EU Strategy for the Adriatic and Ionian Region
EUSAIR

Interreg Co-funded by the European Union
IPA ADRION
FACILITYPOINT

REPUBLIC OF CROATIA
Ministry of Tourism and Sport

Thematic study

Skills for a Competitive and Resilient EUSAIR Region

Improved Social Cohesion
EUSAIR

June 2026

Publisher: Ministry of Tourism and Sport of the Republic of Croatia

For the publisher: Tonči Glavina

European Project: EUSAIR FACILITYPOINT

Project manager: Iva Čaleta Pleša

Project Lead: Correlate LLC

Author: Correlate LLC

Review: Robert Babić, Diana Hećimović, Martina Klapan Štambuk

Design: Correlate LLC

Some of the photographs and graphics used in this publication were designed using artificial intelligence.

Disclaimer:

This publication was produced within the framework of the Interreg IPA ADRION project EUSAIR FACILITYPOINT. The publisher is not responsible for any unintentional errors or omissions that may have occurred despite the care and diligence of the editorial team.

Content

1 Introduction and context 1
2 Methodology 3
2.1 Analytical framework and conceptual approach 3
3 Skills landscape in the EUSAIR Region 5
3.1 Overview of labour market trends and structural changes 5
3.2 Sectoral analysis of skills shortages 5
3.3 Analysis of skills gaps by type 38
3.4 Education, skills mismatch and emerging trends 39
4 Policy and governance analysis 42
4.1 Overview of EU-level policy frameworks 42
4.2 National skills strategies and policy approaches 43
4.3 Governance mechanisms and institutional coordination 44
4.4 Labour Market Intelligence and forecasting systems 44
4.5 Education-industry cooperation mechanisms 45
4.6 Policy gaps and implementation challenges 46
4.7 Comparative assessment across EUSAIR Countries 47
5 Good Practices and innovation instruments 48
5.1 Case Studies of selected Good Practices 48
5.2 Main lessons learned from selected good practices 55
5.3 Transferability, scalability and key success factors 55
6 Recommendations 57
6.1 Strategic recommendations at Macro-Regional Level (EUSAIR) 59
6.2 Policy recommendations at National Levels 63
6.3 Recommendations for key stakeholders (education, industry, policy) 68
7 Conclusions 71
7.1 Summary of Key Indicators for future monitoring 71
7.2 Long-term outlook for the EUSAIR Region 73
8 Literature 76
9 Annexes 81
9.1 Annex 1 Overview of labour market trends 81
9.2 Annex 2 Policy Framework Overview 87
9.3 Annex 3 Cross-border cooperation and macro-regional dimension 88

List of figures

Figure 1 Analytical framework 3
Figure 2 Data sources and indicators 4
Figure 3 Main trends in the energy sector 6

Figure 4 Energy and green transition skills category 7
Figure 5 Main trends in transport and mobility sector 13
Figure 6 Transport and mobility skills 14
Figure 7 Main trends in tourism sector 18
Figure 8 Tourism and services skills category 19
Figure 9 Main trends in maritime and blue economy sector 24
Figure 10 Maritime and blue economy skills categories 25
Figure 11 Main trends in ICT sector 29
Figure 12 Digital skills categories 30
Figure 13 Main trends in advanced manufacturing sector 34
Figure 14 Advanced manufacturing and industry skills categories 35
Figure 15 Main trends in education and training 39
Figure 16 Main implications on education 41
Figure 17 Overview of EU-level policy frameworks 42
Figure 18 Policy gaps and implementation challenges 46
Figure 19 Comparative assessment across the Region 47
Figure 20 Best practices (Croatia) 48
Figure 21 Best practices (Italy) 49
Figure 22 Best practices (Greece) 49
Figure 23 Best practices (Slovenia) 50
Figure 24 Best practices (Albania) 51
Figure 25 Best practices (Bosnia and Herzegovina) 52
Figure 26 Best practices (Montenegro) 52
Figure 27 Best practices (North Macedonia) 53
Figure 28 Best practices (Serbia) 54
Figure 29 Best practices (San Marino) 54
Figure 30 SOAR analysis 58
Figure 31 Recommendations for key stakeholders 69
Figure 32 Key indicators for future monitoring 73
Figure 33 Employment rate for the population aged 15-64 82
Figure 34 Cooperation trends in the Region 88
Figure 35 Barriers to cross-border cooperation 91
Figure 36 EUSAIR's added value to macro-regional cooperation 93

List of tables

Table 1 Share of workers employed in sectors linked to the energy and green transition who participated in education or training 10
Table 2 Skills shortages in tourism....22
Table 3 Digital skills by competence area in the Region....32
Table 4 Skills shortages across the Region 38
Table 5 Main regional patterns in LMI and forecasting systems 45
Table 6 Main barriers for transferability and scalability of best practices....56
Table 7 Enabling factors for transferability and scalability of best practices 56
Table 8 Strategic recommendations for EUSAIR....60
Table 9 Policy recommendations at national levels 64
Table 10 Initiatives supporting cross-border cooperation....89
Table 11 Potential skills corridors in the Region....92

List of charts

Chart 1 Share of employed in sectors related to energy and green transition in the Region ..9
Chart 2 Share of employed in transport and mobility sector 15
Chart 3 Share of employed in tourism sector....20
Chart 4 Share of employed in blue and maritime economy sector 26
Chart 5 Share of ICT specialists in total employment and share of enterprises that had hard-to-fill vacancies for jobs requiring ICT specialist skills 31
Chart 6 Share of employed in manufacturing sector....36
Chart 7 Old-age dependency ratio....81
Chart 8 Gender-based disparities....83
Chart 9 Employment rate by education level 84
Chart 10 Job vacancy rates in services, and industry and construction 84
Chart 11 NEET rates....85

1 Introduction and context

The Adriatic-Ionian Region (Region) is undergoing profound transformations driven by the green and digital transitions, alongside broader geopolitical, demographic, and economic changes. These developments are reshaping labour markets, accelerating technological change, and redefining the skills required to ensure sustainable growth, competitiveness, and resilience. Across the Region, demand is increasing for digital, green, technical, and entrepreneurial skills, while labour markets face growing pressures to adapt to rapidly evolving economic and societal needs. At the same time, many countries continue to face persistent skills shortages and mismatches, particularly in sectors undergoing digital and green transitions. These challenges are compounded by fragmented education and training systems, limited alignment between education and labour market needs, barriers to labour mobility, and demographic pressures such as population ageing, youth emigration, and shrinking labour forces.

These challenges are shared across the Region, which comprises 10 countries: four EU member states (Croatia, Greece, Italy, and Slovenia), five EU candidate countries (Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia), and San Marino. Despite differences in economic development, institutional capacity, and labour market performance, countries across the Region face similar pressures related to skills development, workforce adaptation, and demographic change. The coexistence of EU and non-EU countries makes cooperation, knowledge exchange, and policy alignment particularly important.

Given the cross-border nature of these challenges, effective responses require cooperation beyond national boundaries. Within this context, the EU Strategy for the Adriatic and Ionian Region (EUSAIR) provides a framework for coordinated action and mutual learning among participating countries. In particular, *Pillar 5 – Improved Social Cohesion* focuses on strengthening human capital, enhancing skills development, improving labour market adaptability, and fostering stronger links between education, innovation, employment, and social inclusion policies[1].

Building on this context, the Study provides an evidence-based assessment of skills dynamics across the Region. More specifically, the **Study aims to**:

- Identify critical skills shortages and emerging skills needs, particularly in relation to the green, digital, and blue economy transitions;

[1] More information about EUSAIR can be found at: https://www.adriatic-ionian.eu

- Access the effectiveness of existing policy frameworks, governance arrangements, and institutional capacities related to skills development;
- Analyse the impact of digitalization, AI, and the green transition on labour market dynamics;
- Identify and benchmark good practices and innovative approaches supporting workforce adaptation and lifelong learning;
- Develop evidence-based recommendations to strengthen macro-regional cooperation and support future initiatives under Pillar 5.

2 Methodology

2.1 Analytical framework and conceptual approach

The analytical framework is structured around four interrelated dimensions, presented in Figure 1, which together provide a holistic understanding of skills systems and their role in supporting economic competitiveness, social cohesion, and workforce adaptability.

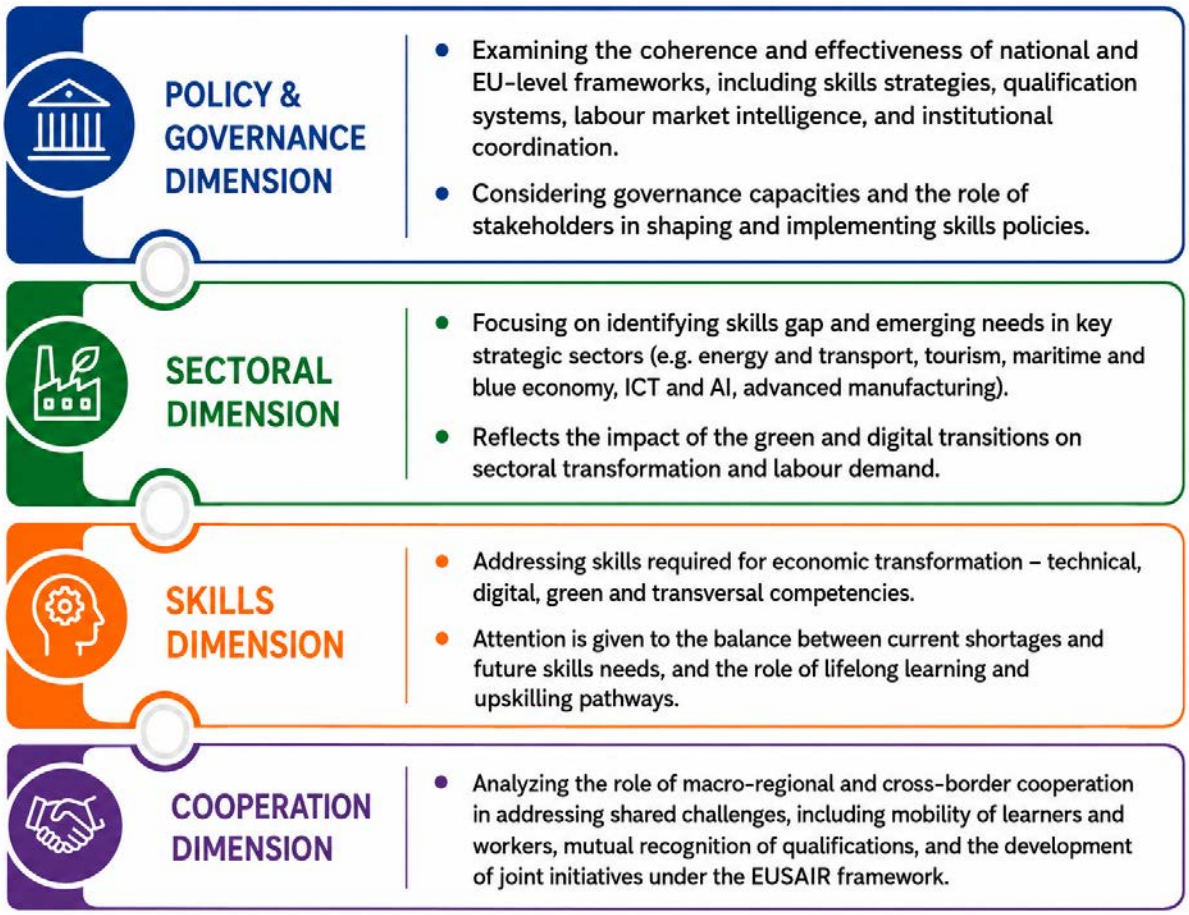


Figure 1 Analytical framework

Building on this framework, the Study is guided by a set of research questions focusing on skills development, labour market dynamics, policy frameworks, and opportunities for enhanced macro-regional cooperation:

- **What are the critical skills shortages across sectors and countries, and how do they affect competitiveness and resilience?**
- **How can labour market intelligence and forecasting systems be improved (including big data and foresight approaches)?**
- **Which policies effectively aligned education and labour market needs?**
- **Hoe can stakeholders strengthen skills ecosystems?**

- **What is the role of EUSAIR in enabling coordinated macro-regional responses?**

To ensure a comprehensive and evidence-based assessment, the Study combines qualitative and quantitative data from a range of sources:

Statistical and quantitative data:

- Eurostat, CEDEFOP, ETF, OECD, Word Bank, UNESCO, national statistical offices

Objective: *to provide a robust basis for analysing labour market trends, educational outcomes, and skills mismatches across the Region*

Policy and strategic documents:

- EU-level strategies (e.g., European Skills Agenda, European Green Deal, Digital Decade)
- macro-regional (EUSAIR, EUSAIR Action Pla)
- regional and national strategies

Objective: *to assess the coherence, priorities, and implementation approaches of skills-related policies*

Scientifical and analytical studies:

- e.g., academic literature, sectoral reports related to digitalization, green transition, and industrial transformation

Objective: *to provide additional insights into emerging trends and future skills needs*

Stakeholders input:

- where available, including contributions from TSG5 members and relevant stakeholders

Objective: *to complement statistical data with practical insights and contextual understanding*

Figure 2 Data sources and indicators

3 Skills landscape in the EUSAIR Region

3.1 Overview of labour market trends and structural changes

The labour market landscape across the EUSAIR region is shaped by a combination of long-term demographic pressures, heterogeneous employment performance, structural differences in labour demand across sectors, and evolving skills requirements. Although the region includes both European Union Member States and non-EU economies, several common trends can be identified, albeit with varying intensity and patterns across countries. These include **Demographic ageing and shrinking labour supply, Heterogeneity of Labour Market Performance, Persistent labour market participation gaps (gender and education), Sectoral restructuring towards services and knowledge-intensive activities challenges and Youth labour market integration (NEET).**

A detailed evidence base for each of the above areas, including statistical indicators, country-level comparisons and explanatory analysis, is presented in *Annex 1 Overview of labour market trends*.

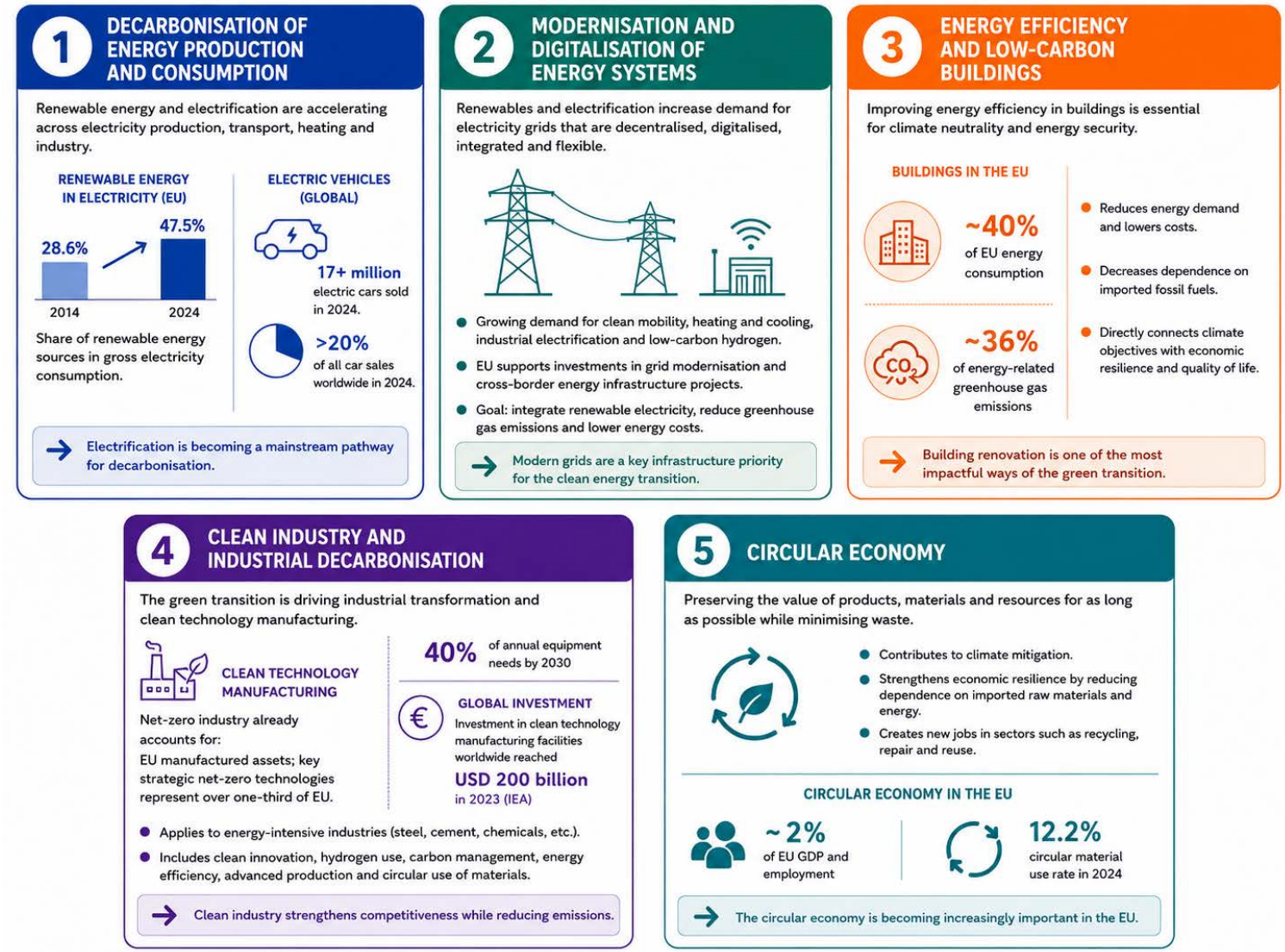
3.2 Sectoral analysis of skills shortages

This section provides a sectoral analysis of skills shortages in the Region, focusing on strategic sectors that are particularly relevant for competitiveness, resilience and the green and digital transitions. The analysis covers the following sectors: **energy, transport and mobility, tourism and services, maritime and blue economy, ICT, digitalisation and artificial intelligence, and advanced manufacturing and industry**. These sectors are directly linked to the thematic scope and strategic priorities of the EUSAIR framework.

3.2.1 Energy and green transition

The **energy sector** is undergoing a transformation driven by the green transition towards more sustainable, low-carbon and resource-efficient models. It includes the shift from fossil fuels to renewable energy sources, improved energy efficiency, electrification of transport and industry, circular use of resources, and the development of cleaner technologies. At the same time, it is reshaping key sectors such as energy, construction, transport, manufacturing and agriculture, creating new opportunities for innovation, investment and sustainable growth. The figure below shows the **main trends in the sector**[2].

