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SKILLS FOR SMART SPECIALISATION IN MONTENEGRO

Understanding and managing skills as a key resource for growth and competitiveness

THE EU AGENCY SUPPORTING COUNTRIES TO DEVELOP THROUGH LEARNING

Report drafted by Dr Jelena Janusevic and Rajko Kosovic for the European Training Foundation.

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EXECUTIVE SUMMARY

Technological, environmental and demographic changes, alongside globalisation, are altering the nature of work, the content of jobs, and the demand for training. Across the ETF partner countries, there is a need for continuous review and updating of the formal education and training provision, and the role of non-formal and informal learning is growing exponentially. The competitiveness of countries and their regions depends on their flexibility and capacity to effectively adapt to global changes. All countries need to ensure: (i) that skills shortages and mismatches do not inhibit growth; (ii) that the workforce has a suitable skills mix for innovation (e.g. entrepreneurship key competences, digital skills); (iii) flexible provision of vocational education and training (VET); and (iv) lifelong learning to respond to future skills needs and improve the adaptability and employment mobility of an ageing workforce.

Smart specialisation is at the intersection of economic, industrial, innovation, labour market and education and training policies. Skills shortages and mismatches often emerge as a priority during the entrepreneurial discovery phase of a smart specialisation approach when the 'mapping' (i.e. analysis of economic potential and identification of preliminary priority areas) is shared with and dialogue is opened with employers. Employers voice the changes in labour market requirements, including an increasing use of new technologies and the need for smart specialisation strategies to be accompanied with relevant and quality VET, and upskilling of the workforce and small and medium-sized enterprises (SMEs) to adapt to new working practices and advanced products and services.

Objective and research approach

To document the foreseeable impact of economic prioritisation on skills supply and demand and the capacity of education and training systems to adjust to newer skills required in the context of smart specialisation, the ETF developed a preliminary approach to explore skills data, at subsector and local/regional levels, and skills relatedness in the context of competitiveness and innovation and the important role of SMEs in employment generation.

This report presents the methodology developed and tested in Montenegro, including the challenges faced during the pilot phase, the main findings related to the country's economic potential in two priority areas and its skills development dimensions, and unpacks a set of key lessons and recommendations. The ETF plans to further enrich the methodology and to present the outcomes and lessons in a report encompassing the methodological approach, the other country cases and the main conclusions and recommendations in 2021.

The economic priority areas selected in the Smart Specialisation Strategy (S3) of Montenegro represented the reference for planning and executing the analysis of human capital implications for growth and competitiveness. For the purpose of this study, two priority areas – development of renewable energy sources and sustainable and health tourism – were selected. It is worth noting that the research was carried out throughout 2019 and completed before the Covid-19 outbreak. Therefore, most of the findings and conclusions, including business expectations on development opportunities and skills needs, reflect the situation prior to the pandemic crisis which has heavily affected the tourism sector in Montenegro, as everywhere in the world. Nevertheless, health tourism activities may prove more resilient compared to general tourism services since it is assumed that

demand for tourism services linked to health improvement and medical treatments is more stable, reflecting the health and wellbeing needs of individuals.

The research methodology relied on a combined analysis of data from multiple sources on aspects related to occupation, education, qualification, skills and competence. To compensate for data limitations, in-depth qualitative research (interviews, focus groups) was implemented to gain more accurate views on skills demand in the priority areas.

Structure of the report

The report consists of several chapters. Following an introductory chapter, Chapter 2 presents an overview of the Montenegrin socio-economic context, the labour market and skills aspects, and explains the rationale behind the choice of the two specific priority areas. Chapters 3 and 4 look into the skills dimensions of the two priority sectors (development of renewable energy sources and health tourism). Each priority area is analysed with a focus on the current situation in the labour market in terms of occupations and skills, education and training offer, emerging or foreseeable changes and impact on skills demand and supply, as well as current or potential skills gaps. The analysis relies on both quantitative and qualitative research methods. Finally, a summary of the key policy implications for skills development, main findings and recommendations are provided in Chapter 5. Annex 1 describes the overall methodology, i.e. research design, data collection tools, data sources and type of analysis, and discusses data availability and limitations. Annex 2 provides the standard methodological guidance for qualitative analysis and the list of interviewed stakeholders. Annex 3 presents additional, relevant statistical data.

Key findings

The economic potential and labour market analysis revealed that both sectors show great potential to create more attractive jobs expressed in higher than average wages and better working conditions, including less seasonality of employment. Despite data limitations, both quantitative and qualitative research sources confirm an important potential of intersectorial mobility, strongest relatedness between the two sub-sectors being found with construction, transportation and services. Economic transformation is to be expected in the context of smart specialisation, therefore people, particularly idle workforce from regions and downsizing sectors, need to make a transition to new jobs in competitive (sub)sectors. For that, demand-based but also forward-looking upskilling and reskilling and activation programmes are a must.

As regards initial education and training, in particular vocational streams, cooperation between industry and educational institutions in both subsectors (renewable energy and health tourism) needs to be consolidated for a more efficient planning of the curriculum and development of new occupational standards and qualifications. Smart specialisation goals in Montenegro entail a great attention to sustainable development elements that require reflection in the education system at all levels. Both employers and employees, interviewed as part of the qualitative research, have underscored the value of key competences and transversal skills in jobs related to the two priority areas, in particular English proficiency.

Overall, the education and training system is not fully aligned with the specific skills demand revealed by the two sectors with high potential for smart specialisation in the Montenegrin economy.

The research backing this report revealed several challenges and specificities of the labour market and skills analysis in the context of smart specialisation. In general, available statistics were not

sensitive enough to allow disaggregation by detailed NACE, ISCO and ISCED levels able to reflect the composition of the two priority areas selected under the smart specialisation process. In fact, priority areas such as renewable energy production and sustainable and health tourism reflect an amalgamation of specific/detailed economic activities that are not captured as such in standard statistical classifications. Given the limitations of the statistical data, the quantitative part of the analysis was complemented by qualitative analysis and findings from the interviews with relevant target groups, in particular companies and employees in the relevant subsectors. Such a hybrid – both quantitative and qualitative – approach is probably highly recommendable for such exercises, although sufficient resources and careful identification of stakeholders are crucial for an accurate analysis.

Main policy and action pointers

The report puts forward several proposals for new policies or actions that would help address the emerging skills gaps in the priority areas identified for smart specialisation. To make the best of Montenegro's potential for innovation, growth and competitiveness, national stakeholders, in particular the government, business sectors and research/academic community, could:

- prioritise the development of more sensitive human capital-related statistics and analyses, to enable regular and more detailed skills demand-supply research, which is essential for an efficient, learner and business-centred education and training planning (both initial and continuing learning);
- consolidate the human capital dimension of various government strategies, with a careful assessment of skills demand and supply implications to secure that initial and continuing training programmes are geared towards achieving such goals;
- enhance awareness and follow up of S3 priorities and strengthen the role of the industry/ businesses in S3 implementation;
- develop a strategic framework for health tourism and concrete action planning and mechanisms to support investments and consolidation of the sector, in particular during and after Covid-19 context;
- update and increase the education offer relevant for the S3 priorities through the revision or update of existing qualification and occupational standards, education and training programmes offered in initial and continuing format and enhanced career guidance;
- embed key competences and sustainable development concepts in the educational programmes to build up future workforce's ability to adapt, remain employable and competitive in a changing labour market, while fostering green and inclusive economy and society;
- expand vocational training to secure a skilled workforce for the sectors prioritised under the S3 process, with stronger provision of continuing vocational training, stronger links between initial and continuing VET, and assessment of the opportunity to establish a specialised training centre in renewable energy (and not only), built on the principles of excellence in VET.

1. INTRODUCTION

1.1 Skills in the context of smart specialisation

Science, research and technology are omnipresent when discussing smart specialisation. Despite human capital and skills having been recognised as framework conditions for innovation ecosystems, they are not fully reflected in the framework (tools and methodologies) that guide the design of smart specialisation strategies in the European Training Foundation (ETF) partner countries.

SMEs are a major source of job creation and an increasing share of employment in ETF partner countries. Yet SMEs invest significantly less in skills development than their larger counterparts and depend on the labour market to supply them with qualified labour. Smart specialisation has the potential to fuel SME innovation and growth potential through relevant supply of skilled workers and by addressing capacity constraints relating to knowledge, innovation and creativity, for example through networking and cooperation with VET providers on equipment, research and development expenditure, as well as cross-country cooperation such as through centres of vocational excellence.

Although VET has an important role to contribute to innovation and smart specialisation (e.g. the Copenhagen Process and the Riga Conclusions underscore the role of VET and skills in the European growth and jobs agenda), most European Union (EU) Member States currently focus on higher education, to some extent covered in smart specialisation analysis ('mapping'), and only a handful (e.g. Finland) include VET and skills in their innovation clusters and strategies. The same is true for the countries in the enlargement region that are engaged in developing and implementing smart specialisation strategies in the context of the EU enlargement process.

The EU places great emphasis on skills anticipation and more accurate matching capabilities. The Europe 2020 Strategy and, in particular, the Agenda for New Skills and Jobs (2016) recognise that anticipation and matching approaches and methods can help develop a skilled workforce with the right mix of skills in response to labour market needs, in a way that promotes job quality and lifelong learning (ETF, 2016). The South East Europe 2020 strategy mirrors the same goals and objectives as well as challenges.

In 2017 the Communication on Strengthening Innovation in Europe's Regions underscored the implementation of smart specialisation for regional innovation policy. In 2019, Skills and Smart Specialisation: The Role of VET in Smart Specialisation Strategies explored trends in VET and where it has contributed to smart specialisation.

To address the challenge of connecting VET to the broader drive for innovation, growth and competitiveness, the ETF started, in 2019, to develop and test a practical guide for analysing skills implications of economic prioritisation (smart specialisation strategies). The work was initiated in early 2019 at national level in Montenegro, followed by the Republic of Moldova (hereafter Moldova). Exploring new and different levels of quantitative and qualitative data highlighted limitations and offered opportunities to improve current approaches to labour market information and intelligence. It also revealed gaps and opportunities to link data on human capital to growth and competitiveness. On provision, it revealed areas where economic prioritisation should be supported with excellence in terms of relevance of skills in a lifelong learning continuum, importance of business–education partnerships, training of teachers and trainers, innovation, and support to entrepreneurs and SMEs, all connected through interregional cooperation, a key element in globalised economies (through the priority areas of smart specialisation). In 2020, the ETF is reviewing and adapting the methodology to the regional context in two pilot regions in Ukraine.

1.2 Research steps to analyse skills for smart specialisation

The ETF agreed to pilot the new methodological approach with two partner countries: Montenegro and Moldova. The work relied on existing ETF tools and methodologies, the use of labour force surveys (LFS) and other existing data sources in the countries as well as globally and in close interaction with the two countries' stakeholders at central and sector levels.

The analysis focused on two priority areas identified as a result of the smart specialisation process in the country:

- Montenegro: (i) development of renewable energy sources and (ii) sustainable and health tourism;
- Moldova: (i) food processing, and (ii) renewable energy.

For the country-level work, the ETF mobilised a mixed expertise team, a labour market/economist and a specialist in human capital development.

The methodology applied is a comprehensive package and includes:

- assessment, from the quantitative perspective, of the skills dimension (supply and demand) in terms of qualifications (measured through the education level obtained), occupations and skills, taking into consideration demographic characteristics such as gender, age and region;
- design of interview questionnaire (qualitative) and conducting of interviews (explorative in-depth semi-structured interviews) with employers, employees and other key stakeholders such as incubators, the Chamber of Commerce and industry, and central and local public administration;
- analysis of the relatedness of qualifications, occupations and skills (QOS) in priority areas, with similar/compatible QOS in shrinking areas with a view to identifying possible alternative uses of skills;
- review of the content of existing training offer for initial vocational education and training (IVET), continuing vocational education and training (CVET), SME training and other types of skills;
- identification of current and emerging skills trends and eventual gaps, in terms of occupations, qualifications and skills;
- analysis of the capacity of training providers to match emerging requirements and develop recommendations for improving training content.

In summary, the research methodology relied on a combined interpretation of data from multiple sources (data and information). Assessing value, relevance and comparability is necessary. In general, the taxonomy varies greatly, in particular on aspects related to occupation, education, qualification, skills and competence. To compensate for data limitations, in-depth qualitative research (interviews, focus groups) was implemented to gain more accurate views on skills demand in the priority areas. Relevant insights and information require good access to stakeholders, receptive public administrative institutions and companies, and enough resources to cover the territory and the subsectors.

The subsequent analysis of the skills dimensions relevant for human capital development in the context of smart specialisation relies on current statistics and information sources, including constraints related to time and availability of stakeholders. Overall, the size of Montenegro's economy and population adds to challenges of such complex analysis as it constrained the data disaggregation on subsector, regional and specific groups of population or workforce.

Details on the methodology employed and main implementation aspects and lessons are presented in Annex 1.

The methodology was piloted in Montenegro, where the ETF has been providing support in skills identification, anticipation and matching, VET reforms, Small Business Act (SBA, where smart specialisation was included in the monitoring framework in 2018), and entrepreneurial learning-related activities for several years.

The baseline for the research on skills implications of economic prioritisation was mapping the economic, innovation and scientific potential in the country (Ministry of Science, 2019a), the Smart Specialisation Strategy (S3) of Montenegro (Ministry of Science, 2019b), skills matching in the ETF partner countries (ETF, 2019a) and the country report on skills mismatches (ETF, 2019b).

The economic priority areas selected in the S3 represented an entry point for the ETF to test the approach to analysing human capital as a key resource for growth and competitiveness. At the same time, the findings of this approach and analysis fed into Montenegro's strategic cycle post-2020 in education, including VET, employment and social policies. The Ministry of Education led the drafting of the new VET strategy and the ETF has been invited to support the drafting process through expertise input and guidance on aspects related to skills demand and supply, governance and financing, and policy monitoring and evaluation. The preliminary findings of this paper informed the working group in charge of the elaboration of the post-2020 VET strategy.

As already mentioned, the priority areas identified in the mapping of economic, innovation and scientific potential in Montenegro were used as a reference. For the purpose of this study, two priority areas – development of renewable energy sources and sustainable and health tourism – were selected based on the results of the mapping, indicators related to the area of human capital development, and data availability.

1.3 Overview of smart specialisation in Montenegro

EU accession

Montenegro applied for EU membership in 2008. The Stabilisation and Association Agreement came into force in September 2010 and the country was granted EU candidate status in December 2010. Accession negotiations began on 29 June 2012.

Chapter 20 of the accession negotiations, opened in December 2013, covers enterprise and industrial policy. Most recently, Montenegro's progress in this area was assessed in the SME Policy Index: Western Balkans and Turkey 2019 (OECD, 2019); the findings and recommendations provide monitoring and guidance for the country to meet Chapter 20 requirements for EU accession. This chapter contains various policy and institutional elements (part of the EU's *acquis communautaire*) fit to strengthen competitiveness, facilitate structural change and encourage a business-friendly environment for SMEs. Implementing the 10 SBA principles is one of the requirements.

The latest EU progress report finds that Montenegro is moderately prepared in enterprise policy (European Commission, 2018a). Going forward, the country needs to:

- strengthen its administrative capacity and ensure strong inter-ministerial coordination to apply the EU acquis;
- continue to implement industrial policy in close cooperation with industry and other relevant stakeholders and conduct a mid-term review of the policy to assess its effectiveness.

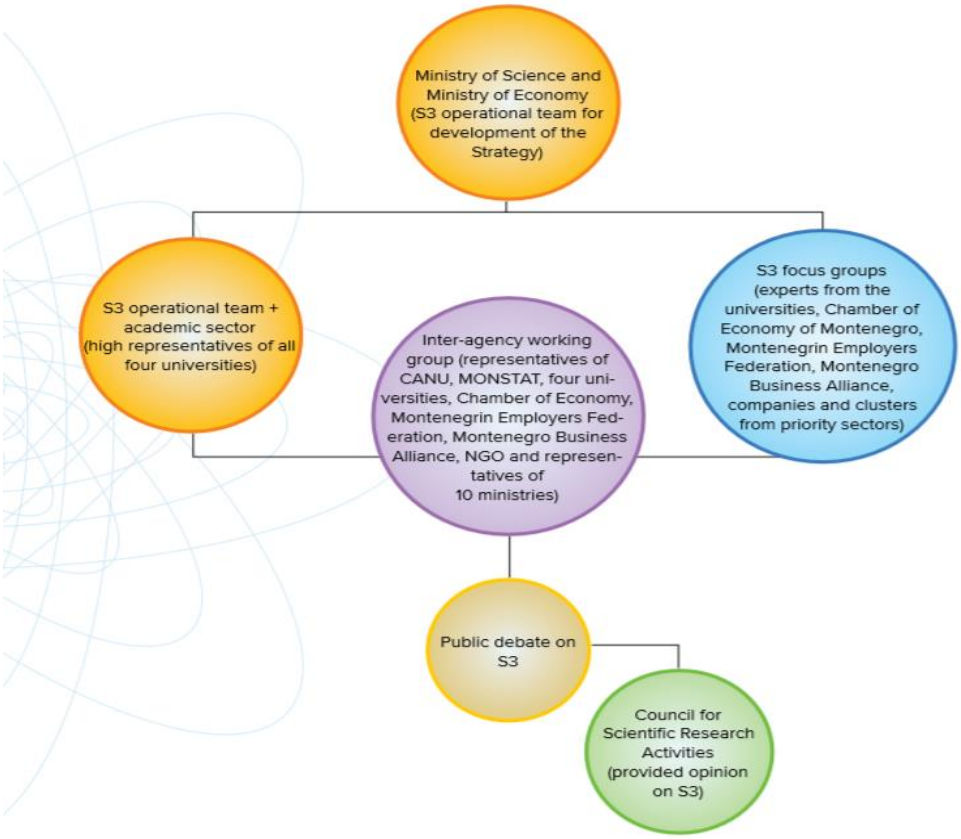
In February 2018, Montenegro's process of accession to the EU gained further momentum, along with the other Western Balkans economies, thanks to the launch of the European Commission's strategy on 'a credible enlargement perspective for an enhanced EU engagement with the Western Balkans' (European Commission, 2018b). The new Western Balkans accession strategy details several reform initiatives, including elements that support SME policy.

Smart specialisation

The policy framework for innovation in Montenegro was set out in 2016 when the First Innovation Strategy and Law on Innovation Activities were adopted. In 2017, the government adopted the 2017–2022 Research Strategy, which includes some elements of innovation policy but in far less detail. The Ministry of Science oversees the implementation and monitoring progress on the Innovation Strategy and sends an annual report on implementation to the government for adoption. The ministry acts as coordinator and the Scientific Research and Innovation Council brings all actors together regularly.

The process of smart specialisation began in 2017, based on the methodology developed by the Joint Research Centre of the European Commission. The Ministry of Science coordinated the process in collaboration with the Ministry of Economy and other institutions from the public, business, academic and non-governmental sector as per the quadruple helix governance model.

FIGURE 1.1 GOVERNANCE OF THE SMART SPECIALISATION PROCESS IN MONTENEGRO



Note: CANU – Montenegrin Academy of Sciences and Arts
Source: Ministry of Science, 2019b

In June 2019, the S3 of Montenegro 2019–2024 and an action plan for its implementation were adopted. In August 2019, a Council for Innovation and Smart Specialisation was established to ensure its implementation. Box 1.1 provides an overview and summary of the results of the process for the identification of S3 potential.

As Montenegro moves forward with smart specialisation, it will need to develop a comprehensive and more targeted vision for skills. The strategic vision of development is based on increasing the competitiveness of the economy. The priorities in the area of research and S3 need to be closely connected to other relevant strategies (e.g. education, employment and health tourism). Such a concept of development is reflected in the key medium-term priority of S3. The three key strategic directions – healthier, sustainable, and modernised and digitalised Montenegro – are closely connected with the Europe 2020 Strategy goals and an orientation to knowledge-based development, environmental protection, high employment levels, productivity and social cohesion.

BOX 1.1 OVERVIEW OF THE SMART SPECIALISATION PROCESS IN MONTENEGRO

To identify the degree of specialisation, critical mass, employment growth and relative wages, the Statistical Office of Montenegro (Monstat) made data available at a detailed industry level, for the number of employees and gross wages for the period from 2011 to 2016. By using detailed four-digit data on employment, the largest clusters and growth sectors were identified. This was used to support the mapping, along with the use of detailed data at sector level. The main characteristics of economic output were used for sector identification, where different volume thresholds were used to determine specialised sectors and sectors with high employment growth or high relative wages. Next, checks were made to determine whether the industry belonged to one of the traded clusters or growth sectors in which the country has above-average strength. The above-average performance of export of goods was viewed in connection with the sector. Finally, reviews were made to see if a certain specialised sector may be paired with any of the priority sectors of the government.

The results of the analysis showed that the following should be given priority: agriculture and food, energy, information and communication technology (ICT), manufacturing, medicine and quality of life, construction and tourism. Additionally, an analysis of research capacity and innovation potential was conducted for selected sectors. Pursuant to the strategic development vision of Montenegro, through the application of the S3 methodology and implementation of the Entrepreneurial Discovery Process, four priority economic areas were in the end defined: energy and sustainable environment; sustainable agriculture and food value chain; sustainable and health tourism; and ICT, where ICT is a horizontal sector as it provides business and technological support to other priority sectors. The final identification of priorities took into consideration the sector potential for a healthier, more sustainable, modernised and digitalised as well as developed and competitive development vision for Montenegro.

