%). There is an increase in the number of tourists coming from distant destinations (e.g. China, Japan, Australia, New Zealand, Canada, UAE) and other markets (42.86%). Key suppliers include specialized international brands and large tour operators for mass tourism (64.29%), so-called 'sales representatives' (21.43%), B2B events (21.43%), DMCs (21.43%), and others. Unlike the organised market, some visitors travel independently, such as digital nomads (less than 10%). Internationalization is generally at a medium to high/very high level, depending on the tourism segment. For example, high-category hotels have strong international connections, national parks have a medium level, while rural tourism is still underdeveloped at the international level. In 35.71% of responses, it is noted that internationalization has been particularly influenced by hotel chains, UNESCO status (e.g. Kotor), foreign investments, but it is hindered and slowed down by insufficient air connectivity. Focus group findings emphasized that the choice of market is limited by air accessibility, but also by infrastructure in terms of domestic transportation within the destination, especially regarding transfers and departures. It is particularly important to note that a strict geographic approach in defining markets and target groups should be replaced by a combination of transportation-geographical and legal-political approaches, meaning that available airline routes, visa regimes, and transit fee policies largely dictate the 'opening' of potential and new tourist markets. In this context, distant markets as well as the diaspora are also important.

3.9.3. Sources of competitiveness, Strengths and Weaknesses

Competitiveness primarily relies on natural resources/beauty, climate, cuisine, authenticity, and service quality, and the price-quality ratio (85.71%). Advantages include the diversity of the offer in a small space, natural beauty, and cultural-historical heritage (71.43%). However, all of this is threatened by numerous internal and external factors, such as lack of infrastructure, weak air connectivity, rising VAT, and seasonality, which negatively impact competitiveness (50%). It is particularly emphasized that competitiveness should not be built on price but on knowledge, uniqueness, and exclusivity (21.43%). The focus group further confirmed the interview findings and specifically highlighted issues of security and safety in the country as an advantage of Montenegro, which, in combination with the favourable visa-free regime, positively influences tourist movements and new market penetration.

Strengths

Strengths include exceptional natural beauty (e.g. slogan of Montenegro is 'Wild Beauty'), climate, gastronomic offerings (e.g. local cuisine, wine etc.), the growth of MICE and wellness tourism offer, authentic experiences, and cultural heritage (85.71%). The focus group confirmed the findings and emphasized the advantages of being a 'new destination'; preservation in terms of its own 'underdevelopment' i.e. the absence of excessive urbanization/industrialization, as well as the benefits of its favourable location to the Ćilipi airport near Dubrovnik. Also, Montenegro is experiencing over six decades of tourism development, which represents an important asset (e.g. Sveti Stefan as a luxury hotel was opened in 1960.).

Weaknesses

Weaknesses are reflected in seasonality, lack of educated personnel, reliance on a limited number of markets, lack of infrastructure, inadequate valorisation of tourism potential, accessibility of the destination, and the grey economy in tourism (85.71%). It is very important to emphasize that regardless of whether the interviewees represent state institutions or the private sector, all agree that the key weaknesses are related to infrastructure in all aspects (e.g. roads, water, waste, transportation connectivity). More than 50% of stakeholders also consider the lack of qualified staff in this sector as one of the key problems/weaknesses, along with a significant portion of the grey economy. Furthermore, knowledge and skills are also highlighted as barriers to further development, especially among hotel entities (42.86%). Weaknesses include lack of precise data about tourists beds, arrivals and overnights; lack of TSA; quite low percentage of collective (e.g. hotel) beds compared to individual (e.g. apartments, villas) which is estimated to be less than 10% in total accommodation; high concentration of tourist overnight in the south part (over 95%) followed by limited development of tourism in central and north parts; limited visibility of the destination in certain markets; insufficient budget for general international promotion; inadequate role of NTO and need for transformation of the organisation and financing of NTOs, and the need for further improvement of legislation, i.e. fundamental laws (e.g. Law on Tourism and Hospitality, Law on Tourist Organisations).

3.9.4. Global trends, opportunities and threats

The highest value is attributed to global players (airlines, luxury brands, tour operators, platforms, and hotel chains) (85.71%). The position of domestic actors is modest in the global context (i.e., niche/micro-niche level), but in terms of potential and room for further growth, it still represents a significant opportunity that is not sufficiently exploited (64.29%). National players are less well-positioned in global value chains, with most of the benefits remaining in hospitality and the private sector. The focus group emphasized the need for the development of authentic and personalized offerings to generate more value for the consumer. Participants also highlighted the negative impact of tax policy, which causes part of the value through higher VAT to be transferred to the state budget, while simultaneously reducing the financial potential of the economy/business sector for research and innovation.

In this context, stakeholders overwhelmingly view Sustainable/Ecotourism and Digitalization/Technological Innovations as the two most critical global trends, with both cited by approximately 50% of respondents.

Digitalization is fundamentally transforming tourism services through online promotion, digital platforms, and personalized offers. While the use of Artificial Intelligence (AI) to analyze tourist preferences and optimize services is gaining importance, experts stress the necessity of maintaining a crucial balance between technology and the authentic customer experience.

Beyond the top two, other significant trends include: health, wellness, and adventure tourism (e.g., active holidays, sports, rural tourism, nature), with 42.86% and cultural, MICE, and luxury personalized tourism with 28.57%.

The remaining around 15% covers other areas, such as the development of the cruise industry and the rise of remote work/digital nomads.

Opportunities

Opportunities for tourism development in Montenegro are primarily concentrated in three strategic areas:

- Sustainable Tourism and Rural Linkages (57.14%): The largest opportunity lies in strengthening sustainable tourism, ecotourism, and forging connections with agriculture (e.g., agro-tourism, rural development).
- Accessing EU Funds (42.86%): Securing access to EU funds is a critical possibility for financing tourism and infrastructure development.
- Digitalization and Innovation (35.71%): There is significant potential in enhancing the digitalization of tourism products and services, including the creation of smart guides and general innovation in promotion.

An additional approximate 20% of opportunities are noted across areas like improving air connectivity, diversifying the overall tourism offer, and strengthening the wellness sector.

Weaknesses

Specific threats have been identified in the following areas: climate change, i.e., the need for adaptation of the tourism sector especially in terms of hotel development and products, green areas, longer season and focus on pre- and post-seasonal products etc.; geopolitical movements; regional and international competition; international infrastructure in terms of isolation from key transcontinental transport-tourism corridors (e.g. highways and railways); international certification and standardization, whose lack can be an impediment to the visibility of the destination, etc.