[2] https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20260114-1?utm_; https://www.iea.org/reports/global-ev-outlook-2025/executive-summary?utm_; https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2023%3A757%3AFIN&qid=1701167355682; https://www.consilium.europa.eu/en/infographics/renovation-wave/?utm_; https://commission.europa.eu/topics/competitiveness/green-deal-industrial-plan/net-zero-dustry-act_en; https://www.iea.org/reports/energy-technology-perspectives-2024?stream=top&utm_

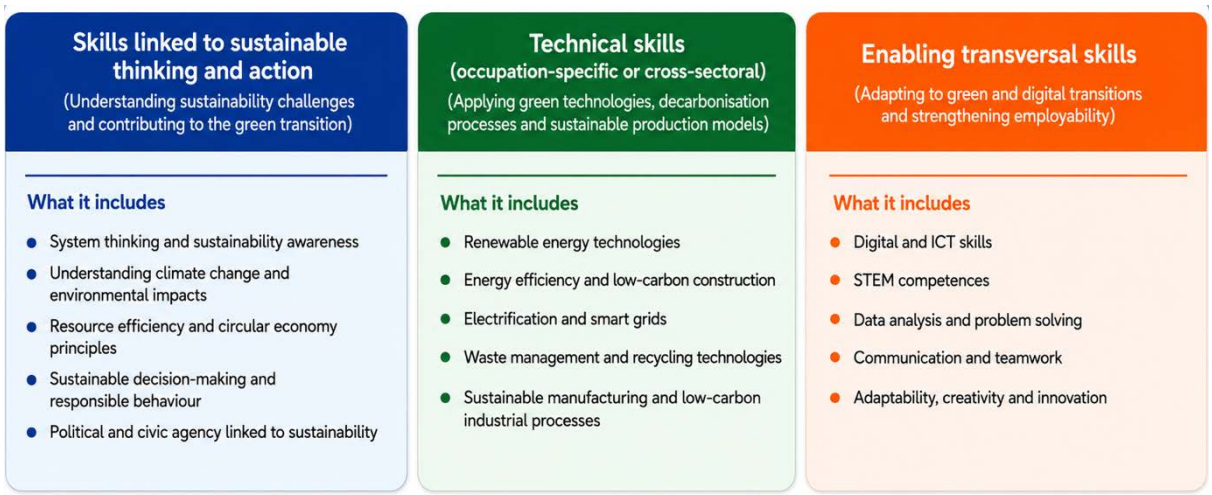


Source: International Energy Agency, European commission, European Council, Council of the EU, Eurostat

Figure 3 Main trends in the energy sector

The transition towards a low-carbon and resource-efficient economy is not only transforming energy systems and industries but also reshaping labour markets and employment structures. Sectors such as renewable energy, clean technology manufacturing, construction, energy efficiency and the circular economy are expected to expand, while fossil fuel-related and emission-intensive industries will need to adapt their production models and workforce profiles. As a result, the green transition is increasing demand for new technical, digital and sustainability-related competences, while also highlighting the importance of re-skilling, up-skilling and lifelong learning to support workforce adaptation and a fair transition towards climate neutrality by 2050.[3]

According to the ETF, skills for the green transition can be broadly grouped into three interconnected categories: sustainability-related skills and competences, technical skills linked to green occupations and sectors, and enabling transversal skills that support adaptation to green and digital transformation processes. This approach highlights that the green transition requires not only specialised technical knowledge, but also broader competences related to sustainability, digitalisation, innovation and collaboration.[4] The **skills categories** are presented in the figure below.



Source: European Training Foundation, Skills for the Green Transition

Figure 4 Energy and green transition skills category

The International Energy Agency highlights that labour, and skills shortages are becoming a growing risk for the clean energy transition, especially in applied technical roles such as electricians, plumbers, grid workers, technicians and solar photovoltaic specialists. These shortages are driven by an ageing energy workforce, too few young workers entering the sector, and insufficient growth in graduates from energy-relevant vocational programmes.

[3] https://op.europa.eu/en/publication-detail/-/publication/4826f429-0545-11f0-b1a3-01aa75ed71a1/language-en; https://www.etf.europa.eu/sites/default/files/2024-02/Green%20paper_2023%20-%20edited.pdf
[4] https://www.etf.europa.eu/sites/default/files/2024-02/Green%20paper_2023%20-%20edited.pdf

Between 2015 and 2022, demand for applied technical workers grew faster than graduations from relevant training programmes, creating a widening skills mismatch. By 2035, around two-thirds of new hires in the energy sector will be needed only to replace retiring workers. As a result, many companies are already recruiting from neighbouring industries or expanding in-house training, while around 60% report labour shortages that may delay projects, increase costs and affect system reliability. This makes investment in skills development a strategic priority for both energy security and the green transition.[5]

Labour and skills shortages are becoming an increasingly important barrier to the energy sector. The sectors analysed within the energy and green transition chapter are based on the approach proposed by the European Commission in their *Estimating labour market transitions and skills investment needs of the green transition – A new approach* paper, which identifies sectors that are either directly important for achieving climate neutrality targets or are expected to experience significant employment and skills changes due to decarbonisation processes. These sectors include activities that play a key role in implementing climate and energy objectives, as well as sectors where the green transition is expected to substantially reshape labour market demand, occupational structures and skills requirements. In line with this approach, the analysis primarily focuses on sectors defined under the NACE Rev. 2 Level 1 classification, including mining and quarrying (B), manufacturing (C), electricity, gas, steam and air conditioning supply (D), water supply, sewerage, waste management and remediation activities (E), construction (F), and transportation and storage (H). It should be noted that these figures do not represent the share of workers directly employed in “green jobs” or exclusively engaged in green transition activities. Instead, they indicate the share of employment in sectors considered strategically relevant for the green transition.

At EU level, these sectors account for 29,68% of total employment, confirming their strong structural relevance for the labour market and the scale of workforce exposure to the green transition. Although these sectors account for a substantial share of total employment, this does not imply that labour market needs are fully met. The chart below shows the **share of employed persons** in sectors related to the energy sector together with the aggregated **job vacancy rate**, where data are available. Aggregated job vacancy rates for the sector were calculated as weighted averages of annual average job vacancy rates across relevant energy-related sectors. Employment in each sector was used as the weighting factor, ensuring that larger sectors have proportionally greater influence on the aggregated Energy value.[6]

[5] https://www.iea.org/reports/world-energy-employment-2025/executive-summary?utm

[6] Data for following countries is not available – Albania (share of employed, job vacancy), Bosnia and Herzegovina, Montenegro, San Marino, Serbia (job vacancy).

Source: Eurostat, Montenegro Statistical Office, National Office of Statistics

Chart 1 Share of employed in sectors related to energy and green transition in the Region

The **share of employment** in sectors related to energy differs considerably across the EUSAIR Region, reflecting differences in industrial structures, energy systems and labour market composition. Compared to the EU average, several countries in the Region record significantly higher shares of employment in sectors linked to decarbonisation and climate transition processes. The highest shares are recorded in San Marino, Croatia and Bosnia and Herzegovina, while Montenegro and especially Greece remain below the EU average. These differences indicate varying levels of labour market exposure to the green transition. Among the countries for which data are available, **job vacancy** pressures are highest in Slovenia, Greece and North Macedonia, all of which stand above the EU average. Italy records a slightly lower level than the EU average, while Croatia records the lowest vacancy pressure among the observed countries.

Evidence from the European Labour Authority shows that construction and related occupations, including electricians, have faced long-standing shortages, while the green transition is expected to further increase demand for these profiles. The European Commission also identifies labour and **skills shortages** as a bottleneck for sustainable growth and for the implementation of the green and digital transitions. This is particularly relevant given that around 3.5 million new jobs are expected to be created in renewable energy sectors alone by 2030.[7]

In the Western Balkans, the skills challenge is closely linked to energy transition, coal phase-out, renewable energy deployment, energy efficiency, waste management and infrastructure

[7] https://www.ela.europa.eu/en/publications/labour-shortages-and-surpluses-europe-2024?utm

modernisation. The European Training Foundation notes that green transition policies in EU neighbouring countries often lack sufficiently developed skills components. Similarly, the OECD review highlights that the green transition in the Western Balkans requires stronger education systems, workforce adaptation and investment in competencies. The Region's transition towards low-carbon energy, greater energy efficiency and renewable energy development will therefore increase demand for new and upgraded skills, particularly in energy, construction, renewable energy, transport, energy efficiency and related technical occupations. [8]

A key limitation in assessing skills shortages related to the energy and green transition is the absence of systematic monitoring of green skills development. Since direct data on green skills are limited, participation of workers in **adult learning and training** can be used as an indicative measure of workforce preparedness. While it does not directly measure skills shortages, low participation in training may point to limited awareness, access or capacity for upskilling and reskilling in sectors exposed to green transition-related changes. The table below presents the share of workers employed in sectors linked to the energy and green transition who participated in education or training in the four weeks prior to the survey.

Table 1 Share of workers employed in sectors linked to the energy and green transition who participated in education or training

Country	Mining and quarrying	Manufacturing	Electricity, gas, steam and air conditioning supply	Water supply, sewerage, waste management and remediation activities	Construction	Transportation and storage
Croatia	n/a	3.2	9.1	4.9	2.2	4.5
Greece	11.5	3.9	6.9	n/a	1.2	6.0
Italy	n/a	9.2	13.6	7.7	5.5	9.6
Slovenia	n/a	19.8	29.8	9.6	13.9	21.2
Albania	n/a	n/a	n/a	n/a	n/a	n/a
Bosnia and Herzegovina	n/a	0.4	n/a	n/a	n/a	n/a
Montenegro	n/a	n/a	n/a	n/a	n/a	n/a
North Macedonia	n/a	11.3	n/a	n/a	4.0	n/a
San Marino	n/a	n/a	n/a	n/a	n/a	n/a
Serbia	3.2	2.9	4.3	3.0	2.8	4.3
EU	9.1	11.8	19.0	11.1	10.8	11.8

[8] https://www.oecd.org/content/dam/oecd/en/publications/reports/2022/04/multi-dimensional-review-of-the-western-balkans_aae194f5/8824c5db-en.pdf?utm_; https://www.etf.europa.eu/sites/default/files/2024-02/Green%20paper_2023%20-%20edited.pdf

Source: Eurostat

Overall, the data show that participation in adult learning and training is relatively low in most countries and sectors. The EU average is highest in electricity, gas, steam and air conditioning supply followed by manufacturing and transportation and storage, water supply and waste management, construction, and mining and quarrying with. This suggests that even at EU level, training participation in transition-related sectors remains moderate, despite the scale of expected sectoral transformation. Among the observed countries, Slovenia stands out with the highest participation rates in several sectors. Slovenia is therefore the only country that consistently reaches or exceeds the EU average in most sectors for which data are available. Italy also performs relatively well, especially in mining and quarrying and in electricity, gas, steam and air conditioning supply. Croatia and Greece show generally low participation in training across most green-transition-related sectors, especially in manufacturing, construction and transport. For the Western Balkan countries, data availability is limited, as several countries and sectors have missing values, which restricts the possibility of a full cross-country and cross-sector comparison. However, where data are available, participation in education and training is generally low, with the main exception of North Macedonia in manufacturing, where participation approaches the EU average.

The table suggests that workers in sectors linked to the energy are generally not participating widely in adult learning and training. This is relevant for the analysis of skills shortages because these sectors are expected to undergo major changes related to renewable energy, energy efficiency, cleaner production, circular economy and low-carbon infrastructure, which will require new and upgraded skills. Low participation in training indicates a limited capacity of the existing workforce to adapt to changing sectoral requirements. In this sense, the findings point to a potential risk that skills gaps in green-transition-related sectors could deepen if adult learning, upskilling and reskilling opportunities are not strengthened.

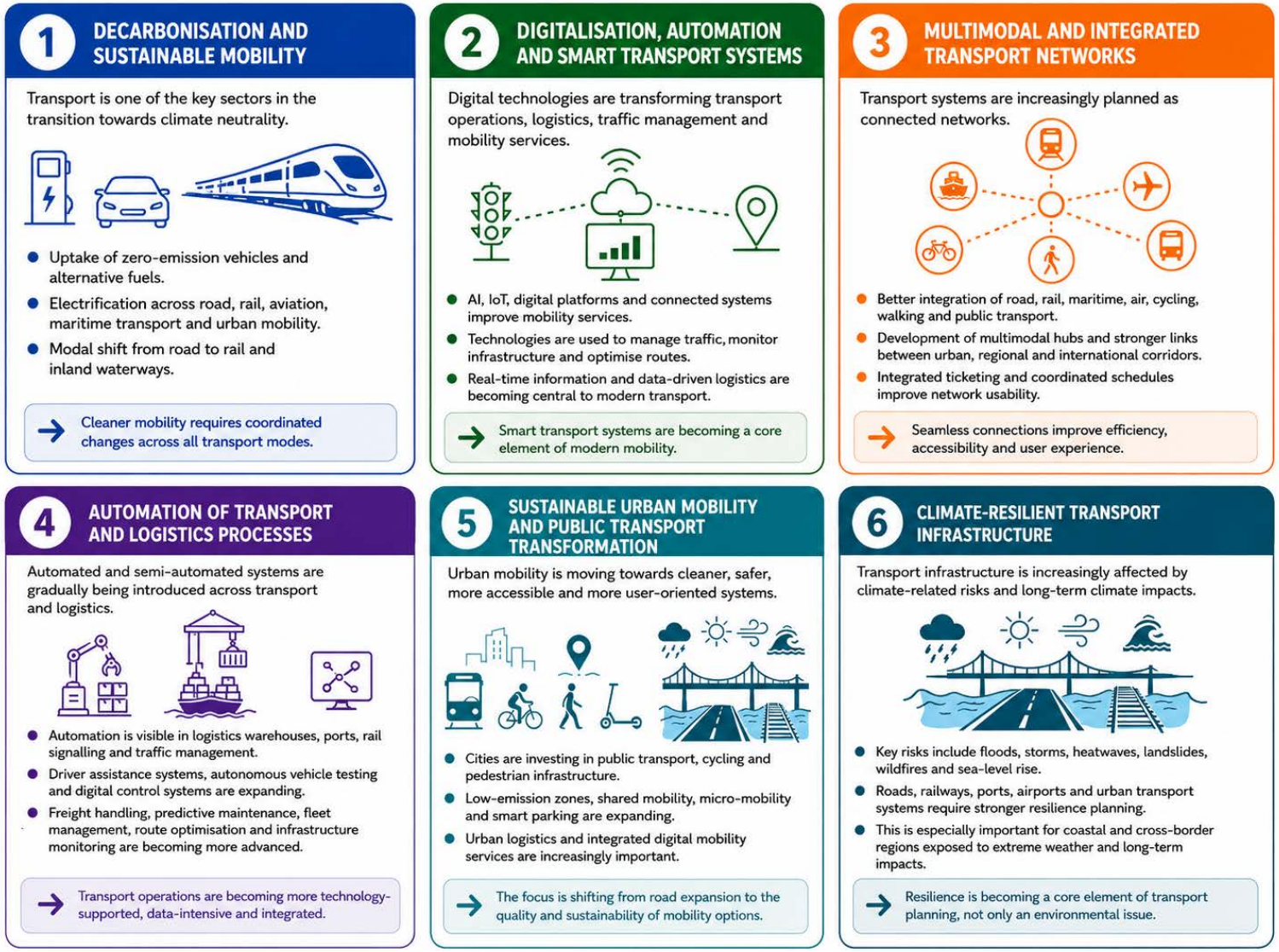
Finally, the findings suggest that countries with a high share of employment in the energy sector but low participation in training may face a particular risk of future skills gaps. For these countries, policy responses should focus not only on increasing the number of workers in relevant sectors, but also on improving the quality and relevance of their skills. Without stronger investment in green skills development, labour shortages may increasingly become a barrier to renewable energy deployment, energy efficiency improvements, industrial transformation and the wider implementation of the green transition.

3.2.2 Transport and mobility

Transport and mobility refer to the movement of people and goods through road, rail, maritime, inland waterway, air and urban transport systems, as well as the logistics,

infrastructure and services that support these flows. The sector is essential for economic activity, trade, tourism, labour mobility and access to services. In the EU, transport contributes around 5% of Gross Domestic Product (GDP) and employs more than 10 million people, which makes it one of the key sectors for competitiveness and territorial connectivity. At the same time, transport is undergoing major transformation due to decarbonisation, digitalisation, automation, new mobility models and changing logistics needs. **Main trends** related to transport and mobility are shown on the figure below[9].

[9] https://transport.ec.europa.eu/transport-themes/mobility-strategy_en?prefLang=uk&utm_; https://commission.europa.eu/topics/transport-and-tourism/transport-and-green-deal_en?utm_; [9] https://digital-strategy.ec.europa.eu/en/policies/digitalisation-mobility?utm_; https://transport.ec.europa.eu/transport-themes/social-issues-equality-and-attractiveness-transport-sector/social-issues/automation-transport_en?prefLang=sk&utm_; [9] https://transport.ec.europa.eu/transport-themes/smart-mobility/cooperative-connected-and-automated-mobility-ccam_en?utm_; https://transport.ec.europa.eu/transport-themes/smart-mobility_en?utm_; https://transport.ec.europa.eu/transport-themes/urban-transport/sustainable-urban-mobility_en?utm_; https://joint-research-centre.ec.europa.eu/projects-and-activities/peseta-climate-change-projects/jrc-peseta-ii/biophysical-results/transport-infrastructure_en?utm_

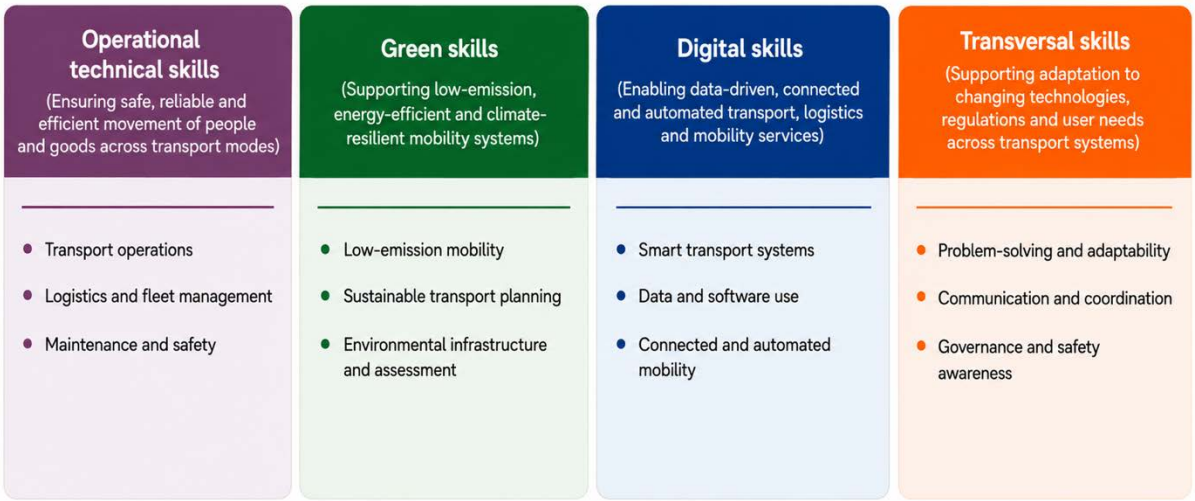


Source: European Commission

Figure 5 Main trends in transport and mobility sector

The main trends in transport and mobility show that the sector is moving towards cleaner, smarter, more connected and more resilient systems. These changes directly influence the skills required in the sector. Traditional transport-related occupations remain important, particularly in road transport, logistics, public transport and infrastructure maintenance, but they are increasingly complemented by new competences.[10] Workers, companies and public institutions now need to combine operational and technical transport knowledge with digital, green and transversal skills.