Source: Ministry of Science, 2019a

2. SOCIO-ECONOMIC CONTEXT AND ECONOMIC PRIORITISATION

Before moving to the skills analysis focused on the two priority areas, this chapter deals with overall socio-economic, labour market, education and skills aspects in Montenegro. It also includes several results from the analysis done using the methodological modules described in Annex 1. These include employment and education distribution or skills mismatch incidences among others: elements that could not be disaggregated at subsector/priority area level. Finally, this chapter briefly presents the process of economic prioritisation – selection of the priority areas for smart specialisation – as an introduction to the next two chapters.

2.1 Montenegro's socio-economic context

Montenegro is a service-based, upper-middle income economy. According to Monstat data, in 2018, the country achieved a positive economic growth rate of 4.9%. In nominal value, the gross domestic product (GDP) amounted to EUR 4.679 billion, while the GDP per capita amounted to EUR 7 422. The average annual inflation rate amounts to 2.6%. On a global level, according to the International Monetary Fund, positive economic trends are expected in future (IMF, 2019). The global economy in 2018 achieved a growth rate of 3.7% (developed countries grew by 2.3%, US economy by 2.9%, eurozone countries by 1.8%, Japan by 0.9%). Emerging economies, such as Montenegro, achieved an average growth of 3.8% in 2018. As to the IMF estimations for 2019 and 2020, lower growth rates have been predicted, amounting to 0.7% and 2.4%, respectively.

When it comes to the forecast of future economic trends, according to the Central Bank of Montenegro (2018), the national GDP growth rate is expected to be in the range of 2.7% to 3.2% in 2019. The Montenegrin growth of 4.9% achieved in 2018 is above the average growth of European economies (3.8%) with an expected short-term decrease, but not below the average growth in developed countries, and especially not below the eurozone average of 3.8%.

Based on the first Eurostat estimates (2019), the GDP per capita measured at purchasing power parity in Montenegro amounted to 46% of the EU-28 average in 2017, which put the country at the top of the scale in the region and slightly below the European average.

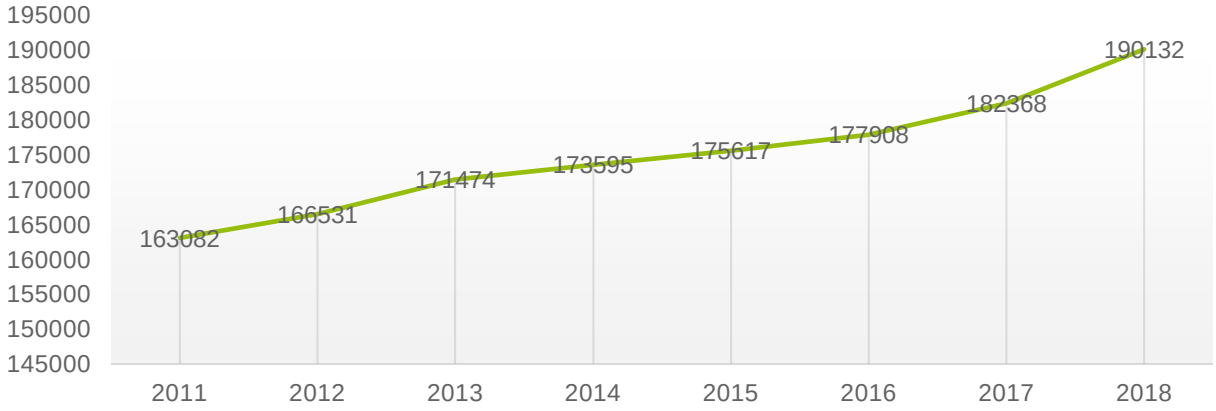
The 2020 World Bank Doing Business report ranked Montenegro 50th out of 190 countries and the 2018 Global Competitiveness Index (WEF, 2018a) ranked Montenegro 71st out of 140 countries. The analysis by the World Economic Forum is based on several factors that affect the competitiveness of a country. Montenegro improved its position, with the largest progress recorded in the labour market pillar (25th) and in the 12th pillar of competitiveness: innovation capacity (74th out of 140 countries).

According to Monstat data, the average gross wage in 2018 amounted to EUR 766.00 per month, which is an increase of 0.1% compared to the previous year. Average wage after taxes and contributions amounted to EUR 511.00 per month and was 0.2% higher than the previous year.

In 2018, according to LFS and Monstat data, 190 132 people were employed, 4.35% higher compared to the previous year. Growth in the number of employees in 2018 was recorded in 15 out of the 19 economic sectors, with the highest growth recorded in the administrative and auxiliary services sector (13.5%) followed by the construction sector (12.5%); the lowest growth rates were recorded in the water supply, management of waste water and waste management sector (0.9%).

The unemployment rate amounted to 15.2% in December 2018, which is a decrease of 4.26% compared to the rate recorded in December 2017 (16.1%).

FIGURE 2.1 TOTAL NUMBER OF EMPLOYEES, 2011–18



Source: Monstat, LFS

The budget deficit at the end of 2018 amounted to EUR 344 million (6.3% of GDP). Net inflow of direct foreign investments in 2018 amounted to EUR 327.6 million, which is an increase of 32.4% compared to the previous year. Total inflow of direct foreign investments amounted to EUR 843.1 million, out of which ownership investments accounted for EUR 519.9 million, whereas the inflow in the form of inter-company debt amounted to EUR 300.1 million.

The share of industrial production in GDP currently amounts to 11.6% and creates 91.5% of total exports, while achieving 22.4% growth in production. The share of the manufacturing industry in GDP amounts to 4.7%, with dominant production of metal (steel and aluminium) presenting around 30% of the total industry exports. The construction sector recorded the highest growth (8.8%) compared to all other industrial sectors, where construction materials created a big portion of the total import of goods (20%).

In 2018, the construction sector realised significant growth in conducted final works (24.9%) as well as an increase in the effective working hours. Additionally, 2018 saw an increase in certain segments of transportation, while forestry production grew by 15.8%. In 2018, Montenegro had 2.2 million tourists, which is 10.2% more compared to 2017, while 8.2% more overnight stays were registered compared to the same period.

It is evident that tourism, construction and transportation are some of the key growth sectors, followed by trade. Investment is seen as an important growth accelerator in the next period, as a result of planned capital investments for construction of the Smokovac to Matesevo highway, as well as planned investments in tourism, energy (e.g. construction of solar plants on Briska Gora) and telecommunication.

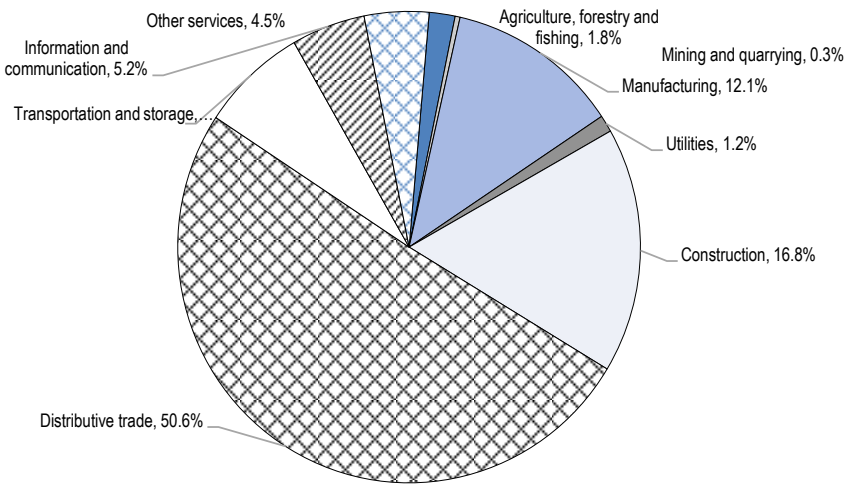
2.2 SMEs in the national economy

This section is based on the SBA assessment exercise done in Montenegro. The Law on Accounting 2016 (*Official Gazette of the Republic of Montenegro*, No 52/2016) sets out the definition of SMEs in the country. The categories conform to the EU's standard definition of SMEs by employee size.

In 2017, there were 30 238 SMEs, making up 99.8% of the total business sector, compared to only 25 106 SMEs in 2013. However, between 2013 and 2017, the share of large enterprises increased by 0.1 percentage point. In 2017, Montenegrin enterprises broke down into 94.4% micro enterprises, 4.5% small enterprises, 0.9% medium-sized enterprises and just 0.2% large enterprises. In terms of number of enterprises, Montenegro's business sector is clearly dominated by micro enterprises. They also contributed the greatest share of employment, with 39% of total employment in 2017. In comparison, micro enterprises in the EU accounted on average for only 29.4% of non-financial business sector employment in the same year (European Commission, 2018c). In total, 106 014 people were employed by SMEs in 2017, representing 80.1% of total business sector employment. This figure has slightly decreased since 2013 when SMEs represented 81.5% of all business sector employment but was still much higher than the 2017 EU average of 66.4% (European Commission, 2018c). SMEs' contribution to the business sector's value added increased from 64.5% in 2013 to 70.5% in 2016, much higher than the EU average where SMEs only accounted for 56.8% of the business sector's value added in 2017 (European Commission, 2018c). The most striking development between 2013 and 2016 in the SME sector was in the SMEs' share of exports, which increased by 19.6 percentage points to reach 75.3% of all exports in 2016, revealing a high competitiveness potential.

On sector level, the greatest number of SMEs are in distributive trade, representing 50.6% of active SMEs, followed by 16.8% in construction and 12.1% in manufacturing (see Figure 2.2). The sectoral distribution of SMEs has remained mostly constant since 2013, although a rise (of almost 900 companies) was noted in the number of SMEs engaged in construction, whereas the number of enterprises engaged in transportation and storage decreased by more than 360 in the same period.

FIGURE 2.2 DISTRIBUTION OF SMEs BY SECTOR, 2017



Note: The sector classification generally follows the NACE Rev.2 classification of productive economic activities with the following exceptions: utilities represent the sum of electricity, gas, steam and air conditioning supply (D) and water supply, sewerage, waste management and remediation activities (E); distributive trade covers wholesale and retail trade; repair of motor vehicles and motorcycles (F); and other services here consists of (I) accommodation and food service activities, (L) real estate activities, (M) professional, scientific and technical activities, (N) administrative and support service activities as well as (S) other service activities. For more information, consult NACE Rev. 2 classification.

Source: Monstat

Geographically, about 37% of enterprises were in Podgorica in 2017 (see Table 2.1).

TABLE 2.1 NUMBER OF REGISTERED COMPANIES BY ENTERPRISE SIZE AND MUNICIPALITY, 2017

Municipality	Enterprise size, by number of persons employed				Total	Share of total number of enterprises (%)
	0–9	10–49	50–249	250+		
Andrijevica	69	3	0	0	72	0.24
Bar	2 767	93	11	2	2 873	9.49
Bijelo Polje	1 032	48	10	2	1 092	3.61
Budva	3 415	123	18	6	3 562	11.76
Cetinje	679	30	3	1	713	2.35
Danilovgrad	497	29	10	0	536	1.77
Žabljak	127	8	1	0	136	0.45
Berane	489	23	7	0	519	1.71
Kolašin	212	12	1	0	225	0.74
Kotor	1 176	69	12	0	1 257	4.15
Mojkovac	144	5	1	0	150	0.50
Nikšić	1 746	93	27	2	1 868	6.17
Plav	105	1	1	0	107	0.35
Plužine	32	1	0	0	33	0.11
Pljevlja	554	29	7	1	591	1.95
Rožaje	561	21	1	0	583	1.92
Tivat	1 244	54	6	0	1 304	4.31
Podgorica	10 432	605	150	33	11 220	37.05
Ulcinj	1 008	30	4	0	1 042	3.44
Herceg Novi	2 207	99	14	1	2 321	7.66
Šavnik	37	1	0	0	38	0.13
Petnjica	18	2	0	0	20	0.07
Gusinje	23	1	0	0	24	0.08
Montenegro	28 574	1 380	284	48	30 286	100.00

Source: Monstat

Stimulation of SMEs and innovation

Montenegro has two business incubators in Bar and Berane. In 2016, the Tehnopolis innovation centre was opened in Nikšić. The infrastructure for business–academia collaboration has improved with the opening of Tehnopolis, and preparations are well under way to establish the second of the four centres in Podgorica. The remaining two centres will be in Bar and Pljevlja.

Several instruments are offered by the Ministry of Science and the Ministry of Economy that could potentially support innovative enterprises. The Ministry of Economy extended its programme of support for innovation in SMEs beyond the processing industry in 2018. It also runs schemes to encourage standardisation to support innovative clusters. Since 2018, the ministry has offered several programmes/support schemes targeting innovative SMEs (e.g. to enhance innovation for SMEs, to strengthen companies' innovation by complying with international standards, or to stimulate development of innovative clusters).

Also, the Ministry of Science ran programmes or promoted initiatives to stimulate innovation and SMEs. For example, in 2017, a pilot programme aimed to support innovation activities, targeting both academics and businesses, and preference was given to consortia as well as to women and young entrepreneurs. Using the experience gained through the World Bank supported project on Higher Education and Research for Innovation and Competitiveness, the Ministry of Science initiated a new programme in 2018 to offer cooperative grants, requiring applicants to form partnerships among scientific research institutions, higher education institutions, innovative entrepreneurial centres and business incubators.

A remaining challenge for Montenegro and other countries from the Western Balkans is weak integration in internationalised production processes, reflected in poor export performance of local companies and limited production of higher value-added products and low level of digitalisation (European Commission, 2018d).

Montenegro's Strategy for the development of micro, small and medium-sized enterprises (MSMEs) 2018–2022 includes provisions for supporting existing clusters and further cluster development, forming vertical clusters in the agriculture and tourism sectors, and linking clusters to scientific research institutions. Overall, Montenegro has 37 established clusters registered with the Ministry of Economy, 7 of which are SME-specific. The country seeks to advance its cluster development through programmes by the Ministry of Economy, the Investment and Development Fund and international organisations. The programmes were also supported by the Business Caravan project, which has gained widespread media coverage as part of the government's initiative to ensure that SMEs are aware of the support services available to them. The action plan of Montenegro's MSMEs Strategy aims for 48 clusters to be registered in the Ministry of Economy's database by 2020.

Skills for SMEs

The National Strategy for Sustainable Development by 2030 adopted in June 2016 clearly identifies the need for SME training to increase competitiveness of the Montenegrin economy for sustainable development and green jobs. As mentioned above, in July 2018, Montenegro adopted the Strategy for the Development of MSMEs.

Various organisations conduct training needs analysis, such as the Chamber of Commerce, Montenegrin Employers Federation and the EAM. Although no typical training needs analysis is conducted as a standardised framework for identification of the training needs of SMEs, the EAM has conducted regular (since 2007) Annual Employers' Surveys. The survey covers skills/knowledge needs and almost 98% of the survey respondents are SMEs. Survey findings are used to define training programmes by the EAM and are available on their website. The purpose of the employers' survey is to identify 'the needs for certain professions, skills and competences, the structure and characteristics of seasonal employment, the scope and structure of employee training, etc'. In addition, the aim of the research is to obtain feedback from the employers about the programmes that are being implemented or for which the employers show a special interest (EAM, 2017).

Furthermore, the Montenegrin Employers Federation conducted surveys of employers' needs for employment of foreign workers. The survey was used to help the government's annual decision on the number of work and residence permits, coordinated by the Ministry of Labour and Social Welfare, with the Federation taking part as one of the Working Group members. The findings of this survey are used for identification of occupational gaps in the labour market, as one of the reasons why companies hire foreign workers is the lack of people with required occupations/skills. The findings are also used to suggest creation of new and/or update existing VET qualifications.

Montenegro is implementing various initiatives to respond to specific needs of SMEs for their development or consolidation. For example, the Ministry of Economy, via its Directorate for Investments, Development of Small and Medium Enterprises and Management of EU Funds, provides training and mentoring to SMEs under the Ministry of Economy's Business Stimulating programmes (in collaboration with the United Nations Development Programme), ranging from business zone development and cluster development to processing industry modernisation. Since 2012, the directorate has also been providing mentoring services to SMEs with the support of the Japanese International Cooperation Agency. The directorate also coordinates projects with Montenegrin SMEs in the Enterprise Europe Network. Business support services are also available to SMEs through the Investment and Development Fund of Montenegro, which offers training on financial literacy and business plan development, information on financing opportunities, and loans to SMEs and specific target groups (e.g. women and young entrepreneurs). The EAM provides training for unemployed people and to potential entrepreneurs. Through the Programme for Continuous Stimulation of Employment, it provides training courses to improve SMEs' entrepreneurship skills.

Montenegro is actively taking part in several EU programmes, such as COSME (Competitiveness of Enterprises and Small and Medium-sized Enterprises), Horizon 2020, Erasmus for Young Entrepreneurs and the European Enterprise Network. The challenge is to further promote these initiatives and to develop more project proposals with the aim of developing an entrepreneurial culture and building the capacity of SMEs and entrepreneurs. The Ministry of Economy has so far only coordinated one Horizon 2020 programme that aimed to enhance SMEs' innovation management capacity. The Erasmus for Young Entrepreneurs programme has had very limited participation (European Commission, 2018e).

The SBA assessment (2018) concludes that to improve innovation and competitiveness, the government should invest more in developing SMEs' skills for growth and internationalisation, including developing a green and digital economy. It is therefore important to carry out training needs analyses regularly at national level. This would allow policy-makers to introduce new training programmes based on the identified skills gaps and needs of SMEs. Also, the challenge Montenegro will face is addressing skills needs under the S3, which will require flexibility in education and training provision with actions that target in particular the micro and small enterprises in the smart specialisation priority areas.

2.3 Employment by occupation and level of education

As described in the methodological section, an analysis of the occupations, including local/regional level, and by gender and education, was conducted. However, insufficient availability and representativeness of data limited the analysis to a significant extent. It was not possible to carry out a full analysis of occupations, skills and qualifications on the level of selected priority areas. There is no single data set that can be used to explain these important elements of human capital for these two

subsectors. The only possibility was to analyse regional distribution of occupations for the relevant occupational groups[1].

We focused our analysis on two occupational groups that we believe are mainly related to the selected subsectors: professionals (ISCO group 2), and associated professionals and technicians (ISCO group 3). In later stages, the findings from the interviews confirmed that the majority of employees in the renewables sector are engineers (tertiary education) and technicians (secondary education). Similar is true for the health tourism subsector, where physiotherapists, doctors and nurses/technicians represent the greatest proportion of total employees.

Regional, educational and gender-related analysis was performed for these two occupational groups and the results are presented hereinafter.

In terms of territorial distribution, professionals and associated professionals and technicians are mostly concentrated in the central region, followed by coastal and northern regions (Table 2.2). Overall, these two occupational groups represent around 32% of the total number of employed persons. On the country level, occupational group 2 demonstrated gradual and stable growth, reaching 44 000 people in 2018. For occupational group 3, the opposite trend is observed from 2014 until 2016, though after that it started to increase and reached 28 600 employees in 2018.

TABLE 2.2 EMPLOYED PEOPLE BY OCCUPATIONAL GROUP AND REGION (IN '000)

Region/ISCO occupational group		Year				
		2014	2015	2016	2017	2018
Coastal	2	7.5	10.3	10.9	9.7	9.4
	3	9.7	8.4	6.9	7.3	8.1
Total all groups		60.7	60.4	61.5	60.0	62.3
Central	2	20.3	21.0	26.0	27.8	28.2
	3	22.1	17.1	13.0	14.3	16.7
Total all groups		114.1	115.6	114.7	120.9	125.8
Northern	2	5.4	6.8	6.4	6.4	6.4
	3	6.1	4.8	4.5	4.1	3.9
Total all groups		38.5	41.0	43.1	43.0	43.0
Total	2	33.3	38.1	43.3	43.9	44.0
	3	37.9	30.3	24.4	25.6	28.6
Total all groups and regions		213.2	217.0	219.3	223.9	231.1

Source: Monstat, LFS

[1] Occupational groups in line with ISCO: 0 – Military occupations; 1 – Legislators, senior officials and managers; 2 – Professionals; 3 – Associated professionals and technicians; 4 – Clerks; 5 – Market, sales and service workers; 6 – Skilled agricultural workers; 7 – Craft and related trades workers; 8 – Plant and machine operators and assemblers; 9 – Elementary occupations.

When it comes to the education level and gender dimension, as per Table 2.3, ISCED[2] 3–4 and ISCED 5–8 are considered. Identically to occupational groups 2 and 3, both men and women with relevant education levels are mainly concentrated in the central region, followed by the coastal area, with the lowest in the northern region. Gender distribution in these two educational categories is as follows: 45% of women and 55% of men. Both educational categories showed an increase from 2014 to 2018 (see Table 2.3 for details). An interesting aspect is that the number of males belonging to ISCED 3–4 (secondary education) is significantly higher than the number of females in this category (87.1 thousand and 56.7 thousand, respectively), while the number of women with tertiary and higher education is higher compared to the number of men in this category (38.1 thousand compared to 29.4 thousand, respectively).