3.9.5. Main development trajectories

A significant majority of stakeholders, around 75%, reported or provided examples of engaging in research and collaboration with the academic community. This cooperation often takes the form of international projects funded by organizations like Erasmus+ and Interreg, focusing on areas relevant to tourism and economic development.[15]

To expand and strengthen Montenegro's tourism position, approximately 64.29% of stakeholders believe it is necessary to focus on organising off-season events (e.g. entertainment, sports, cultural, eno and gastronomic, etc.), building high-quality hotel accommodations, and developing MICE (Meetings, Incentives,

[15] Key examples of these projects include: DUALMON (2020-2025): Strengthening capacities for dual education in Montenegrin higher education; FOSTINNO (2018-2020): Fostering tourism innovation systems in the Adriatic-Ionian Region.; BLUEWBC (2018-2023): Focusing on the sustainable development of blue economies through higher education and innovation in Western Balkan countries.; Katun Roads for Montenegro and Bosnia and Herzegovina (2020-2022): An EU-funded project focused on regional development. Examples of collaboration in Montenegro are: Chamber of Commerce of Montenegro, Project for visual labelling of Montenegrin products 'Dobro iz Crne Gore'; The project 'Domestic Tastes - Good, Better, Domestic' was launched as the second phase of the 'Buy Domestic' Program, implemented by the Ministry of Sustainable Development and Tourism, the National Tourism Organisation of Montenegro, the Investment and Development Fund and the Chamber of Commerce of Montenegro. Also, Montenegro is a member of the UNWTO Health Tourism Coalition

Conferences & Events) tourism. This would not only reduce seasonality but also contribute to the development of other regions in Montenegro (besides the coastal area). A few stakeholders mentioned the lack of digital promotion and suggested that more investment should be made in this area, connecting with neighbouring countries (e.g. Croatia, Greece, Italy). One stakeholder pointed out the importance of easing or removing bureaucratic and visa barriers, which could limit the inflow of tourists from key markets such as the USA, China, and Russia. Reducing visa restrictions and promoting cross-border travel agreements within the region would facilitate the arrival of international tourists. Less than 10% highlighted the importance of certification and standardization for visibility and positioning in international markets, as well as the film industry and international events (e.g. sports, entertainment). A notable finding (<20%) is the role of cruising and the position Montenegro occupies in this industry, which could be significantly improved.

In addition, there is significant potential in connecting tourism with:

- Agriculture (around 35%), i.e., strengthening agrotourism through the promotion of rural areas, linking the tourism offer with local food and beverage producers, and creating authentic gastronomic-tourist experiences. Using local, organic, and indigenous products contributes to the differentiation of the tourism offer.
- ICT sector (21.43%), i.e., digitalizing tourism services through the development of smart guides, digital maps, e-platforms, and applications for personalized recommendations. Advanced technological innovations, including artificial intelligence and data analytics, can enhance user experience and the efficiency of destination promotion.
- Energy sector (14.29%), i.e., applying sustainable energy solutions in hotels and tourist facilities, including the use of renewable energy sources (solar panels, wind turbines) and eco-friendly innovations to reduce the ecological footprint of destinations. Smart systems for energy and resource management can significantly improve the ecological sustainability of tourism. Recycling, circular economy, and similar areas are also highlighted.
- Construction sector (14.29%), i.e., modernization and construction of sustainable tourism infrastructure, adapted to the needs of ecotourism and increasing accommodation capacity. Improving transportation and utility infrastructure is key to supporting growing tourist traffic.

4. Conclusions

Drawing on both quantitative and qualitative data, the analysis in this report identifies five preliminary priority areas: Construction, Energy, Food, ICT, and Tourism. These sectors have emerged as the most significant in terms of economic, technological, and scientific potential, and were further examined during the qualitative exercise.[16] Below some conclusive remarks are highlighted. These areas will be explored and refined in the next stages of strategy design, most notably through the stakeholder dialogue. The main findings for these sectors are outlined below.

— **'Construction' –** No economic sector, nor life itself, can develop without adequate infrastructure (transport, water, and energy), which inherently involves construction activities. The upcoming wave of investment in infrastructure (primarily in roads – highways and expressways), expected to take place in Montenegro over the next 10-15 years, should be leveraged as a platform for innovation and as a driving force for revitalizing the construction industry on modern and environmentally sustainable foundations. This includes the development of the construction materials and products industry in Montenegro, yielding multiple benefits, such as: increasing the value of raw materials that Montenegro currently does not process; creating jobs for a workforce that is currently migrating to foreign markets; reducing the CO2 footprint by using local raw materials, thereby minimizing the transportation of materials and products; enhancing skills, strengthening capacities, and further developing the Montenegrin construction sector to ensure its competitiveness on the international market, both in terms of products and services.

  On the other hand, climate changes and natural disasters, along with the dangers of accumulating various types of waste and simultaneously overusing and mismanaging natural resources, serve as a warning to humanity to adopt a more responsible approach toward nature, the planet, and living space. For Montenegro, it is crucial to recognize and accept that space and natural resources are not infinite. They must be carefully managed, properly preserved, planned, and utilised responsibly – an area where the Construction sector holds significant responsibility. This sector can find numerous opportunities to contribute meaningfully to these efforts through the S3 strategy.

  The quantitative analysis underscored the economic importance of this sector as a significant pillar in the Montenegrin economy, and the qualitative assessment has built upon those findings by highlighting its development potential, specifically through intersectoral innovations and synergies with other priority areas.

— **'Energy' –** Based on insights gathered from both quantitative and qualitative analyses, as well as the recognition of this sector in the previous Strategy, it is evident that the energy sector holds increasing potential. This potential is particularly reflected in its flexibility and adaptability to global trends through the implementation of new technologies and innovative solutions in the sector.

  Some of the examples of good practice introduced in the previous period and that are already underway include the green energy transition, the shift to renewable energy sources, energy savings through the application of energy efficiency measures and system optimization, as well as the sustainable management of resources and waste. From an economic perspective, a significant number of small and medium-sized enterprises (SMEs) in this sector are already achieving notable results at the local level. These companies possess great potential to expand their development

[16] While quantitative mapping initially highlighted the econmic relevance of Management Consulting and Wholesale sectors, qualitative analysis suggests their economic strength is overstated. Both sectors are inflated by broad classification codes, administrative registrations for residency purposes, and a lack of distinction between wholesale and retail activities. Consequently, their actual contribution to the economy and potential for innovation remain low no significant connections with the other identified sectors emerge. Detailed findings are available in Annex 2.

capacities and export their products and services to regional markets, as well as throughout the European Union.

Montenegro's commitment to aligning its energy sector development with environmental and spatial protection standards presents a challenge also for the scientific community, which has to provide sustainable solutions related to energy transmission and storage, as well as the efficient management of waste as a resource.

Considering these factors, there is a clear need for a comprehensive approach to this sector, including its terminology. In line with this, the proposed name for this priority area is: 'Energy and a Sustainable Environment'. This priority area would encompass three segments: Production and Supply of Electricity; Energy Efficiency and Renewable Energy Sources; Environmental Sustainability and Waste Management.

- **'Food' –** Agriculture and food production is a sector that plays a multiple role in the development of the society and economy of Montenegro. Its economic importance is reflected in its high contribution to GDP creation (about 6%). The participation of agriculture in the employment of the workforce is even greater, since almost a quarter of all employees in Montenegro are employed on family farms. Agriculture in Montenegro is characterized by the diversity of production by region (the diversity of agro-ecological and climatic conditions enables a great diversity of cultivated plant and animal species), as well as the existence of a large number of autochthonous species and varieties in plant and breeds in livestock production. This sector is highly complementarity with other priority sectors, and especially with tourism as the driver of all types of agritourism and health tourism through the presentation of traditional gastronomy in the context of the tourist offer.