Based on a review of relevant European and sectoral documents addressing skills needs in the field of transport and mobility, the following figure provides an overview of the **key skills categories** required for the sector. The classification brings together skills identified in documents related to the mobility, transport and automotive ecosystem, digitalisation and automation of transport, smart mobility, green transition, and the wider European skills agenda.



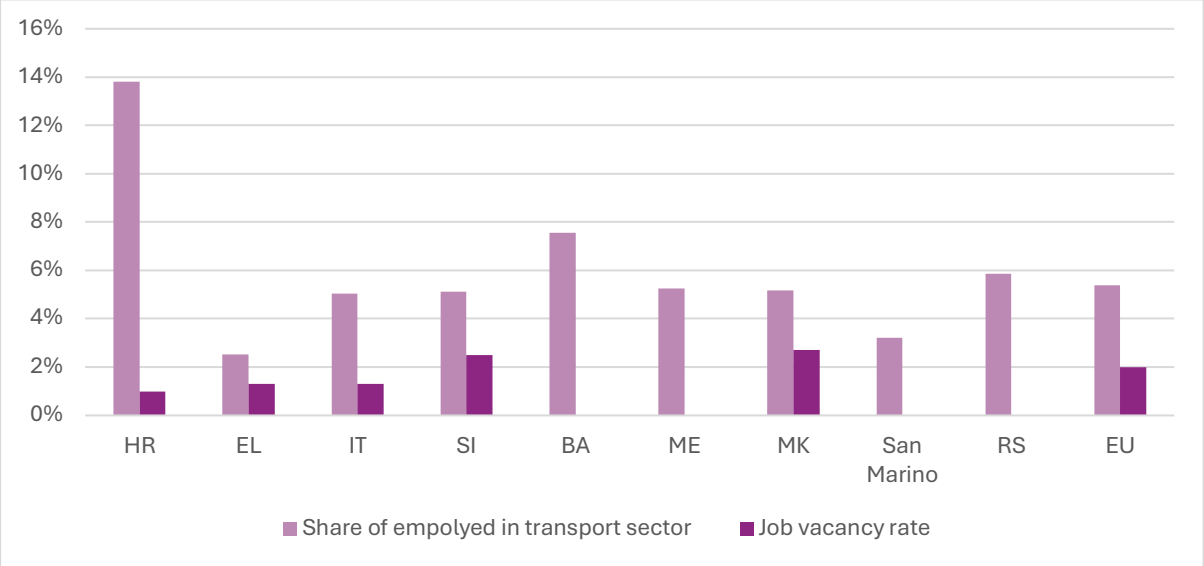
Source: The classification has been developed based on the European Monitor of Industrial Ecosystems – Mobility, Transport and Automotive ecosystem; European Commission – Digitalising transport: towards smart and sustainable mobility; European Commission – Recommendation on the impact of automation and digitalisation on the transport workforce; Pact for Skills – Mobility, Transport and Automotive ecosystem; Cedefop – Drivers and vehicle operators: skills opportunities and challenges.

Figure 6 Transport and mobility skills

The transportation and mobility sector represents an important part of employment in EU, accounting for 5.39% of total employment in 2025. This confirms the sector's relevance not only for labour markets, but also for the functioning of wider economic activity, territorial connectivity, logistics, trade and mobility services. At the same time, the sector is facing substantial labour shortages, particularly in occupations such as drivers and mobile plant operators. These shortages are linked to a combination of factors, including unattractive working conditions, demographic ageing, difficulties in attracting younger workers and

[10] https://digital-strategy.ec.europa.eu/en/policies/digitalisation-mobility?utm

mismatches between available skills and job requirements.[11] This indicates that workforce challenges in transport and mobility are not only related to the number of available workers, but also to the ability of the labour force to respond to changing technological, environmental and operational requirements. The chart below shows the **share of employed** and **job vacancy rate** in *Transportation and storage* (I) sector.[12]



Source: Eurostat

Chart 2 Share of employed in transport and mobility sector

The data show that the sector has the highest employment share in Croatia and Montenegro, while the lowest share is recorded in San Marino. In other countries the share of employment is around 5%, broadly close to the EU average. In addition, job vacancy data provide an additional indication of labour market pressure. Among the countries for which data are available, the job vacancy rate in the sector ranged from 1.0% to 2.7%, with North Macedonia recording the highest rate and Croatia the lowest. Slovenia also stood above the EU average, while Greece and Italy recorded comparatively lower rates. To support the further development and resilience of the transport and mobility sector, while mitigating additional recruitment pressures, it is essential to ensure that the workforce is equipped with skills that correspond to both current sectoral needs and emerging transformation trends. This requires a continuous and forward-looking approach to skills development, enabling the existing workforce to adapt to changing operational, green and digital requirements, while ensuring that new entrants acquire competences that are aligned with evolving employer demand and the future direction of the sector.[13]

[11] https://www.ela.europa.eu/sites/default/files/2025-06/EURES_Report_on_labour_shortages_and_surpluses_2024.pdf
[12] Data for Albania is not available.
[13] Data for other countries is not available.

According to Commission Recommendation (EU) 2024/236, the transport sector is one of the areas where the implementation of the European Green Deal and related national strategies is expected to create additional demand for both labour and new skills. This challenge is particularly significant because the sector is already affected by a scarcity of skilled workers and visible shortages in specific transport occupations.[14]

The EURES *Report on labour shortages and surpluses 2024* further confirms that these pressures are being reinforced by the ongoing transformation of the sector. Digitalisation, automation and the green transition are changing work processes and occupational profiles in transport and mobility, increasing demand for more advanced technical, engineering, digital and data-related competences. As a result, **skills shortages** in the sector are not only linked to current labour gaps, but also to the need to adapt the workforce to new operational and technological requirements.[15]

The skills challenge in transport and mobility is further reinforced by the sector's limited preparedness for automation and digitalisation. The *Study on the social dimension of the transition to automation and digitalisation in transport, focusing on the labour force* shows that, although these changes are expected to affect jobs, skills, job characteristics and working conditions across all transport modes, awareness of their social and workforce impact remains relatively low. The focus of many stakeholders is still more strongly placed on the technological dimension of the transition, while the implications for workers and skills development receive less attention. The study indicates that transport stakeholders are, on average, only moderately prepared for the transition. Preparedness also differs between stakeholder groups, with trade unions and national public bodies more likely to have measures in place to anticipate or manage change than employers and employers' organisations. This suggests that the sector does not only face shortages of workers and skills, but also a gap in institutional and organisational readiness to manage the skills implications of automation and digitalisation.[16]

For the Western Balkans, transport-specific evidence on skills shortages is more limited than for EU Member States, but broader labour market data point to a clear risk of skills mismatches that may also affect transport and mobility. Despite rising educational attainment, young people in the region continue to face difficulties in translating education into positive labour-market outcomes. NEET rates remain high, including among tertiary-educated youth, while employers frequently report difficulties in finding workers with the skills their businesses need. These findings suggest that the challenge is not only the availability of labour, but also the

[14] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32024H0236#ntr26-L_202400236EN.000101-E0026
[15] https://www.ela.europa.eu/sites/default/files/2025-06/EURES_Report_on_labour_shortages_and_surpluses_2024.pdf
[16] https://op.europa.eu/en/publication-detail/-/publication/476d738a-404c-11ec-89db-01aa75ed71a1/language-en

relevance and quality of skills. The region continues to face gaps between education outcomes and labour market needs, limited creation of high-skill jobs and widespread vertical skills mismatches.[17]

The Transport Community's *Strategy for Sustainable and Smart Mobility in the Western Balkans* highlights that there is already a risk of skills mismatch in certain transport sectors, and that the workforce will need to keep pace with changing skill requirements caused by automation, digitalisation and the transition towards more sustainable mobility. The strategy also notes that decarbonisation and digitalisation will bring profound changes to transport systems, requiring people with different skill sets and mindsets. This is particularly relevant because the Western Balkans are expected to modernise transport infrastructure, improve regional connectivity, align with EU standards and support the transition towards cleaner and smarter mobility. [18]

Finally, participation in **adult learning and training** provides an additional indication of the sector's capacity to respond to changing skills needs. The data show differences between countries, with Slovenia (21.2%) recording the highest participation of workers in the transportation sector in adult learning and training, while Italy (9.6%), Greece (6.0%), Croatia (4.5%) and Serbia (44.3%) record considerably lower levels than the EU average (11.8%). The relatively low participation in training in several observed countries therefore indicates a potential weakness in the sector that is undergoing major changes. As a result, workforce may remain insufficiently prepared for the challenges of digital and green transition, which can deepen existing skills gaps and make it more difficult for the sector to respond to future labour market needs.

Transport and mobility is a strategically important sector for the Region, but its transformation is creating increasing pressure on skills systems. Labour shortages are already visible in key occupations, while decarbonisation, digitalisation and automation are raising demand for new technical, green, digital and transversal competences. Strengthening targeted upskilling and reskilling pathways, especially in smart mobility, sustainable transport, logistics, maintenance, safety and data-related skills, will therefore be essential to prevent skills gaps from becoming a barrier to more sustainable, integrated and resilient transport systems.

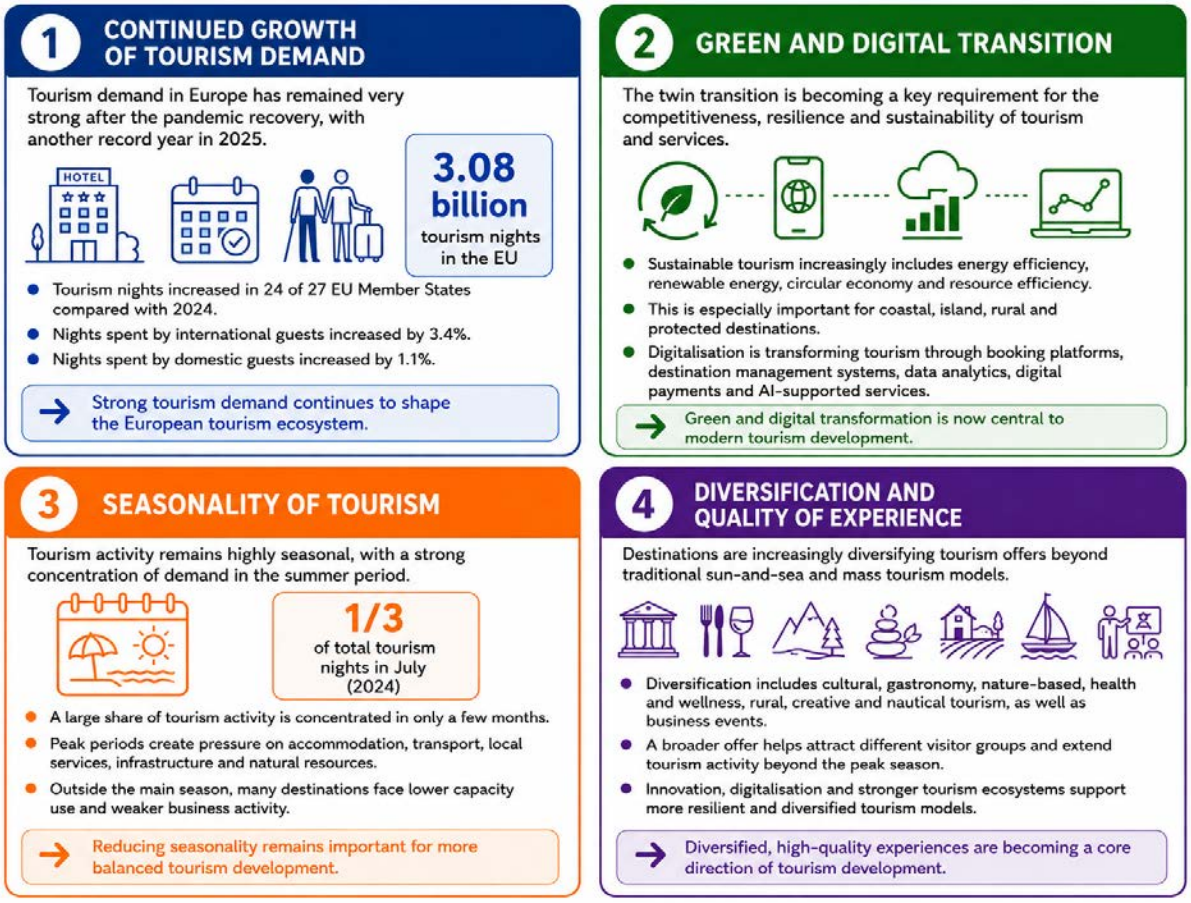
3.2.3 Tourism and services

Tourism and services refer to a broad group of economic activities that support travel, hospitality, leisure, culture, recreation, food services, accommodation, visitor experience and

[17] https://documents1.worldbank.org/curated/en/099042826083529135/pdf/P512916-a8ee0bba-76d2-40bb-9569-2de384090aba.pdf
[18] https://www.transport-community.org/wp-content/uploads/2021/06/Strategy-for-Sustainable-and-Smart-Mobility-in-the-Western-Balkans.pdf?utm_

related business services. In statistical terms, the core tourism-related activities are usually captured through accommodation and food service activities, travel agencies and tour operators, passenger transport, cultural and recreational services, while the wider tourism ecosystem also includes retail, digital platforms, local services and destination management.

Tourism and services are undergoing significant transformation, driven by changing visitor expectations, digitalisation, sustainability requirements, labour shortages and the growing need for higher-quality and more diversified tourism offers. The **main trends** are shown on the figure below.[19]



Source: Eurostat, European Commission

Figure 7 Main trends in tourism sector

[19] https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20260304-1; https://urban-mobility-observatory.transport.ec.europa.eu/news-events/news/european-commission-publishes-stocktaking-report-green-and-digital-transition-tourism-2025-06-12_en; https://transport.ec.europa.eu/tourism/transition-eu-tourism/digital-transition-tourism_en?prefLang=sl&utm_;

[19] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Seasonality_in_tourism_demand

Overall, the transformation of tourism and services shows that the sector increasingly depends on a workforce with a broader and more adaptable set of skills. Continued demand growth, digitalisation, sustainability requirements, seasonality and the diversification of tourism products all create new expectations for workers, managers and education providers. This confirms the need to strengthen not only traditional hospitality skills, but also digital, green, communication, customer-experience, language, entrepreneurial and destination management skills.[20]

The figure below presents the **key skills** required for tourism and services in response to these sectoral trends.

Source: The classification has been developed based on the European Commission's Transition Pathway for Tourism, the EU Pact for Skills – Skills Partnership for the Tourism Ecosystem, the Pact for Skills Tourism Ecosystem 2024 Report, Cedefop's occupational analysis of Personal service workers and Hospitality and retail managers.

Figure 8 Tourism and services skills category

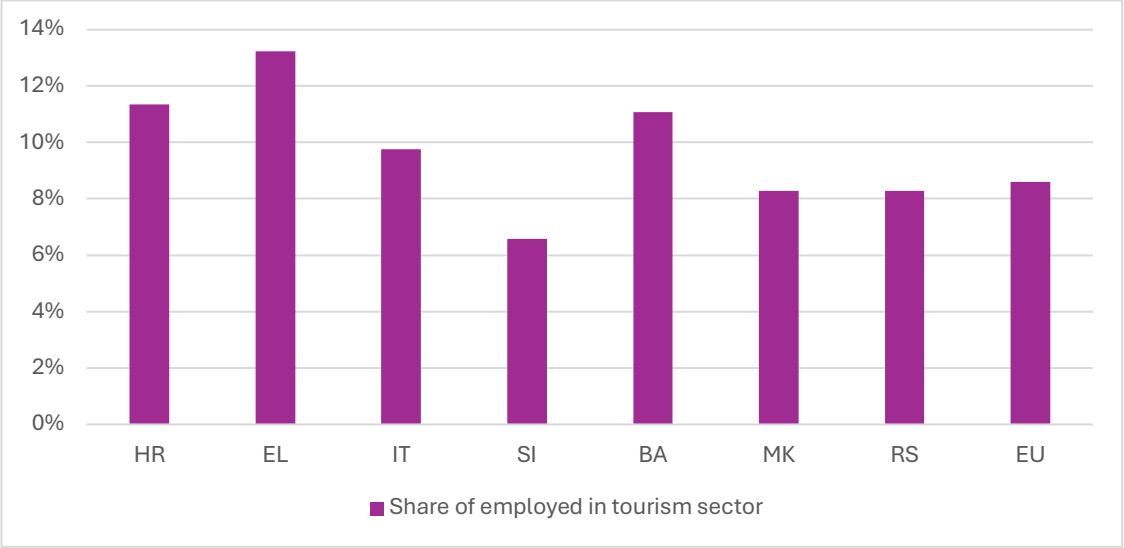
Tourism and services represent an important sector for the EU, both in terms of economic activity and employment. According to Eurostat, in tourism industries in the EU employed 11.3 million people, representing 8.6% of total employment in the non-financial business economy. The importance of tourism is even more pronounced in tourism-oriented countries and regions, including several countries of the Region, where tourism-related activities account for a significantly higher share of employment than the EU average. The data on **share of employment** in tourism and hospitality sector is presented on the graph below.[21]

[20] https://www.oecd.org/en/publications/oecd-tourism-trends-and-policies-2024_80885d8b-en/full-report/component-6.html?utm_

[21] For this purpose, the analysis takes into account selected tourism-related NACE Rev. 2 sectors: H49 *Land transport and transport via pipelines*, H50 *Water transport*, H51 *Air transport*, I55 *Accommodation*, I56 *Food and beverage service activities*, and N79 *Travel agency, tour operator and other reservation service and related activities*. Data for Albania, Montenegro and San Marino is not available.