TABLE 2.3 OVERALL EMPLOYED PROFESSIONALS (ISCO GROUP 2) AND ASSOCIATED PROFESSIONALS AND TECHNICIANS (ISCO GROUP 3) – OVERVIEW OF GENDER, EDUCATION LEVEL AND REGIONAL DISTRIBUTION (IN '000)

Gender	Region	Education		Year				
				2014	2015	2016	2017	2018
Men	Coastal region	ISCED_2011	ISCED 0–2	2.7	1.8	1.4	2.0	2.9
			ISCED 3–4	20.8	20.7	21.8	21.9	23.2
			ISCED 5–8	9.6	10.3	10.2	8.4	8.2
		Total		*33.1*	*32.7*	*33.4*	*32.2*	*34.3*
	Central region	ISCED_2011	ISCED 0–2	3.5	3.9	4.6	6.0	6.0
			ISCED 3–4	42.0	42.7	40.7	44.0	46.6
			ISCED 5–8	15.7	14.5	16.3	16.3	15.6
		Total		*61.2*	*61.0*	*61.5*	*66.3*	*68.3*
	Northern region	ISCED_2011	ISCED 0–2	2.5	3.1	4.6	4.6	3.6
			ISCED 3–4	14.9	15.3	15.9	17.3	17.3
			ISCED 5–8	5.7	5.8	5.4	4.9	5.6
		Total		*23.1*	*24.2*	*25.8*	*26.9*	*26.5*
	Total	ISCED_2011	ISCED 0–2	8.6	8.8	10.6	12.5	12.5
			ISCED 3–4	77.8	78.7	78.3	83.3	87.1
			ISCED 5–8	31.0	30.5	31.9	29.6	29.4
		Total men		*117.4*	*118.0*	*120.7*	*125.4*	*129.0*
Women	Coastal region	ISCED_2011	ISCED 0–2	1.5				
			ISCED 3–4	15.3	15.0	16.1	16.7	16.3
			ISCED 5–8	10.8	11.5	11.0	10.1	10.6
		Total		*27.6*	*27.6*	*28.1*	*27.8*	*28.1*

[2] International Standard Classification of Education (ISCED) level 0 – Early childhood education; level 1 – Primary education; level 2 – Lower secondary education; level 3 – Upper secondary education; level 4 – Post-secondary non-tertiary education; level 5 – Short-cycle tertiary education; level 6 – Bachelor's or equivalent level; level 7 – Master's or equivalent level; level 8 – Doctoral or equivalent level.

	Central region	ISCED_2011	ISCED 0–2	1.9	2.9	2.8	3.0	2.9
			ISCED 3–4	30.7	32.7	29.3	28.2	31.2
			ISCED 5–8	20.3	19.0	21.1	23.3	23.4
		Total		*52.9*	*54.6*	*53.2*	*54.6*	*57.6*
	Northern region	ISCED_2011	ISCED 0–2	2.2	3.1	4.0	3.5	3.3
			ISCED 3–4	8.8	8.8	8.3	8.3	9.2
			ISCED 5–8	4.4	4.8	5.0	4.4	4.1
		Total		*15.4*	*16.7*	*17.3*	*16.2*	*16.5*
	Total	ISCED_2011	ISCED 0–2	5.6	7.2	7.8	7.5	7.4
			ISCED 3–4	54.8	56.5	53.7	53.3	56.7
			ISCED 5–8	35.5	35.4	37.1	37.8	38.1
		Total women		*95.8*	*99.0*	*98.6*	*98.6*	*102.2*
Total		ISCED_2011	ISCED 0–2	14.2	15.9	18.4	20.0	19.9
			ISCED 3–4	132.5	135.2	132.0	136.5	143.8
			ISCED 5–8	66.5	65.9	69.0	67.4	67.5
				213.2	217.0	219.3	223.9	231.1

Source: Monstat, LFS

Skills mismatch indicators in Montenegro

Given the specificity of Montenegro, the data is rather limited when disaggregated on various dimensions (population size and employment level limits the reliability and relevance of disaggregated data). As in the two priority areas, most relevant employees are professionals and technicians; ISCO occupational groups 2 and 3 are relevant for the calculation of mismatch incidence. This required a detailed disaggregation level, and therefore the mismatch results were rather indicative. Due to the limited accuracy of data when disaggregated on ISCO and ISCED levels, in this report, we prefer to mainly discuss the latest results of the Eurostat calculations of mismatch incidence, covering the whole spectrum of the employed population. The data discussed below is from Eurostat's experimental statistics on skills (more information is available at https://ec.europa.eu/eurostat/web/experimental-statistics/skills).

In the case of vertical mismatch reflected through over-qualification – i.e. the number of persons with ISCED 5–8 working in occupational groups 4–9, for the employed population aged 20 to 64 – the incidence of mismatch decreased from 16.5% in 2015 to 13.8% in 2017 (latest year for which calculation is available). This trend contrasts with the EU-28 averages, which slightly increased in the same period (Eurostat).

There is a higher horizontal mismatch, i.e. people working in occupational groups different from their fields of study: 34.4% in 2018, as opposed to the EU-28 average of 28.1%. This calculation includes employed people, aged 15 to 34, with ISCED 3–8 education attainment (therefore both medium and tertiary levels of education). When looking at tertiary levels only (employed aged 25 to 34), the incidence, although still significant (20.1% in 2018), is 8 percentage points below the EU-28 average. One should be cautious when interpreting such results as the difference in age ranges between the two cohorts analysed (15 to 34 and 25 to 34) may play a role in labour market outcomes. Very young people are less experienced in searching for a job, and have less chance of finding a matched job, at least in the first stages of the transition from

school to work. When disaggregated by field of study, most data from Montenegro is unreliable (due to the small number of observations in the LFS, an effect of the population size of the country). Still, in two fields relevant for our study (health and welfare, and engineering), Eurostat calculates a horizontal incidence among medium and tertiary educated workers, in 2018, as follows:

- There was a horizontal mismatch for 30.9% of workers with studies in the field of health and welfare, as opposed to 21.7% in EU-28.
- Almost half (49.5%) of those who graduated from engineering fields of study were working in occupations not matching their areas of education, compared to 33.5% in the EU in 2018.

As mentioned above, for the purpose of this study, the research team attempted a specific mismatch calculation covering occupation areas and fields of study relevant for the priority areas selected for smart specialisation (health tourism and renewable energy). The aggregate results for workers holding jobs in occupation areas ISCO 2 and ISCO 3 (those found most relevant for the two priority areas) are presented in Table 2.4.

TABLE 2.4 HORIZONTAL SKILLS MISMATCH INDICATORS, 2014–18 (%)

	2014	2015	2016	2017	2018
Horizonal skills mismatch rate (15–34 age group)	74.95	79.00	76.19	66.98	67.83
Horizonal skills mismatch rate (25–34 age group)	92.58	92.64	90.49	85.83	87.73

Source: Authors' calculations using Monstat and LFS data

The horizontal mismatch figures are rather significant, referring to high numbers of those working outside their field of education. Since the data was rather limited, the results should be used with caution. However, what is observed is a sinuous evolution of the indicator for both age groups with a slight increase in 2018.

The mismatch implications for the education and labour market are important. Data reveals a worrying level of horizontal mismatch among the younger generations of workers (i.e. those under 35). Several drawbacks can explain such incidence, such as the lack of correlation between in-demand occupational profiles and jobs and the enrolment policies or education programmes available; insufficient career guidance and counselling in school and after graduation; unattractive working conditions in certain jobs and occupations; or territorial disparities. In the present assessment of skills for smart specialisation, such a high incidence of horizontal mismatch may imply that the right enrolment policies need a closer synchronisation with lifelong learning programmes to help those already working in mismatched occupational and education fields.

2.4 Selection of the priority areas

The results of the analysis of economic potential within the S3 process showed that the following areas should take priority: agriculture and food, energy, ICT, manufacturing industry, medicine and quality of life, construction and tourism. Additionally, analysis of research capacity and innovation potential was conducted for selected sectors.

The mapping exercise findings were complemented with qualitative analysis which included interviews with relevant stakeholders, analysis of strategic directions of the country and estimation of the synergy

effect with other sectors/subsectors. Activities related to both subsectors were identified as having the highest potential for smart and competitive growth (see Tables 2.5 and 2.6).

TABLE 2.5 SUBSECTORS WITH THE HIGHEST POTENTIAL BASED ON RESULTS OF S3 QUANTITATIVE ANALYSIS

Subsector	Specialisation location quotient above 1.5	Employment share above the common threshold of 1% (%)	Employment share above industry size specific threshold (%)	Employment share above industry-specific size threshold (%)	Employment growth above 25% (%)	Wages relative to average wages higher than 125% (%)	Export specialisation	Potential for innovation
Hotels and similar accommodation	2.95	4.90	4.90	3.19	-2.6	85.9	yes	yes
Restaurants and mobile food service activities	1.11	4.09	4.09	2.67	47.7	42.1	yes	yes
Precious metal production and other ferrous metal production	5.00	0.86	0.86	0.56	-66.8	161.0	no	yes
Production, transmission and distribution of electricity	3.27	2.55	2.55	1.66	-6.0	180.2	yes	yes
Wired telecommunication activities	2.59	1.10	1.10	0.72	-20.00	220.8	no	yes

Source: Ministry of Science, 2019b

TABLE 2.6 SUBSECTORS WITH THE HIGHEST EXPORT AND INNOVATION POTENTIAL

	Priority S3 sector	Subsector	Export potential	Innovation potential
1	Sustainable and health tourism	Health tourism	yes	yes
2	ICT	Software engineering	yes	yes
3	Energy and sustainable environment	Construction materials based on industrial waste	yes	yes
		Renewable energy sources	yes	yes
		Energy efficiency	yes	yes
4	Sustainable agriculture	Organic production	yes	yes
		Autochthonous products	yes	yes

Source: Ministry of Science, 2019b

Following a pragmatic choice and combining the specific interests of stakeholders and the results of the data mapping, the local research and the ETF team selected the following two priority areas to perform a more in-depth skills analysis: development of renewable energy sources and health tourism.

3. SKILLS ANALYSIS OF THE PRIORITY AREA 'DEVELOPMENT OF RENEWABLE ENERGY SOURCES'

3.1 Overview

Energy is a very important sector for the Montenegrin economy as it generates 8% of GDP (2018). Moreover, the increase in production from renewable energy sources in relation to final production in 2018 was 33% and is expected to reach 42% of all production by 2022 (Ministry of Science, 2019b).

Montenegro has great potential in renewable energy sources. Most of the electricity is produced through hydro energy sources but only 17% of the hydro energy potential has been exploited so far. Beside hydro, the country has wind potential, as well as solar energy potential (more than 2 000 hours of sunshine per year, while the coastal regions have more than 2 500 hours). The biomass energy potential primarily relates to the forestry sector. The wood waste energy potential amounts to 400 MW. A new underwater electrical energy cable between Montenegro and Italy will enable the country to become a regional energy exchange hub.

Two wind farms have already been set up and produce energy while a third one is about to be built. A few solar plants have also been built. The Montenegrin government has signed a contract for the construction of a 250 MW solar power plant at Briska Gora. There are currently 13 small hydro plants operating and a few more under construction, but due to pressure from environmental groups, the government has decided to stop issuing permits for the construction of small hydro power plants and reconsider those awarded so far.

The government's goal is to decrease import dependence to 31% (while similar estimations for the EU stand at around 70%), with significant use of renewable energy sources. When it comes to potential for innovation and development possibilities, the S3 process recognised a very high level of innovation potential[3] for development of renewable energy sources.

Furthermore, this subsector is highly correlated with other sectors and subsectors (e.g. tourism, transportation, construction, agriculture and industry). Opportunities for joint development and innovativeness are particularly high between renewables and ICT, as ICT can provide complex methods of artificial intelligence to secure the operation of modern energy systems which require continuous optimisation of process functions (Ministry of Science, 2019b).

Still, there are many challenges related to the energy sector, such as high import dependence, negative impact of fossil fuels on the environment, significant losses in energy distribution, and limited use of renewable energy sources. Unavailability of adequate and sufficiently educated staff was recognised as one of the challenges by many stakeholders. If skilling and reskilling processes are adequately planned and organised, challenges related to human capital can be turned into opportunities to achieve the real potential of sustainable production of energy.

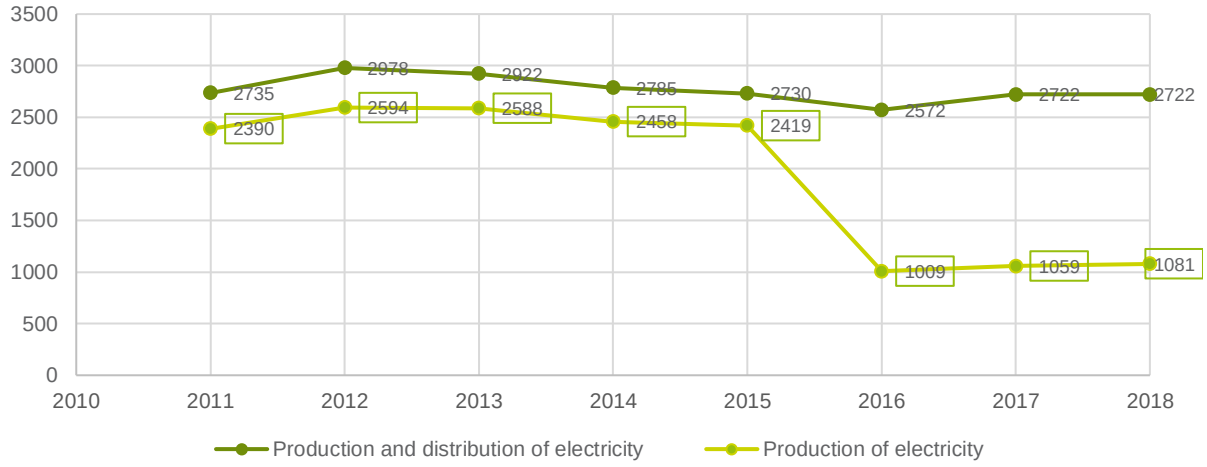
[3] According to S3, the scale of innovation potential was developed, where IP* represents low, IP** average and IP*** high level of innovation potential.

Data availability on subsector level is quite a challenge. Statistics on employment, unemployment and salary level are available only on the sector level. With the goal to understand trends in the labour market in this subsector, we decided to analyse sector data, since trends that exist on a higher level of aggregation (energy production level) can, to some extent, explain trends at subsector level, too. At a later stage, this very limited analysis was upgraded with a literature review based on different reports, strategies and other secondary sources of data, as well as on the deep interviews conducted with relevant institutions, businesses and employees.

The production and distribution of renewable energy sources is analysed based on data on production and distribution of electricity, where other energy sources are also included.

Figures 3.1 and 3.2 present the trends for the number of employees and average salary level.

FIGURE 3.1 NUMBER OF EMPLOYEES IN THE PRODUCTION AND DISTRIBUTION OF ENERGY (COMPARISON)

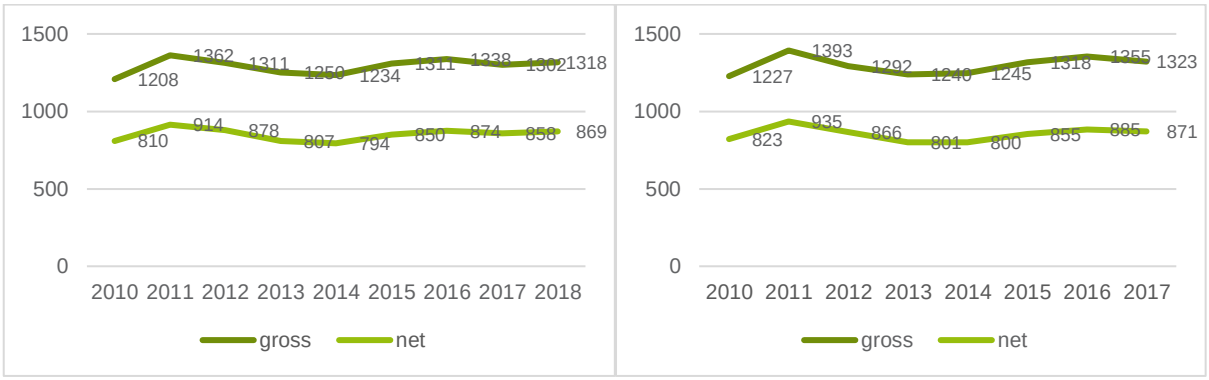


Source: Monstat, LFS

As presented in Figure 3.1, the number of employees in both distribution and production remained relatively constant from 2011 to 2018. For the subsector level, related to electricity production, a significant decrease was registered in 2016, which may denote a change in the structure of employees with a new distribution between production and distribution of energy.

An important indicator is the average salary level, revealing improvement in the job attractiveness and higher demand for certain specialisations/occupations. Figure 3.2 shows the level of gross and net salary from 2010 to 2018 in the energy and gas supply sector and at subsector level for production of electricity. The average salary on sector and subsector levels related to energy demonstrates similar growth trends. The salaries saw moderate growth in the observed period, with an average monthly salary of EUR 871 net in 2017 at the subsector level (which is more than 70% above the average salary in Montenegro).

FIGURE 3.2 AVERAGE MONTHLY SALARY: ENERGY AND GAS SUPPLY (SECTOR LEVEL – LEFT SIDE) AND PRODUCTION OF ELECTRICITY (SUBSECTOR LEVEL – RIGHT SIDE) (EUR)

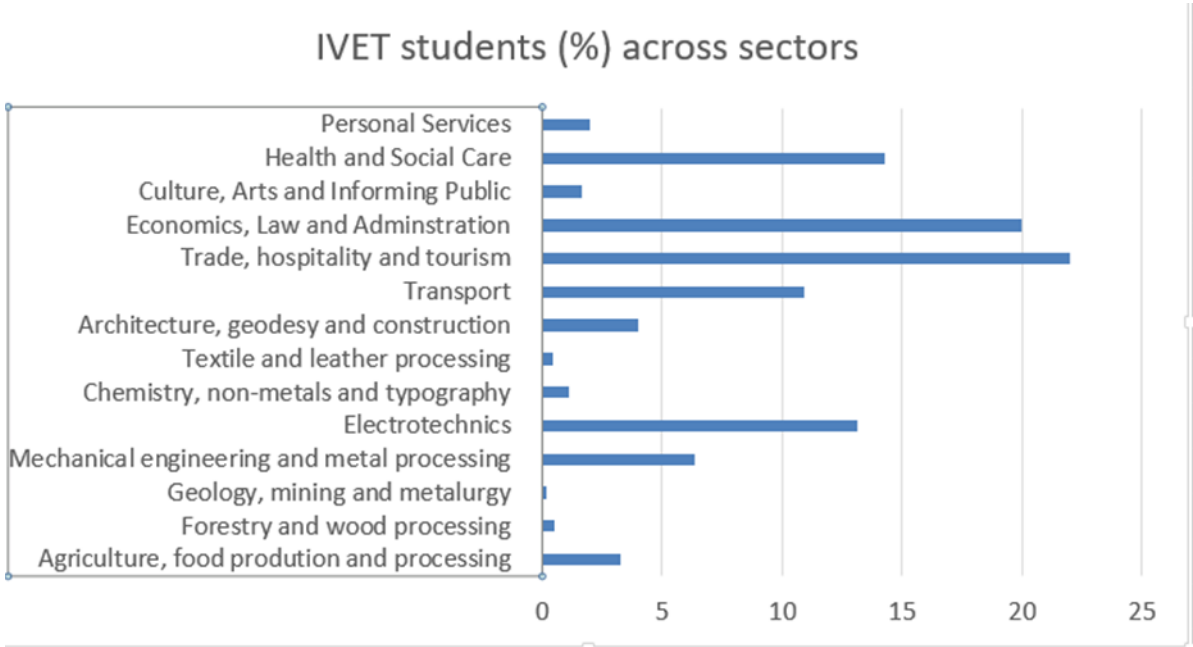


Source: Monstat, LFS

3.2 Provision of education and training

VET is very popular in Montenegro. Nearly two-thirds of all secondary school students are enrolled in VET programmes at upper secondary education level. As shown in Figure 3.3, vocational schools offered the majority of IVET in the following four sectors: trade, hospitality and tourism; economics, law and administration; health and social care; and electrotechnics.

FIGURE 3.3 STUDENTS IN IVET BY SECTOR, SEPTEMBER 2018 (%)



Source: Monstat, secondary schools and resource centres, beginning of academic year 2018/19

Currently, no training programmes either at secondary or tertiary level specifically target occupations and skills in the renewable energy sector. In addition, no specific qualification standard or programme has been developed; however, many other programmes (VET and IVET) contain certain elements and courses relevant to the needs of the renewables sector. At the tertiary level, the Faculty of Electrical Engineering and Faculty of Mechanical Engineering are the main institutions providing relevant education that can to some extent respond to the needs of the renewables market.

Broadly speaking, the IVET electrotechnics profile produces graduate students for occupations/qualifications summarised in Table 3.1.

TABLE 3.1 LEVEL 3 AND 4 QUALIFICATIONS IN MONTENEGRO

Level 3 qualifications	Level 4 qualifications
Auto electrician Electrician Installer of electrical and communications infrastructure	Electronics – electromechanic Computer systems and networks – electromechanic Web and mobile applications – electromechanic Electronic communications – electromechanic Cooling and heating devices – electromechanic Mechatronics technician

Source: Ministry of Education, enrolment of students in Year 1 of secondary schools in academic year 2018/19

The territorial distribution of IVET electrotechnics programmes offered to students in Year 1 in September 2018 is shown in Table 3.2.

TABLE 3.2 IVET TRAINING OFFER IN ELECTROTECHNICS FOR STUDENTS IN YEAR 1, SEPTEMBER 2018

	Auto electrician – III	Electrician – III	Installer of electr. communications infrastructure – III	Electromechanic – IV	Electronics electromechanic – IV	Computer systems and networks electromechanic – IV	Web and mobile application electromechanic – IV	Electronic communications electromechanic – IV	Cooling and heating devices electromechanic – IV	Mechatronics technician – IV
Central region										
Podgorica		+	+	+	+	+	+	+		+
Nikšić	+	+	+	+	+	+	+	+	+	
South region										
Tivat		+			+					
Ulcinj		+								
North region										
Berane	+			+	+	+	+			
Bijelo Polje		+	+	+		+	+			
Pljevlja					+	+				
Rožaje						+				

Source: Ministry of Education, enrolment of students in Year 1 of secondary schools in academic year 2018/19

Tables 3.3a and 3.3b provide an overview of the enrolment and graduation from electrotechnics programmes in Montenegro. The share of students enrolled in electrotechnics programmes in relation to the total number of VET students is relatively steady: 13.80% in 2016/17, 13.32% in 2017/18 and 13.12% in 2018/19.