  The sector of grape and wine production is recognized as a very important sector for Montenegro. Wine occupies 20% in all exported agricultural products. In addition to wine, there are meat products in recent years one of the main export products. Export of fresh, frozen or chilled meat and meat products in the period from 2021 to 2024 increased 130%. Recently sector of olive and olive oil production appears as sector with great potential and not only in south of the country but also in central part. Still the whole sector of agriculture and food production was not emphasized as the sector with high export potential, but it could be sector with recognized autochthonous products with geographic origin and with high-quality products that will be marketed through the country's tourist offer.

- **'ICT' –** As outlined in this report, the ICT sector in Montenegro represents one of the most dynamic fields for the continued growth of the digital economy. In 2023, the sector directly contributed 11% to the country's GDP[17], employing approximately 2.75% of the total workforce and accounting for 25% of total exports, underscoring its significant economic impact. Since 2019, when the sector's share in GDP stood at 8.60%, there has been an impressive growth trajectory, with projections indicating that this share could rise to 12.60% by 2033.

  A qualitative analysis, based on structured interviews with key stakeholders from industry, academia, and government institutions, reveals that the ICT sector is rapidly adopting innovations and transforming business models. This shift is characterized by a move away from traditional outsourcing towards the development of domestic, innovative digital solutions, particularly in the areas of FinTech, artificial intelligence, gaming, and cybersecurity.

  The high readiness of stakeholders to engage in further collaboration through the Entrepreneurial Discovery Process (EDP) further confirms the sector's agility and potential for international positioning.

17 https://lookerstudio.google.com/u/0/reporting/dafd2ccf-3479-4723-891b-c224826c8afa/page/7wZ1C

Given the sector's impressive economic indicators, technological advancement, and innovation dynamics, ICT not only holds substantial growth potential but also lays a strong foundation for the modernization and enhancement of Montenegro's economic competitiveness.

Therefore, it is proposed that the promotion of the ICT sector be framed under the compelling title 'Digital Innovation and Transformation', which clearly reflects its pivotal role in Montenegro's future Smart Specialisation Strategy.

— **'Tourism' –** The preliminary analysis of the priority 'Tourism' clearly indicates that this sector is extremely strong and has enormous potential for further development, especially in terms of research and innovations.

The quantitative analysis showed that key industries, in particular I55 (hotel accommodation) and I56 (activities of preparing and serving food and beverages), meet the conditions of critical mass and specialisation, while the travel agency segment (N79) additionally contributes to the specificities of the market.

Qualitative research confirms that representatives of the business sector, academia, civil society and government officials agree on the importance of high-quality service, innovations in digitalization and personalized tourist experiences. The proposed sub-priorities, such as (1) Hotels and tour operators in special interest tourism, as well as (2) Authentic, personalized and high-quality eno-gastro tourism experiences, represent differentiating elements that can further improve Montenegro's competitiveness in the international market. In addition, the growing trend of digitalization – through the development of applications, smart guides and the improvement of network infrastructure (including 5G technology) - ensures that the tourism sector adapts to modern global trends. The combination of high socio-economic importance (over 25% of GDP and more than 10% of employment) with a growing number of innovations makes tourism a key platform for stimulating economic growth, research and innovation.

Therefore, 'Innovative and Sustainable Tourism' can be considered a strategic priority with significant opportunities for integrating scientific, technological and business initiatives to strengthen Montenegro's competitiveness.

Based on the above conclusions for each of the above sectors and the insights from interviews and focus groups, a list of potential priority areas and sub-priorities follows to be further explored in the S3 design process:

— **'Construction',** encompassing the segments *'Planning and Design', 'Execution of Construction Works'.*

— **'Energy and Sustainable Environment',** encompassing the segments '*Production and Supply of Electricity', 'Energy Efficiency and Renewable Energy Sources'* and '*Environmental Sustainability and Waste Management'.*

— **'Sustainable Agriculture and Food Value Chain'.**

— **'Digital Innovation and Transformation'.**

— **'Innovative and Sustainable Tourism',** encompassing the segments: '*Hotels and tour operators in special interest tourism' and 'Authentic, personalized and high-quality eno-gastrotourism experiences'*.

As mentioned, in line with the methodology developed by the JRC for S3 design in EU Enlargement region, the findings of this report are intended to provide a robust evidence base for the subsequent phase of stakeholder dialogue within the Entrepreneurial Discovery Process (EDP). The EDP, which is entirely coordinated by the Government of Montenegro, offers a structured and inclusive platform to validate,

discuss, and further elaborate on these findings with key stakeholders. This process enables a more precise identification and refinement of the relevant SWOT (Strengths, Weaknesses, Opportunities, Threats), the articulation of a shared strategic vision, and the definition of a coherent and targeted policy mix. In this respect, the results of this study constitute a critical input to the strategy design phase, ensuring that policy priorities and interventions are firmly grounded in territorial evidence and collective stakeholder insight, thereby strengthening place-based, evidence-informed policymaking.

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List of abbreviations and definitions

Abbreviations	Definitions
BERT	Bidirectional Encoder Representations from Transformers
EaP	Eastern Partnership countries
EU	European Union
E&N	Enlargement and Neighbourhood
LFS	Labour force survey
LQ	Location quotient
IPC	IInternational Patent Classification
IPR	Intellectual property rights
ISIC	International Standard Industrial Classification
NACE	Nomenclature of Economic Activities
NCI	Normalised citation
index R&D	Research and development
SBS	Structural business statistics – Eurostat
SITC	Standard international trade classification S&T Science and technology

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Annex

Annex 1. Approach in collection of qualitative data and verification of findings

Construction

The experts interviewed were selected to ensure that various fields of civil engineering are covered (structures, geotechnics, hydrotechnics and hydraulic engineering, transportation infrastructure, i.e. roads, and project management, i.e. construction management), as well as architecture; all relevant S3 actors are represented – public administration, academia, business community and civil society; both design and construction companies, as well as companies of different sizes, are included as representatives of the business community;

their professional references, or the credentials of the entity they represent, indicate their status as recognized experts in the field, competent for this type of interview/purpose.

Table 18. The list of stakeholders and experts interviewed

NO.	ORGANISATION	HELIX
1.	Institut za građevinarstvo d.o.o.	Business (+ Academia)
2.	Bemax d.o.o.	Business
3.	Faculty of Civil Engineering – University of Montenegro	Academia
4.	Faculty of Civil Engineering – University of Montenegro	Academia (+ Business)
5.	Via Project d.o.o.	Business (+ Academia)
6.	Ministry of Spatial Planning, Urbanism and State Property	Government
7.	Vigoris d.o.o. – EVC Montenegro d.o.o.- ecoportal.me	Business
8.	NGO Expeditio	Civil sector
9.	IGP Fidija d.o.o.	Business
10.	Enforma d.o.o.	Business
11.	GeoT d.o.o.	Business (+ Academia)

Source: *Authors*

Out of a total of 11 interviews, seven were conducted with representatives from the business sector (64 %), two with representatives from academia (18 %), and one each with representatives from public administration and civil society (2 x 9 %).