Labour shortages are one of the main challenges affecting tourism and services, particularly in hospitality, accommodation and food service activities. The available evidence shows that these shortages are not only temporary or seasonal, but increasingly structural. The European Labour Authority confirms that hospitality has been among the sectors affected by labour shortages for several years, while cooks are among the most widespread shortage occupations in Europe, identified in at least three quarters of reporting countries.[22]

Eurostat **job vacancy** data are not available at the level of the selected tourism-related subsectors used in this analysis. For this reason, job vacancy data are not included in the graphical presentation of employment in tourism-related sectors. However, to provide an indicative assessment of recruitment pressure in the tourism and services sector, the following analysis uses the broader Eurostat category Accommodation and food service activities. Although this category does not cover the full tourism sector, it represents one of its core labour-intensive components and provides useful quantitative evidence of labour demand and recruitment challenges in the countries of the Region for which comparable data are available.



Source: Eurostat

Chart 3 Share of employed in tourism sector

The chart shows that the share of employment in tourism-related sectors ranges from around 6% to 13% across the observed EUSAIR countries. The highest shares are recorded in Greece, Croatia, and Bosnia and Herzegovina, indicating that tourism and related services represent a particularly important part of their labour markets. In Italy, North Macedonia, and Serbia, tourism-related employment is also significant, although slightly less pronounced than in the most tourism-dependent countries. This confirms that tourism and services remain important employment sectors and that skills development is relevant not only for coastal

[22] https://www.ela.europa.eu/sites/default/files/2025-06/EURES_Report_on_labour_shortages_and_surpluses_2024.pdf

destinations, but also for countries with broader urban, cultural, rural and transit-related tourism potential. Slovenia records the lowest share among the observed countries, but tourism-related employment remains relevant, particularly in the context of sustainable, nature-based and quality-oriented tourism development. The available data show on job vacancy rates in this sector are above the EU average (2.7%) in several observed countries. In Slovenia, the job vacancy rate reached 4.3%, followed by North Macedonia with 3.7%, Greece with 3.4% and Italy with 2.9%, all above the EU average of 2.7%., while only Croatia recorded a lower rate of 2.2%. Data for the remaining EUSAIR countries are not available, which limits a fully comparable regional assessment.[23]

This employment structure further confirms the importance of skills development in tourism and services. The OECD emphasises that tourism is a highly labour-intensive sector with strong potential to support employment across different age groups, qualification levels and types of work. However, its competitiveness increasingly depends on the availability of a skilled workforce capable of delivering high-quality services and adapting to new market requirements. This means that skills development is not only relevant for filling existing vacancies, but also for enabling tourism businesses and destinations to respond to digitalisation, sustainability requirements, changing visitor expectations and the diversification of tourism products.[24] The challenge of skills shortages in tourism is highly relevant for the Region. The table below presents main tourism skills shortages in the Region.[25]

[23] https://ec.europa.eu/eurostat/databrowser/view/lfsa_egan2__custom_21540066/default/table

[24] https://www.oecd.org/en/publications/oecd-tourism-trends-and-policies-2024_80885d8b-en/full-report/component-6.html#chapter-d1e6026-719e955b66

[25] https://pact-for-skills.ec.europa.eu/document/download/83968c43-1706-4fbd-9fd0-4461583607d7_en?filename=Pact%20for%20Skills%20Tourism%20Baseline%20-%20update%2020240229.pdf; https://www.oecd.org/en/publications/western-balkans-competitiveness-outlook-2024-bosnia-and-herzegovina_82e0432e-en/full-report/component-20.html#chapter-d1e25759-4069d6d249; https://www.oecd.org/en/publications/western-balkans-competitiveness-outlook-2024-albania_541ec4e7-en/full-report/component-20.html#chapter-d1e25789-029c6c53bb; https://www.oecd.org/en/publications/western-balkans-competitiveness-outlook-2024-montenegro_ead1588e-en/full-report/component-20.html#chapter-d1e24359-26096432d0; https://www.oecd.org/en/publications/western-balkans-competitiveness-outlook-2024-north-macedonia_8207326d-en/full-report/component-20.html#chapter-d1e26026-0818e506b3; https://www.oecd.org/en/publications/western-balkans-competitiveness-outlook-2024-serbia_3699c0d5-en/full-report/component-20.html#chapter-d1e27664-e2cbd5e789

Table 2 Skills shortages in tourism

Country / area	Key evidence on tourism skills shortages
EU Member States within the Region	• Tourism faces difficulties in attracting and recruiting qualified workers • Most affected are operational, service-oriented and increasingly digital and sustainability-related roles • Up to 25% of tourism workers have low-level qualifications • More than 90% of tourism enterprises employ fewer than 10 people
Albania	• Shortages of qualified workers • The National Strategy for Employment and Skills 2023–2030 and the Sectoral Committee of Hospitality and Tourism address this issue
Bosnia and Herzegovina	• Skills shortages are linked to fragmented governance, outdated curricula and weak alignment with industry needs
Montenegro	• Seasonal labour shortages are significant, especially during the summer season when tourist numbers exceed the country's population • Main challenges – skills gaps, language barriers and peak-season labour shortages • Existing training solutions are not sufficient to meet seasonal demand, while administrative barriers make foreign worker recruitment more difficult
North Macedonia	• Tourism skills development is supported by the national tourism strategy and vocational and higher education frameworks • The regional TO REGOS initiative has contributed to improving occupational standards in tourism • Limited financial resources and shortages of qualified staff for quality assurance and accreditation remain constraints
Serbia	• The national tourism strategy recognises skills development and promotion of tourism careers among young people, but implementation remains limited • Weak stakeholder consultation, insufficient budgets and lack of policy evaluation reduce the effectiveness of workforce development measures • Digitalisation is also expected to create stronger future skills needs in tourism

Source: European Commission, OECD

Participation of employees in **adult learning and training** provides an additional indication of the sector's capacity to respond to changing skills needs. Since tourism-specific data are not available at more detailed subsector level, the analysis uses the broader category Accommodation and food service activities. The data show significant differences between countries. The EU average participation of workers in adult learning and training in this sector is 18.9%. Among the observed countries, Slovenia stands out with 27.9%, which is significantly above the EU average. In contrast, participation is much lower in Italy (9.6%), Greece and Serbia (8.8%), Croatia (5.5%) and North Macedonia (3.4%).[26] [27]

The analysis shows that tourism and services are facing a combination of labour shortages, skills gaps and low participation in adult learning. These challenges are particularly important because the sector is labour-intensive, highly seasonal and strongly dependent on service quality. Future actions should strengthen cooperation between education providers, employers and destination management actors, support short and flexible training programmes, and improve digital and green upskilling. This would contribute to higher service

[26] Data for the remaining EUSAIR countries are not available.
[27] https://ec.europa.eu/eurostat/databrowser/view/trng_lfs_08b__custom_21543378/default/table

quality, better workforce adaptability, reduced seasonality pressures and more sustainable tourism development across the Region.

3.2.4 Maritime and Blue economy

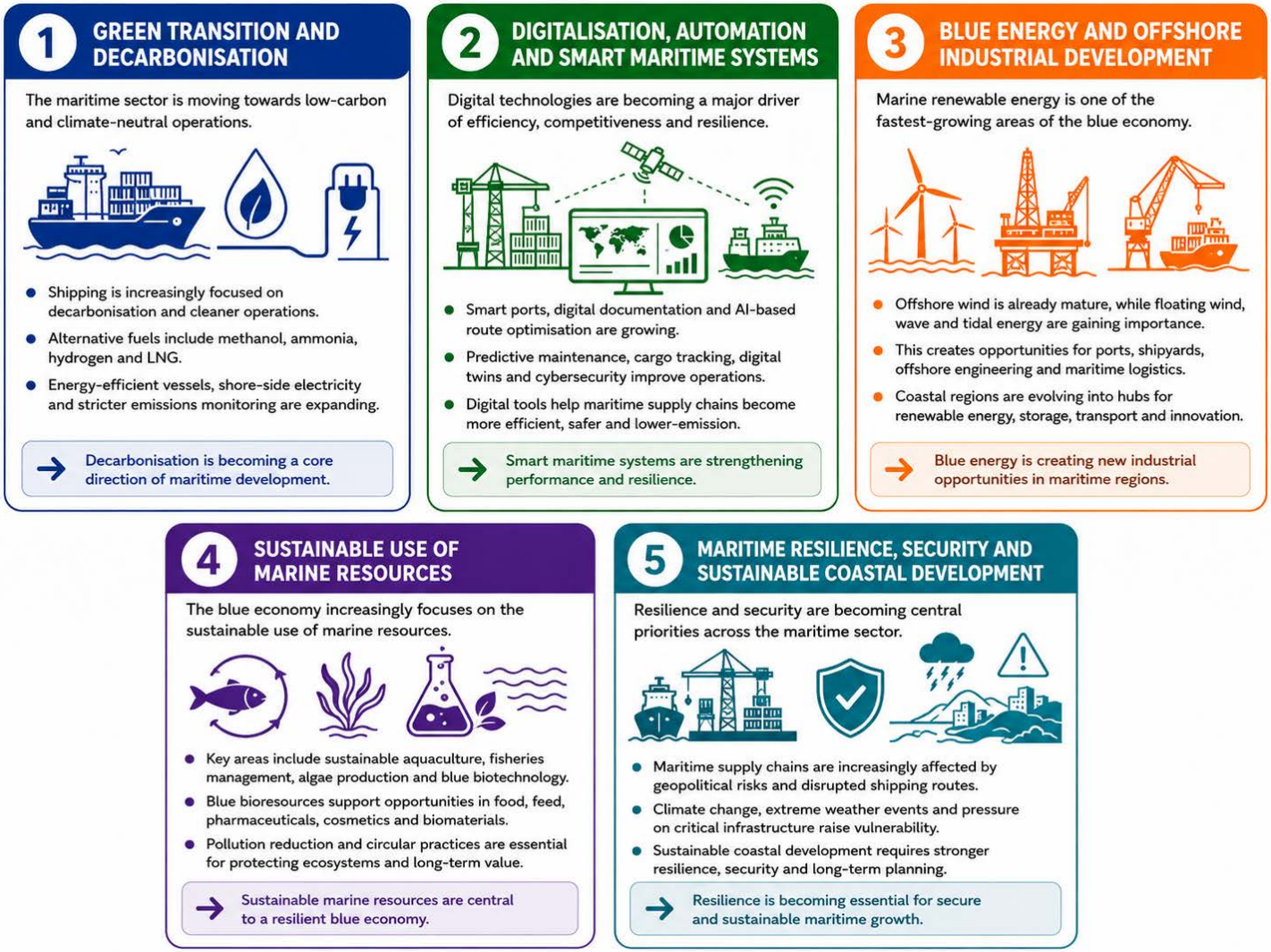
The **maritime and blue economy** refers to all economic activities connected to seas, oceans, coastal areas and inland waters, while ensuring that marine resources are used in a sustainable way. It includes traditional sectors such as shipping, ports, fisheries, aquaculture, shipbuilding and coastal tourism, as well as emerging sectors such as offshore renewable energy, blue biotechnology, marine data, ocean monitoring and smart maritime technologies.

The concept is important because seas and oceans are not only transport routes and sources of food, but also key spaces for energy production, innovation, climate action, biodiversity protection and regional development. Maritime and blue economy professions also play an important role in maintaining supply chains, supporting island and coastal communities, ensuring food security and creating employment opportunities in regions strongly connected to the sea. As the sector becomes more sustainable, digitalised and technology-driven, its development increasingly depends on blue skills and ocean literacy, including the ability to understand the economic, environmental and social value of marine resources. A sustainable maritime and blue economy therefore aims to balance economic growth, environmental protection and social benefits for coastal communities and wider society.[28]

This sector is undergoing a major transformation driven by climate change, technological development, energy transition, geopolitical uncertainty and the need for more sustainable use of marine resources. The **main trends** shaping the maritime and blue economy are shown on the figure below.[29]

[28] The EU Pact for Skills – Regional Skills Partnerships for Blue Skills in EUSAIR (*Blue Skills in EUSAIR*).

[29] https://transport.ec.europa.eu/news-events/news/landmark-agreement-towards-achieving-net-zero-emissions-global-shipping-2050-2025-04-11_en?utm_; https://imare.in/wp-content/uploads/2025/02/33-DNV-Maritime-Forecast-To-2050_Uday-Chaitanya-Ganivada.pdf?utm_; https://www.worldbank.org/en/topic/transport/publication/accelerating-digitalization-across-the-maritime-supply-chain?utm_; https://op.europa.eu/webpub/mare/eu-blue-economy-report-2025/blue-economic-sectors/marine-renewable-energy.html; https://openknowledge.fao.org/server/api/core/bitstreams/50e47c44-4d39-4ab4-b204-05dd658b339f/content; https://unctad.org/publication/review-maritime-transport-2025?utm_



Source: European Commission, Blue Economy Report, Inmare, World Bank, FAO

Figure 9 Main trends in maritime and blue economy sector

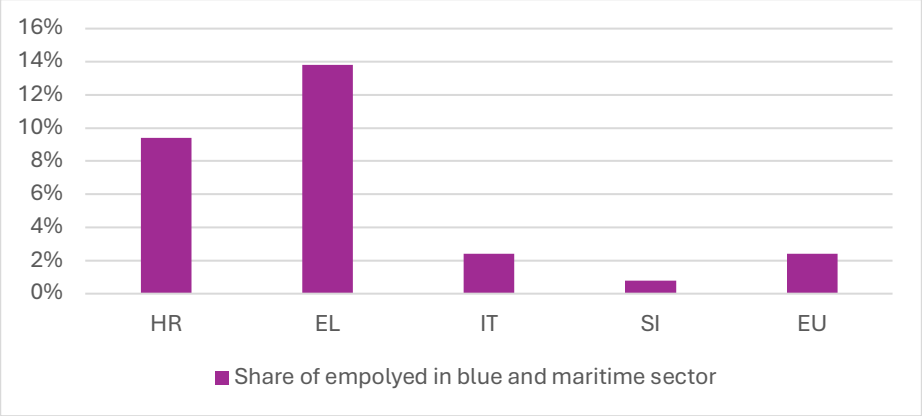
The main trends in the maritime and blue economy show that the sector will increasingly need a workforce that combines traditional maritime expertise with green, digital and cross-sector skills. As shipping, ports, aquaculture, offshore energy and coastal activities become more sustainable and technology-driven, workers will need to understand both operational processes and new environmental, digital and regulatory requirements. The most important **skills related to maritime and blue economy** sectors are presented in the figure below. There is no single official and universally accepted skills classification for the entire sector, because the sector covers many different activities, including shipping, ports, fisheries, aquaculture, shipbuilding, offshore energy, coastal tourism, marine biotechnology and ocean monitoring. For practical purposes, the skills needs in the sector can be grouped into four broad categories: technical and sector-specific skills, green skills, digital skills and transversal skills. This approach is also consistent with EU blue skills work, which highlights sector-specific and cross-cutting skills, including digital, green and interdisciplinary competences.

Source: The classification has been developed based on the BlueComp, the competence framework to navigate the blue economy, The EU Blue economy report 2025, and The EU Pact for Skills – Regional Skills Partnerships for Blue Skills in EUSAIR (Blue Skills in EUSAIR).

Figure 10 Maritime and blue economy skills categories

Employment data for 2025 are not available in a sufficiently detailed and comparable way for all EUSAIR countries. Eurostat employment data cannot be easily extracted for all relevant blue economy activities at the required lower levels of economic classification, because the sector cuts across several industries. For this reason, the analysis uses the latest comparable data from the *EU Blue Economy Report 2025* and the EU Blue Economy Observatory, which present consolidated employment data for 2022, while the **job vacancy data** are not available.

According to the EU Blue Economy Report 2025, established sectors of the EU Blue Economy employed 4.82 million people in 2022, representing 2.4% of total EU employment. The chart below shows the share of employed in the sector.[30]



Source: EU Blue Economy Report 2025

Chart 4 Share of employed in blue and maritime economy sector

Among the EU Member States participating in the EUSAIR area, the maritime and blue economy plays a particularly important role in countries with strong coastal and tourism-based activities. Greece recorded the highest relative importance, with employment strongly concentrated in coastal tourism, which remains the dominant blue economy activity in the country. In Croatia, employment is mainly linked to coastal tourism, but also to marine living resources, maritime transport and related services, reflecting the strong connection between the Adriatic coast and economic activity. Although this share in Italy is lower than in Greece and Croatia, the sector is important due to the size and diversity of the Italian economy. Employment is distributed across several activities, including coastal tourism, maritime transport, port activities, marine living resources and shipbuilding. In Slovenia, the lower share reflects the country's shorter coastline and smaller maritime base. Nevertheless, the sector remains relevant through port activities, maritime transport, coastal tourism and related maritime services.[31]

At this stage, there is no country-specific data available for the EUSAIR countries that would allow a precise comparison of **skills shortages** by country. Therefore, the main problems and skills gaps will be presented on the basis of the broader findings of the European Commission study *Study to Support and Design Skills Development in the Blue Economy*, which analyses

[30] For the non-EU countries of the Region comparable maritime and blue economy employment data are more limited. This makes it difficult to produce a fully harmonised cross-country comparison for the entire Region.
[31] https://blue-economy-observatory.ec.europa.eu/country-profiles/croatia_en?utm_; https://blue-economy-observatory.ec.europa.eu/country-profiles/slovenia_en?utm_; https://blue-economy-observatory.ec.europa.eu/country-profiles/italy_en?utm_; https://blue-economy-observatory.ec.europa.eu/country-profiles/greece_en?utm_

needs, gaps, competency requirements and future policy directions for blue skills development.