TABLE 3.3A NUMBER OF STUDENTS ENROLLED IN ELECTROTECHNICS PROGRAMMES

	Total	1st year of study	2nd year of study	3rd year of study	4th year of study
2016/17	2 564	706	638	591	629
2017/18	2 517	652	693	621	551
2018/19	2 501	623	629	667	582

TABLE3.3B NUMBER OF STUDENTS GRADUATING FROM SECONDARY SCHOOLS

Sector	2014	2015	2016	2017	2018	2019
Electrotechnics	713	742	683	673	579	642

Source: Ministry of Education

In Montenegro, all the programmes belonging to energy and electronics are classified in the electrotechnics sector/profile. They are mostly delivered in two specialised vocational schools (in Podgorica and Nikšić), and partly in other vocational schools, especially in the north of the country. Four-year programmes are much more popular than three-year programmes.

VET curricula have recently become more flexible to meet changing labour market needs. One way to create a flexible curriculum is by using a modular design. A modular approach can encourage interdisciplinary working, because modules can sometimes be used for different programmes, allowing students from different programmes to participate in the same module. Based on new needs, modules can be added or deleted if they become obsolete. This, in turn, creates the need for flexible qualifications based on sets of learning outcomes that can be assessed and certified as qualifications or parts of qualifications.

As of 2019, the VET Centre of Montenegro had designed 39 modularised educational programmes, of which six are modularised programmes for the energy sector (and two for the health sector).

Modularised curricula also allow for much less complicated and faster design and acquisition of vocational qualifications. For example, upon completion of the 'energy electrotechnician' programme, the following vocational qualifications are acquired:

- electrotechnician of electro-energy systems, level IV1;
- electrotechnician of electro-motor engines, level IV1;
- electrotechnician of electric installations, level IV1;
- electro-installer on construction sites, level III;
- assistant to electro-installer on construction sites, level II.

The 'energy electrotechnician' programme is the most focused on the energy sector. It also has an elective subject: alternative energy sources. As this programme is modularised, it is relatively easy to design new modules that deal with renewable energy and either add them to the programme or design new vocational qualifications.

There are also three four-year programmes formally belonging to other sectors but linked with energy: mechanical engineering technician in energy; technician in construction of low-rise buildings and hydro-construction (also modularised); and environmental protection technician (also modularised). All three programmes are in the formal IVET system.

As for CVET, there are five three-year courses offered by vocational schools (auto electrician, electrician, electromechanic, electromechanic of machines and equipment, and telecommunications network installer) and one four-year course (computer repairs).

Information from stakeholder meetings and interviews (see details in the next subsection) suggests that the energy sector will soon have a lack of qualified workers, especially workers specialised in installing and repairing electrical wires and overall electrical insfrastructure, i.e. line installers and repairers. However, to date, no relevant changes in the education system have been made, and more intensive and effective communication between industry and education should be established.

As for university level, there is an electrical engineering and automatics course at bachelor, specialist and master's level, and electrotechnics at doctoral level. Additionally, there are relevant undergraduate and postgraduate renewable energy programmes at the Mechanical Engineering Faculty.

IVET schools and the Faculty of Electrotechnics have for years been the main suppliers of all the companies (mostly state-funded) for this type of workforce. Predominantly, these were employees working in big hydro power plants or working with transmission and distribution lines.

3.3 Development prospects and skills implications

The developments in renewable energy have not been matched by the education system. At the same time, industries find it hard to communicate their needs to the education system and vice versa.

According to the European Commission data (2014), it is estimated that the renewable energy industry supports the employment of 1.2 million workers in the EU-28 – with the majority in wind, solar and bioenergy industries (a figure that could rise to 2 million in 2020). A common attribute to all renewable energy sectors is that employment spans the value chain from equipment manufacture, project development, construction and installation, to operations and maintenance. The employment associated with any individual renewable project tends to be front-loaded with many engineers, technicians and assemblers needed in the manufacture, project development and installation phases.

According to the International Labour Organisation, occupations that are difficult to fill are as follows (ILO, 2011):

- wind energy: project developers; service technicians; data analysts; electrical, computer, mechanical and construction engineers;
- solar energy: photovoltaic and solar thermal system installers and maintainers; building inspectors;
- hydropower: electrical and operations and maintenance engineers; technicians; tradespersons; sustainability specialists;
- geothermal: trainers; geothermal engineers;
- bioenergy: research and design engineers; service technicians; trainers.

When it comes to Montenegro, there is no available skills forecast or projections on the needs for the workforce and skills in this subsector (or skills/future qualification needs in general). Most of the information and findings related to future skills needs and emerging gaps stem from the interviews conducted with the stakeholders.

A key challenge for development of the renewables sector will be to align education and training to meet the emerging skills needs of both new and existing occupations and industries. New and priority skills related to innovation may be needed, such as problem-solving, design and working with stakeholders.

The Montenegrin education system has not fully started to train a specialised workforce in this subsector. Several rather ad hoc initiatives have been implemented over the last couple of years. There was an initiative to develop solar photovoltaic installers at levels 3 and 4 (vocational qualifications). Occupational and qualifications standards for electrotechnicians of electro-energy systems were designed in 2017.

Training for solar panel installers was organised in 2011 (40 people were trained) within the government backed Montesol project, which aimed to offer an attractive and sustainable financial mechanism, via a retail loan, to install solar water heating systems. Thirteen companies were given the right to take part in the campaign.

As there have been numerous projects in the sector lately, a great deal of training is delivered abroad, or companies train the staff needed.

Montenegro does not train specialists in renewable energy in its education system. However, it offers education programmes for many qualifications that can easily be adapted to those needed for renewable energy development. According to the government plans, it is expected that in future, investments will be more focused on the renewables sector. The appropriate workforce capable of implementing the desired outcomes would be a major factor for success.

3.3.1 Results of the qualitative research/interviews

As stated previously, the qualitative research gave additional insights on the development and investment prospects of companies active in the renewable energy field, typology of employment, skills and other labour market aspects, and an assessment of current skills gaps and emerging needs. Below, the main results and findings from the interviews are presented. In line with the methodology, three main groups of respondents were included in the research: companies and business associations, employees, and institutions or organisations relevant for the subject at central, regional or sector level. The companies and other stakeholders interviewed are shown in Annex 3.

Target group 1. Industry/business representatives

Representatives of the management of several companies working in the renewables sector were interviewed. All geographical regions were considered: northern, central and coastal regions of Montenegro. The main targets were SMEs that had 5 to 10 years of experience working in this field and an average turnover of EUR 0.5 mil to EUR 20 million. The number of employees varied from 20 to 700. Each interviewed company had a certain level of export experience; if the company did not have significant export experience, they believed in their export potential in the future[4].

[4] For further information on the structure of consumption and energy import–export in Montenegro, see: https://bankwatch.org/beyond-coal/the-energy-sector-in-montenegro and www.worldometers.info/electricity/montenegro-electricity/

Subsector characteristics, market and competition

All of the interviewees believed that the renewables sector has huge potential and is growing fast. The interviewed companies identified government administration and bureaucracy as the biggest obstacle for working in this sector. This is particularly the case when it comes to the lack of communication and cooperation between central and local authorities, as well as interpretation of relevant regulations. All this makes the process of getting relevant permits and licences for work in this sector time-consuming, and thus prolongs the start of production and leads to big costs and losses for companies.

By nature, this sector is innovative, but there is still space for Montenegro to increase the use of innovative methodologies, ways of work and technology. The biggest challenge in this case is the lack of financial resources and in general low levels of investments in innovation from both government and industry. Innovation and research should be planned at country level with active involvement of all stakeholders.

Companies in this subsector cooperate with many other sectors, such as households, government, and other businesses like construction and transportation but also tourism and agriculture. It is interesting to note that most interviewed companies had excellent cooperation with universities, particularly with the Faculty of Mechanical Engineering. It was stressed that the cooperation with the faculty was helpful in getting access to skilled and trained employees, but also in planning study programmes relevant for the industry needs. Additionally, cooperation with the EAM but also with other private employment agencies is continuous and successful.

Human capital characteristics

When setting up, most of the companies had gaps in the knowledge and skills of their employees. Companies had to invest in staff education mainly through in-house training and mentorship schemes. However, many companies employed different trainers from abroad for training that was not available in Montenegro. Until 2016, the training was mainly organised in-house. However, from 2016 onwards, many institutions in both Montenegro and abroad started offering training in this field which significantly improved the situation in companies and improved the knowledge of employees as well as development of new skills and competences.

Competences required for the renewables sector are divided into various categories.

- **Technical and engineering competences**: essential knowledge comprises the basic principles of the technology and technological products and processes. Skills include the ability to use and handle technological tools and machines as well as scientific data to achieve a goal or to reach an evidence-based decision or conclusion.
- **Multilingual competences**: this requires knowledge of different languages (mainly English). Essential skills for this competence consist of the ability to understand spoken messages, to initiate, sustain and conclude conversations, and to read, understand and draft texts. This is particularly important for companies applying for international tenders or financial resources from international organisations and banks.
- **Digital competences**: this involves the use of digital technologies for learning, at work, and for participation in society. It includes information and data literacy, communication and collaboration, media literacy, safety, problem-solving and critical thinking.
- **Personal, social and learning-to-learn competences**: this is the ability to reflect on oneself, effectively manage time and information, work with others in a constructive way, remain resilient and manage one's own learning and career.

Companies employ both fresh graduates and experienced people. In smaller companies, most employees are engineers, and low-skilled labour is engaged for different operational tasks (such as installation of solar panels) on a part-time and/or temporary basis. In larger companies, there is a constant need for new and good workers, skilled and educated, willing to work and learn. According to the companies' representatives, the current Law on Labour (in force at the time of interviews in August 2019) provides protection for long-term employees, meaning it is hard to motivate them and increase their productivity and efficiency; it is almost impossible to discipline or dismiss these employees. This category of employees is very hard to motivate to obtain new skills and knowledge, and at the same time, they present the biggest obstacle to bringing in new members of the labour force.

Foreseeable changes

The renewables sector has huge potential for future development (wind, solar, hydro).

Having in mind the size of Montenegro, labour force mobility is not considered a problem and there is a strong connection and relatedness between industries that are shrinking and industries that are progressing and growing (for example from manufacture to renewables and similar). This relationship, according to industry experience in the renewables sector, exists in almost all occupations relevant for this sector. Industry representatives expect that adoption of new technologies, artificial intelligence and digitalisation will soon become an unavoidable change if the companies want to be competitive and to survive in the market. This will require employees with digital, ICT and multilingual skills.

General feedback and suggestions for improvement

The energy sector presents a huge potential for future employment; however, it is important and necessary to work on awareness as well as employees' approach and attitude to work. The relevant labour force is slowly growing, with skills and competences necessary for dealing with tasks in this sector. The country's education system is to some extent in line with the market needs, although practical knowledge and more internships for students would help ensure there is a better-skilled and more knowledgeable labour force.

It is interesting that no matter the company size, the skills of managers – i.e. people who manage processes and are responsible for sustainability of the systems at all levels (government, academia, industry, etc.) – were stressed as being of crucial importance. The systematisation of employment, where people with relevant education, knowledge and skills should have suitable positions and also transfer experience and knowledge to newcomers, was pointed out as one of the most important changes that should be considered in future.

The government should work on making relevant administrative procedures much faster and simpler and provide clear interpretations of relevant regulations so that it does not present obstacles for doing business in this subsector. These findings are also reflected in the SBA assessment.

Target group 2. Representatives of employees in relevant subsectors

Several employees working in renewables were interviewed. The methodology applied took into consideration gender, education level, age and geographical region. Employees working in companies producing energy from solar, wind and hydro sources were interviewed.

Education level and additional qualifications and/or specialisation courses

When it comes to renewables, most employees have completed tertiary education, with those working in the field (e.g. installing works) having completed secondary education. The age of respondents varied from 20 to 55. It is interesting that in their opinion, the skills and competences needed to start work after graduation were at the required level. However, the need for further skills increased while

working, and the interviewed employees were proactive in finding and taking different training with the goal of getting a better-paid job within the same company or in another company.

Characteristics of current job and knowledge/skills and expertise needed

The skills and competences needed for the current job are in line with the company's requirements. It is interesting to mention that, within the probation period of employment, in-house training is provided for employees. This training is mainly related to the processes and procedures in the company, introduction to the main services and projects of the company, and basic skills training in a mentorship capacity.

In later stages of employment, the situation changes. In renewables, companies still organise training for employees, shaping it around the needs of the company and in line with competition in the market. However, it seems that employees' self-identified training needs for their professional development are not a priority for the company; employees are expected to organise and conduct this on their own. Availability of such training and affordability for employees present huge obstacles. Such training is mainly provided abroad, and it is not easy for employees to afford it. In the renewables sector, such training usually focuses on the use of different software as well as new methodologies for project design. For low-skilled workers, such need is not evident, and most of the training is provided by the company.

Salary levels, relatedness with other sectors, mobility type

Salary levels for lower-skilled workers (installers, electricians, physical workers etc.) varies from EUR 400 to EUR 600 per month, while for engineers (electrical, mechanical, civil or architecture) it ranges from EUR 600 to EUR 1 500 per month.

Renewables shows strong relatedness with other sectors, particularly with construction, transportation and housing. This is a feature for almost all occupations; for example, engineers working in construction can very easily find employment and start work after basic training in renewables. This is the case for other low-skilled workers, as well as for managers and administrative staff.

It is important to mention that it seems there is a high potential for labour force mobility in all occupations in different geographical locations in Montenegro, according to the interviews carried out but also taking into account the relatively short physical distances between various municipalities or production places in the country. Employees are willing to relocate to get a better job with higher pay. Mobility is mainly within the same profession and even position, but for a higher salary or a more prestigious company. Salary is one of the key factors in making a decision to change jobs, but the prestige of the company and other working conditions such as working hours are also important.

Target group 3. Representatives of relevant institutions and associations

Representatives of different institutions (see Annex 3) working in or influencing the targeted subsector were interviewed on several aspects, such as awareness of S3 development, their views on opportunities, potential and challenges for future development of these areas, and what they plan to do to support the development and smart specialisation research and innovation in relevant subsectors. Also, special attention was given to skills and expertise needed for the future of the subsectors.

Potential, challenges, advantages

The representatives of institutional stakeholders in the renewables sector believed there is huge potential for future growth and development of this sector. Montenegro has a favourable geographical position, climate and natural resources for solar, hydro and wind energy production.

The main challenges recognised were of a financial nature since initial investments (sunk costs) are very high in Montenegro. Also, the need to strike a balance in the use of resources and their preservation (such as the impact of small hydro plants) significantly affects the prospects of financial gains.

Activities to support development and smart specialisation research and innovation in relevant subsectors (including financial resources invested)

The government has used many projects and initiatives to stimulate the use of renewables, and according to the Ministry of Economy, more projects and activities are in the pipeline to support the use of renewables in future (for example, the European Bank for Reconstruction and Development has been helping the country with renewable energy projects). Montenegro follows EU guidance on the use of renewables, and legislation and strategies are in line with EU directives. There is a need to raise awareness about the advantages of using renewables.

Skills and expertise needing further development

According to the representatives of this target group, Montenegro has skilled workers in renewables to deal with the current level of activity. The challenge is reflected in the lack of highly qualified workers able to design, supervise and manage demanding and big projects and to offer services abroad. Even now, for highly specialised tasks, companies employ labour from abroad. That element aside, the companies interviewed stated that they mainly rely on domestic labour, and for new and highly specialised tasks, companies engage relevant professionals who educate staff through mentor schemes.

Competition from abroad is seen as the main driver of change. Many foreign companies are interested in investing and working in Montenegro due to its natural resources and potential for renewables. These companies use high-level technology and software, and domestic companies should follow that level of innovation and way of work in order to survive in the market.

3.3.2 Key skills implications

In this part of the analysis, an overview of global skills and qualification needs is provided to be able to identify the skills and qualification gaps for Montenegro.

It is widely agreed that the basic skills needed for most jobs in renewable energy are related to project development, construction and installation, and operations and maintenance. Several university study programmes worldwide (electrical, civil, mechanical and environmental engineering, agriculture and forestry, law, architecture, etc.) provide good knowledge on which specific renewable energy competences can be built. ‘However, even with the basic skills requirements of most jobs in renewable energy being covered by existing courses, those who have these skills also require more specialised skills in the area, and in some cases benefit from skillsets that cross existing occupations. Most of the skills response to the needs of the renewable energy sector is about delivering these specialised and cross-disciplinary skills, either through providing initial education and training courses and apprenticeships specialised in renewable energy, or through providing supplementary education and training in renewable energy to build on existing skills’ (ILO, 2011).

Recently the world has seen a drop in the demand for manual skills and physical abilities. At the same time, there is more demand for skills in management of financial and other resources. As technologies are increasingly dominating our jobs and our lives, there is a growing need for various forms of technology competences (technology design and programming, as well as basic technology installation and maintenance skills). ‘However, proficiency in new technologies is only one part of the

2022 skills equation. “Human” skills such as creativity, originality and initiative, critical thinking, persuasion and negotiation will likewise retain or increase their value, as will attention to detail, resilience, flexibility and complex problem-solving. Emotional intelligence, leadership and social influence as well as service orientation are also set to see particular increase in demand relative to their current prominence today’ (WEF, 2018b).

Investment in development and upgrading workers’ skills is necessary, but rarely through full education and training programmes. ‘In the majority of cases, extensive reskilling is not required. Instead, the focus is on upgrading certain skills through structured education and training; especially science, technology, engineering and maths skills and the broad range of technical and managerial skills needed to adapt to new technologies’ (European Commission, 2014).

Quite often, producers (in some renewable energy subsectors) require their staff to install the technology themselves, thus reducing the need for specialised occupations. This was the case for Montenegro with the first wind farms.

Looking at the quantitative and qualitative analysis of skills demand and supply in renewable energy, it may be concluded that there are emerging gaps in the country when it comes to highly specialised technical skills. Even though existing courses cover the basic skills requirements of most jobs in renewable energy, those who have these skills also require more specialised skills in the area. Technical skills at all levels of qualification, in particular levels IV to VIII, are needed. At the same time, there are skills needs for maintenance of the newly built wind farms and solar plants, as well as installing and maintaining/repairing small-scale equipment. Small-scale installations need, in general, technician-level skills. Given the size of the country, it is unlikely that a lot of big facilities will be built. At the same time, having in mind favourable climate conditions and all the talk about sustainable development, it seems very probable that the state will focus on smaller projects, including households.

4. SKILLS ANALYSIS OF THE PRIORITY AREA 'SUSTAINABLE AND HEALTH TOURISM'

4.1 Overview

Tourism is one of the strategic sectors for Montenegrin economic development, with a significant share in GDP creation (almost 25% in 2018). Moreover, this sector has shown important constant growth in the past decade (7% in 2018). In parallel, the number of tourists, overnight stays and the revenue from this sector have continuously increased. Significant investments have been made and are planned in this sector in future. The sector is also an important source of jobs, generating around 19% of the total employment in Montenegro. Tourism is linked with other sectors too, particularly agriculture, construction, trade and transportation.

There are, however, many problems and drawbacks in this sector, reflected in the limited number of high-quality accommodation options, highly season-dependent offerings, underdeveloped road and rail infrastructure, and low levels of domestic labour supply. The government is conducting activities to create a high-quality, diversified and year-round tourism offer, with special focus on development of sustainable tourism.

One of the fastest-growing segments of tourism in the world is health tourism (with 15% to 20% yearly growth). This sector is even more important due to its positive impacts on demographic, social and cultural dimensions. When it comes to Montenegro, the sector shows growth potential and opportunity for employment, job creation and diversification of the tourism offer. An important step in the development of health tourism was the establishment of the Health Tourism Cluster of Montenegro in 2015, with the aim to connect leading experts from the health and tourism sector and other actors to promote the overall health tourism offer. There are more than 40 members of the cluster, both from state-owned and private institutions. Within the Chamber of Economy of Montenegro, in 2016, the Coordination Committee for Health Tourism was set up to design, stimulate, coordinate, develop and improve quality of services in this field. The first Montenegrin tourist agency specialising in health tourism started working in 2018, in Petrovac.

Tourism has strong synergy effects and correlation with many other sectors and subsectors (e.g. energy, agriculture, industry, transportation and ICT). It is also a sector that generates exports and has strong potential to increase this.

Montenegro is an appealing tourist destination, with attractive nature, and has a health system with a wide variety of services and strong private sector network of health service providers. The number of people using Montenegrin health services is increasing, particularly during the summer tourist season, which indicates strong connection and synergy between these two sectors, and potential for further development. The health and social service sector contributed 3.5% of GDP in 2017. With the aim of improved quality of life, there has been evident expansion of fitness and wellness programmes in the private sector across the country.

When it comes to innovation potential, S3 estimated that the sector has average innovation potential (IP**), where special potential has been seen in development of health tourism as well as cultural tourism. Additionally, S3 identified high innovation potential (IP***) for international marketing of therapeutic rehabilitation, wellness and spa services, and the possibility for Montenegro to provide high-quality services at competitive prices in the context of providing services at attractive tourist

destinations. Users of these services would have the opportunity to improve their health condition while enjoying nature, cultural events and other tourism elements (Ministry of Science, 2019b).

Health and life quality show strong synergy with tourism and this can be realised through the development of health tourism. Montenegro, as a country with a favourable geographical position and rich in adequate natural resources, has obvious potential to become a destination for health tourism. This applies to health services that include therapeutic rehabilitation programmes and wellness and spa facilities. This sector also shows that it has the potential to establish synergy with agriculture, because healthy and organic food produced in Montenegro can be an additional component in the offer of health tourism (nutrition).