The contacted experts were cooperative and willing to participate. No negative experiences, such as refusals, were recorded. Unfortunately, not all initially planned interviews could be conducted, as some of the originally contacted experts, despite their willingness, faced technical limitations in the second half of January 2025 (e.g., being outside Montenegro, other business commitments, etc.). Therefore, their participation in the focus group and/or the EDP process was planned (and tentatively agreed upon).

All interviews were arranged verbally, through phone conversations. No written invitations were sent. At the request of some stakeholders, basic information about S3 was provided before the interviews, along with an excerpt from the report of *Quantitative Analysis for the Development of Montenegro S3 Strategy 2026-2031* (a single paragraph related to the Construction sector). This

informational material was previously agreed with and approved by the Ministry of Education, Science, and Innovation (MPNI, the Ministry).

The selection principle for the focus group members was like that used for choosing experts for interviews, primarily concerning the academic and professional references of the experts themselves, as well as the credentials of the stakeholders they represent. Experts selected for the focus group were those with a broad perspective on the Construction sector, both in Montenegro and in the region.

Table 19. The list of focus group participants

NO.	ORGANISATION	HELIX
1.	Institute for Construction LLC Prof.dr Duško Lučić, Predinet of Board of Directors	Business (+ Academia)
2.	Strabag d.o.o. / Crnagoraput a.d. Svetislav Bajić, Executive Director	Business
3.	Privredna komora Crne Gore Balša Rakčević	Business
4.	Faculty of Civil Engineering, University of Montenegro Prof.dr Biljana Šćepanović	Academia
5.	NGO Expeditio Biljana Gligorić, program manager	Civil sector
6.	Ministry of Education, Science and Innovation Savica Vujičić, Head of Department for Smart Specialization	Government

Source: *Authors*

Out of the six focus group members, three were representatives from the business sector (50 %), while academia, public administration, and civil society were each represented by one member (3 x 16.7 %).

All experts were highly cooperative and willing to collaborate, actively participating in the focus group discussions and making significant contributions. They also confirmed their interest and availability for involvement in the EDP process on behalf of the stakeholders they represent.

The focus group meeting was held on 18 February 2025, lasting 2 hours and 10 minutes, at the premises of the Science and Technology Park of Montenegro (STP).

Energy

As part of the research on the energy sector, initial in-depth interviews were conducted with 11 relevant stakeholders. The objective of this process was to gather qualitative insights into the current challenges, opportunities, and perspectives for the development of the energy sector in Montenegro.

The legal entities selected for the interviews were carefully chosen based on their role and influence in the energy sector, including representatives from the business sector, state institutions, and civil society organisations. Most of the invited participants expressed their willingness to contribute to the research.

The interviews were conducted by using a combined methodology of data collection, including face-to-face meetings, online questionnaires, video conferences and telephone conversations. This process took place from 15 January to 5 February 2025. The first phase involved submitting the questions and agreeing on the date and format of the interview. After the interviews were completed, the collected data was processed and systematized in a tabular format. Any unclear or incomplete responses were further clarified through follow-up communication via phone and email.

Table 20. The list of stakeholders and experts interviewed

NO.	ORGANISATION	HELIX
1.	Expeditio architects	Industry
2.	Ening	Industry
3.	E3 Consulting	Industry
4.	Doo Deponija 'Livade'	Industry
5.	Hemosan	Industry
6.	Young Ecologists Society Nikšić	Civil sector
7.	Electric Power Company of Montenegro (EPCG)	Industry
8.	Eco Fund	Industry
9.	Chamber of Commerce	Business association
10.	CEDIS	Industry
11.	Regulatory Agency for Energy and Regulated Utilities (REGAGEN)	Regulator/Government

Source: *Authors*

In addition to in-depth interviews, focus groups with energy sector experts were also conducted for research purposes. Participants in the focus groups were selected based on their expertise, influence, and representativeness in key areas of the energy sector. Special emphasis was placed on ensuring the inclusion of representatives from all relevant spheres: government institutions, businesses, academic community, and civil society.

Table 21. The list of focus group participants

NO.	ORGANISATION	HELIX
1.	Co-Creation, Domen Bole, International expert	International expert for support in the development of qualitative analysis
2.	Ministry of Education, Science and Innovation, Savica Vujičić, Head of S3 Division	Government
3.	Ministry of Education, Science and Innovation, Milica Lekić, Advisor	Government
4.	Hemosan, Nemanja Radonjić, Advisor	Business
5.	Ening, Petar Jovanović, Head of the sale	Business
6.	E3 Consulting, Milica Daković, Executive director	Business
7.	E3 Consulting, Jelena Vukčević, Analyst	Business
8.	Elektroprivreda Crne Gore (EPCG), Goran Đukanović, Deputy Executive Officer for Development and Investments	Business

9.	Center for Climate Change, Natural Resources and Energy, Ivana Vojinović, Director	Civil sector
10.	EMCG, Boris Jabučanin, Director	Business

Source: *Authors*

The focus group was held at the Science and Technology Park on February 18th, 2025, and lasted approximately three hours. The composition of the focus group ensured adequate representation of all key stakeholders in the energy sector. The inclusion of representatives from the government, business and civil society enabled a multi-perspective approach to identifying challenges and reaching balanced conclusions. This structure aligns with the methodological requirements of the research, allowing for the formulation of recommendations that consider diverse interests and priorities.

Food

As part of the qualitative analysis for the Sustainable agriculture and Food value chain priority, ten interviews were conducted with subjects belonging to the Quadruple Helix (state administration, civil sector, economy and academia). Of the total number of interviews, 60% of the interviews were conducted with subjects from the economy, 20% from academia, 10% from the civil sector and 10% from the state administration.

Table 22. The list of stakeholders and experts interviewed

NO.	ORGANISATION	HELIX
1.	Ministry of Agriculture, Forest and Water Management	Government
2.	Agricultural Cluster	Civil sector
3.	FoodHub	Academy
4.	Biotechnical Faculty, University of Montenegro	Academy
5.	13. jul Plantaže a.d.	Business sector – production
6.	Kuća Maslina d.o.o./ House of Olives	Business sector – production
7.	Meso promet d.o.o./ Meat Trade	Business sector – production
8.	DMD Delta	Business sector – production
9.	Pivara Paun/ Paun Brewery	Business sector – production
10.	Srna d.o.o.	Business sector –production

Source: *Authors*

A focus group in the field of Agriculture and the Food value chain was organised on 19 February 2025 in the hall of the Science and Technology Park of Montenegro. In addition to the representatives of the Ministry of Education, Science and Innovation (the head of the S3 directorate, assistants in the S3 directorate) and an international expert, the focus group was attended by 10 participants from the public administration, academia and business sectors. The focus group participants are listed in the Table below.