The main problems are workforce shortages and difficulties in attracting and retaining talent, especially due to an ageing workforce and labour gaps in emerging sectors such as Marine Renewable Energy and Blue Biotechnology. A second challenge is the low visibility and attractiveness of blue economy careers. Career opportunities are not sufficiently promoted, while career pathways are often unclear, making it harder to attract students, young professionals and new workers. Another key problem is the mismatch between education and industry needs. Existing **training** is often too theoretical, with limited hands-on learning, apprenticeships and mentoring. This reduces the development of practical, job-ready skills. Finally, limited funding and lack of time for upskilling and reskilling restrict the ability of workers and organisations to continuously update skills in response to technological change, sustainability requirements and new occupational profiles.[32]

The weakest-rated skills in the survey may indicate areas where competences are less developed, less systematically addressed, or unevenly distributed across blue economy sectors. Their lower scores suggest that they are currently less prioritised in training, workforce development and sectoral strategies. This may create future skills shortages, particularly if their importance increases over time. Risk prevention at work is the weakest-rated skill within the sector-specific category. Its low prioritisation may indicate that this competence is not sufficiently developed or embedded across all blue economy sectors, especially in Infrastructure and Robotics, where its importance declines significantly in the long term. Digital communication is rated weaker than other digital skills. This suggests that, while advanced digital and data-related skills are increasingly recognised, digital communication competences may be less developed or considered less urgent in several technical sectors. Cybersecurity in blue biotechnology receives relatively low scores compared with other sectors. This may point to a lower level of cybersecurity awareness, weaker integration of cybersecurity into sector-specific training, or a less developed perception of cyber risks in this field. Proficiency in other languages is unevenly prioritised, particularly in technical sectors. Lower scores may indicate that language skills are not sufficiently developed or are not seen as central to workforce development, despite their potential importance for international cooperation, mobility and cross-border projects. Cross-cultural competence starts from a low baseline in some technical sectors, which may suggest that this skill is currently underdeveloped or insufficiently embedded in training and professional development. However, its expected

[32] https://maritime-forum.ec.europa.eu/document/download/d278fdad-0681-42cf-bd2a-c41d862c7400_en?filename=Blue%20economy%20skills%20survey.pdf

growth over time indicates that it could become more important as blue economy activities become more international and collaborative.[33]

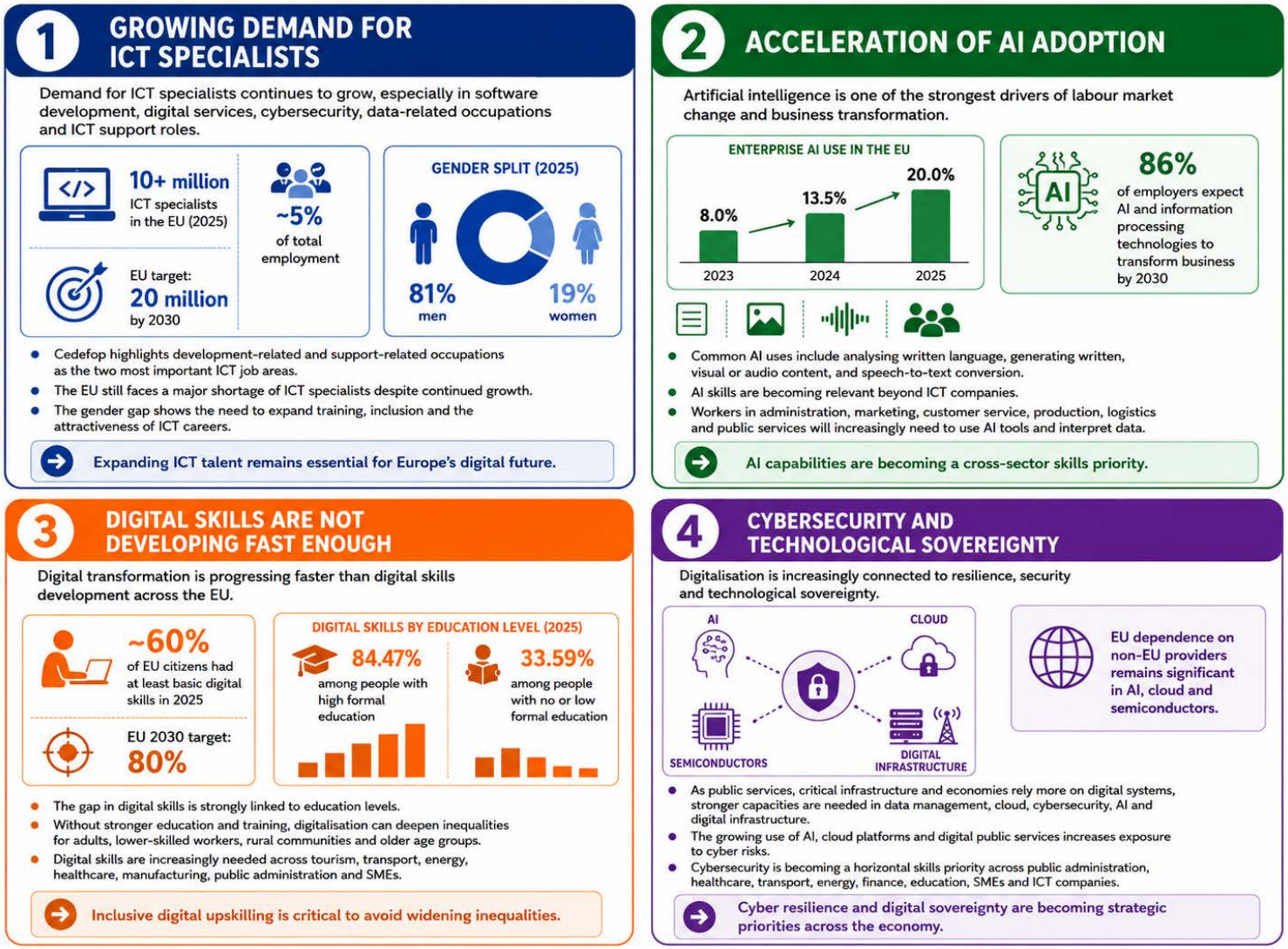
The blue and maritime economy is a strategic sector for the Region, especially for coastal and port-based economies. The sector is undergoing significant transformation driven by decarbonisation, digitalisation, offshore renewable energy, sustainable use of marine resources, and growing requirements for maritime resilience and security. These trends are increasing the demand for a workforce that combines traditional maritime and technical expertise with green, digital and transversal skills. Therefore, strengthening blue economy skills, including through specialised training programmes, practical placements and cross-border cooperation, will therefore be essential for supporting the sector's competitiveness, sustainability and resilience across the Region

3.2.5 ICT, Digitalisation and Artificial Intelligence

ICT, digitalisation and artificial intelligence represent one of the fastest growing and most transformative sectors in the Region. Although ICT is a distinct economic sector, its importance goes far beyond ICT companies, as digital technologies increasingly shape business models, public services, education, healthcare, tourism, transport, energy and manufacturing. The sector is therefore central to competitiveness, productivity and innovation, but also to the ability of countries to adapt to green and digital transitions. The **main trends** in the sector are shown on the figure below.[34]

[33] https://maritime-forum.ec.europa.eu/document/download/d278fdad-0681-42cf-bd2a-c41d862c7400_en?filename=Blue%20economy%20skills%20survey.pdf

[34] https://www.cedefop.europa.eu/en/data-insights/ict-professionals-skills-opportunities-and-challenges-2023-update; https://ec.europa.eu/eurostat/web/interactive-publications/digitalisation-2026?utm_; https://www.weforum.org/publications/the-future-of-jobs-report-2025/in-full/1-drivers-of-labour-market-transformation/#1-drivers-of-labour-market-transformation https://ec.europa.eu/eurostat/web/interactive-publications/digitalisation-2026?utm_; https://www.weforum.org/publications/the-future-of-jobs-report-2025/in-full/1-drivers-of-labour-market-transformation/#1-drivers-of-labour-market-transformation; https://ec.europa.eu/eurostat/web/interactive-publications/digitalisation-2026?utm_; https://ec.europa.eu/eurostat/databrowser/view/isoc_sk_dskl_i21__custom_21510732/default/table; https://digital-strategy.ec.europa.eu/en/policies/2025-state-digital-decade-package; https://www.enisa.europa.eu/topics/skills-and-competences?utm_



Source: European Commission, Cedefop, World Economic Forum

Figure 11 Main trends in ICT sector

The rapid advancement of ICT is closely linked to skills development, as continuous technological change requires individuals, education systems, and labour markets to adapt quickly to emerging digital competencies and new forms of work. Digital skills should be understood broadly, as a combination of competences needed to use digital technologies effectively, safely and critically in work, learning and everyday life. According to the *DigComp 2.1 – The Digital Competence Framework for Citizens*, **digital skills** are grouped into five main areas: information and data literacy, communication and collaboration, digital content creation, safety, and problem solving.

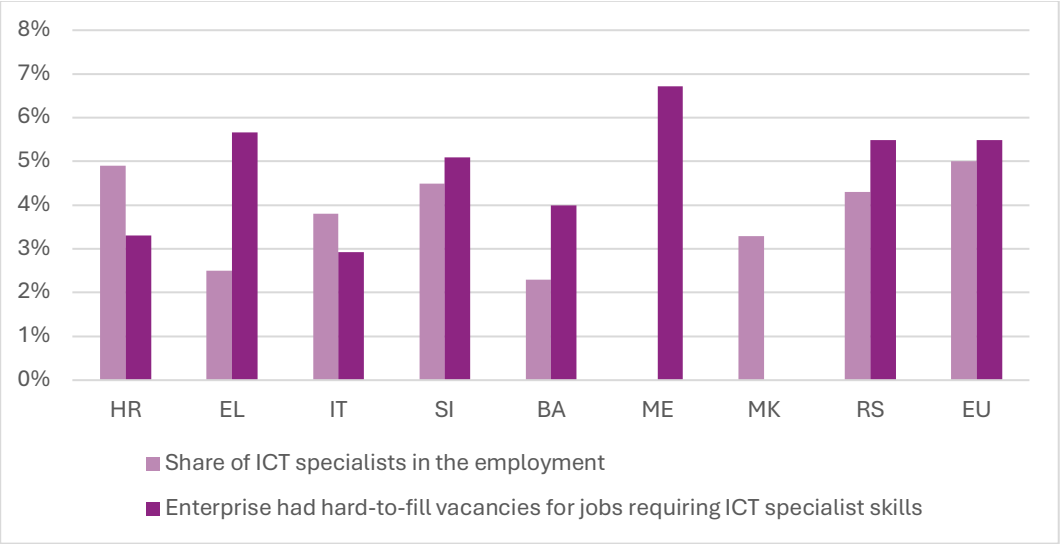
Source: DigComp 2.1 – The Digital Competence Framework for Citizens

Figure 12 Digital skills categories

The growing number of ICT specialists confirms the increasing importance of digital skills for the European labour market. In 2024, more than 10 million people were employed as ICT specialists across the EU, representing 5.0% of total employment. However, this figure should not be interpreted as a sign that labour market demand has been met. At EU level, 9.55% of enterprises recruited or tried to recruit personnel for jobs requiring ICT specialist skills. In the countries of the Region this share ranged from 5.00% in Italy to 23.92% in Montenegro. These differences suggest that recruitment intensity varies across countries, but the overall pattern confirms that enterprises across the Region are actively seeking ICT specialists. However, the EU remains far from its 2030 target of at least 20 million ICT specialists.

Although demand for ICT specialists is high, enterprises continue to face difficulties in finding workers with the required specialist skills. **Job vacancy data** for the ICT sector are not available, but the indicator on **enterprises with hard-to-fill vacancies for jobs requiring ICT**

specialist skills points to clear recruitment difficulties. At EU level, 3.31% of enterprises reported hard-to-fill vacancies for jobs requiring ICT specialist skills. The chart below shows the **share of ICT specialists in total employment** and **shares of enterprises that had hard-to-fill vacancies for jobs requiring ICT specialist skills**.[35]



Source: Eurostat

Chart 5 Share of ICT specialists in total employment and share of enterprises that had hard-to-fill vacancies for jobs requiring ICT specialist skills

The share of ICT specialists in total employment confirms that most countries in the Region remain below the EU average, pointing to a structural shortage of advanced digital human capital. Only Croatia is almost at the EU level, followed by Slovenia, Serbia and Italy. Countries with lower shares of ICT specialists may face greater difficulties in supporting AI adoption, cybersecurity, SME digitalisation, digital public services and data-driven innovation. At the same time, difficulties in filling vacancies requiring ICT specialist skills are visible across several countries. Compared with the EU average, these difficulties are more pronounced in Montenegro, Greece, Slovenia and Serbia, while they are less pronounced in Italy and Croatia.

Eurostat data, structured according to the *DigComp* competence areas, show that digital skills levels differ significantly across countries of the Region and that **skills shortages** are not uniform across competence areas. Detailed data on digital skills by competence area are presented in the table below.

[35] Data for Montenegro on share of ICT specialists is not available, while dana for Albania and San Marino for both indicators is not available.

Table 3 Digital skills by competence area in the Region

Country	Information and data literacy	Communication and collaboration	Digital content creation	Safety	Problem solving
Croatia	78.75	84.31	79.56	70.67	77.33
Greece	73.95	87.85	59.27	70.05	82.31
Italy	65.54	87.97	62.63	73.41	78.18
Slovenia	77.28	89.65	63.46	56.16	81.02
Albania	63.91	86.88	51.55	42.57	59.35
Bosnia and Herzegovina	65.49	89.92	55.95	49.05	66.76
Montenegro	72.80	94.02	90.52	51.14	81.26
North Macedonia	55.48	91.30	33.89	58.39	67.85
San Marino	n/a	n/a	n/a	n/a	n/a
Serbia	78.84	88.79	69.89	48.10	77.95
EU	86.47	92.07	70.51	74.63	86.07

Source: Eurostat

The comparison of Eurostat data shows that digital skills development across the Region is uneven, both between countries and across different types of digital competences. This is important because digital transformation does not depend only on access to technology, but also on the capacity of individuals to use digital tools productively, safely and independently.

The data suggest that communication and collaboration skills are the strongest competence area across most countries. Although only Montenegro performs above the EU average, most countries record relatively high values in this category. This indicates that many individuals are already able to use digital tools for communication, interaction and online collaboration. However, this should not be interpreted as full digital readiness. Communication skills represent only one part of digital competence and do not necessarily imply the ability to create digital content, solve technical problems, protect data or use technologies in more complex work settings.

By contrast, digital content creation and safety skills emerge as the main shortage areas. Digital content creation is below the EU average in most countries, with Croatia being the only country above the EU average. Particularly low values are recorded in North Macedonia, Albania, Bosnia and Herzegovina and Greece. This points to a weaker capacity to create, adapt and responsibly use digital content, which is increasingly important for work, learning, entrepreneurship, public services and digital business models.

The gap in safety skills is even more significant, as all countries in the Region perform below the EU average. The lowest values are visible in Albania, Serbia, Bosnia and Herzegovina and Montenegro. This represents a particularly relevant skills shortage because safety skills are directly linked to cybersecurity awareness, data protection, privacy and responsible use of digital technologies. As countries expand the use of AI, cloud platforms, digital public services and interconnected systems, weak safety skills may become a barrier not only to individual employability, but also to institutional resilience and trust in digital services.

The data on the use of generative AI tools adds another important layer to this comparison. While most EUSAIR countries remain below the EU average in ICT specialist employment, some countries already show relatively high levels of generative AI use among individuals. Croatia records the highest value among the observed countries, with 13.37% of individuals using generative AI tools, above the EU average of 9.55%. Greece also performs above the EU average, with 11.22%, while Slovenia is close to the EU average, with 9.17%. Italy, Serbia, Bosnia and Herzegovina, North Macedonia and Albania record lower values, indicating weaker individual uptake.

This comparison shows that AI adoption may spread faster than the development of specialised ICT labour markets and broader digital skills. Generative AI tools are increasingly accessible to the general population, but their effective use requires more than basic access. Users need AI literacy, data awareness, critical thinking, understanding of privacy and responsible use, and the ability to evaluate AI-generated outputs. This is directly linked to the previously identified gaps in content creation, safety and problem-solving skills.

In relation to **adult learning and training**, enterprise-provided training to ICT specialists can be used as a indicator of lifelong learning capacity in the ICT, digitalisation and AI sector. The available data show that the share of enterprises providing training to ICT/IT specialists remains relatively limited across the observed countries. The EU average is 11.44%, while among countries of the Region, Montenegro (13.37%), Slovenia (12.37%) and (11.88%) are above the EU average. Bosnia and Herzegovina (9.98%), Greece (9.38%) and Croatia (9.01%) remain below the EU average, while Italy (7.26%) records the lowest value among the observed countries.[36]

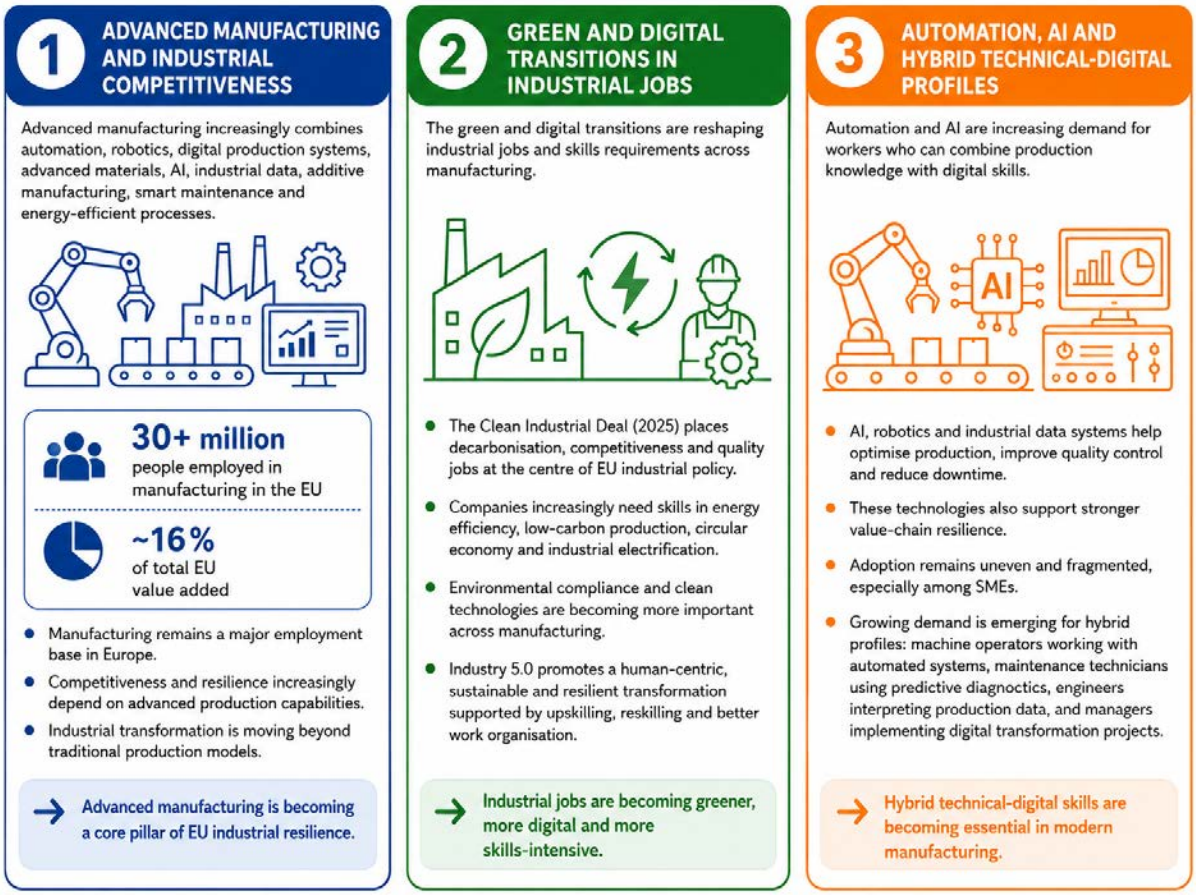
The country comparison points to a clear conclusion for education institutions: digital skills development needs to move beyond general digital literacy and become more targeted, practical and sector oriented. The data show that many individuals are already able to use digital tools for communication and collaboration, but weaker results in digital content creation,

[36] Data for Albania, North Macedonia and San Marino are not available.

safety and problem solving indicate shortages in the competences needed for productive, safe and independent use of digital technologies.