In addition to the positive impact on health and quality of life, health tourism has numerous economic benefits; it also encourages the development of other economic branches and activities and can contribute to the development of less developed areas. The most significant impact of health tourism is the increase in employment due to the extension of the tourist season throughout the year.

Preconditions are natural resources, rich historical, cultural and industrial heritage, favourable geographical position, traditional hospitality of people, the existing tourist infrastructure, multi-ethnic character of Montenegro and multicultural tradition, and the growing awareness of tourist employees about the benefits that the development of the health tourism sector can bring to the overall economic development.

Prices for health services in Montenegro are very low compared to other European countries. The Health Fund of Montenegro has contracts to provide health services with 23 European countries.

Health tourism is linked with active holidays, based not only on traditional 'sun and sea' options but also a number of activities like hiking, biking and diving. The significance of this industry is clear as health tourists spend five times more than other tourists, and the growing interest in health tourism, both regionally and globally, will help bring these tourists into the country.

Montenegro has the potential to obtain the status of a country that provides a significant number of health services and has possibilities for development of new services and offers. The country already has a reputation for offering services to help people with respiratory diseases, heart disease, back problems and other health issues. The country also has the ideal conditions to offer a variety of health programmes, such as physiotherapy, preventive medicine, weight loss, aesthetic surgery, stomatology, wellness and sport injury clinics.

In 2019, the Ministry of Sustainable Development and Tourism announced a public tender for the selection of consultants to create a strategy on development of health tourism for Montenegro. The development of this branch of tourism is part of a strategic commitment to becoming a year-round tourist destination.

The strategy will be prepared in cooperation with the Ministry of Health, the Chamber of Commerce, the Agency for Nature Protection and Environment, the Health Tourism Cluster of Montenegro, Dr Simo Milošević Institute, public and private health-rehabilitation institutions, the National Tourist Organisation, businesses, municipalities and all relevant civil society groups. The strategy with its action plan should define further directions for the development of this type of tourism by 2025 and contribute to the improvement of the offer.

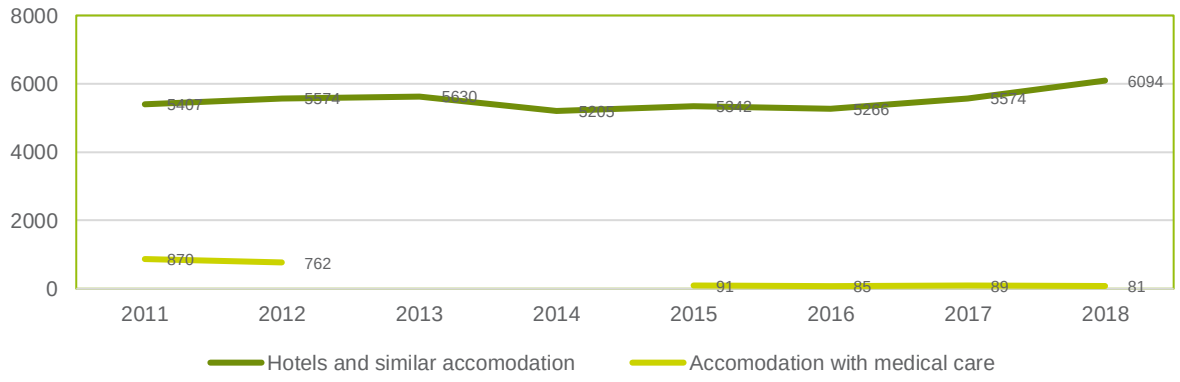
Currently, health tourism is concentrated in Dr Simo Milošević Institute in Igalo, a hospital in Risan, a hospital in Meljine (at the time of writing, this had some legal issues), and in the four- and five-star hotels (mainly through spa and wellness offers). However, this subsector faces many challenges and obstacles (Ministry of Science, 2019b):

- poor air connectivity as well as the general accessibility of the tourist destinations;
- lack of high-quality hotels in the mountain region;
- inadequate municipal waste management;
- insufficient professional staff to support the tourist offer;
- high seasonality and underutilised winter season;
- insufficiently diversified tourist offer;
- partly outdated existing healthcare equipment and technologies;
- functional and aesthetic disadvantages of diagnostic, therapeutic and rehabilitation spaces, facilities, buildings and their surroundings;
- underdeveloped national promotion of health tourism;
- lack of accreditation and certification of health institutions providing health tourism services;
- lack of market orientation of health institutions.

Labour market

When it comes to the labour market data, this subsector has similar problems to the energy sector. To present some trends that can be assigned to this subsector, a similar approach is applied as in the case of renewable energy. Two relevant economic activities were combined: hotels and similar accommodation (at sector level), out of which accommodation with medical care (at subsector level) (see Figure 4.1). The required education and skills (discussed later in this section), and data and information related to the health sector (i.e. medical services and personnel) are also analysed.

FIGURE 4.1 NUMBER OF EMPLOYEES IN HOTELS AND SIMILAR ACCOMMODATION



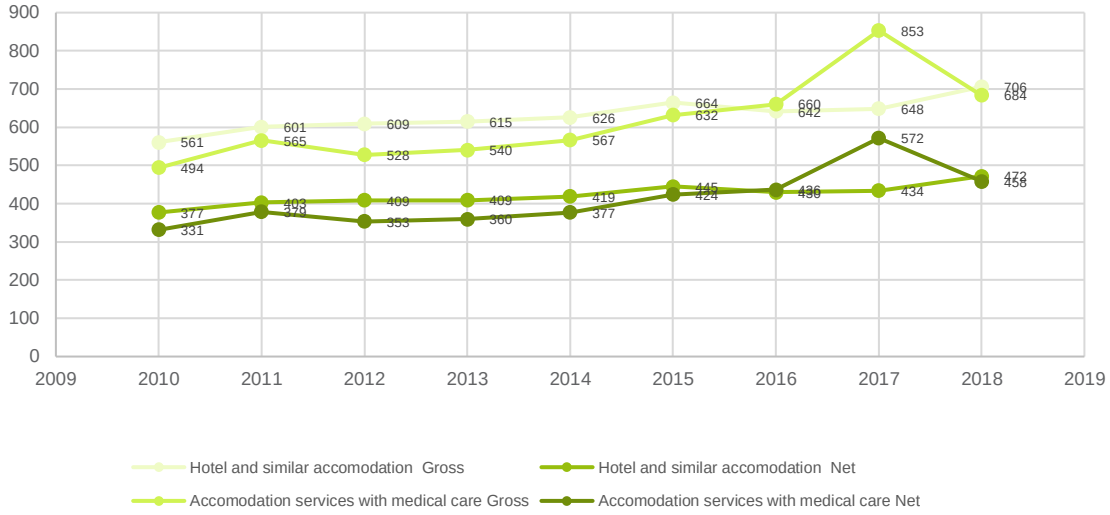
Source: Monstat, LFS

When it comes to the accommodation with medical care, a significant decrease was registered in 2015. This is particularly evident for accommodation with medical care at the subsector level, where in 2015 the number of employees was more than eight times lower compared to the last available data (2012) and continued to fall to 81 in 2018. Additionally, there was no data for 2013 and 2014[5].

[5] According to the information received from Monstat, employees are classified by company business code (where they are employed). In 2013 and 2014, Monstat did not receive any data for these particular employees.

This shows that the traditional source of information on employment at this very specific level of detail is insufficient and it should be backed by other sources or research.

FIGURE 4.2 AVERAGE MONTHLY SALARY IN HEALTH AND TOURISM (IN EUR)



Source: Monstat, LFS

Salaries in the health and tourism subsectors have generally been increasing, with a significant increase evident in 2017 in the accommodation services with health care subsector, where salary growth was around 30%, after which it fell by almost 20%, amounting to EUR 458 net per month, which is slightly below the average salary in Montenegro.

4.2 Provision of education and training

The analysis of the Montenegrin education system as well as skills profile can only be conducted through a joint analysis of tourism and health care sectors. This is because there are no statistics on this subsector nor educational programmes that are specifically developed for health tourism occupations and qualifications.

Montenegro has a good **IVET** education system in the health sector, which is also very popular with Montenegrin students. Most courses are four-year programmes (enabling further schooling at universities), and only one is a three-year programme.

IVET health sector four-year programmes are as follows:

- health technician,
- pharmacy technician,
- medical lab technician,
- cosmetics technician,
- physiotherapy technician,
- dental-stomatology technician.

The only IVET three-year programme is cosmetician.

According to Monstat, this does not mean that people were no longer employed in the sector; it could be that the company business code changed.

There is sufficient provision of IVET programmes in health and a corresponding number of students willing to study these courses. Cosmetics technician and cosmetician courses overlap sufficiently with the idea of health tourism; all of the above-mentioned courses are required for the development and success of health tourism.

TABLE 4.1 IVET TRAINING OFFERS IN HEALTH CARE BY REGION

Education programmes	Health technician	Pharmacy technician	Medical lab technician	Medical cosmetician	Physiotherapy technician	Dental-stomatology technician
Central region						
Podgorica	+	+	+	+	+	+
Nikšić	+	+				
Cetinje	+					
South region						
Kotor	+					
Bar	+					
Herceg Novi					+	
North region						
Berane	+	+				
Rožaje	+					
Pljevlja	+					
Plav	+					

Source: Ministry of Education, enrolment of students in Year 1 of secondary schools in academic year 2018/19

As can be seen from Table 4.1, there are two specialised medical schools: Podgorica (offering all the courses) and Berane. The other schools offer one or two medical/health care programmes. Medical schools are very attractive for students in Montenegro.

Tables 4.2a and 4.2b provide an overview of enrolment and graduation data for health, pharmacy and social protection studies.

TABLE 4.2A NUMBER OF STUDENTS ENROLLED IN HEALTH, PHARMACY AND SOCIAL PROTECTION PROGRAMMES

	Total	1st year	2nd year	3rd year	4th year
2016/17	2 487	708	628	627	524
2017/18	2 650	727	678	621	624
2018/19	2 721	749	715	660	597

The share of students enrolled in health, pharmacy and social protection programmes in relation to the total number of VET students is steady, and was 13.39% in 2016/17, 13.35% in 2017/18 and 13.67% in 2018/19.

TABLE 4.2B NUMBER OF STUDENTS GRADUATING FROM SECONDARY SCHOOLS

Sector	2014	2015	2016	2017	2018	2019
Health, pharmacy and social protection	618	581	584	531	648	652

Source: Monstat, statements about secondary education, www.monstat.org/cg/page.php?id=602&pageid=76

The following options are available for CVET in the health sector:

- cosmetician care for face and body and cosmetician development for a wellness and spa therapist;
- geriatric nurse organiser;
- geriatric nurse;
- senior medical technician of transfusion medicine;
- medical technician of transfusion medicine;
- medical technician of transfusion medicine specialised in gathering and processing blood.

TABLE 4.3 CVET OFFER – NUMBER OF ADULT EDUCATION PROVIDERS BY REGION

	Cosmetician care for face and body and cosmetician development for wellness and spa	Geriatric nurse organiser	Senior medical technician of transfusion medicine	Medical technician of transfusion medicine gathering and processing blood	Cosmetician for face and body treatment	Geriatric nurse
Central region	5		1	1	1	
South	2					
North	1	1				1

Source: VET Centre, 2016, www.mpin.gov.me/ResourceManager/FileDownload.aspx?rId=256936&rType=2

In the period 2014–16, 286 people followed CVET courses in this field, out of which 141 attended programmes provided by EAM (almost all of them for cosmetician).

As for **higher education**, the following courses exist:

- Faculty of Medicine – medical doctor/general practitioner;
- Faculty of Stomatology – dentist;
- Higher Medical School, bachelor's degree – senior nurse;
- Faculty of Pharmacy – pharmacist;
- Applied Physiotherapy – physical therapist.

Table 4.3 provides an overview of the number of graduates at the Faculty of Medicine and Faculty of Pharmacy from 2014 to 2018.

TABLE 4.3 NUMBER OF GRADUATES IN FACULTY OF MEDICINE AND FACULTY OF PHARMACY

Faculty	2014	2015	2016	2017	2018
Medicine	45	43	35	34	30
Pharmacy	27	49	22	27	35

Source: Monstat

There seems to be a constant flow of graduate IVET students and graduate university students into the health system of Montenegro. There are also 600 unemployed people in the health sector equal to level 4 (four-year IVET programmes). Some unemployment is also registered among doctors (in April 2020, 62 doctors and 450 technicians in the medical field were registered as unemployed; EAM April 2020 data).

Broadly speaking, when talking about medicine and the health sector, there is a lot of potential in both the unemployed professionals and those who graduate from vocational schools and university every year. It may be assumed that there is no lack of professional and technical skills with medical staff.

However, a trend has been observed of doctors leaving the country and looking for opportunities in Germany and other European countries. Brain drain in this sector could be a major threat for such a small country.

4.3 Development prospects and skills implications

One of the main challenges for development of health tourism in Montenegro is the fact that it involves two sectors, namely health and tourism, which very often leads to confusion in relation to jurisdiction, responsibility and accountability. The accommodation sector accounts for some of the most pressing skills challenges in the tourism sector. It is struggling to cope with the issue of seasonal jobs and attractiveness of these types of jobs among the domestic workforce.

4.3.1 Results of the qualitative research/interviews

As in the case of the renewable energy sector, insights on skills and development perspectives of the health tourism sector were collected through interviews and questionnaire implementation. The findings are presented for each target group of respondents (see Annex 3).

Target group 1. Industry/business representatives

Representatives of the management of several companies working in the sector of health tourism were interviewed. Companies interviewed were rather diverse, from those where health-related services represent a small portion of the company's offer (hotels with spa and wellness facilities) and are relatively new to this market, to a very experienced one (70-plus years of operating in this field) and where health-related services are the main business. Also, all geographical regions were considered: northern, central and coastal regions of the country.

Characteristics, market and competition

Interviewed companies believed that health tourism in Montenegro has huge potential and has demonstrated growth over recent years. However, there is still huge potential for improvement and further growth and development.

The main obstacle for sector development was considered to be the lack of a strategy, which should provide deep analysis of the current state in the sector, potential for development, gaps, and goals with necessary financial resources identified to support its development. Development of the sector is based mainly on individual activities and actions of companies (hotels) working in this sector, but it is obvious that a clear and planned government strategy is required.

Moreover, particularly when it comes to spa and wellness facilities in hotels, the health tourism services present a small portion of the hotels' offering, mainly due to a lack of understanding and recognition of health tourism potential and, linked to that, increased profitability.

The third important obstacle is the short season, mainly during the summer in the coastal area and summer and one or two months in winter in the northern region. Initiatives to extend the tourist season should be taken on all levels. For companies still in government ownership, such as Dr Simo Milošević Institute, finalising the privatisation process is an important step in the future development of the company.

When it comes to innovation, although companies are trying to follow global trends, there is a lot of space in Montenegro to increase the use of innovative methodologies, ways of work and technology. The main problem is that the new technologies require large investments. The short season and size of the market do not currently provide a good rate of return.

Companies in this subsector cooperate with many other sectors, such as households, government, medical institutions, academia and schools. Also, to get access to skilled workers, companies cooperate with the EAM, but also with other private employment agencies.

Human capital characteristics

Companies have constant need for skilled and educated employees. This is particularly the case during summer within the tourism season (April to October). Services that companies offer vary, including different types of wellness and prevention services (such as massages, yoga and meditation, and weight control programmes) and those related to rehabilitation and recovery from different illnesses or injuries. The first category relates more to services offered by hotels, while the second is mainly offered by specialised hospitals (such as Dr Simo Milošević Institute, or small hospitals or centres offering physiotherapy and recovery from sports injuries).

While hotels face challenges in finding skilled employees, particularly due to the seasonal nature of work, specialised hospitals, such as the Dr Simo Milošević Institute, which is also a provider of education programmes for physiotherapists, do not have such a problem.

Companies invest in staff education mainly through in-house training and mentorship programmes. Many companies employed different educators from abroad for training that is not available in the country. Also, cooperation with the Clinical Centre of Montenegro and relevant high schools is of great importance and benefit.

The overall competences required for jobs in the health tourism sector are the same as for renewables and underline the importance of building transversal skills in addition to technical, occupation-specific skills.

- **Technical competences**: these competences and skills are related to the use and handling of relevant equipment and scientific data to achieve a goal or to reach an evidence-based decision or conclusion (e.g. make a diagnosis, prescribe therapy).
- **Multilingual competences**: this competence requires knowledge of different languages (mainly English). Essential skills for this competence consist of the ability to understand spoken messages, to initiate, sustain and conclude conversations and to read, understand and draft texts. This is very important as many tourists come from abroad.
- **Digital competences**: this involves the use of digital technologies for learning, use at work and for participation in society. It is very important for the promotion and marketing of health services that a company is offering.
- **Personal, social and learning-to-learn competences**: this is the ability to reflect on oneself, effectively manage time and information, work with others in a constructive way, remain resilient and manage one's own learning and career.

Teamwork, customer relations and the ability to present services offered and products used (specific oils, creams, and other cosmetic and self-care products) are becoming more important in this subsector. The lack of relevant postgraduate education (master's level) and PhD studies is considered a limitation.

Companies employ both fresh graduates and experienced people. When it comes to the availability of the labour force, the biggest problem is a lack of doctors as well as outflow of graduates who are looking for better opportunities abroad.

Foreseeable changes

The sector obviously has huge potential for future development; however, a strategic and legislative framework must be adopted and in place. There are companies able to provide high-quality health tourism services, as well as employees with relevant skills and competences, but what is missing is development of a tourism product in this subsector that will be properly promoted and presented to relevant users.

Bearing in mind the size of Montenegro, labour force mobility is not a problem and there is a strong connection and relatedness between this sector and the health sector, particularly when it comes to nurses and technician occupations.

Montenegro has the potential to become a health tourism destination, where additional services such as aesthetic surgery and aesthetic treatments should be an important part of this tourism offer.

General feedback and suggestions for improvement

Development of a comprehensive tourism product in the health tourism sector should be one of the government's priorities. Without a sound government strategy and policy, with clearly defined goals and plans, as well as an action plan supported with necessary infrastructure and financial resources, it is difficult to talk about the future of this subsector. An important segment of health tourism should be sport tourism where different teams can use excellent climate conditions together with accommodation, prevention and recovery services to spend time preparing for competitions or recover from injuries.

Target group 2. Representatives of employees in relevant subsectors

Employees working in the health tourism sector were interviewed. The methodology applied took into consideration gender, education level, age and geographical region.

Education level and additional qualifications and/or specialisation courses

The age of respondents varied from 20 to 55. University education mostly relates to physiotherapists and doctors working in special hospitals such as Dr Simo Milošević Institute, while employees in spa centres in hotels do not necessarily have tertiary education but took certified VET education. Identically to the findings for the renewable subsector, skills and competences needed to start work after graduation were at the required level, though they were improved after starting work through in-house training. However, the need for education increased with experience, and employed people were proactive in finding and taking different training courses (self-paid) with the goal to get a better-paid job within the same company or in another company.

Characteristics of current job and knowledge/skills and expertise needed

The skills and competences needed for employees' current jobs are in line with companies' needs (as presented in the section related to the companies). As with the renewables sector, in-house training is provided during the probation phase. This training is mainly related to the processes and procedures

in the company, introduction to the main services and projects of the company, and basic skills related to doing the job, often provided on a mentorship basis.

In later stages of employment, the situation is changing. Employees with more experience were proactive in identifying new training, methods or techniques for conducting their job, and according to their experience this investment has paid off. The majority of physiotherapists took different training (mainly certified courses) organised outside the country (mostly in countries in the former Yugoslavia region), costing from several hundred euros to a few thousand euros per course; the skills and competences gained through these courses secured the participants a better position and better salary. It was interesting that, after obtaining certain experience and training, a significant number of interviewed physiotherapists have opened their own businesses or are planning to do so in the near future. The Union of Physiotherapists in Montenegro was established in 2017, and it is important to mention that, based on the interviewed employees, the union has helped employees identify and pay for training in the country. Besides therapists, other supporting professional services are present and required for successful development of health tourism (doctors, receptionists, managers, marketing specialists, etc.).

Salary levels, relatedness with other sectors, mobility type

Salary levels for physiotherapists vary from EUR 600 to EUR 1 200 per month, while those who start their own businesses can earn from EUR 1 500 to EUR 2 500 per month. Administrative staff working in spa centres or specialised hospitals earn around EUR 400 per month.

When it comes to relatedness, a physiotherapist working in hospitals can easily work in spa centres for example. Also, nurses and technicians can easily transfer from the health sector to the health tourism sector. This is also the case for managers and administrative and marketing staff.

Target group 3. Representatives of relevant institutions and associations

The same starting point as for renewables was taken for the health tourism subsector: focus on awareness in S3 development, their view on opportunities, potential and challenges for future development of these areas, and what they plan to do to support development and smart specialisation research and innovation in relevant subsectors. Also, special attention was given to skills and expertise needed for the future of the subsectors.

Awareness and involvement in S3

Representatives of institutions relevant for development of health tourism were mainly not aware of the existence, goals and plans of the S3, and were not involved in the process that followed S3 development and adoption. Only those who were directly involved in the process as members of working groups (consultative process) were familiar with S3.

Potential, challenges, advantages

Representatives of institutions in health tourism, as was evident from the interviews, believed that health tourism is becoming more important in tourism both nationally and globally. Montenegro is slowly getting acknowledged on the world map of health tourism, and it has great potential to become a developed and authentic destination. However, a relevant strategic and legal framework, with detailed analysis and data on the current state and potential of health tourism, is essential. Based on such analysis, goals and plans should be developed, followed by relevant actions and financial resources to support such actions.

Cooperation with businesses and support from government is an important factor in successful implementation of a health tourism strategy. This will also require cooperation between central and local government and administration.