Table 23. The list of focus group participants

NO.	ORGANISATION	HELIX
1.	Biotechnical faculty, University of Montenegro, Nedeljko Latinović	Academy
2.	Biotechnical faculty, University of Montenegro, Zoran Jovović	Academy
3.	Biotechnical faculty, University of Montenegro, Biljana Lazović	Academy
4.	13. jul Plantaže, Jovana Kojić	Business
5.	Ministry of Agriculture, Forest and Water Management, Vučeta Dukić	Government
6.	Ministry of Agriculture, Forest and Water Management, Branko Šarac	Government
7.	Biotechnical faculty, University of Montenegro, Bogoljub Kandić	Academy
8.	Paun d.o.o. , Koča Paunović	Business
9.	Garnet d.o.o. , Miodrag Leković	Business
10.	Restart IT d.o.o. , Miodrag Nikač	Business

Source: *Authors*

ICT

As part of the qualitative analysis, the QA team conducted structured interviews with key experts from the ICT sector, following the guidelines prescribed for qualitative analysis. This segment's objective was to collect expert input to facilitate the identification of priority areas, challenges, and trends, following the JRC S3 Design methodological framework.

The QA team selected experts based on their positions and roles within the ICT sector, including representatives from industry, academia, and government institutions. The team gave special attention to ensuring industry representation, which accounts for 54% of the interviewed subjects, while academia and government institutions each constitute 23%. All contacted participants demonstrated high interest and willingness to engage in the interviews and the subsequent process.

QA team conducted the interviews between 22 January and 4 February 2025.

Table 24. The list of stakeholders and experts interviewed

NO.	ORGANISATION	HELIX
1.	DataDesign	Business
2.	POS4me	Business
3.	Innovation Fund of Montenegro	Government
4.	Ministry of Public Administration	Government
5.	Logate, Solvership, Logate institut	Business
6.	Domain	Business
7.	Innovation and Entrepreneurship Centre Tehnopolis	Government
8.	Amplitudo	Business
9.	Codeus, Ollitech	Business
10.	Čikom	Business
11.	Faculty of Natural Sciences and Mathematics, University of Montenegro – Centre for Computer Science	Academia
12.	Faculty of Electrical Engineering	Academia
13.	University Mediterranean	Academia

Source: *Authors*

The total number of interviewed participants meets the methodology requirements, with all actors coming from the ICT sector. The structure of experts enables a valid interpretation of findings and the identification of key priorities.

Most interviews were conducted in person, while 15% were conducted online due to participant availability. The interviews lasted between 90 and 120 minutes, and data was documented through structured minutes, following methodological standards defined in the Handbook for Conducting Qualitative Analysis (QA) as part of developing the new Smart Specialisation Strategy.

Predefined criteria were applied when selecting experts/participants for the focus group to ensure the representativeness of all relevant sectors – governmental, business, academic, and civil.

Table 25. The list of focus group participants

NO	ORGANISATION	HELIX
1.	Aleksandra Bošković Delagić, Bild Studio	Business
2.	Branka Žižić, EIT Community Hub Montenegro	Academia/Government
3.	Marina Matijević, Ministry of Education, Science and Innovation (MPNI)	Government
4.	Maja Laušević Odalović, ICT Cortex, member of the QA team for the ICT sector	Civil Sector/Business
5.	Valentina Radulović, Science and Technology Park of Montenegro, member of the QA team for the ICT sector	Government

Source: *Authors*

The participant list confirms compliance with structural requirements, ensuring representation from all key sectors (business, academia, and government). This diversity allows for a comprehensive approach to analysis and enhances the quality of discussions, contributing to the formulation of concrete recommendations.

The focus group, which lasted 150 minutes and was moderated by external expert, was held on 17 February 2025, at the Science and Technology Park of Montenegro.

During the focus group, participants discussed key challenges, opportunities, and priorities in the ICT sector, focusing on practical solutions and future development guidelines.

Tourism

In-depth interviews were conducted with 14 relevant stakeholders as part of the tourism sector analysis. These interviews aimed to gather qualitative information on the current state, challenges, and opportunities within the sector. The stakeholders were selected based on their positions within the tourism sector, including representatives from the business sector, academic community, the public sector, and civil society.

The interviews were carried out between the 15 January and 25 February 2025.

Table 26. The list of stakeholders and experts interviewed

NO.	ORGANISATION	HELIX
1.	Ministry of Tourism of Montenegro	Government
2.	National Tourism Organisation of Montenegro	Government
3.	National Parks of Montenegro	Government
4.	University of Montenegro, Faculty of Tourism and Hospitality	Academy
5.	United Rural Households	NGO in rural tourism
6.	Chamber of Commerce of Montenegro	Business
7.	Hilton Hotel, Podgorica	Business
8.	Mamula Island, Herceg Novi	Business
9.	Port of Kotor	Business
10.	Signum Hotel Podgorica	Business
11.	Swissotel Kolašin	Business
12.	Montenegro Concierge DMC, Tivat	Business
13.	Casa del Mare, Kotor/Budva	Business
14.	Hotel Splendid, Montenegro Stars Hotel Group, Budva	Business

Source: *Authors*

In addition to the interviews, data was also gathered and supplemented by a focus group held on 19 February 2025, at the premises of the Science and Technology Park in Podgorica.

Table 27. The list of focus group participants

NO	ORGANISATION	HELIX
1.	Dr Olivera Blagojević, Director General of the Directorate for Investment and Competitiveness Development in Tourism, Ministry of Tourism, as a representative of the government body responsible for tourism and hospitality activities.	Government
2.	Matea Matan, Independent Advisor at the National Tourism Organisation, as a representative of the organisation responsible for promoting Montenegro both nationally and internationally.	Government
3.	Dr Sanja Pekovic, Professor, Vice-Rector for Internationalization, University of Montenegro, Faculty of Tourism and Hotel Management, as a representative of the academic community, higher education, and scientific-research activities.	Academia
4.	Edil Omeragić, Director of Montenegro Concierge DMC, as a representative of travel organisers (DMC – destination management company).	Business
5.	Gordana Stevović, Secretary of United Rural Households - Rural Tourism, as a representative of rural households and rural tourism operators.	Business
6.	Milan Vuković, Manager, Hotel Splendid – Montenegro Stars Hotel Group, as a representative of the hotel industry.	Business
7.	Veselin Dragićević, Secretary of the Small and Medium Enterprises Association, Chamber of Commerce of Montenegro, as a representative of the tourism industry.	Government/Business
8.	Dr Jelena Zvizdojević, Consultant, Damar Institute, as a local expert in the field of tourism.	Business
9.	Dr Ilija Moric, Assoc. Prof., Associate Professor, University of Montenegro, Faculty of Tourism and Hotel Management, as a local expert in the field of tourism.	Academia

Source: *Authors*

Considering the defined requirements for conducting the interviews and focus group, above stakeholder lists indicate that the necessary structure of respondents has been met, whereupon representatives from the private/business sector make up nearly 63%, government officials slightly below 20%, and the remaining respondents include representatives from academia and civil society. The selected stakeholders are representative in terms of both structure and number, with particular emphasis on the representation of the private sector. This sector includes domestic hotel chains (Montenegro Stars, Casa del Mare), international chains (Hilton, Swissotel), a luxury resort (Mamula Island), a travel organiser (Montenegro Concierge DMC), small and medium-sized enterprises, as well as rural households.