3.2.6 Advanced manufacturing and industry

Advanced manufacturing and industry include production activities that combine traditional industrial sectors with new technologies, automation, digitalisation, advanced materials and greener production processes. Examples of technologies supporting advanced manufacturing and capable of maximising the potential of EU manufacturing include AI, robotics, additive manufacturing, virtual reality, blockchain and big data. Advanced manufacturing and industry is increasingly shaped by the combined effects of digitalisation, automation and the green transition. The **main trends** are shown on the figure below.[37]

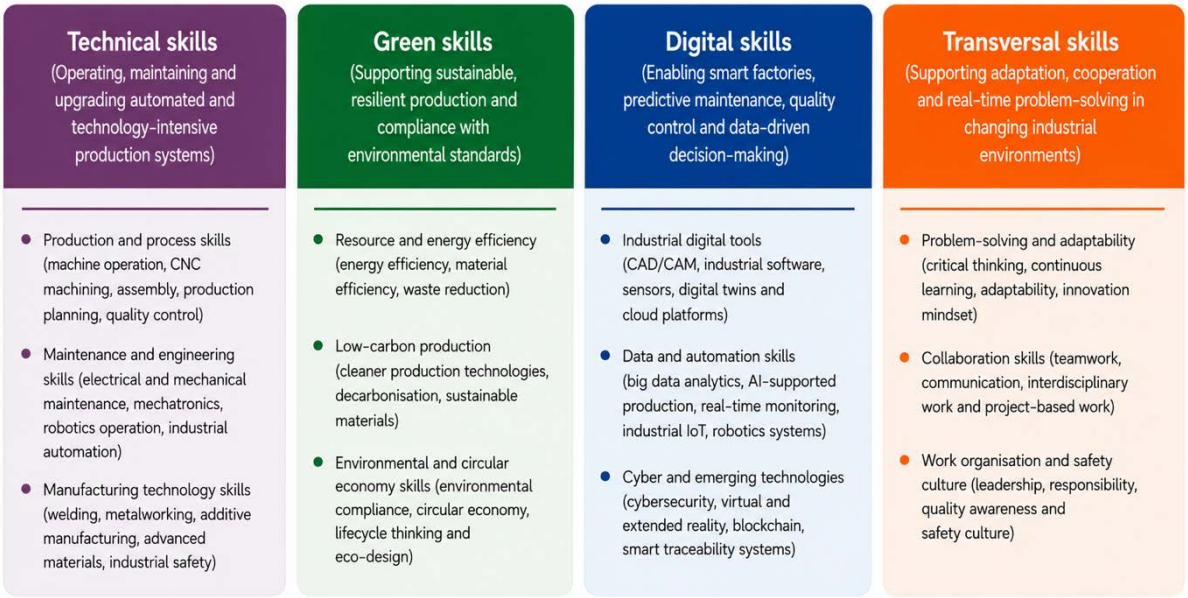


Source: European Commission, OECD

Figure 13 Main trends in advanced manufacturing sector

[37] https://single-market-economy.ec.europa.eu/industry/advanced-manufacturing_en; https://www.oecd.org/en/publications/progress-in-implementing-the-european-union-coordinated-plan-on-artificial-intelligence-volume-2_3ac96d41-en/full-report/ai-in-manufacturing_5df4a60d.html?utm_; https://commission.europa.eu/topics/competitiveness/clean-industrial-deal_en?utm_; https://research-and-innovation.ec.europa.eu/research-area/industrial-research-and-innovation/industry-50_en?utm_; https://www.oecd.org/en/publications/progress-in-implementing-the-european-union-coordinated-plan-on-artificial-intelligence-volume-2_3ac96d41-en/full-report/ai-in-manufacturing_5df4a60d.html?utm_

Advanced manufacturing and industry are strongly influenced by technological change. As manufacturing becomes more automated, digital, data-driven and resource-efficient, companies will increasingly need workers who combine technical expertise with digital, green and problem-solving skills. Given that there is no official classification of skills specifically designed for advanced manufacturing and industry, skills are grouped into four analytical categories: technical skills, digital skills, green skills and transversal skills. This classification allows the analysis to capture both occupation-specific competences required in industrial production and broader cross-cutting skills shaped by technological change, automation, digitalisation and the green transition. The **key skills required in advanced manufacturing and industry** are presented in the figure below.



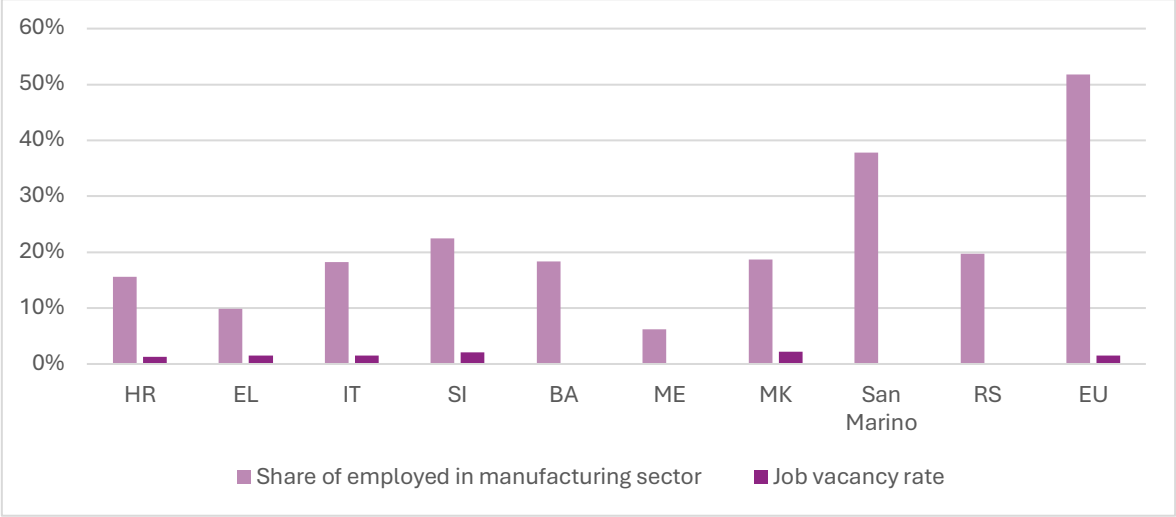
Source: The classification of skills is based on several relevant EU and international reference documents – Strategic Insights into the EU's Advanced Manufacturing Industry: Trends and Comparative Analysis, Progress in Implementing the European Union Coordinated Plan on Artificial Intelligence, and OECD Future of Education and Skills 2030 Conceptual learning framework.

Figure 14 Advanced manufacturing and industry skills categories

Advanced manufacturing and industry do not constitute a separate statistical category in standard labour market datasets. Official statistics usually report employment by broader economic activities, such as manufacturing, industry, construction or services, but they do not distinguish whether a worker is employed in traditional manufacturing or in technologically advanced manufacturing activities.

For this reason, the overview uses employment in the manufacturing sector as a proxy indicator. This is appropriate because advanced manufacturing is defined as the application of advanced technologies to manufacturing processes, including technologies such as AI, robotics, additive manufacturing, IoT, extended reality, dynamic data and power electronics. Therefore, advanced manufacturing is primarily embedded within the wider manufacturing

workforce, even though not all manufacturing jobs can be considered advanced manufacturing jobs. The graph below presents the **share of employment** and **job vacancy** in manufacturing across the Region.[38]



Source: Eurostat, Montenegro Statistical Office, San Marino Statistical Office

Chart 6 Share of employed in manufacturing sector

The chart shows considerable variation in the share of employment in manufacturing across the observed EUSAIR countries, ranging from around 6% to 38**%**. This confirms that the industrial employment base is unevenly distributed across the region, with some countries relying much more strongly on manufacturing than others. The available data show that the job vacancy rate ranges from 1.3% in Croatia to 2.2% in North Macedonia, with Slovenia also recording a relatively high rate. This suggests that several EUSAIR countries face visible recruitment pressures in the wider manufacturing and industrial labour market. Italy is close to the EU average, while Greece and Slovenia show higher vacancy pressures, indicating stronger unmet labour demand.[39]

The highest shares are recorded in San Marino and Slovenia, while in Serbia, Bosnia and Herzegovina, North Macedonia, Italy and Croatia also accounts for a significant share of employment. This confirms that these economies have a relevant industrial employment base, which is important for the development of skills linked to advanced manufacturing technologies. By contrast, Greece and Montenegro record lower shares of manufacturing employment, reflecting more service-oriented economic structures and a more selective industrial base.

Advanced manufacturing is characterised by the integration of advanced technologies, the connection between physical and digital environments, real-time operations and smart

[38] Data for Albania is not available.
[39] Data for other countries is not available.

production systems. These changes directly affect the workforce, because industrial jobs increasingly require workers who can operate, monitor and maintain more complex, automated and data-driven production systems.[40] As a result, the skills profile of the manufacturing workforce is changing: traditional technical skills remain essential, but they need to be complemented by digital skills, green skills and transversal skills.

However, the CECIMO 2025 report confirms that **skills shortages** are a major challenge for the European manufacturing sector. The report distinguishes between labour shortages and skills shortages and shows that companies see skills shortages as the slightly greater concern than labour shortages. This indicates that the problem is not only the lack of available workers, but also the lack of workers with the specific competences required by advanced manufacturing.[41]

The report shows that companies face serious recruitment and retention challenges. Almost 90% of participants describe finding skilled talent as challenging or very challenging. The main reason is the lack of qualified candidates, followed by a limited applicant pool, demographic pressures, the declining attractiveness of manufacturing careers, and the cost and time required for training. Retention is also a concern, with many companies reporting difficulties in keeping skilled workers, partly due to competition for talent, changing employee expectations and insufficient career development opportunities. The most pronounced skills shortages are reported in core industrial and engineering functions. According to the survey, shortages are strongest in mechanical and industrial engineering, electrical engineering and production, which the report links to the growing adoption of advanced technologies such as automation and AI.

The report also shows that companies consider technical skills the most important skill category for industrial growth, especially skills related to machinery knowledge. In addition to technical skills, companies also emphasise soft skills, including communication, problem-solving and management, as well as digital skills such as cybersecurity, AI and data sharing. Green skills are still less prioritised by companies, but they remain important for sustainability, energy efficiency and regulatory compliance.

The problem of skills shortages is also reflected in participation in **adult learning and training**. Across the observed EUSAIR countries, participation in adult learning and training varies significantly. Slovenia records the highest rate, at 19.8%, which is well above the EU average of 11.8%. Italy also performs relatively strongly, with 9.2%, although it remains below the EU average. By contrast, participation is much lower in Greece at 3.9%, Croatia at 3.2%, Serbia

[40] https://publications.jrc.ec.europa.eu/repository/handle/JRC139092
[41] https://www.cecimo.eu/wp-content/uploads/2025/02/Insights-Beyond-the-Skills-Gap-2025-3.pdf?utm

at 2.9%, North Macedonia at 1.3%, and Bosnia and Herzegovina at only 0.4%, where the share is ranging from only 0.4% to 3.9%. These differences suggest that several countries of the Region may face difficulties in adapting their manufacturing workforce to the skills required by advanced manufacturing technologies.

The identified skills shortages in advanced manufacturing and industry require a more coordinated response from education, training and labour market institutions. As production becomes more automated, digitalised and resource-efficient, skills development systems need to support both the entry of new workers into industrial occupations and the continuous upgrading of the existing workforce.

3.3 Analysis of skills gaps by type

The table below summarises the main skills gaps identified through the sectoral analysis in Section 3.2.[42]

Table 4 Skills shortages across the Region

Skills category	Main pattern in the Region
Technical skills	• The most widespread and immediate skills gap across the region • Reflects the lack of workers with practical and occupation-specific competences needed to keep key sectors operational and to support investment, maintenance, service quality and industrial upgrading • Especially visible in countries with stronger industrial, transport, maritime and energy-related employment bases, • Also affects service-oriented economies through tourism, logistics and maintenance needs
Green skills	• Emerging as a cross-sectoral risk • Most visible in sectors directly exposed to decarbonisation, such as energy, construction, transport and manufacturing • Increasing relevance in other sectors • Often not yet systematically monitored, which makes shortages harder to quantify
Digital skills	• Horizontal requirement across all sectors • No longer limited to ICT sector • The gap is particularly relevant where traditional sectors are being transformed by automation, digital platforms, AI and data-based management
Transversal skills	• Less visible in vacancy statistics • Critical for adaptation in all sectors • Common gap across almost all sectors. • Especially important because work is becoming more technology-intensive, service-oriented, collaborative and affected by rapid change • Important for lifelong learning, mobility between sectors and successful upskilling and reskilling

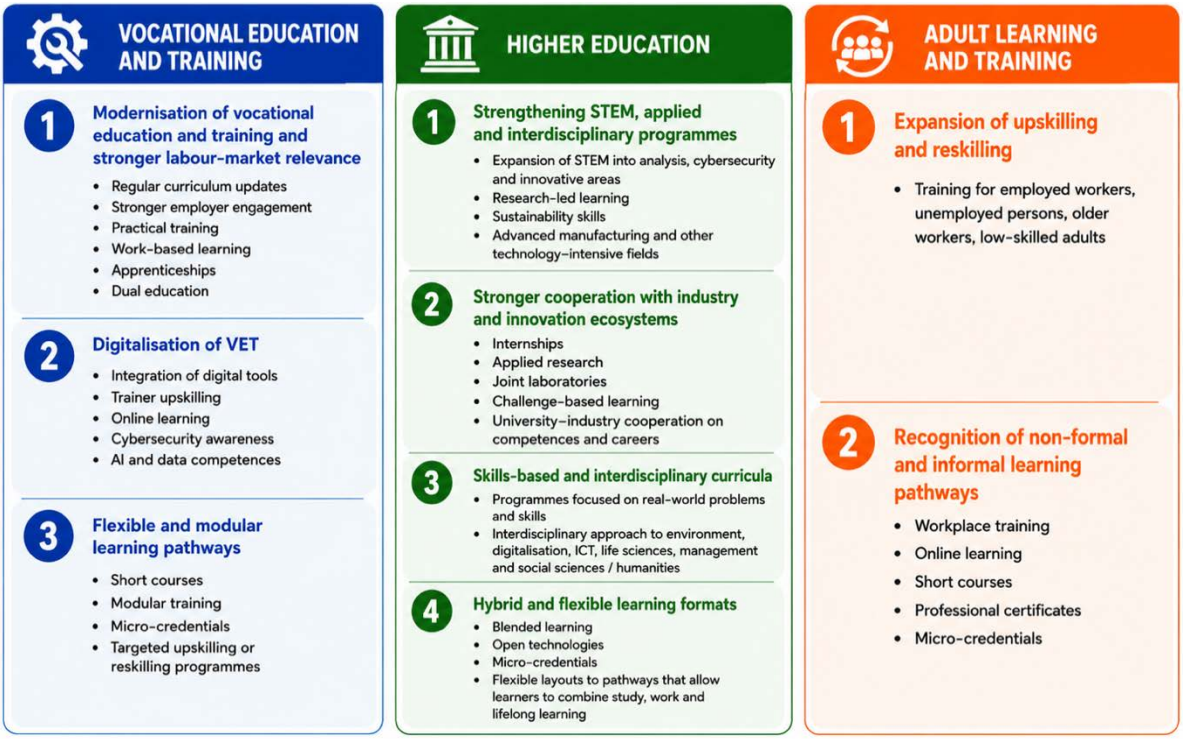
Overall, the matrix confirms that skills gaps in the Region are not isolated within individual sectors but form a broader structural challenge. These findings indicate that strengthening vocational education and training (VET) institutions is a key priority for the Region. VET institutions, higher education providers and adult learning systems need to become more responsive to labour market needs, update curricula more regularly, expand practical and

[42] Data availability and comparability vary across sectors and countries. The findings therefore represent an analytical synthesis of available evidence rather than a comprehensive statistical measurement of skills across the Region.

work-based learning, and provide flexible upskilling and reskilling opportunities. Without stronger institutional capacity in education and training, skills gaps may continue to limit competitiveness, sectoral transformation and resilience across the Region.