Activities to support development and smart specialisation research and innovation in relevant subsectors (including financial resources invested)

The Ministry of Tourism and Sustainable Development has conducted several initiatives to promote this type of tourism product. However, without a strategy on health tourism development and harmonisation of legal framework and policies for the two relevant ministries (Ministry of Health and Ministry of Sustainable Development and Tourism), existing potential cannot be utilised properly.

Skills and expertise needing further development

According to the representatives of this target group, Montenegro has skilled workers to deal with the current level of activity.

When it comes to health tourism, the current level of activities and services can be fulfilled by domestic labour with the skills and competences they have. However, if the country wants to become a health tourism destination, it will need to introduce new services, such as aesthetic medicine (aesthetic surgery and other aesthetic treatments), and thus is expected to need new skills and competences from employees able to provide such services. Additionally, there is an immediate need for a labour force able to define the health tourism product in the country, and to use modern tools for promotion and marketing.

The biggest challenge is to create year-round tourism, which is a precondition for the development of this sector and linked to the development of a skilled and educated labour force.

4.3.2 Key skills implications

According to the EU Skills Panorama (European Commission, 2014) report, health is forecast to be a growth sector, with a net increase of 1.8 million jobs across the EU between 2013 and 2025, and it will mainly be in occupations not related to medicine per se. Health tourism is a labour-intensive form of tourism requiring a wide range of skills across tourism, hospitality, health, healing, fitness, sport and spirituality (Dvorak et al., 2014). Health sector employment is mainly concentrated in three of the major occupational groups: professionals; technicians and associate professionals; and service and sales workers. The occupations most at risk of shortages in future are high-skilled professions, which face a critical need to replace employees leaving the sector due to retirement or for other reasons. Other competences that are generally associated with the sector include the capacity to communicate in non-native languages, deal with physical and mental stress, show empathy and work in multidisciplinary teams.

In Montenegro, spa and wellness are two subsectors expected to have great potential for health tourism development. Many hotels and other facilities offer this. There is a Medical Spa Association of Montenegro, offering courses in the field, and courses on cosmetics and wellness and spa therapy are offered by eight providers throughout the country. However, there is still a lot to be done to maximise the potential.

As the health tourism services in general follow global standards, it is expected that Montenegro will need to boost availability of specialised spa workforce for various positions and levels, such as managers, supervisors, customer service staff, support staff, therapists and fitness professionals. For some, academic education and/or specific certifications are required.

There is a wide range of positions in this subsector that need to be filled by qualified employees. As there is no formal training for these positions, a lot of training is done in-house or services are outsourced, or foreign workers are employed.

The formal education system is not managing to keep pace with all the changes that are happening faster than ever before. It is particularly visible in the formal IVET sector as it takes a long time to initiate, develop and adopt a qualification needed on the labour market. Besides, qualifications/skills intelligence is done rarely such that IVET is focused on revising existing qualifications, turning them into modularised programmes. The new education programmes are much better compared to the previous ones as they are based on learning outcomes and talk about acquiring key competences through vocational modules, and in a way deal with all the soft skills that are often discussed.

As for health tourism, the system produces enough good-quality medical staff. As the system is so small, however, there are gaps in provision of certain types of doctors and medical staff, but good foundations exist. The technical skills are good but need constant upgrading and updating with all the latest technology developments. Medical staff, on top of medical/scientific developments, must be trained on patient safety, e-health and ICT systems, new technologies (equipment), intercultural communication and care for the elderly.

As for soft skills, the situation is the same as in all other sectors and resembles the situation in the EU. The five key skills for health professionals are problem-solving, communication, learning, teamwork and planning. There is solid evidence that all these skills need to be reinforced.

Montenegro has established mandatory continuous medical education which ensures that health and health associate professionals maintain a satisfactory level of skills development, measured in terms of competences developed through a mandatory number of hours or assessment credits, or a combination of these methods.

5. CONCLUSIONS: THE SKILLS DEVELOPMENT DIMENSION OF RENEWABLE ENERGY AND HEALTH TOURISM PRIORITIES

5.1 Overall findings

Both subsectors – renewable energy and health tourism – have great potential to create new jobs with more attractive working conditions in Montenegro. Although the education and training system is not yet fully geared towards the specific needs of the two subsectors, several upper secondary and tertiary-level programmes are relevant for qualifications and skills in demand. The quantitative analysis of skills was somewhat constrained by insufficient data availability at subsector and regional levels. Subsector statistics on labour demand and supply elements, skills and occupations are essential for policy planning and implementation in the economic prioritisation/smart specialisation contexts.

Given the skills patterns among the workforce (both employed and unemployed), there are positive correlation coefficients for potential inter-sectoral mobility from shrinking to growing (sub)sectors. The strongest relatedness between the two sub-sectors is found with construction, transportation and services. Activation and retraining programmes should particularly target the workforce released from regions and downsizing subsectors and help people move into economic activities with growing potential. Salary is the most important factor in deciding to take a new job, but other working conditions, including the type and duration of the labour contract and the overall workplace environment are important as well.

Cooperation between industry and educational institutions in both subsectors (renewable energy and health tourism) needs to be consolidated. Input from employers (both state-funded and private) about skills needs, gaps and expectations should be provided to educational institutions so that proper planning for the curriculum and development of new occupational standards and qualifications can be achieved.

Occupational and qualifications standards and training programmes should be developed for qualifications specific to renewable energy and health tourism. In the short term, prioritisation of continuing vocational programmes (qualification levels 4 and 5) is recommended, as they are less time-consuming and can help alleviate unemployment and transition to demand sectors. A significant number of unemployed people from the shrinking sectors/subsectors of mechanical engineering could be reskilled or upskilled to find a job in the renewable energy and other related sectors.

Students should become more familiar with both renewable energy and energy efficiency concepts. Education about sustainable development (carried out in primary schools thanks to the approval of inter-subject curricula areas on sustainable development) could be extended to secondary and tertiary education. Montenegro has made education about sustainable development a component of teacher training and developed specific teaching guidelines for this; the aim now is to make this more mainstream throughout the education system.

Key competences and transversal skills scored highly among the skills needs revealed through the interviews with both employers and employees. Acquiring such competences should be secured in initial education, but also through lifelong learning courses. English knowledge is a growing requirement in the respective subsectors, very often a compulsory requirement for hiring.

For renewable energy, science, technology, engineering and maths knowledge and qualifications seem to be of crucial importance. Therefore, efforts should be made to encourage more students to follow such educational programmes. Also, setting up a specialised training centre, e.g. centre of vocational excellence, in the field of renewable energy might help attract more candidates from the whole country and, possibly, from the wider region and help Montenegro become a hub for training of specialised workforce in the field of renewable energy, in particular hydro, wind and solar power.

ICT-related developments have and will continue to change the two subsectors, with many support and administrative roles disappearing. There will be an increasing need for education and training systems to respond to developments in technology by providing new skills and preparing people for new occupations.

There is also a need for innovative and flexible forms of education and training to meet the skills needs of micro and small, including family-run businesses, which are in general rather predominant in the country, compared to its Balkans peers and Europe overall.

5.2 Methodological findings

The methodology on skills needs identification and analysis of emerging gaps between offer and demand in the context of smart specialisation was tested in Montenegro for the first time. Several inherent limitations, such as the inability to disaggregate data at the level of detail required for the analysis of priority areas, constrained to a large extent the full deployment of the three methodology modules (described in Annex 1).

The key methodological takeaways from research implementation, in line with the approaches defined for each module, are summarised below.

Data at subsector level is crucial for the analysis of labour market, employment, wage and education patterns of the selected priority areas. The available statistics for Montenegro were not sensitive enough to allow disaggregation by detailed NACE, ISCO and ISCED levels. Moreover, further disaggregation of data on regional or local levels could lead to unreliable results.

Since the research focused on specific subsectors, new domains and specialisations, the availability of data at subsector level was essential, particularly for the quantitative element. In the discussions with Monstat and the EAM, as two main data source institutions for labour market data, availability of data at the subsector level was considered as quite problematic. The data sets provided by Monstat, the core of the quantitative analysis, are accurate but very limited.

For the renewable energy subsector, there is no data that is disaggregated to the subsector level. Monstat was able to provide data for a higher level of aggregation, namely production and distribution of energy, where renewables are just one part of it.

For health tourism, the data situation is even more complicated, since health tourism as an industry/sector is not reflected as such in Monstat classifications (and international classifications), so the analysis had to combine data relevant for both health and tourism sectors, with a focus on the activities related to accommodation and accommodation with health services.

Inter- and intra-sectoral transitions of the labour force for the QOS analysis are also very difficult to determine using the available statistics. For example, the assessment of QOS relatedness in the selected priority areas for growth and smart specialisation (sectors/subsectors) with similar/compatible

QOS in shrinking areas requires detailed data on wages, occupations, work status, gender and age, disaggregated on the subsector level. As already explained, availability of subsector-level data made it impossible to evaluate most indicators and relatedness measures. A calculation attempt of correlations between the occupational groups relevant for the two sectors and between the geographical regions of the country is presented in Annex 3. There is very strong correlation between coastal and northern labour flow for the professional occupational group, and very strong correlation between all regions for associate professionals and technicians. The conclusion could be that for these types of occupations, there is strong labour-flow mobility, which means that it does not depend on the specific industry.

Given the limitations of the statistical data, the quantitative part of the analysis has been complemented by qualitative analysis and findings from the interviews with relevant target groups, in particular with companies and employees in the relevant subsectors. Both sectors (renewable energy and health tourism) show a strong relatedness with other sectors, particularly with construction, transportation and services, and therefore a high potential for inter- and intra-sectoral mobility of workforce based on similarity in skills requirements may be assumed.

5.3 Proposals for policy or action pointers

Based on the overall data collected and analysis conducted, we put forward several proposals for new policies or actions that would help address the emerging skills gaps in the priority areas identified for smart specialisation. The goal is to improve the existing system and enhance skills development that will enable growth and innovation in the country.

Prioritise the development of more sensitive human capital-related statistics and analyses

Statistics on skills and occupations, as well as labour market data at subsector level, is essential for policy planning and implementation. Statistics is crucial to conducting any type of analysis on human capital and assessing the current situation and estimating needs and emerging trends. Analysis of current skills and occupations, as well as estimating emerging ones, is a precondition for proper education planning. Such studies should provide a clear picture of the current situation, needs and gaps and as such could serve as a source of information for proper planning and management of human capital in relation to S3 and other strategies.

Consolidate the human capital dimension of government strategies

While developing this research and report, it was observed that for the human capital dimension, labour market data in terms of qualifications, skills and occupations are not fully reflected in different government strategies. Planning for the development of the economy and future economic directions without human capital consideration may put at risk SMEs' innovation capacity, create skills mismatches, and reduce potential for new jobs creation, economic growth and competitiveness. Our analysis included two priority areas (subsectors). However, similar analysis should be done for other subsectors and priority areas. As stated, the need for human capital planning and management is unavoidable and overlooking it risks missing opportunities for innovations and, linked to that, competitive growth.

Enhance awareness and follow up of S3 priorities

The analysis showed a relatively insufficient level of awareness and knowledge of S3 in Montenegro within all stakeholder groups. Sharing knowledge on goals and plans of S3 could be enhanced,

through organising different workshops/events and increasing stakeholders' involvement in the follow up of S3 priorities. Implementation of S3 should be at the top of the government's priorities. Accordingly, budget planning around S3 activities is important. It would be good if financial planning could be done on a longer-term scale. Besides government financing, S3 and linked activities are entry points for EU funds and opportunities (Horizon 2020 and others). Non-governmental actors, such as business, research and academic community could assume a stronger role in attracting such resources for S3 goals implementation. Additionally, due to the significant need for business involvement, public–private partnerships could be worth pursuing as an alternative financial mechanism.

Strengthen the role of the industry/businesses in S3 follow up

Bearing in mind the scope and goals of S3, both in selected priority areas and all other sectors, a mechanism for closer and more active cooperation between industry, education and government could be established. Industry/businesses are the main drivers of change towards smart and competitive economic development. Businesses are profit-oriented and as such are exposed to market competition to the highest extent, so by nature this group has the greatest needs and at the same time potential for human capital development. Therefore, industry/businesses should lead in human capital needs identification and skills development and planning. One of the potential solutions for stronger business involvement could be to enhance and intensify this cooperation, for example through the Union of Employees, Chamber of Commerce or any other newly established coordination body. Input from employers on skills needs, gaps and expectations should be provided to the educational institutions in a timely manner so that proper planning for the curriculum and development of new occupational standards and qualifications can be achieved.

Develop a strategic framework for health tourism

Stakeholders consulted for this study found that a health tourism-focused strategy is a precondition for the development of this subsector. Without a clear direction on how to develop health tourism as a smart sector, human capital implications, in particular skills needs, are difficult to evaluate. The current level of activities and services in health tourism can be fulfilled by the domestic labour force with the skills and competences they have. However, if Montenegro wants to become a health tourism destination, new services will be necessary, and employees will have to master new skills and competences to provide them. Furthermore, there is a huge need for construction, equipping and operationalisation of service providers in health tourism. Given the significant financial requirements, public–private partnerships could be one possible mechanism.

Update and increase the education offer relevant for the S3 priorities

Occupational and qualifications standards should be developed for the currently non-existent qualifications in renewable energy and health tourism subsectors. The following training programmes could be prioritised by making more courses available in these subjects/fields, improving the teaching and equipment base, and cooperating with companies for the practical training: (i) operating/ maintenance of wind farms and solar farms and a training programme for application of renewable energy for small-scale solar thermal systems; and (ii) aesthetic medical (non-surgery) and other relevant training programmes in the health tourism sector. For both sub-sectors, science, technology, engineering and maths knowledge seems to be of crucial importance. Therefore, efforts should be made to increase take-up/enrolment in a much more effective manner, including through career counselling and guidance.

Embed key competences and sustainable development concepts in the educational programmes

Key competences and transversal skills should be acquired throughout the school system in the first place, but also through lifelong learning. The main skills gaps and shortages reported by employers relate to soft skills, language skills, interpersonal skills and ICT skills. This should be taken into consideration when planning training. Courses in English for medicine, tourism and energy-related qualifications could help internationalisation and increased competitiveness of the companies working in these fields. Students in all levels of education should be more familiar with both renewable energy and energy efficiency concepts. The initiatives related to education for sustainable development could be mainstreamed in all educational programmes.

Expand vocational training to secure skilled workforce for S3 economic priorities

To secure competitive and sufficiently skilled workforce for the sectors prioritised under S3 process, the links between IVET and CVET providers could be reinforced. Overall, there is a need for innovative and flexible forms of education and training to meet the skills needs of SMEs and family-run businesses. Development of vocational qualifications at levels 4 and 5 is recommended, as they are less time-consuming and can help combat unemployment. For example, a significant number of unemployed people from the shrinking sectors/subsectors of mechanical engineering could be reskilled or upskilled so that they can find a job in the renewable energy sector. Setting up a training centre (for example, in the context of the new EU initiative for promoting centres of excellence in VET) for renewable energy courses might help attract more interested candidates and improve the overall availability of a skilled workforce for a sector that can grow in the country and the region. Similar consolidation of VET offer with stronger links to the research and innovation community and regional and local environment could be pursued in other economic (sub)sectors prioritised in Montenegro.

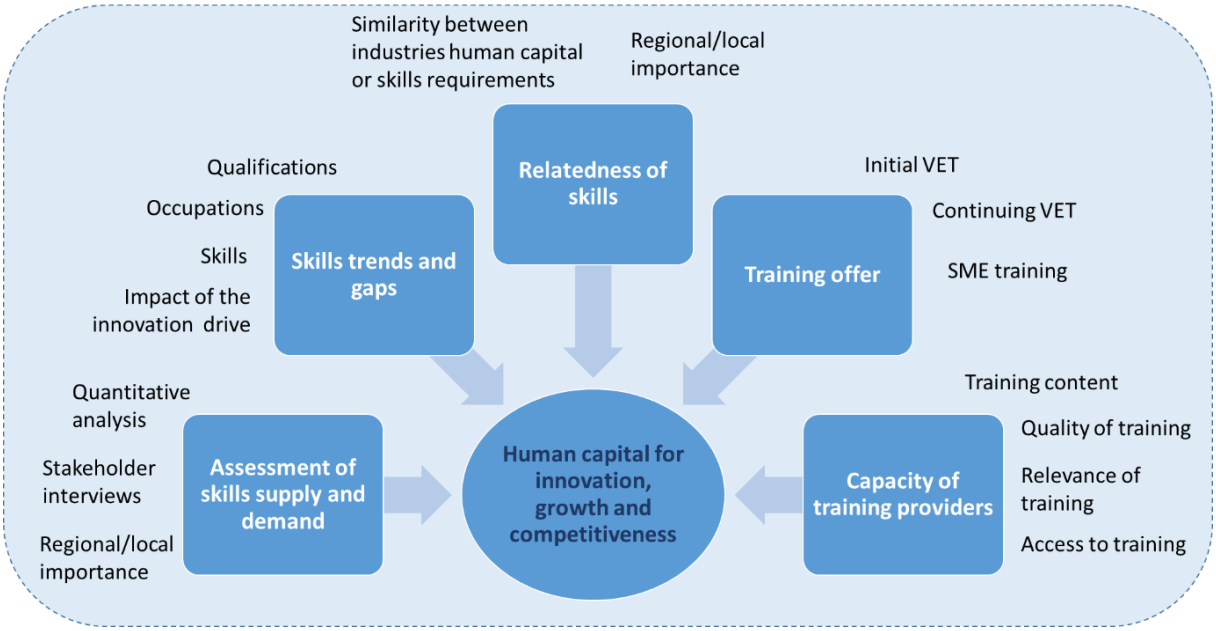
ANNEXES

Annex 1. Methodology

The research work relied on the results of the smart specialisation process, i.e. mapping of economic potential and entrepreneurial discovery process, and the country strategy on smart specialisation. It also took into account the relevant policy setting in the area of VET and continuous education, the institutional arrangements for engaging representatives of non-state actors in education and training, i.e. sectoral committees or similar collaborative formats, and relied on existing ETF tools and methodologies, for example labour market analysis, skills mismatch analyses, skills needs anticipation, and SBA or holistic analyses of VET systems, such as the Torino Process.

As presented in Figure A1.1, the main goal was to analyse the implications for human capital development of innovation, growth and competitiveness in two priority areas chosen from those selected for smart specialisation. The research attempted to assess skills supply and demand; analyse skills trends and gaps and relatedness of skills; perform a mapping of training offers; and analyse capacity of training providers to respond to emerging trends or new skills requirements.

FIGURE A1.1 KEY ELEMENTS IN THE METHODOLOGICAL DEVELOPMENT



Source: ETF, preparatory research document (unpublished)

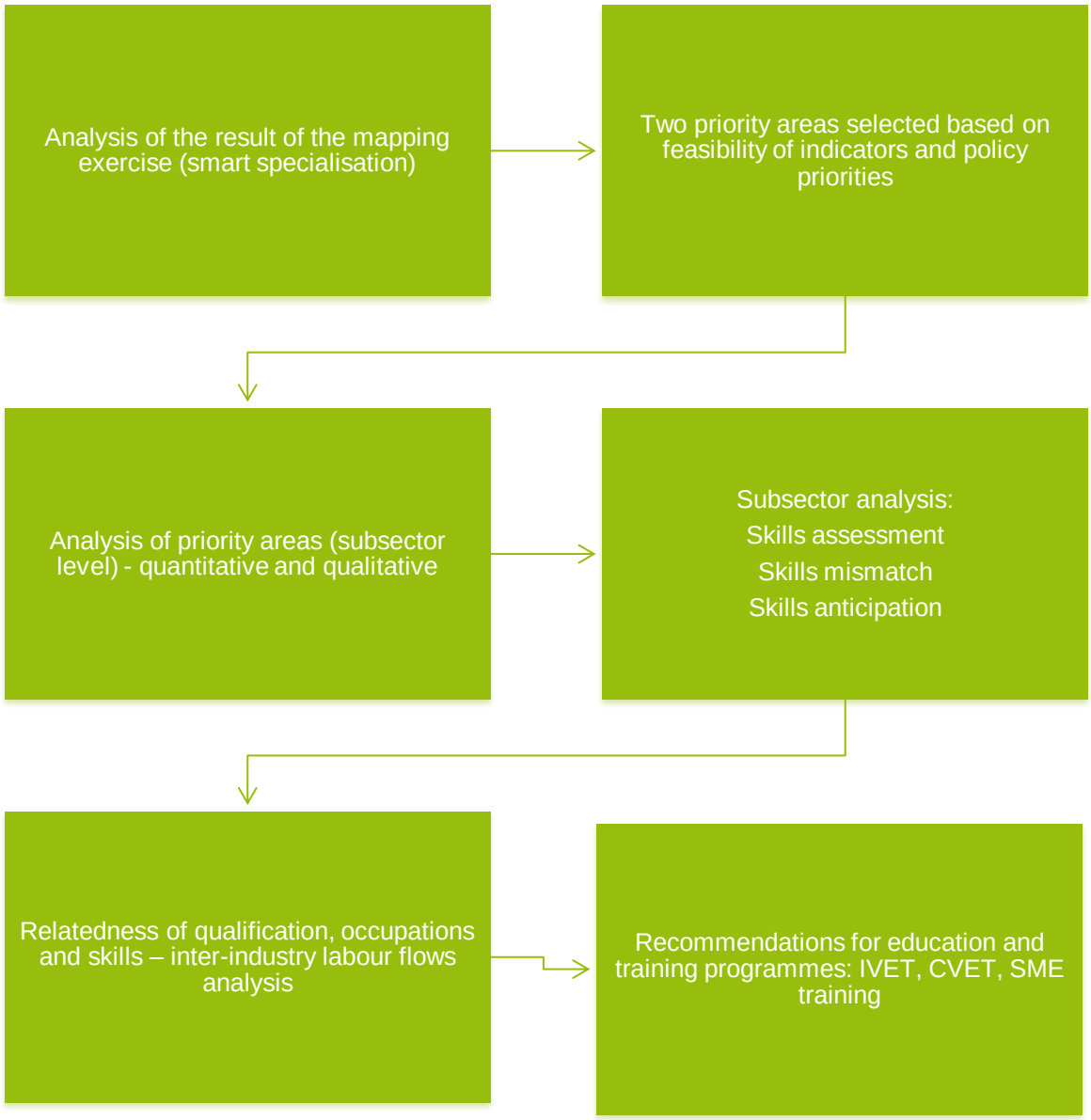
The analytical approach is organised in three modules:

1. analysis of two priority areas identified in the (draft[6]) S3, specifically in terms of the employment, occupational and education profile;
2. analysis of the relatedness of QOS in the priority areas;
3. assessment of existing training offer and content, including the potential to respond to newer skillsets foreseeable in the context of economic prioritisation/smart specialisation.