Annex 2. Case study on 'Management consulting' and 'Wholesale' sectors

As emphasized in the report, in addition to the five potentially priority areas of the Smart Specialisation Strategy 2026-2031, which have been recognized for their strong economic, scientific, and innovation potential, the Quantitative Analysis Report highlighted that statistical data indicate management consulting and wholesale possess strong economic significance, but with weak scientific and innovation potential. Further insights were suggested, and an in-depth analysis has been conducted.

Methodological approach

Management consulting

A qualitative analysis of the consulting sub-sector (code 702) was carried out, building upon the previous quantitative analysis and covering the following classifications: 7021 Public Relations and Communication Activities; 7022 Business and Other Management Consulting Activities. The data used in the analysis were obtained from submitted financial statements (FS) of business entities within this sub-sector.

To further verify and enrich the data from the quantitative analysis, interviews were conducted with six local experts who monitor the sector and are familiar with developments in the Montenegrin economy. The topics covered in the interviews included: definition of the sub-sector and reasons for the large number of registered companies, regulatory and administrative factors, economic efficiency of the sector, the role of newly established firms in its growth, and innovation potential.

In addition to the interviews, a focus group was organised on 17 February 2025, involving the local expert team, members of the qualitative teams for the five priority areas, the international expert engaged to support the development of the Qualitative Analysis, and the S3 team of the Ministry of Education, Science, and Innovation. The discussion enabled a deeper analysis of the sub-sector structure. The conclusions drawn from the data analysis were largely confirmed and further elaborated through discussions and surveys conducted among experts monitoring the Montenegrin economy.

Wholesale

In addition to management consulting, the qualitative analysis also included an in-depth examination of sub-sector 469 – Wholesale Trade, which consists of a single activity classification: 4690 – Non-Specialized Wholesale Trade. The data used in the analysis were obtained from submitted financial statements (FS) of business entities within this sub-sector. Additional analysis of this sector was conducted through interviews with four local experts closely familiar with developments in the Montenegrin economy.

A final focus group was held on17 February 2025. Participants included the local expert team, members of the qualitative teams for the five priority areas, the international expert engaged to support the development of the Qualitative Analysis, and the S3 team of the Ministry of Education, Science, and Innovation. The objective of this analysis was to uncover details and potential shortcomings resulting from incomplete statistical data and limited classifications in official data sources.

Key Findings

Management consulting

The economic potential of this sub-subsector was recognized in the previous quantitative analysis due to the significant number of business entities registered in this sub-sector, as well as the high number of employees within them. The scientific research and innovation potential of this sub-sector has not been identified.

The data used in the Qualitative Analysis were obtained from the submitted financial statements of business entities registered in the analysed sub-sector.

Table 28. Business Activity Code 702* (1/3)

BUSINESS ACTIVITY CODE 702*	2019	2020	2021	2022	2023
Number of enterprises in the activity	2,971	3,184	3,447	3,880	4,230
% change		7.17%	8.26%	12.56%	9.02%
BUSINESS ACTIVITY CODE 702*					
Number of enterprises in the activity that submitted FS	1,689	1,663	1,732	1,884	1,908
% change		-1.54%	4.15%	8.78%	1.27%
Number of employees	2,691	2,645	2,813	3,239	3,664
% change		-1.71%	6.35%	15.14%	13.12%
Projection of employees WITHOUT newly established enterprises	2,283	2,454	2,582	2,839	3,310
% change		7.49%	5.22%	9.95%	16.59%
Average number of employees	1.59	1.59	1.62	1.72	1.92
% change		-0.17%	2.11%	5.85%	11.70%
Business revenues	83,269,208	91,953,494	122,606,923	131,807,852	157,595,041
% change		10.43%	33.34%	7.50%	19.56%
Average business revenues per enterprise	49,301	55,294	70,789	69,962	82,597
% change		12.16%	28.02%	-1.17%	18.06%
Business revenue per employee	30,944	34,765	43,586	40,694	43,012
% change		12.35%	25.37%	-6.63%	5.70%
Additional revenue value per newly employed person		-	182,461	21,598	60,676

Source: *Authors*

The growth in the number of business entities in this sector has been significant, but it generally follows the overall economic growth, including the last two years, when there was an increase in newly registered entities. However, the growth in the number of companies that regularly submit financial statements is considerably lower (1.27%) compared to the growth in the number of business entities within the sub-sector (9.02%). This discrepancy may indicate occasional or temporary business activity or administrative reasons for company formation, rather than the establishment of companies for actual business operations.

The number of employees is also increasing, at a slightly faster rate than the number of companies, except for the pandemic year 2020, followed by a rapid recovery in the subsequent year. The highest employment growth occurs in existing companies, as confirmed by supporting indicators–excluding the impact of newly established companies, their employment growth rate (16.59%) exceeds the overall growth rate (13.12%). The average number of employees per company is gradually increasing, but the contribution of newly established companies remains negligible.

A similar trend is observed in business revenues–they are increasing but remain at the micro-enterprise level, with the average annual revenue per business entity reaching a maximum of EUR 82,597 in the most recent observed year. With an average of 1.92 employees per company, the sector remains highly fragmented, consisting primarily of micro-enterprises, which are smaller than the national average in Montenegro.

The additional revenue value per newly employed worker is lower than the average revenue per employee, indicating that newly hired employees do not significantly contribute to sector efficiency. This finding is further confirmed in the table showing that newly established companies generate even lower revenue per employee.

Table 29. Business Activity Code 702* (2/3)

BUSINESS ACTIVITY CODE 702*	2019	2020	2021	2022	2023
Newly established enterprises, total	450	228	283	457	371
% in relation to the number of enterprises	15,15%	7,16%	8,21%	11,78%	8,77%
Newly established companies that submitted FS	354	183	223	355	271
% in relation to the number of enterprises that submitted FS	20,96%	11,00%	12,88%	18,84%	14,20%
Number of employees in newly established enterprises	408	191	231	400	354
% change		-53,19%	20,94%	73,16%	-11,50%
Average number of employees in newly established enterprises	1,15	1,04	1,04	1,13	1,31
% change		-9,44%	-0,75%	8,77%	15,93%
Revenues in newly established enterprises	5.794.385	1.783.714	1.687.374	6.666.716	1.979.359
% change		-69,22%	-5,40%	295,09%	-70,31%
Number of newly established / number of active %	20,96%	11,00%	12,88%	18,84%	14,20%
Business revenues of newly established / business revenues of active %	6,96%	1,94%	1,38%	5,06%	1,26%
Business revenue per employee in a newly established enterprise	14,202	9,339	7,305	16,667	5,591

Source: *Authors*

The analysis of newly established business entities in this sector indicates a fluctuating trend. The sub-sector was attractive in 2019, followed by a decline during the 2020 pandemic, a recovery over the next two years to pre-pandemic levels, and then another decline in the most recent observed year. These fluctuations did not show a clear causal relationship with real business conditions.

Newly established companies submit financial statements at a higher rate than the average firm in this sector, meaning that the lack of financial statement submissions due to a lack of business activity occurs mainly among existing companies.