3.4 Education, skills mismatch and emerging trends

Education and training systems are increasingly expected to respond to fast-changing skills needs driven by digitalisation, automation, the green transition, demographic change and evolving labour market demand. Skills mismatch is therefore no longer only a question of whether individuals hold formal qualifications, but whether education and training systems can provide relevant, adaptable and continuously updated competences. The main trends differ across levels of education and types of institutions. The figure below shows main trends in vocational education and training, higher education and adult learning and training.[43]



Source: Official Journal of the European Union, Cedefop, UNESCO, European Commission

Figure 15 Main trends in education and training

The trends described above show that education and training systems need to become more flexible, skills-oriented and better connected with labour market needs. However, these trends have different implications for different parts of the skills system. Vocational education and

[43] https://www.francecompetences.fr/app/uploads/2024/10/COUNCIL-RECOMMENDATION-of-24-November-2020-on-vocational-education-and-training-VET-for-sustainable-competitiveness-social-fairness-and-resilience.pdf?utm_; https://www.cedefop.europa.eu/files/9200_en.pdf; https://www.cedefop.europa.eu/en/publications/3081; https://unesdoc.unesco.org/ark:/48223/pf0000384326; https://education.ec.europa.eu/focus-topics/stem; https://education.ec.europa.eu/education-levels/higher-education/innovation-in-education; https://education.ec.europa.eu/sites/default/files/2022-01/communication-european-strategy-for-universities-graphic-version.pdf?utm_; https://education.ec.europa.eu/education-levels/higher-education/micro-credentials?utm_

training, higher education and adult learning do not have the same role, but they need to act in a coordinated way. The figure below translates these trends into institutional implications. It shows how different parts of the skills system should contribute to reducing skills mismatches and supporting workforce adaptation across the key sectors analysed in this study.

The key priority is to move towards a more responsive and coordinated skills system. This means that education and training institutions should not only react to current shortages, but also anticipate future skills needs and provide flexible learning pathways that support competitiveness, resilience and workforce adaptability.

Education level	Main implications	What this brings to the sectors	Sectoral relevance
Vocational education and training	• Strengthen practical and occupation-specific training • Expand work-based learning, apprenticeships and dual education • Update curricula more regularly with employers • Integrate basic digital, green and transversal skills into vocational programmes • Invest in modern equipment and teacher/trainer competences	• Sectors gain **workers** who are better prepared for real workplace tasks • Reduces shortages in technical, operational and service occupations • Supports faster implementation of new technologies and standards • Improves service quality, maintenance capacity, safety and operational reliability	• **Energy transition** needs practical skills for renewable energy, energy efficiency, smart grids and building renovation • **Transport** requires operational, logistics, maintenance and safety skills for cleaner and smarter mobility • **Tourism** needs practical hospitality skills combined with service quality, languages and digital tools • **Maritime and blue economy** need port, ship repair, safety, aquaculture and environmental skills • **ICT, digitalisation and AI** require applied digital skills, basic AI literacy, cybersecurity awareness, data handling and use of sector-specific digital tools across occupations • **Advanced manufacturing** needs machine operation, CNC, welding, mechatronics, robotics and maintenance skills
Higher education	• Strengthen STEM, applied and interdisciplinary programmes • Develop skills-based curricula focused on learning outcomes and labour market relevance • Integrate digitalisation, AI, sustainability and innovation across study programmes • Expand internships, applied research, joint laboratories and cooperation with companies • Support technology transfer and innovation ecosystems • Align enrolment quotas with labour market needs	• Sectors gain advanced professionals able to lead transformation processes • Strengthens innovation, technology adoption and productivity • Supports development of higher-value activities and new business models • Improves capacity for strategic planning, digital transformation and green transition	• **Energy** requires advanced competences in clean energy systems, smart grids, circular economy and industrial decarbonisation • **Transport** requires transport engineering, sustainable mobility planning, automation, data use and logistics management • **Tourism** requires sustainable tourism management, destination development, tourism analytics and entrepreneurship • **Blue economy** requires marine technologies, maritime logistics, marine spatial planning, decarbonisation and blue innovation • **ICT and AI** require software, data science, cybersecurity, AI and responsible digital transformation skills • **Advanced manufacturing** requires engineering, robotics, industrial data analytics, advanced materials and sustainable manufacturing
Adult learning and training	• Expand upskilling and reskilling for the existing workforce • Develop short, flexible and modular training programmes • Use micro-credentials for targeted skills development • Focus on workers affected by digitalisation, automation and the green transition • Improve access for low-skilled adults, older workers, seasonal workers and SME employees	• Helps sectors adapt without relying only on new graduates • Enables workers to update skills as technologies and regulations change • Reduces risk that existing workers become excluded • Supports SMEs and seasonal sectors with practical and flexible training solutions	• **Energy, construction, manufacturing** and **transport** workers need reskilling for green technologies, energy efficiency and circular economy • **Transport** workers need training in smart mobility tools, digital logistics, route optimisation and low-emission systems • **Tourism** workers and SMEs need training in digital marketing, online booking, CRM, languages, service quality and sustainability • **Maritime** workers need short courses in safety, environmental compliance, alternative fuels, data use and digital tools • **Industrial** workers need upskilling in automation, robotics, CAD/CAM, predictive maintenance, industrial data and green production

Figure 16 Main implications on education

4 Policy and governance analysis

4.1 Overview of EU-level policy frameworks

Skills development within the Region is shaped by a broader European policy framework that increasingly links human capital with competitiveness, workforce resilience, social inclusion, and the green and digital transitions. Rather than functioning as a standalone policy area, skills development is embedded within wider EU priorities related to labour market transformation, innovation, sustainability, and economic convergence.

Within the EUSAIR context, these frameworks are particularly relevant because they provide a common strategic basis for addressing shared regional challenges, and they also support greater policy alignment and cooperation among participating countries.

Instead of analysing each EU document separately, the main frameworks relevant for the Region can be grouped into **three broad categories**: broader transformation and socio-economic frameworks, skills and education-specific frameworks, and targeted labour market and inclusion initiatives (Figure 11):

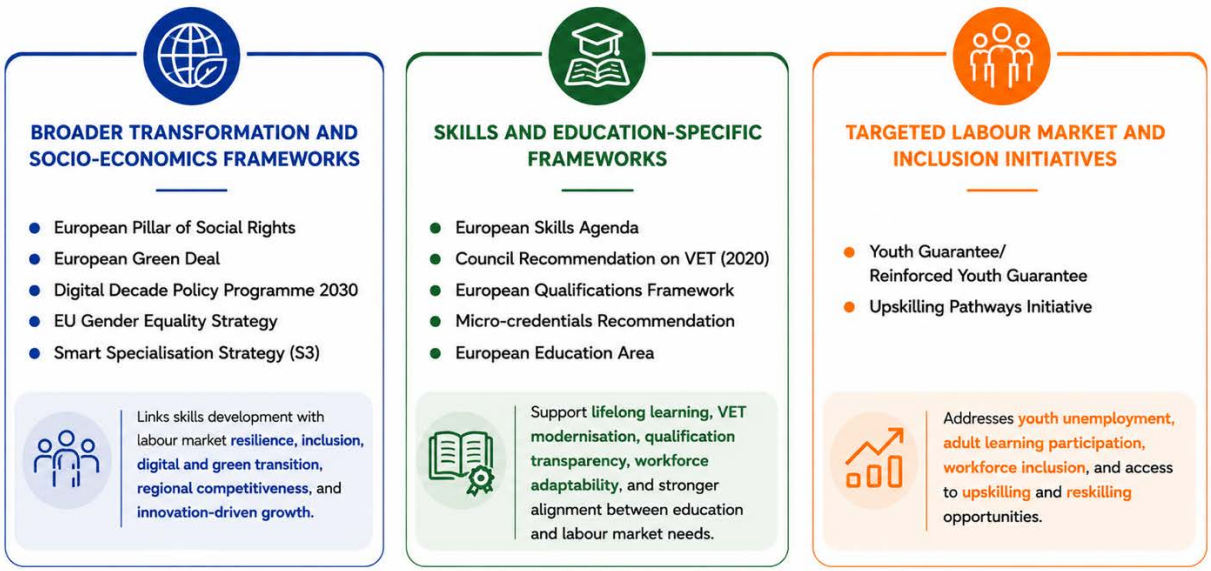


Figure 17 Overview of EU-level policy frameworks

Key takeaway: although EU-level framework provides a common strategic direction for skills development, the main challenge for the Region lies in translating these shared priorities into coordinated and effective implementation across countries with differing governance systems, institutional capacities, and labour market conditions.

4.2 National skills strategies and policy approaches

National skills systems across the Region are shaped by diverse strategic frameworks, institutional arrangements and levels of alignment with EU priorities. While all countries increasingly link skills development with education reform, labour market needs, digitalisation, green transition and innovation, their policy approaches differ depending on governance structures, institutional capacity and implementation maturity.

The policy mapping confirms that skills development has become a strategic priority across all EUSAIR participating countries, with a strong focus on improving workforce adaptability, strengthening employability, and supporting the green and digital transitions. While policy frameworks differ in scope and maturity, a high degree of convergence can be observed regarding the key challenges and priorities shaping skills policies across the Region.

A **common trend** across most countries is the growing emphasis on **lifelong learning, upskilling, and reskilling** as essential mechanisms for responding to labour market transformation. Croatia, Slovenia, Greece, Bosnia and Herzegovina, and Montenegro place particular emphasis on lifelong learning and workforce adaptability, reflecting the need to respond to demographic change, technological development, and evolving labour market demands.

Another recurring priority is **strengthening the alignment between education and labour market needs**. Greece, Croatia, North Macedonia, and Albania are implementing reforms aimed at increasing the relevance of VET, improving work-based learning opportunities, and supporting competence-based approaches to education. Similar efforts are visible across the Region, reflecting a broader shift towards more responsive and demand-driven skills systems.

Digital transformation emerges as a cross-cutting policy priority in nearly all participating countries. Serbia, Montenegro, North Macedonia, Albania, Croatia, and Greece explicitly emphasize the development of digital skills and workforce readiness for technological change, while Italy combines digital skills development with broader employability and innovation policies. At the same time, several countries increasingly integrate skills development within wider innovation, competitiveness, and regional development agendas, particularly Slovenia and Italy.

Differences between EU member states and non-EU countries are primarily related to implementation maturity rather than strategic direction. Non-EU countries generally place stronger emphasis on alignment with European standards, qualifications frameworks, and labour market reforms, while EU member states increasingly focus on strengthening the responsiveness, flexibility, and effectiveness of existing systems.

A detailed overview of national skills policy frameworks and strategic documents across EUSAIR participating countries is provided in *Annex 2 Policy Framework Overview* of this Study.

4.3 Governance mechanisms and institutional coordination

Governance arrangements for skills development across the Region differ significantly in terms of institutional structure, coordination capacity, and implementation maturity. Across the Region, **governance challenges** increasingly relate not to the absence of strategic priorities, but to the limited capacity to ensure coordinated implementation across institutions and policy domains. Coordination between education system, labour market policies, innovation agendas, and labour market intelligence (LMI) remains uneven, while institutional silos, limited data sharing, and inconsistent stakeholder engagement continue to affect implementation effectiveness and the responsiveness of skills systems to labour market and demographic change.

4.3.1 Key governance findings

- **EU member states** generally demonstrate more integrated governance systems linking education, labour market, innovation, and social policy domains. Slovenia and Croatia show relatively stronger institutional coordination, while Italy combines comprehensive governance structures with a highly regionalized implementation model.
- **Enlargement countries**, particularly Serbia, Montenegro, Albania, and North Macedonia, have strengthened governance frameworks through EU-aligned reforms related to education, employment, qualifications, and innovation policies. However, implementation capacity and cross-sectoral coordination remain uneven. **Bosnia and Herzegovina** continues to face the most significant governance fragmentation in the Region due to the distribution of responsibilities across multiple administrative levels.
- **San Marino** operates through a smaller and more flexible governance structure, characterized by closer institutional interaction but lower levels of formalization.

Key takeaway: EUSAIR provides an important platform for macro-regional coordination, macro-regional exchange, stakeholder engagement, and joint initiatives related to skills development, although its effectiveness depends on the commitment and cooperation of participating countries.

4.4 Labour Market Intelligence and forecasting systems

LMI and forecasting systems plan an important role in supporting evidence-based skills policies and aligning education and training systems with labour market demand. The

overview below highlights the main regional patterns, differences in system maturity, and common implementation challenges across the Region (Table 5):

Table 5 Main regional patterns in LMI and forecasting systems

Regional pattern	Main characteristics	Main challenges
EU-level systems	• Advanced forecasting, benchmarking, and real-time labour market monitoring tools (e.g. CEDEFOP, Skills Panorama, OVERATE, EUROSTAT)	• Uneven national uptake and policy integration
More developed and integrated national systems (EU member states)	• Stronger institutional coordination, forecasting capacity, employer-based analysis, and integration with qualifications and VET systems	• Limited systematic integration of forecasting outputs into curriculum development and long-term education planning
Reform-oriented and developing systems (e.g. Greece, Serbia, Montenegro, Albania, North Macedonia)	• Increasing use of labour market analysis, sectoral assessment, and EU-aligned reforms supporting workforce adaptability and skills anticipation	• Limited forecasting sophistication, institutional coordination, and data integration
Fragmented or less formalized systems (e.g. Bosnia and Herzegovina, San Marino)	• Fragmented or highly informal labour market monitoring approaches with limited harmonization and forecasting capacity	• Weak policy usability and limited coordination

Key takeaway: strengthening the integration of LMI into education, training, and strategic policymaking should become a key regional priority for improving workforce adaptability and reducing skills mismatches across the Region.

4.5 Education-industry cooperation mechanisms

Education-industry cooperation increasingly represents a central component of effective skills systems across the Region, particularly in the context of green and digital transitions. Across the Region, countries are strengthening work-based learning, employer engagement, and cooperation between education providers, labour market institutions, and innovation ecosystems. However, the level of institutionalization, governance integration, and employer participation varies significantly between countries, reflecting broader differences in governance maturity and implementation capacity.

4.5.1 Main regional patterns

- **EU member states** generally demonstrate more institutionalized cooperation mechanisms, including sector skill councils, apprenticeship systems, VET partnerships, innovation clusters, and stronger integration between education, labour market, and innovation policies.
- **Non-EU countries** increasingly strengthen cooperation through dual education reforms, VET modernization, and employer engagement initiatives, although implementation remains uneven and often project based.
- Across the Region, **S3 increasingly support** stronger links between skills development, innovation systems, and regional economic priorities.

- Despite progress, **persistent gap between education provision and labour market needs** remain a common regional challenge.

Key takeaway: education-industry cooperation is increasingly recognized as a strategic priority across the Region, but effectiveness of cooperation mechanisms continues to depend largely on the level of institutionalization, employer engagement, and integration between education, labour market, and innovation ecosystem.

4.6 Policy gaps and implementation challenges

Stakeholder inputs collected across participating countries additionally confirm that the main challenges across the Region are increasingly linked to implementation gaps rather than the absence of policy frameworks. The illustration below (Figure 18) summarizes the main challenges and recurring implementation gaps highlighted by stakeholders across EUSAIR participating countries.

Figure 18 Policy gaps and implementation challenges

4.7 Comparative assessment across EUSAIR Countries

The comparative assessment presented below summarises the main patterns of convergence and divergence across the Region in relation to skills development, governance, labour market responsiveness, and implementation capacity (Figure 19):

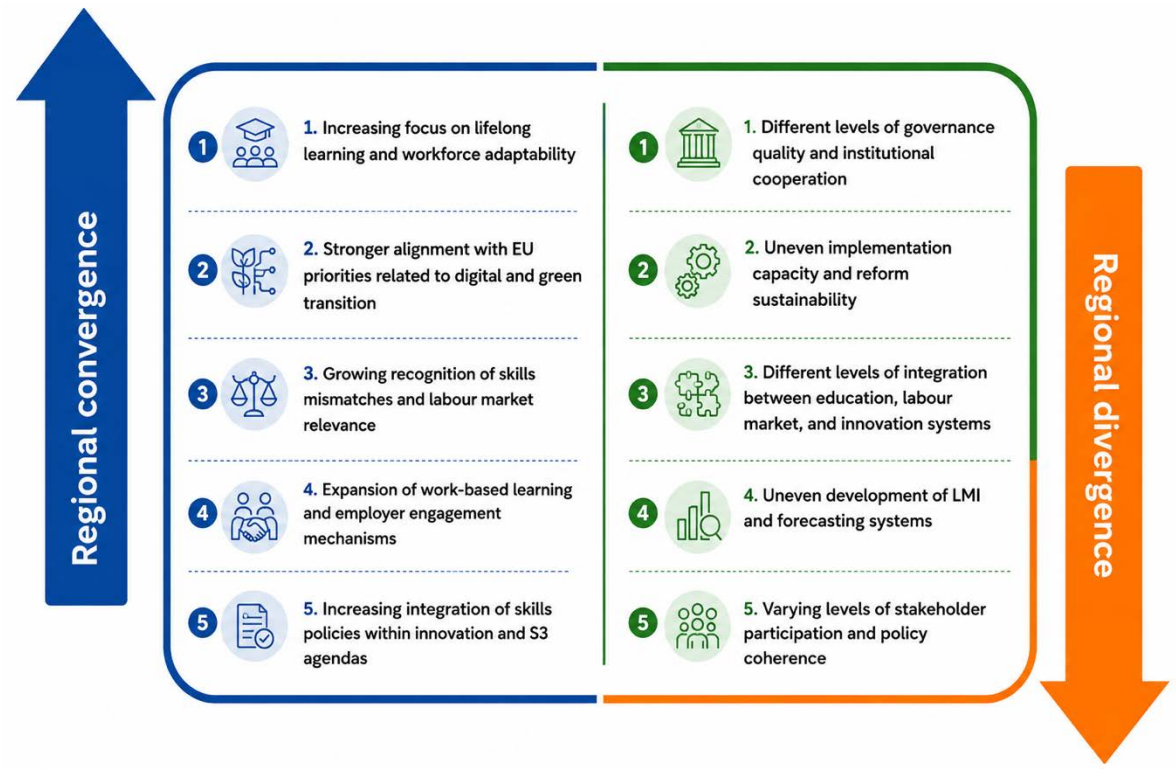


Figure 19 Comparative assessment across the Region

Key takeaway: Strengthening governance coordination, labour market responsiveness, and cross-sectoral cooperation should become a key priority across the Region, while EUSAIR playing an important role in supporting coordinated macro-regional action and policy implementation.

5 Good Practices and innovation instruments

5.1 Case Studies of selected Good Practices

This chapter presents selected examples of good practices and innovative approaches to skills development across the Region. In addition to desk research and document analysis, the selection was informed by stakeholder input collected from representatives of TSG5. The identified themes and examples were further discussed and validated during a dedicated meeting and workshop organized within the TSG5 meeting held on 21st of April 2026 in Sarajevo. This approach ensured that the presented examples reflect both documented evidence and practical perspectives on implementation and transferability across the Region.

5.1.1 EU member states

Figure 20 Best practices (Croatia)

ITALY – BEST PRACTICE

From Dialogue to Action: Building the Adriatic-Ionian Green Skills Network for Sustainable Ports

FOCUS

Strengthening green and digital skills development for sustainable ports through macro-regional cooperation, stakeholder engagement, and the creation of joint training pathways across the Adriatic-Ionian Region.