[6] At the time of research, the strategy was still at draft stage.

The methodology combined secondary data analysis, qualitative interviews with relevant stakeholders and desk research of existing studies in the respective countries or internationally.

FIGURE A1.2 SUMMARY OF THE METHODOLOGICAL APPROACH



Source: ETF, preparatory research document (unpublished)

During the preparatory phase of implementation, the country experts screened data availability and reliability, which included both survey and administrative sources, managed by statistical offices, ministries or agencies in charge of education, employment, economy or other relevant fields. Table A1.1 shows the key indicators or information on policies or investment plans considered in Montenegro.

TABLE A1.1 OVERVIEW OF KEY INDICATORS AND INFORMATION IN MONTENEGRO

Indicators included in previous studies	Additional indicators to be considered
■ Gross domestic product (GDP) ■ GDP per capita ■ GDP growth rates (current and expected) ■ Location quotient ■ Critical mass or volume of the sector ■ Employment growth ■ Average wages ■ Export for different groups of products ■ Research potential ■ Innovation potential ■ Connection with country strategies and development vision	■ Current and planned investments ■ Current and planned investment in technology and innovation ■ Import ■ Waste production ■ CO_2 emissions ■ Relevant government ongoing and planned development projects and public or private investments ■ Existing relevant educational programmes

Source: ETF, preparatory research document (unpublished)

The objectives, research methods, data needs and outcomes of the three modules of the methodology applied in Montenegro are presented below.

Module 1. Skills assessment for the two priority areas

Objective: to analyse the characteristics of the priority areas in terms of occupations, level of education and skills profiles, mismatch incidence and wages.

Given the specificities of prioritisation as part of the smart specialisation process, where mostly subsectors or clusters of economic activities are considered, the assessment was carried out at subsector level; therefore, the availability of data at the third level of NACE classification was critical. The selected subsectors/priority areas within the S3 strategy do not follow statistical (NACE[7]) classification. The S3 priority areas are presented on a more aggregate level and one priority economic area can consist of several other sectors or subsectors (according to NACE classification). Thus, in the case of Montenegro, the mapping exercise, which was already conducted with 46 selected sectors at the third level of NACE classification, provided a solid basis for subsector analysis.

To capture the skills profile and changes in subsectors clustered as priority areas requires both quantitative and qualitative investigations, with emphasis on the latter. Although clustered together, subsectors reveal very different skills profiles and needs given the specificity of economic activities and associated technologies. Data and information vary greatly as they are shaped by policy and institutional frameworks, existing statistical infrastructure, including relevant previous research, and the broader economic and political context.

Subsector approaches to skills anticipation are an important part of the 'toolkit' for economic and skills development. They can secure a fine-grained analysis of the issues related to the potential of economic

[7] The Statistical Classification of Economic Activities in the European Community (NACE) is the classification of economic activities in the EU. NACE is a four-digit classification providing the framework for collecting and presenting a large range of statistical data according to economic activity in the fields of economic statistics (e.g. production, employment and national accounts) and in other statistical domains developed within the European statistical system.

development of a certain subsector or niches of activities. Various subsectors have very different skills needs because of the different economic activities they pursue, and the technologies associated with them.

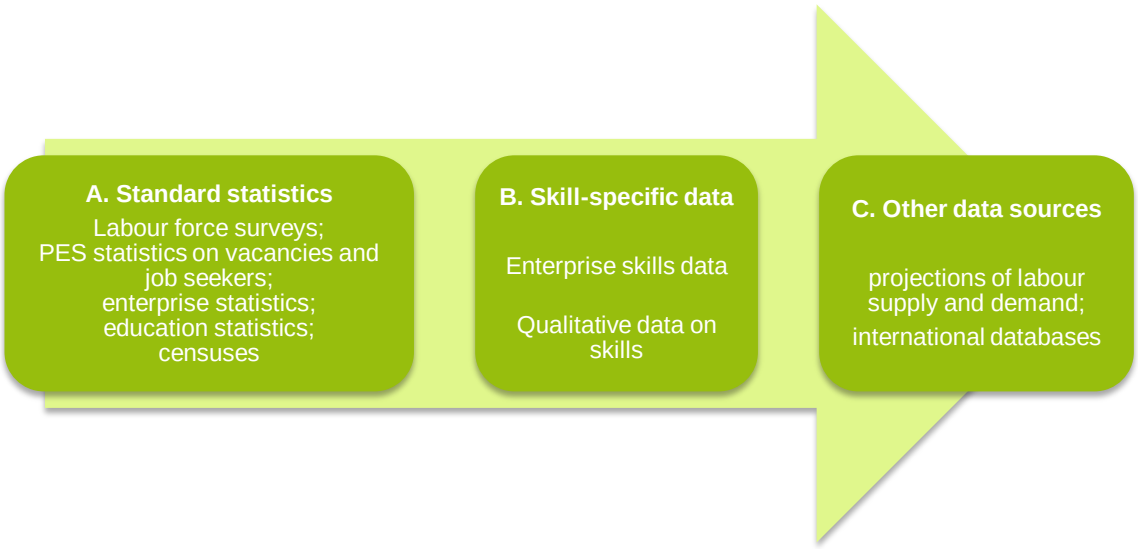
These various aspects shape what is both desirable and possible in such a skills anticipation approach. This includes details of the various methodologies and tools to be used. In an ideal context, a combination of both qualitative and quantitative methods is needed. Available data and resources influence the method, or more generally the combinations of methods, used in most analyses of skills.

Considering the specific context and limitations, each subsector analysis was focused on (i) gaining a sound understanding of the subsector/priority area, the key drivers of change, and interlinkages with other parts of the economy; and (ii) developing a detailed profile of occupations, jobs and human capital, with a focus on skills aspects.

Key data and information sources

A combination of quantitative and qualitative techniques was used: interviews with key players and stakeholders; descriptive analysis of relevant data related to employment, skills and education level; and desk research using existing data, studies and reports. This combination was necessary to overcome limitations in data availability at subsector level, which is crucial for this type of study. Figure A1.3 provides a general overview of data sources.

FIGURE A1.3 DATA SOURCES FOR ANALYSIS OF SKILLS SUPPLY AND DEMAND



Source: ETF, preparatory research document (unpublished)

Quantitative analysis

The main quantitative data sources used for the analysis were the LFS (data disaggregated by sectors, International Standard Classification of Occupations (ISCO) groups and regions), survey and administrative data on companies, wages/revenues, education, unemployment and vacancies.

Depending on data availability, the analysis was focused on (i) socio-demographic variables (gender, age); (ii) variables which denote status in the labour market (employed, unemployed, inactive); (iii) occupation (by standard classification) and industry (sectors) for the employed; (iv) level and field of education; (v) wage level; (vi) length of current employment or unemployment; (vii) participation in formal and informal education; (viii) industry and size of the company, place of work, required qualifications, number of vacancies per position; and (ix) data on graduates and students by field and level of education

as one of the main sources of skills supply flows. To account for the limited availability of quantitative data, the analysis also combines evidence collected through in-depth interviews (see below).

For the quantitative component of the analysis, Monstat and the Employment Agency of Montenegro (EAM) were the two main data producers for labour market data. The availability of subsector data was quite problematic as data was mainly available on the sector level; on the whole, no further disaggregation was feasible, though it was possible in certain cases.

Table A1.2 reflects the main data sources for the main elements analysed, such as demand and supply of skills, mismatches and other labour market imbalances or shortcomings in skills utilisation (e.g. over- or under-education phenomena).

TABLE A1.2 INDICATORS AND DATA SOURCES FOR SECTOR/SUBSECTOR APPROACH

	LFS	Public employment services	Other data sources	Qualitative data on skills
Demand				
Structure of employment by sector	✓			
Structure of employment by occupation	✓			
Structure of sector/occupation by age	✓			
Vacancies by occupation		✓		
Supply				
Age structure of population or labour force	✓			
Structure of population/labour force by education	✓			
Structure of graduates			✓	
Participation of adults in education and training			✓	
Mismatch				
Unemployment rate	✓			
Unemployment rate by education level	✓			
Unemployed to employed ratio	✓			
NEET (not in employment, education or training)	✓			
Over-education			✓	
Under-education			✓	
Coefficient of variation (differences in education levels between employed and unemployed)	✓		✓	
Wage rates (relative)	✓			✓
Hard-to-fill skills – shortage vacancies				✓
Share of over-/under-qualified people	✓			
Skills gaps reported by employers	✓			✓

Source: Authors

For the calculation of mismatch indicators, two sets of indicators were used for the respective priority areas, although the practical implementation revealed that such calculation is feasible only at the sector level. The first investigates the incidence of vertical mismatch; the second set assesses the

degree of mismatch by education field, i.e. horizontal mismatch. The definitions and calculation method follow the Eurostat practice (tested by the ETF as well), namely (i) use the LFS as data source; (ii) calculate the vertical mismatch as the discrepancy between the education attainment level (ISCED 2011 one-digit) and occupations (ISCO 2008 one-digit); and (iii) measure the horizontal mismatch through the comparison of the education field of the highest level of education attained (ISCED-1999 fields of education and training) and occupations (ISCO 2008 three-digit).

Qualitative analysis

Qualitative information complemented the quantitative data on occupational and skills trends. The main reason is the insufficiency (availability, relevance) of existing statistics for an accurate and complete analysis of skills dynamics in the priority areas. Therefore, qualitative methods need to be employed to fill in gaps and add value or contextualise the findings from the quantitative analysis.

This can be carried out through in-depth interviews and/or consultations (done face-to-face, over the phone or online) with relevant stakeholders, using a clear set of guiding questions and/or questionnaires. Interview guides for the three main target groups were developed, adapted to the national context and tested.

The main topics covered are skills needs; skills gaps; vacancies; training activities (or human resource development strategies more generally); strategy to attract and retain specialised workforce; bottlenecks in company development; and local/regional or sector development priorities.

Three main target groups were identified for gathering such insights:

- companies active in the respective priority areas and business/employer associations;
- employees of the respective companies;
- representatives of central and local public administration and professional associations relevant for the respective priority areas.

The list of interviewed stakeholders is available in Annex 2.

In addition to interviews, the qualitative analysis includes: (i) analysis and overview of the relevant strategic framework, (ii) analysis of relevant national reports and studies, (iii) analysis of the best practices in the country and abroad; and (iv) global trends and skills needs.

Module 2. Relatedness of QOS

Objective: To assess the relatedness of QOS in the selected priority areas for growth and smart specialisation (sectors/subsectors) with similar/compatible QOS in shrinking economic areas, with the aim to identify possible alternative uses of skills.

This kind of analysis seeks to provide answers to the following questions: How mobile are workers across industries? Which industries can easily exchange labour? Such questions matter, because on the one hand, shocks to an economy's industrial structure require the transfer of productive capacity, and thus of workers, from shrinking to growing industries. On the other hand, labour mobility transfers the knowhow of workers across firms, industries and locations.

In the context of labour market and skills transformations triggered by smart specialisation, this research module sought to shed light on the following topics: How large is the set of industries a worker chooses from when he or she changes jobs? Do different types of workers switch within the same industries, i.e. do they follow the same industrial transition matrix? To what extent do the

mobility constraints expressed in this network prevent an economy from reallocating labour from shrinking to growing industries?

The conceptual starting point is that, if jobs require industry-specific human capital, the mobility of workers across industries will be constrained, and inter-industry labour flows will be shaped by those constraints.

Analyses of inter-industry labour flows should answer several questions important to understanding QOS relatedness:

- Do workers often switch jobs between industries that belong to different sections of the industrial classification system?
- Which industries considered as developing industries absorb labour flows from shrinking industries?
- Does the structure of inter-industry transitions change over time?

The final aim of the QOS analysis was to derive several stylised facts using the data on:

- general structure of the labour flows in terms of the amount of job switches;
- the degree to which labour flows concentrate in relatively few industry pairs;
- the general structure underlying these flows by plotting the skills-relatedness network and comparing the skills-relatedness matrices for different labour market segments;
- how skills-relatedness affects local labour markets by estimating local industry-growth regressions;
- the extent to which the limited mobility of workers across industries could potentially hinder an efficient reallocation of workers from shrinking to growing industries.

Analysis of the inter-industry labour flows should reveal how industries are connected to one another in terms of their human capital requirements. QOS analyses focus on cross-industry labour-flow patterns; flexibility (ability of an industry to absorb workers who leave another industry); skills-relatedness structure of labour-flow matrices – the size of labour flow will depend on the size and flow rates (the fraction of employees switching jobs) of the industries involved; comparing skills-relatedness across labour market segments; skills-relatedness and the growth of local industries; and skills-relatedness and reallocation frictions.

While all the research questions and topics are relevant for studying skills-relatedness, data limitations in many countries restrict the analysis. This was the case in Montenegro since key labour market indicators by detailed level of occupations and transitions of workers from one occupational area or (sub-)sector to another were not fully available (due to low accuracy of disaggregated data and limited number of observations).

Key data and information sources

The set of data required for such analysis is demographic and employment data, such as average wage, occupation, work status, gender and age, and data on industry and location of each individual's work establishment. Thus, the main sources of data needed for such analysis usually are LFS and administrative data on employment.

When it comes to Montenegro, the main constraint for this analysis was the availability of data. For this reason, the experts employed qualitative approaches, i.e. interviews with employers' representatives and other stakeholders to get certain details and insights into the issues and help answer the above

questions. In any case, given the data constraint, the QOS analysis was performed at the general level only.

Module 3. Assessment of training offer and anticipation of skills needs

Objective: To map the existing education and training offer, both initial and continuing, relevant to the selected priority areas and understand to what extent it can respond to skills gaps and needs identified.

The review and assessment of existing training offer covers IVET, CVET, tertiary education and other types of skills (e.g. transversal, managerial) in the priority areas for smart specialisation.

The following information was gathered: IVET, CVET and tertiary education providers; students enrolled and graduates of education programmes relevant for the sectors/subsectors in question; existing qualifications in these sectors; and offered education and training programmes. Sources for such data are administrative and managed by different institutions.

In addition to quantitative information, interviews or focus groups revealed more insights on the shortcomings in terms of quality or relevance of available training programmes, or to what extent occupational or qualification standards still correspond to job and competence requirements of respective professions and sectors (e.g. new technologies, digital skills, other transversal competences).

Finally, information on the availability and quality of education and training on offer was matched with the outcomes of skills needs assessments and anticipation, done in the first and second module. Such comparison determines existing or emerging gaps, eventual needs to review the content of qualifications, curricula or modalities of training provision, and overall reveal the major policy actions to address emerging skills trends and eventual gaps, in terms of occupations, qualifications and skills in the priority areas.

Key data and information sources

In Montenegro, the analysis of module 3 relied on the following sources: the Enrolment Open Call for IVET students (published by the Ministry of Education every year); the number of students per sector in IVET; the number of students leaving IVET in specified sectors; the list of accredited CVET providers in the country; a list of the training programmes CVET providers offer; a list of faculties offering tertiary education in the selected sectors; and the number of graduates from these faculties.

Data came from information available on the websites of the Ministry of Education, Monstat, www.obrazovanjeodraslih.me (for CVET/adult education), universities and other reliable publications. Information was also gathered during face-to-face interviews, emails and/or phone calls.

In Montenegro, there is much more information and data available on IVET students/qualifications than on CVET. Once the subsectors had been identified, the research team asked for additional data from relevant institutions, such as the Ministry of Education, the Centre for Vocational Training and schools.

The data about IVET was obtained from the Ministry of Education and VET Centre directly, through their Montenegrin Education Information System or using their website which contains a lot of useful materials. Some information was obtained directly from vocational schools. The quality of this data was considered very good.

For CVET data, the local research team encountered difficulties although multiple sources were used (e.g. Ministry of Education, VET Centre, sectoral committees, vocational schools, private VET providers, websites specialised in a certain type of education). The question is whether this data collection was exhaustive and if it covered all the training that took place in Montenegro. For example, the official figures on participation in lifelong learning for the past seven years show a very small percent, 2.4% to 3.3%. However, nearly all the people contacted and interviewed stated that the actual participation is much higher but there are no good methods of recording and gathering all the information from everyone dealing with CVET. A further difficulty in obtaining information is the fact that private CVET providers often tend to be unresponsive or avoid providing complete answers, especially when asked about the numbers of participants or programmes.

Annex 2. Methodological guidance for the implementation of qualitative analysis

The qualitative analysis was an important part of the selected methodology, particularly taking into consideration the overall context: (i) lack of statistical data and thus limited possibility for quantitative analysis; (ii) time frame; (iii) financial constraints for data production; and (iv) goals and aims of the assignment. Qualitative analysis, based on the in-depth interviews as a methodological tool, is seen as an efficient instrument and methodological approach for overviews, understanding and planning human capital in selected priority areas. In-depth interviews were selected due to time and cost constraints, but above all due to important features of this method related to the possibility to obtain comprehensive information compared to other data collection methods (such as surveys).

An important element in conducting the interviews was the identification of target groups/respondents. In the case of Montenegro, three target groups were selected: (i) representatives of relevant institutions for both selected priority areas; (ii) employees working in selected areas; and (iii) representatives of businesses operating in selected subsectors. The list of interviewed stakeholders is presented at the end of this annex.

For the target institutions and organisations, it was important to focus on institutions in charge of development, implementation and monitoring of the relevant sector, for example central and local government institutions, education institutions, representatives of business associations and representatives of relevant bodies, such as commissions and committees.

For the target group of employees, it was important to include employees with different education levels, gender, age, position in the company and experience to ensure a multitude of inputs and thus get a fuller understanding from different angles.

When it comes to the target group of companies, focus should be on representatives who make decisions related to staff employment, development and enhancement, but also who understand the needs of the sector and the challenges, obstacles and directions for future sector development. This could be owners of the companies, chief executives, human resources managers and managers of different departments (depending on the size of the company). Other important criteria in the selection of respondents include geographical location, size of the company in terms of number of employees, turnover and other financial data, and number of years operating in the relevant field.

Semi-structured questionnaires were used for the interviews, where key areas as well as relevant open questions were defined in advance.

In-depth interviews with representatives from institutions, businesses operating in both subsectors, associations and employees were carried out within this research. Interviews took place in August 2019. Interviews were done face-to-face, by Skype or by telephone.

Questionnaire 1. Employers and entrepreneurs

Background information

- Company's name, number of years operating, number of employees, average turnover, export experience etc.
- (Sub)sectors with which the company is cooperating

Subsector characteristics, market, competition

- Comparative advantages of the sector (national/international level), export potential of the company and of the subsector in general
- Main challenges in the sector (your company), obstacles
- Innovations and changes in your company implemented so far, including investments in innovation and technology improvement, development of new products/services, experience and future plans
- Innovative potential in company/sector, investments in innovation and technology improvement

Cooperation with institutions and organisations

- Cooperation with research and academic community
- Cooperation with schools and/or training providers
- Cooperation with employment service providers (e.g. employment agency, private providers)

Human capital questions

Demand aspects

- Opinion on demand for labour (company needs, staff company employs – experienced and/or interns, vacancy situation, type of contract they offer)
- Occupational developments (current and emerging jobs/positions, occupations, competences, future needs, etc.)
- Main challenges in attracting competitive/specialised staff

Supply aspects

- Opinion on supply of labour characteristics
- Availability of training providers, quality
- Affordability of training (location, cost, etc.)
- Characteristics of the employees – education level, skills, competences, any specific occupation, needs for additional training, post-graduation labour force characteristics, investments in human capital in the company, challenges, advantages, etc.

Foreseeable changes

- How do you see the future of your company and sector in general?
- Skills anticipation (main drivers for change in the subsector and beyond, newer skillsets in demand, etc.)
- What is the potential mobility of labour force between subsectors/sectors?
- Skills and expertise needing further development for employees (for various position levels and occupations, e.g. including managerial positions, skilled and unskilled/less-skilled positions)

General feedback

- Regulatory framework and public policies supporting innovation and competitiveness, suggestions for improvement

Questionnaire 2. Employees

Education level and additional qualifications and/or specialisation courses

- Age
- Gender
- Geographical region of living and work (previous and current)
- Education (level of education and field), additional training taken and professional certification obtained
- Occupation (previous five years and current in the company)
- Length of employment within current company

Characteristics of current job and knowledge/skills and expertise needed

- What are the key skills and competences required to perform your job? (Note for the interviewer: ask about technical/occupational skills, transversal skills and any other type of skills and competences)
- Did employment in this subsector require additional training, skills and competences for position? If yes, which ones?
- What are your needs for acquiring additional skills (additional training needs)?
- Are there available training providers for such skills?
- Are there any obstacles to attending such training (e.g. affordability, location, cost, family obligations)?

Salary levels – current level and over the last five years (to try to get relatedness between salary level, subsector, skills and occupation)

- Have you worked in another sector and which one?
- Was it hard to transfer to new sector?
- Mobility type: same profession and position or different? Same geographical area or not? Did you need additional training or not (formal or non-formal)?