The number of employees in newly established companies is below the sector average–in 2023, it was 1.31 per company, compared to the sector average of 1.92. This confirms the previous finding that new employment mainly occurs within existing firms.

A comparison between the share of newly established firms in the sector and their contribution to business revenues reveals a significant disparity. In 2023, newly established firms accounted for 14.2% of all companies submitting financial reports (271 out of 1,908), yet they generated only 1.26% of the sector's total business revenues (EUR 1.98 million out of EUR 157.60 million).

The average revenue per employee in newly established companies is exceptionally low–it reached its highest value in 2022 (EUR 16,667) but dropped to EUR 5,591 in 2023. This confirms that the main driver of business revenue growth in the sector comes from existing companies, rather than from newly established firms.

Table 30. Business Activity Code 702* (3/3)

BUSINESS ACTIVITY CODE 702*	2019	2020	2021	2022	2023
Estimate of the number of new enterprises founded by foreigners	150	102	130	192	163
% in relation to the number of enterprises	5.05%	3.20%	3.77%	4.95%	3.85%
Estimate of the number of new enterprises founded by foreigners that submitted FS	112	89	105	132	121
% in relation to the number of enterprises that submitted FS	6.63%	5.35%	6.06%	7.01%	6.34%
% of new enterprises that submitted FS	31.64%	48.63%	47.09%	37.18%	44.65%
Number of employees in new enterprises founded by foreigners that submitted FS	180	132	152	203	183
% change		-26.67%	15.15%	33.55%	-9.85%
Average number of employees in newly established enterprises founded by foreigners	1,61	1,48	1,45	1,54	1,51
Revenues of new enterprises founded by foreigners that submitted FS	1,921,473	602,893	759,989	2,570,050	707,674
% change		-68.62%	26.06%	238.17%	-72.46%
Business revenue per employee in a newly established foreign-owned enterprise	10,675	4,567	5,000	12,660	3,867

Source: *Authors*

Among the newly established business entities, a significant number were founded by foreign individuals, averaging slightly below half (44.65% in 2023), with their business revenues following a similar proportion (35%–40%). The average number of employees in these companies is slightly higher than the average among all newly established businesses (1.51 in 2023), yet it remains below the sector average (1.92). In all other aspects, the observations remain the same as those related to all newly established business entities.

The business revenues of newly established companies also vary, reflecting the limited economic strength of the sector, where a few larger entities can significantly impact overall results.

The table above presents a list of the largest business entities in this sub-sector, ranked by number of employees and sales revenue in the most recent observed year (2023). The lists reveal significant differences in the industries where these companies operate or with which they are affiliated, including gambling and betting, construction, an innovation-entrepreneurship centre (state-owned), accounting and bookkeeping services, trade, consultancy for the Economic Citizenship Program, real estate management, and others.

The diversity of activities these companies perform demonstrates that this sub-sector (specifically, code 7022) is widely recognized as a general business activity, regardless of the core industry to which it is related to, leading to its high number of entities but extremely heterogeneous structure.

Furthermore, interviews with experts confirmed that the sector is highly fragmented, predominantly composed of small and micro-enterprises, with newly established companies not significantly contributing to the growth of this sub-sector. The innovation potential of sub-group 702 and the key business entities operating within it was rated very low.

In addition to the interviews, a focus group was organised. The discussion provided a deeper analysis of the sub-sector's structure, revealing that a significant number of companies are registered not for business activities, but to fulfil administrative requirements, such as residency regulation. The focus group also confirmed that newly established firms do not significantly contribute to sector growth, with employment and economic expansion driven primarily by existing businesses.

The data obtained from the conducted analysis indicate that the current state of this sub-sector is the result of a combination of multiple factors, primarily: a broadly defined classification description that allows consulting services from a wide range of other industries to be registered under this activity code.

Additionally, the data reveal that this is a highly fragmented sector, predominantly composed of micro-enterprises, with an average of 1.92 employees per company and an average business revenue of EUR 82,597 per entity. Moreover, although newly established companies in this sector are numerous, they do not make a significant contribution to the growth of this industry, neither in terms of revenue nor employment. The same applies to newly established companies founded by foreign individuals, who predominantly use company registration under this activity – one that does not require specific infrastructure or investment – as a means to fulfil residency requirements for themselves, their employees, and often their families.

Wholesale

The economic potential of this sub-subsector was recognized in the previous quantitative analysis due to the significant revenue registered in this sub-sector, as well as the high number of employees. The scientific research and innovation potential of this sub-sector has not been identified.

The data used in the Qualitative Analysis were obtained from the submitted financial statements of business entities registered in the analysed sub-sector.

Table 31. Business Activity Code 469* (1/3)

BUSINESS ACTIVITY CODE 469*	2019	2020	2021	2022	2023
Number of enterprises in the activity	3,817	3,930	4,160	4,569	5,175
% change		2.96%	5.85%	9.83%	13.26%
Number of enterprises in the activity that submitted FS	1,397	1,435	1,485	1,636	1,891
% change		2.72%	3.48%	10.17%	15.59%
Number of employees	9,783	9,486	9,574	10,082	10,915
% change		-3.04%	0.93%	5.31%	8.26%
Projection of employees WITHOUT newly established enterprises	9,602	9,245	9,354	9,740	10,454
% change		-3.72%	1.18%	4.13%	7.33%
Average number of employees	7.00	6.61	6.45	6.16	5.77
% change		-5.60%	-2.47%	-4.41%	-6.34%
Business revenues	1,164,699,550	993,156,097	1,264,632,894	1,487,799,056	1,695,130,257
% change		-14.73%	27.33%	17.65%	13.94%
Average business revenues per enterprise	833,715	692,095	851,605	909,413	896,420
% change		-16.99%	23.05%	6.79%	-1.43%
Business revenue per employee	119,053	104,697	132,090	147,570	155,303
% change		-12.06%	26.16%	11.72%	5.24%
Additional revenue value per newly employed person		-	3,084,964	439,303	248,897

Source: *Authors*

The growth in the number of business entities in this sector is significant, but it is largely in line with the overall increase in the number of businesses across the economy, including the recent years' trend, which has seen a notable rise in newly registered enterprises. In the most recent observed year, growth in this sector was slightly higher than in the economy as a whole, which, according to expert interviews, can partly be attributed to efforts to establish mediation between local retail stores and manufacturers in the home countries of the founders.

The increase in the number of businesses that regularly submit financial statements is slightly higher than the growth in the total number of businesses, which may indicate a resumption of business activity in entities that had been inactive in previous years, as well as a potential improvement in financial reporting culture and financial discipline.

The number of employees is also increasing, but at a lower rate than the number of businesses, except for the decline during the pandemic year 2020 and a relatively quick recovery the following year.

It is evident that most of the employment growth occurs within existing businesses, as seen from several supporting indicators. When eliminating the impact of newly established companies and projecting employment growth without them it becomes clear that employment growth in existing companies accounts for the majority of total employment growth and is significantly higher than the increase in employment within newly established businesses.

Additionally, the average number of employees per business entity is declining, which is evident in each observed year. Both findings will be further confirmed by examining the data specifically related to newly established companies.