Questionnaire 3. Relevant institutions and associations

- Awareness and involvement in S3
- Opinion of subsector potential, challenges and advantages
- Activities that the institution carried out in the past to support development and smart specialisation research and innovation in relevant subsectors (including financial resources invested)

- Plans for future to support development and smart specialisation research and innovation in relevant subsectors (including resourcing/financial planning)
- Opinion on activities and actions that government, businesses, academia and other stakeholders should do to support implementation of S3 and plan and manage human capital for its implementation
- Skills and expertise needing further development
- Availability of training providers, quality
- Affordability of training (location, cost, etc.)
- Mobility of labour force and relatedness between subsectors/sectors
- Investments in research and innovation in future
- Skills anticipation (e.g. key drivers of change, human capital implications, foreseeable occupational changes, emerging skills demands, newer and obsolete competences)
- Capacity of public and private actors to manage occupational transitions, skills changes, etc.

List of consulted stakeholders

Institutions and organisations

- Sector Commission for Tourism, Trade and Hospitality, Ministry of Education (University UDG)
- Sector Commission for Engineering and Industry, Ministry for Education (Centre for Vocational Training, Committee or Technology and Industry, Ministry of Education)
- Clinical Centre of Montenegro
- Ministry of Sustainable Development and Tourism
- Employers Federation of Montenegro
- Ministry of Labour and Social Welfare
- Ministry of Economy
- University of Montenegro

Companies

- Sistem-mne
- Verde Complex
- EPCG, Zeta Energy
- Dr Simo Milošević Institute
- Hotels Avala & Bjanka Resorts
- Krnovo Wind Farm
- ION Solutions
- Balans hospital

Annex 3. Statistics

TABLE A3.1 EMPLOYED POPULATION BY GENDER, REGION AND OCCUPATION (AGE GROUP 15–64, IN '000)

Gender	Region	Occupational group		Year				
				2014	2015	2016	2017	2018
Men	Coastal region		0					
			1	3.3	4.8	5.3	5.6	3.6
			2	2.8	4.5	4.3	3.4	3.2
			3	4.7	4.1	3.2	2.7	3.6
			4	1.8	2.0	2.3	2.4	2.1
			5	9.7	7.2	7.7	7.3	9.0
			6					1.3
			7	4.9	4.4	4.5	3.9	4.8
			8	3.4	3.5	4.2	4.4	4.7
			9	1.3	1.4		1.8	1.9
		Total		33.1	32.7	33.4	32.2	34.3
	Central region		0					
			1	2.8	3.7	3.6	4.3	3.6
			2	7.9	7.8	10.1	9.6	10.0
			3	11.0	7.9	6.6	7.9	8.2
			4	4.5	4.2	4.7	4.3	4.2
			5	12.7	12.1	13.7	15.0	13.9
			6		2.6	1.7	2.7	2.3
			7	9.2	8.3	8.0	8.6	12.0
			8	8.4	9.7	7.8	7.6	8.0
			9	2.7	3.7	4.5	5.5	5.4
		Total		61.2	61.0	61.5	66.3	68.3
	Northern region		0					
			1		1.3			1.3
			2	2.4	3.2	2.9	3.0	3.2
			3	3.4	2.5	2.7	2.3	2.1
			4				1.8	1.4
			5	5.3	5.1	4.4	5.0	4.7
			6	2.4	3.2	4.9	5.2	5.0
			7	3.2	3.3	3.1	3.1	3.4
			8	3.0	2.9	3.6	3.0	3.5
			9	1.3	1.7	2.0	2.1	1.7
		Total		23.1	24.2	25.8	26.9	26.5
	Total		0		1.3			
			1	7.0	9.8	9.8	11.1	8.5

			2	13.1	15.5	17.3	16.0	16.4
			3	19.0	14.5	12.5	12.8	13.9
			4	7.3	7.2	8.1	8.5	7.7
			5	27.7	24.4	25.9	27.3	27.7
			6	4.6	6.3	7.3	8.8	8.6
			7	17.4	16.0	15.6	15.6	20.1
			8	14.8	16.1	15.6	14.9	16.3
			9	5.4	6.8	7.6	9.4	9.0
		Total		117.4	118.0	120.7	125.4	129.0
Women	Coastal region		0					
			1	1.5	1.9	2.0	1.7	1.8
			2	4.7	5.7	6.6	6.3	6.2
			3	5.1	4.3	3.7	4.6	4.5
			4	3.6	3.7	2.9	2.6	3.6
			5	9.6	9.7	10.5	10.1	9.5
			6					
			7					
			8					
			9	2.3	1.9	2.1	2.0	1.6
		Total		27.6	27.6	28.1	27.8	28.1
	Central region		0					
			1			1.8	1.3	1.6
			2	12.5	13.2	15.9	18.2	18.2
			3	11.2	9.2	6.4	6.4	8.4
			4	6.1	6.7	6.4	6.3	7.7
			5	15.8	15.5	15.1	14.7	12.8
			6		1.4			1.2
			7	1.5	1.4	1.6	1.2	
			8					
			9	3.5	5.8	5.3	5.2	6.5
		Total		52.9	54.6	53.2	54.6	57.6
	Northern region		0					
			1					
			2	3.0	3.6	3.5	3.3	3.2
			3	2.7	2.3	1.9	1.8	1.8
			4	1.6	1.4	1.7	1.2	.
			5	4.0	3.2	3.1	3.6	4.5
			6	1.7	4.0	4.6	3.7	3.4
			7					
			8					

			9	1.7	1.4	1.8	2.0	1.9
		Total		15.4	16.7	17.3	16.2	16.5
	Total		0					
			1	2.6	2.9	4.1	3.2	3.7
			2	20.2	22.5	26.0	27.8	27.5
			3	18.9	15.9	11.9	12.8	14.7
			4	11.3	11.7	11.0	10.2	12.4
			5	29.5	28.4	28.7	28.4	26.9
			6	3.0	5.6	5.2	4.7	4.9
			7	2.1	2.4	2.0	1.6	1.3
			8					
			9	7.5	9.0	9.2	9.3	10.0
		Total		95.8	99.0	98.6	98.6	102.2
Total	Coastal region		0					
			1	4.8	6.7	7.3	7.3	5.4
			2	7.5	10.3	10.9	9.7	9.4
			3	9.7	8.4	6.9	7.3	8.1
			4	5.4	5.7	5.2	5.0	5.7
			5	19.3	16.9	18.2	17.4	18.5
			6	1.3				1.6
			7	5.3	4.8	4.5	4.1	5.1
			8	3.5	3.5	4.3	4.5	5.0
			9	3.6	3.3	3.3	3.8	3.5
		Total		60.7	60.4	61.5	60.0	62.3
	Central region		0					
			1	3.9	4.7	5.4	5.6	5.3
			2	20.3	21.0	26.0	27.8	28.2
			3	22.1	17.1	13.0	14.3	16.7
			4	10.6	11.0	11.0	10.6	11.9
			5	28.6	27.6	28.9	29.7	26.7
			6	2.2	4.0	2.2	3.7	3.6
			7	10.7	9.7	9.6	9.9	12.6
			8	8.7	10.1	8.0	7.8	8.4
			9	6.2	9.5	9.7	10.7	11.9
		Total		114.1	115.6	114.7	120.9	125.8
	Northern region		0					
			1		1.4		1.4	1.5
			2	5.4	6.8	6.4	6.4	6.4
			3	6.1	4.8	4.5	4.1	3.9
			4	2.7	2.3	2.9	3.1	2.5

			5	9.3	8.3	7.5	8.6	9.3
			6	4.1	7.2	9.5	8.8	8.4
			7	3.5	3.8	3.5	3.3	3.6
			8	3.2	3.0	3.7	3.1	3.6
			9	3.0	3.0	3.8	4.1	3.6
		Total		38.5	41.0	43.1	43.0	43.0
	Total		0		1.3			
			1	9.6	12.8	13.9	14.3	12.2
			2	33.3	38.1	43.3	43.9	44.0
			3	37.9	30.3	24.4	25.6	28.6
			4	18.7	19.0	19.1	18.6	20.1
			5	57.2	52.9	54.6	55.7	54.5
			6	7.6	11.9	12.5	13.5	13.5
			7	19.6	18.4	17.7	17.2	21.4
			8	15.4	16.6	15.9	15.4	16.9
			9	12.9	15.8	16.9	18.6	18.9
		Total		213.2	217.0	219.3	223.9	231.1

Note: Occupational groups in line with International Standard Classification of Occupations (ISCO-08): 0 – Military occupations; 1 – Legislators, senior officials and managers; 2 – Professionals; 3 – Associated professionals and technicians; 4 – Clerks, 5 – Market, sales and service workers; 6 – Skilled agricultural workers; 7 – Craft and related trades workers; 8 – Plant and machine operators and assemblers; 9 – Elementary occupations

Source: Monstat and labour force surveys

TABLE A3.2 EMPLOYED POPULATION BY GENDER, REGION AND EDUCATION (AGE GROUP 15–64, IN '000)

Gender	Region	Education		Year				
				2014	2015	2016	2017	2018
Men	Coastal region	ISCED_2011	ISCED 0–2	2.7	1.8	1.4	2.0	2.9
			ISCED 3–4	20.8	20.7	21.8	21.9	23.2
			ISCED 5–8	9.6	10.3	10.2	8.4	8.2
		Total		33.1	32.7	33.4	32.2	34.3
	Central region	ISCED_2011	ISCED 0–2	3.5	3.9	4.6	6.0	6.0
			ISCED 3–4	42.0	42.7	40.7	44.0	46.6
			ISCED 5–8	15.7	14.5	16.3	16.3	15.6
		Total		61.2	61.0	61.5	66.3	68.3
	Northern region	ISCED_2011	ISCED 0–2	2.5	3.1	4.6	4.6	3.6
			ISCED 3–4	14.9	15.3	15.9	17.3	17.3
			ISCED 5–8	5.7	5.8	5.4	4.9	5.6
		Total		23.1	24.2	25.8	26.9	26.5
	Total	ISCED_2011	ISCED 0–2	8.6	8.8	10.6	12.5	12.5
			ISCED 3–4	77.8	78.7	78.3	83.3	87.1
			ISCED 5–8	31.0	30.5	31.9	29.6	29.4
		Total		117.4	118.0	120.7	125.4	129.0
Women	Coastal region	ISCED_2011	ISCED 0–2	1.5	.	.	.	.
			ISCED 3–4	15.3	15.0	16.1	16.7	16.3
			ISCED 5–8	10.8	11.5	11.0	10.1	10.6
		Total		27.6	27.6	28.1	27.8	28.1
	Central region	ISCED_2011	ISCED 0–2	1.9	2.9	2.8	3.0	2.9
			ISCED 3–4	30.7	32.7	29.3	28.2	31.2
			ISCED 5–8	20.3	19.0	21.1	23.3	23.4
		Total		52.9	54.6	53.2	54.6	57.6
	Northern region	ISCED_2011	ISCED 0–2	2.2	3.1	4.0	3.5	3.3
			ISCED 3–4	8.8	8.8	8.3	8.3	9.2
			ISCED 5–8	4.4	4.8	5.0	4.4	4.1
		Total		15.4	16.7	17.3	16.2	16.5
	Total	ISCED_2011	ISCED 0–2	5.6	7.2	7.8	7.5	7.4
			ISCED 3–4	54.8	56.5	53.7	53.3	56.7
			ISCED 5–8	35.5	35.4	37.1	37.8	38.1
		Total		95.8	99.0	98.6	98.6	102.2
Total	Coastal region	ISCED_2011	ISCED 0–2	4.2	2.9	2.5	2.9	4.2
			ISCED 3–4	36.1	35.7	37.8	38.6	39.4
			ISCED 5–8	20.4	21.8	21.2	18.5	18.7
		Total		60.7	60.4	61.5	60.0	62.3

	Central region	ISCED_2011	ISCED 0–2	5.4	6.8	7.4	9.0	8.9
			ISCED 3–4	72.6	75.4	70.0	72.2	77.9
			ISCED 5–8	36.0	33.5	37.4	39.6	39.1
		Total		114.1	115.6	114.7	120.9	125.8
	Northern region	ISCED_2011	ISCED 0–2	4.6	6.2	8.5	8.1	6.8
			ISCED 3–4	23.8	24.1	24.1	25.7	26.4
			ISCED 5–8	10.1	10.6	10.4	9.3	9.7
		Total		38.5	41.0	43.1	43.0	43.0
	Total	ISCED_2011	ISCED 0–2	14.2	15.9	18.4	20.0	19.9
			ISCED 3–4	132.5	135.2	132.0	136.5	143.8
			ISCED 5–8	66.5	65.9	69.0	67.4	67.5
		Total		213.2	217.0	219.3	223.9	231.1

Notes: International Standard Classification of Education (ISCED) level 0 – Early childhood education; level 1 – Primary education; level 2 – Lower secondary education; level 3 – Upper secondary education; level 4 – Post-secondary non-tertiary education; level 5 – Short-cycle tertiary education; level 6 – Bachelor's or equivalent level; level 7 – Master's or equivalent level; level 8 – Doctoral or equivalent level

Source: Monstat and labour force surveys

TABLE A3.3 EMPLOYED POPULATION BY GENDER, EDUCATION AND OCCUPATION (IN '000)

Age	Gender	Education	Occupational group		Year				
					2014	2015	2016	2017	2018
15–64	Men	ISCED 0		5					
				6					
				7					
				8					
				9					
			Total						
		ISCED 1–2		0					
				1					
				2					
				4					
				5	1.5			1.5	1.5
				6	1.9	2.0	3.2	3.8	3.3
				7	1.5		1.3	1.8	2.3
				8		1.2	1.3		
				9	2.1	2.5	2.8	3.3	3.3
			Total		8.4	8.5	10.2	12.1	11.7
		ISCED 3–4 general		0					
				1					
				2					
				3					
				4					
				5	2.3	1.5	1.5	1.5	1.6
				6					
				7					
				8					
				9					
			Total		6.5	5.4	4.9	5.1	6.1
		ISCED 3–4 vocational		0					
				1	3.0	4.8	5.1	6.6	4.5
				2			1.3		
				3	9.0	8.0	7.0	7.2	8.0
				4	5.3	5.1	5.7	6.1	6.0
				5	20.4	18.9	19.5	21.6	22.4
				6	2.3	3.8	3.7	4.5	4.9
				7	14.8	14.1	13.6	13.0	16.2

				8	11.9	13.5	12.8	12.2	13.3
				9	2.9	3.6	4.0	5.2	4.4
			Total		71.3	73.3	73.4	78.1	81.0
		ISCED 5–8		0					
				1	3.6	4.6	4.3	4.0	3.7
				2	12.0	14.6	15.7	15.0	15.7
				3	8.9	5.8	4.7	4.8	4.7
				4			1.2	1.2	
				5	3.5	2.8	3.7	2.6	2.1
				6					
				7					
				8					
				9					
			Total		31.0	30.5	31.9	29.6	29.4
		Total		0		1.3			
				1	7.0	9.8	9.8	11.1	8.5
				2	13.1	15.5	17.3	16.0	16.4
				3	19.0	14.5	12.5	12.8	13.9
				4	7.3	7.2	8.1	8.5	7.7
				5	27.7	24.4	25.9	27.3	27.7
				6	4.6	6.3	7.3	8.8	8.6
				7	17.4	16.0	15.6	15.6	20.1
				8	14.8	16.1	15.6	14.9	16.3
				9	5.4	6.8	7.6	9.4	9.0
			Total		117.4	118.0	120.7	125.4	129.0
	Women	ISCED 0		5					
				6					
				9					
			Total						
		ISCED 1–2		1					
				3					
				4					
				5				1.4	1.2
				6	1.9	3.4	3.3	2.7	2.7
				7					
				8					
				9	2.5	2.2	2.9	2.6	3.1
			Total		5.4	7.0	7.6	7.2	7.3

		ISCED 3–4 general		1					
				2					
				3					
				4	2.0	2.6	2.2	1.8	1.7
				5	3.6	3.0	2.6	2.6	2.5
				6					
				7					
				8					
				9					
			Total		7.7	7.8	6.8	5.9	5.5
		ISCED 3–4 vocational		1					1.4
				2					
				3	8.9	8.6	6.7	7.5	9.4
				4	6.7	6.5	6.6	6.9	9.2
				5	22.4	22.1	23.1	22.4	20.9
				6	.	1.8	1.7	1.8	1.9
				7	1.7	2.0	1.5	1.3	
				8					
				9	4.4	5.9	5.4	5.7	6.2
			Total		47.1	48.6	46.9	47.4	51.2
		ISCED 5–8		0					
				1	2.0	1.7	3.2	2.3	2.2
				2	18.8	21.6	24.5	26.9	27.1
				3	9.2	6.2	4.5	4.8	5.0
				4	2.4	2.6	2.1	1.3	1.3
				5	2.9	2.5	2.4	2.0	2.2
				6					
				7					
				8					
				9					
			Total		35.5	35.4	37.1	37.8	38.1
		Total		0					
				1	2.6	2.9	4.1	3.2	3.7
				2	20.2	22.5	26.0	27.8	27.5
				3	18.9	15.9	11.9	12.8	14.7
				4	11.3	11.7	11.0	10.2	12.4
				5	29.5	28.4	28.7	28.4	26.9
				6	3.0	5.6	5.2	4.7	4.9

				7	2.1	2.4	2.0	1.6	1.3
				8					
				9	7.5	9.0	9.2	9.3	10.0
			Total		95.8	99.0	98.6	98.6	102.2
	Total	ISCED 0		5					
				6					
				7					
				9					
			Total						
		ISCED 1–2		0					
				1					
				2					
				3					
				4					
				5	2.1	2.0	1.9	2.9	2.7
				6	3.8	5.5	6.5	6.6	5.9
				7	1.7		1.7	2.0	2.3
				8		1.3	1.3	1.3	
				9	4.5	4.8	5.7	5.9	6.4
			Total		13.9	15.4	17.8	19.3	18.9
		ISCED 3–4 general		0					
				1					
				2					
				3	2.0	1.7	1.4	1.2	1.6
				4	2.7	3.6	3.1	2.7	2.5
				5	5.9	4.5	4.1	4.1	4.2
				6					
				7					
				8					
				9					
			Total		14.1	13.2	11.7	11.0	11.6
		ISCED 3–4 vocational		0					
				1	3.6	5.7	5.6	7.3	5.9
				2	2.0	1.5	2.4	1.8	
				3	17.9	16.5	13.7	14.7	17.4
				4	12.1	11.6	12.2	13.0	15.2
				5	42.8	41.0	42.6	44.0	43.4
				6	3.1	5.6	5.4	6.3	6.8

				7	16.4	16.1	15.1	14.2	17.4
				8	12.4	13.9	13.0	12.6	13.8
				9	7.3	9.4	9.4	10.9	10.6
			Total		118.4	122.0	120.3	125.6	132.2
		ISCED 5–8		0					
				1	5.5	6.4	7.6	6.3	5.9
				2	30.8	36.2	40.2	41.9	42.7
				3	18.0	12.0	9.2	9.6	9.6
				4	3.4	3.4	3.4	2.5	2.0
				5	6.3	5.4	6.0	4.6	4.3
				6					
				7					
				8					
				9					
			Total		66.5	65.9	69.0	67.4	67.5
		Total		0		1.3			
				1	9.6	12.8	13.9	14.3	12.2
				2	33.3	38.1	43.3	43.9	44.0
				3	37.9	30.3	24.4	25.6	28.6
				4	18.7	19.0	19.1	18.6	20.1
				5	57.2	52.9	54.6	55.7	54.5
				6	7.6	11.9	12.5	13.5	13.5
				7	19.6	18.4	17.7	17.2	21.4
				8	15.4	16.6	15.9	15.4	16.9
				9	12.9	15.8	16.9	18.6	18.9
			Total		213.2	217.0	219.3	223.9	231.1

Source: Monstat and labour force surveys

TABLE A3.4 CORRELATION BETWEEN DIFFERENT OCCUPATIONAL GROUPS

Occupational group 2	Occupational group 3	Occupational groups
0.82	-0.96	1. Legislators, senior officials and managers
1.0	-0.92	2. Professionals
-0.92	1.0	3. Associated professionals and technicians
0.45	-0.20	4. Clerks
-0.35	0.47	5. Market, sales and service workers
0.94	-0.89	6. Skilled agricultural workers
-0.12	0.43	7. Craft and related trades workers
0.28	-0.17	8. Plant and machine operators and assemblers
0.95	-0.82	9. Elementary occupations

Source: Authors' calculation based on Monstat data and labour force surveys

TABLE A3.5 CORRELATION BASED ON THE LOCATION/REGION

All occupations	ISCO occupational group 2	ISCO occupational group 3
Coast versus Central region		
0.46903658	0.42	0.99
North versus Central region		
0.587830608	0.33	0.79
Coast versus North region		
0.35401479	0.87	0.78

Source: Authors' calculation based on Monstat data and labour force surveys

ABBREVIATIONS AND ACRONYMS

CVET	Continuing vocational education and training
EAM	Employment Agency of Montenegro
ETF	European Training Foundation
EU	European Union
EUR	Euros (currency)
GDP	Gross domestic product
ICT	Information and communication technology
ILO	International Labour Organisation
IMF	International Monetary Fund
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
IVET	Initial vocational education and training
LFS	Labour force survey
Monstat	Statistical Office of Montenegro
MSME	Micro, small and medium-sized enterprises
MW	Megawatt
NACE	Statistical Classification of Economic Activities in the European Community
OECD	Organisation for Economic Cooperation and Development
QOS	Qualifications, occupations and skills
S3	Smart Specialisation Strategy
SBA	Small Business Act
SMEs	Small and medium-sized enterprises
VET	Vocational education and training

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