A similar trend is observed in business revenues–they are increasing, while the average revenue per business entity remains relatively stable. However, the additional revenue value per newly employed worker, has been declining significantly year after year. This trend will also be confirmed in the next table, where an analysis of newly established companies will show that new employees in these businesses generate significantly lower average business revenue per employee.

Table 32. Business Activity Code 469* (2/3)

BUSINESS ACTIVITY CODE 469*	2019	2020	2021	2022	2023
Newly established companies, total:	217	160	270	442	648
% in relation to the number of companies	5.69%	4.07%	6.49%	9.67%	12.52%
Newly established companies that submitted financial statements:	143	118	199	301	439
% in relation to the number of companies that submitted financial statements	10.24%	8.22%	13.40%	18.40%	23.22%
Number of employees in newly established companies:	181	241	220	342	461
% change		33.15%	-8.71%	55.45%	34.80%
Average number of employees in newly established companies	1.27	2.04	1.11	1.14	1.05
% change		61.36%	-45.87%	2.78%	-7.58%
Revenues in newly established companies:	16,703,975	6,276,185	6,148,161	7,643,771	8,729,745
% change		-62.43%	-2.04%	24.33%	14.21%
Number of newly established companies / Number of active companies %	10.24%	8.22%	13.40%	18.40%	23.22%
Business revenues of newly established companies / Business revenues of active companies %	1.43%	0.63%	0.49%	0.51%	0.51%
Business revenue per employee in a newly established company	92,287	26,042	27,946	22,350	18,937

Source: *Authors*

When examining only newly established business entities, we observe a year-over-year increase in their number, which largely mirrors overall economic trends. Additionally, it is evident that newly established companies submit financial statements at a higher rate, which is expected–these businesses typically have business activity at the beginning of their operations and are also more compliant with their reporting obligations in the early stages of their business lifecycle.

The number of employees in these companies is significantly lower than the sector average. In 2023, newly established businesses had an average of just 1.05 employees, whereas the sector-wide average for this activity classification was 5.77.

Business revenues in newly established companies generally follow the trends in the number of businesses and employees, except in the initial year of observation. Given the relatively small revenue figures, this 'irregularity' could be attributed to one or a few companies that generated a significant business income in their first year of operation.

A notable observation is the large discrepancy between the number of newly established companies and their contribution to overall business revenue. For example, in 2023, out of all business entities that submitted financial statements (1,891), 439 were newly established businesses, representing 23.22% of the total. However, these 23.22% of newly established companies generated only EUR 8.7 million, which accounts for just 0.51% of total business revenues (EUR 1.695 billion).

These trends have led to a significant and consistent decline in average business revenue per employee in newly established companies, a trend observed in each of the last five years. This further confirms the earlier conclusion that the most significant growth in business revenue and employment, and thus the economic potential recognized in this sub-sector, is driven primarily by existing businesses rather than newly established ones.

Table 33. Business Activity Code 469* (3/3)

BUSINESS ACTIVITY CODE 469*	2019	2020	2021	2022	2023
Estimate of the number of new enterprises founded by foreigners	131	80	123	142	264
% in relation to the number of enterprises	3.43%	2.04%	2.96%	3.11%	5.10%
Estimate of the number of new enterprises founded by foreigners that submitted FS	112	65	101	122	201
% in relation to the number of enterprises that submitted FS	8.02%	4.53%	6.80%	7.46%	10.63%
% of new enterprises that submitted FS	78.32%	55.08%	50.75%	40.53%	45.79%
Number of employees in new enterprises founded by foreigners that submitted FS	143	92	134	152	250
% change		-35.66%	45.65%	13.43%	64.47%
Average number of employees in newly established foreign-owned enterprises	1.28	1.42	1.33	1.25	1.24
Revenues of new enterprises founded by foreigners that submitted FS:	3,762,630	2,226,211	2,871,334	3,546,722	4,080,207
% change		-40.83%	28.98%	23.52%	15.04%
Business revenue per employee in a newly established foreign-owned enterprise	26,312	24,198	21,428	23,334	16,321

Source: *Authors*

Among newly established business entities, a significant number were founded by foreign individuals, averaging approximately half (45.79% in 2023), with their business revenues following a similar proportion. The average number of employees in these companies is slightly higher than the average among all newly established businesses (1.24 in 2023), yet it remains significantly below the sector average (5.77). In all other aspects, the observations remain the same as those related to all newly established business entities.

By analysing largest business entities registered under this activity classification, we recognize a significant number of companies that, in addition to wholesale trade, are also extensively engaged in retail trade across various sectors. These include food and consumer goods retail chains (Voli Trade, HD Laković), cosmetics stores (MPM – Cosmetics Market), electronics retailers (Tehno Max), auto parts stores (Castellana), and street kiosk chains (Tabacco Shop, Bar-Kod).

Among the top 10 largest employers and top 10 highest-revenue business entities within this classification (2023), 7 out of 10 largest employers and 6 out of 10 highest-revenue businesses operate both in wholesale and retail trade. These 7 companies in the TOP 10 employ 5,208 workers, accounting for 47.71% of total employment within this activity classification (Table 1: 10,915 employees). At the same time, these 6 companies in the TOP 10 by revenue generated EUR 833,186,504 in business revenue in 2023, representing 49.15% of the total revenue of sub-sector 469 (Table 1: EUR 1,695,130,257). These figures clearly indicate that the influence of business entities operating in both wholesale and retail trade is dominant in shaping the statistical profile of this sector.

Interviews confirmed that wholesale trade primarily relies on domestic demand and seasonal factors, while efficiency is most influenced by internal business optimization. The analysis revealed that many wholesale companies also operate in retail, which significantly affects their business performance. In the largest company within a wholesale sector, number of employees in retail and also revenue from wholesale represent less than 20% of total. Additionally, attempts by foreign entrepreneurs, particularly from Turkey, to establish intermediary companies between local retailers and manufacturers from their home countries were observed. However, these business models have proven to be largely unsustainable in the long term. The overall conclusions indicate that wholesale trade, while possessing strong economic potential, does not exhibit a strong innovation-driven character.

In addition to the interviews, a focus group was conducted, involving the local expert team, members of the qualitative teams for the five priority areas, and the international expert engaged to support the development of the Qualitative Analysis. It was confirmed that newly established companies, despite their numerical significance, do not generate a visible economic contribution, as the main growth in employment and revenue occurs within already established companies. Furthermore, it was identified that some companies are founded for administrative reasons, primarily to facilitate residency permits for foreign owners and employees, rather than for genuine business activity.

The data obtained indicate that the economic potential of this sub-group is primarily recognized due to the fact that business entities registered under '4690 – Non-Specialized Wholesale Trade', include the most significant RETAIL chains in the country. These companies, in addition to retail trade, are also engaged in wholesale trade across various sectors. This applies to 7 out of the 10 largest employers and 6 out of the 10 highest-revenue business entities within this classification.

Furthermore, the data show that newly established companies in this sector, although numerically significant, do not contribute significantly to the sector's growth, neither in terms of revenue nor in employment. The same applies to newly established companies founded by foreign individuals.

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