TYPE

Macro-regional cooperation initiative / policy dialogue platform

MAIN APPROACH

Brings together public authorities, port authorities, logistics operators, universities, research centres, VET providers and private sector stakeholders to identify common priorities and address green and digital skills needs in sustainable ports. The initiative explores governance models and long-term cooperation mechanisms, establishes a macro-regional Green Skills Network, and supports joint training pathways and future European project opportunities.

KEY STRENGTHS

- Supports cross-border cooperation on skills development
- Integrates education, research, industry and public authorities
- Focuses on emerging green and digital competencies
- Promotes joint training pathways and future project development
- Strengthens stakeholder engagement and institutional cooperation
- Encourages macro-regional approaches to workforce adaptation

MAIN RELEVANCE FOR THE STUDY

Demonstrates how macro-regional cooperation can support skills anticipation, workforce adaptation and capacity building in sectors undergoing green and digital transformation. The initiative highlights the importance of structured cooperation between education providers, employers and public institutions in addressing emerging labour market needs and developing future-oriented skills ecosystems.

KEY TAKEAWAY: This Italian example highlights the value of macro-regional cooperation, stakeholder-driven governance and cross-sectoral partnerships in supporting green and digital skills development, workforce adaptation and long-term capacity building in strategic sectors.

CROSS-BORDER COOPERATION | GREEN & DIGITAL TRANSITION | STAKEHOLDER ENGAGEMENT | SKILLS & TRAINING DEVELOPMENT

Figure 21 Best practices (Italy)

GREECE – BEST PRACTICES

1 Apprenticeship Schools of DYPA

FOCUS: VET, apprenticeship, youth employability

TYPE: National VET and apprenticeship programme

MAIN APPROACH:
Combines VET with paid workplace training through a dual education model. Participants attend theoretical and laboratory-based training while simultaneously gaining practical experience in sectors such as tourism, energy, ICT, mechanics, and health services. Curricula are regularly updated in cooperation with employers and sectoral stakeholders.

KEY STRENGTHS:
- Strong integration of education and workplace learning
- Direct employer involvement in curriculum adaptation and training delivery
- Supports smoother transition from education to employment

MAIN RELEVANCE FOR THE STUDY:
Illustrates the growing importance of apprenticeship and dual education models in addressing skills mismatch and improving labour market responsiveness.

2 NEETs Activation and Skills Development Actions

FOCUS: youth employment, social inclusion, lifelong learning

TYPE: ESF+ funded HRSC programme

MAIN APPROACH:
Supports young NEETs through personalized counselling, VET, mentoring, and employability support. Particular emphasis is placed on strengthening digital, entrepreneurial, communication, and teamwork skills through cooperation between employment services, training providers, employers, and local stakeholders.

KEY STRENGTHS:
- Integrated approach combining activation, training, and labour market inclusion
- Strong focus on NEETs and employability pathways
- Promotion of lifelong learning and soft skills development

MAIN RELEVANCE FOR THE STUDY:
Demonstrates how integrated activation and skills development measures can strengthen labour market participation and reduce social exclusion risks among young people.

KEY TAKEAWAY: The Greek examples highlight the importance of dual education, integrated activation and skills development approaches in improving youth employability, supporting smooth school-to-work transitions, and promoting social inclusion and lifelong learning.

DUAL EDUCATION & APPRENTICESHIP | YOUTH EMPLOYMENT & ACTIVATION | SOCIAL INCLUSION & NEETs SUPPORT | LIFELONG LEARNING & SOFT SKILLS

Figure 22 Best practices (Greece)

SLOVENIA – BEST PRACTICES

1 Labour Market Platform (LMP)

FOCUS: LMI, skills forecasting, workforce planning

TYPE: ESF+ co-finances digital LMP

MAIN APPROACH:
Provides real-time and long-term LMI related to occupations, competencies, digital and green skills, and workforce trends. It combines LMI, skills anticipation, labour supply-demand analysis, and educational alignment tools to support evidence-based policymaking.

KEY STRENGTHS:
- Advanced LMI and skills anticipation system
- Strong cross-sectoral governance and stakeholder cooperation model
- Supports alignment between education systems and labour market needs

MAIN RELEVANCE FOR THE STUDY:
Demonstrates how integrated LMI systems can strengthen workforce adaptability, skills anticipation, and evidence-based policymaking.

2 Micro-credentials at University of Ljubljana

FOCUS: lifelong learning, flexible upskilling and reskilling

TYPE: pilot lifelong learning and micro-credentials initiative

MAIN APPROACH:
Develops flexible, competency-based micro-credentials that support targeted acquisition of knowledge and skills aligned with labour market and societal needs. It promotes lifelong learning, rapid workforce adaptation, and cooperation between universities, employers, and public institutions.

KEY STRENGTHS:
- Flexible and modular lifelong learning pathways
- Strong alignment with labour market and societal needs
- Supports innovation, soft skills, and human-centred digital transition

MAIN RELEVANCE FOR THE STUDY:
Illustrates the growing importance of flexible lifelong learning systems and micro-credentials.

KEY TAKEAWAY: The Slovenian examples demonstrate the value of data-driven labour market intelligence and flexible learning solutions in strengthening skills anticipation, workforce adaptability, and collaboration between education, employers, and public institutions.

LABOUR MARKET INTELLIGENCE | STAKEHOLDER COOPERATION | FLEXIBLE LEARNING & MICRO-CREDENTIALS | WORKFORCE ADAPTABILITY

Figure 23 Best practices (Slovenia)

5.1.2 EU candidate countries

ALBANIA – BEST PRACTICES

1 Skills for Jobs (S4J) – Work-Based Learning and VET Modernisation

FOCUS: VET quality, work-based learning, private sector engagement, digital skills

TYPE: International development cooperation programme

MAIN APPROACH:
Supports the modernisation of Albania's VET system through digitalisation, work-based learning, curriculum development with employers, and stronger public-private cooperation to better align skills provision with labour market needs.

KEY STRENGTHS:
- 71% of graduates employed or self-employed within one year (2024)
- Female graduate employment increased from 32% (2019) to 47.1% (2024)
- Proven model for scaling VET innovations from pilot schools to the national system

MAIN RELEVANCE FOR THE STUDY:
Demonstrates how sustained cooperation between education providers, employers and public authorities can improve VET quality, employability and workforce readiness while supporting system-wide reform.

2 SELFIEforTeachers – Digital Competence Development for VET Educators

FOCUS: Digital skills, teacher professional development, VET digitalisation

TYPE: EU-supported initiative (ETF / European Commission Joint Research Centre)

MAIN APPROACH:
Provides a structured, evidence-based framework for assessing and improving digital competences among VET teachers while supporting national planning for digital education and training investments.

KEY STRENGTHS:
- 573 VET teachers participated, representing nearly half of all vocational teachers in Albania
- Data-driven identification of teacher training needs
- Supports implementation of Albania's VET digitalisation roadmap

MAIN RELEVANCE FOR THE STUDY:
Illustrates how systematic assessment of digital competences can accelerate digital transformation in VET and support targeted investment in skills development at scale.

KEY TAKEAWAY: The Albanian examples highligh two priority areas identified by the Study: strengthening labour market relevance through work-based learning and accelerating digital transformation through evidence-based teacher capacity development.

WORK-BASED LEARNING | DIGITAL SKILLS | PUBLIC-PRIVATE COOPERATION | VET MODERNISATION | EMPLOYABILITY | SYSTEM SCALING & ADAPTATION

Figure 24 Best practices (Albania)

BOSNIA AND HERZEGOVINA – BEST PRACTICES

1 Centre for Excellence in Entrepreneurship

FOCUS: entrepreneurship development, youth employability

TYPE: programme/initiative

MAIN APPROACH:
Supports entrepreneurial capacity-building through mentorship, workshops, startup acceleration, networking activities, and practical training focused on innovation, digital skills, and youth employability.

KEY STRENGTHS:
- Strong cooperation between public institutions, education providers, NGOs, and SMEs
- Promotion of entrepreneurial and innovation-oriented skills
- Support for youth employability and local innovation ecosystem

MAIN RELEVANCE FOR THE STUDY:
Demonstrates the importance of local innovation ecosystems and cross-sectoral partnerships in strengthening entrepreneurial skills and supporting labour market integration.

2 Living Lab Centre Sarajevo

FOCUS: digital skills, entrepreneurship, social innovation, green and digital transition

TYPE: initiative/ public-private platform

MAIN APPROACH:
Supports practical learning, digital transformation, entrepreneurship, and innovation through mentoring, educational programmes, and interdisciplinary collaboration.

KEY STRENGTHS:
- Practical and project-based learning approach
- Strong multi-sector cooperation model
- Focus on emerging technologies, innovation, and youth empowerment

MAIN RELEVANCE FOR THE STUDY:
Illustrates the potential of innovation ecosystems and Living Lab models to strengthen digital, entrepreneurial, and transversal skills aligned with labour market and innovation needs.

KEY TAKEAWAY: **The Bosnian and Herzegovinian examples highlight the importance of entrepreneurship support, practical learning, and cross-sectoral collaboration in building innovative, inclusive, and future-ready skills ecosystems for youth.**

ENTREPRENEURSHIP DEVELOPMENT | INNOVATION & STARTUP SUPPORT | MULTI-SECTOR COOPERATION | DIGITAL & GREEN TRANSFORMATION | YOUTH EMPLOYABILITY & EMPOWERMENT

Figure 25 Best practices (Bosnia and Herzegovina)

MONTENEGRO – BEST PRACTICES

1 Active Labour Market Policy (ALMP) Measures

FOCUS: skills development, employability, labour market inclusion

TYPE: policy/programme

MAIN APPROACH:
Supports adult education, training, retraining, internships, and self-employment measures aimed at improving employability and aligning labour supply with demand. Special emphasis is places on NEET groups and sectors such as tourism, healthcare, and digital economy.

KEY STRENGTHS:
- Strong focus on workforce adaptability and employability
- Integration of green and digital transition priorities into employment measures
- Improved transparency and monitoring through ALPM catalogue

MAIN RELEVANCE FOR THE STUDY:
Demonstrates how ALMP can support reskilling, social inclusion, and labour market responsiveness through coordinated employment and training

2 Youth Guarantee Programme in Montenegro

FOCUS: youth employment, inclusion, education-to-work transition

TYPE: initiative

MAIN APPROACH:
Ensures that young people receive an offer for employment, education, training or internship within four months after leaving education or becoming unemployed. The initiative is implemented through coordination between labour market institutions, education providers, employers, and EU-supported mechanisms.

KEY STRENGTHS:
- Strong focus on reducing NEET rates and youth employment
- Improved links between education and labour market needs
- Multi-stakeholder cooperation

MAIN RELEVANCE FOR THE STUDY:
Illustrates the importance of integrated youth employment and skills policies in supporting labour market inclusion and smoother school-to-works transitions

KEY TAKEAWAY: **The Montenegrin examples highlight the importance employment and training measures, targeted youth support, and multi-stakeholder cooperation in improving employability, inclusion, and smoother transitions from education to work.**

EMPLOYABILITY & WORKFORCE ADAPTABILITY | GREEN & DIGITAL TRANSITION | YOUTH EMPLOYMENT & NEET REDUCTION | MULTI-STAKEHOLDER COOPERATION | TRANSPARENCY & MONITORING

Figure 26 Best practices (Montenegro)

NORTH MACEDONIA – BEST PRACTICES

1 Dual Education Expansion in Vocational Education and Training

FOCUS: VET reform, work-based learning, youth employability

TYPE: National VET policy reform and institutional development

MAIN APPROACH:
Expands dual education through structured cooperation between schools and employers, increasing workplace learning opportunities, strengthening employer involvement, and aligning vocational training with labour market needs.

KEY STRENGTHS:
- 84% of VET schools participate in the dual model
- One-third of VET students enrolled in dual programmes
- VET participation reached 67.3% of secondary students, with graduates achieving higher employment rates than general education peers

MAIN RELEVANCE FOR THE STUDY:
Demonstrates how large-scale VET reform can strengthen school-to-work transitions, employer engagement, and workforce readiness, providing a transferable model for other Western Balkan countries.

2 Youth Guarantee Implementation Plan

FOCUS: Youth employment, NEET reduction, education-to-work transition

TYPE: National active labour market policy / EU-inspired initiative

MAIN APPROACH:
Provides young people not in employment, education or training (NEET) with access to employment, education, training, or activation measures within four months of registration, through coordinated action of employment, education and social partners.

KEY STRENGTHS:
- NEET rate reduced from nearly 30% (2018) to 24.1% (2023)
- Strong multi-stakeholder coordination model
- First non-EU country to successfully implement the Youth Guarantee

MAIN RELEVANCE FOR THE STUDY:
Illustrates how EU-inspired youth employment measures can be effectively adapted in enlargement countries, helping reduce youth disengagement and improve labour market inclusion.

KEY TAKEAWAY:
The North Macedonian examples highlight two priority areas identified by the Study: strengthening school-to-work transitions through work-based learning and reducing youth labour market exclusion through coordinated employment and activation measures.

WORK-BASED LEARNING | YOUTH EMPLOYMENT | EMPLOYER ENGAGEMENT | VET REFORM | LABOUR MARKET INCLUSION | SCALABLE POLICY MODELS

Figure 27 Best practices (North Macedonia)

SERBIA – BEST PRACTICES

1 NOVA – New Partnerships and Opportunities for Innovative and Sustainable Approaches to Social and Labour Market Integration of Vulnerable Groups

FOCUS: social inclusion, labour market integration, skills development for vulnerable groups

TYPE: EU funded project

MAIN APPROACH:
Implements integrated and individualized activation pathways for beneficiaries of financial social assistance through coordinated training programmes combined with mentoring, childcare, elderly care support, and employability measures. It brings together employment services, social welfare institutions, local authorities, academia, and NGOs.

KEY STRENGTHS:
- Strong cross-sectoral and multi-stakeholder cooperation model
- Integrated approach combining skills development and social inclusion measures

MAIN RELEVANCE FOR THE STUDY:
Demonstrates the importance of integrated activation pathways and social innovation approaches in supporting labour market inclusion and employability of vulnerable groups.

2 Emerging Social Entrepreneurship and Social Economy Ecosystem

FOCUS: social entrepreneurship, inclusive labour markets, reskillls and upskilling

TYPE: public policy

MAIN APPROACH:
The ecosystem supports capacity-building, networking, advocacy, and inclusive employment opportunities for vulnerable groups through social economy models and labour market-oriented social innovation initiatives.

KEY STRENGTHS:
- Strong focus on inclusion of vulnerable groups and labour market integration
- Promotion of social innovation and community-based employment models

MAIN RELEVANCE FOR THE STUDY:
Illustrates the growing role of social entrepreneurship and social economy approaches in supporting inclusive skills development, workforce activation, and social cohesion.

KEY TAKEAWAY: The Serbian examples highlight the importance of integrated activation pathways, multi-stakeholder cooperation, and social entrepreneurship ecosystems in promoting inclusive skills development, employability of vulnerable groups, and stronger social cohesion.

INTEGRATED ACTIVATION & SOCIAL INCLUSION | MULTI-STAKEHOLDER COOPERATION | SOCIAL ENTREPRENEURSHIP & SOCIAL ECONOMY | INCLUSIVE EMPLOYMENT & SOCIAL COHESION

Figure 28 Best practices (Serbia)

5.1.3 San Marino

SAN MARINO – BEST PRACTICES

1 Territorial Pact

FOCUS: innovation, digital skills, entrepreneurship

TYPE: Cooperation development programme

MAIN APPROACH:
Represents a cooperation platform connecting the University of San Marino with public institutions, companies, trade unions, and NGOs. It supports dialogue on strategic development priorities, promotes cooperation between higher education and the labour market, and facilitates stakeholder involvement in innovation, skills development, and social inclusion activities.

KEY STRENGTHS:
- Strong multi-stakeholder cooperation model
- Direct connection between higher education and labour market actors
- Supports innovation, entrepreneurship, and digital transition priorities

MAIN RELEVANCE FOR THE STUDY:
Illustrates the importance of structured local cooperation mechanisms in improving labour market relevance and strengthening links between education systems and socio-economic development.

2 Organization of Further Education Courses

FOCUS: lifelong learning, reskilling and upskilling, labour market integration

TYPE: initiative

MAIN APPROACH:
Supports continuous professional development through cross-disciplinary training programmes, refresher courses, reskilling and upskilling activities, and labour market-oriented VET. Programmes are developed in cooperation with employers, trade unions, and labour market institutions, based on labour market demand analysis and workforce needs.

KEY STRENGTHS:
- Strong focus on adult learning and workforce adaptability
- Labour market-oriented approach
- Cooperation of key stakeholders

MAIN RELEVANCE FOR THE STUDY:
Demonstrates the growing importance of lifelong learning systems and active labour market measures in addressing skills mismatches and supporting workforce resilience.

KEY TAKEAWAY: The San Marino examples highlight the value of multi-stakeholder cooperation platforms and lifelong learning initiatives in fostering innovation, skills development, and stronger alignment between education and labour market needs.

MULTI-STAKEHOLDER COOPERATION | LIFELONG LEARNING & UPSKILLING | LABOUR MARKET INTEGRATION | INNOVATION & SOCIO-ECONOMIC DEVELOPMENT

Figure 29 Best practices (San Marino)

5.2 Main lessons learned from selected good practices

- **Skills development initiatives are more effective when closely aligned with labour market and economic transformation needs**, particularly in relation to digitalization, green transition, and workforce adaptability
- **Flexible lifelong learning models, including non-formal education, micro-credentials, and voucher schemes, are becoming increasingly important** for supporting continuous upskilling and reskilling across different target groups
- **Strong multi-stakeholder cooperation between education providers, employers, public institutions, and NGOs represents a key success factor** for improving skills relevance and employability outcomes.
- **Work-based learning, practical training, and employer engagement significantly strengthen transitions from education to employment** and help reduce skills mismatches
- **Inclusive and targeted approaches are essential for strengthening social cohesion and labour market participation**, particularly for vulnerable groups such as youth, migrants, refugees, persons with disabilities, etc.
- **Local and regional innovation ecosystems, including living labs, entrepreneurship centres, and sectoral cooperation platforms**, can play an important role in connecting skills development with innovation and regional competitiveness.

Furthermore, several stakeholders additionally highlighted **the growing importance** of **social innovation** and **social entrepreneurship** approaches as mechanisms for strengthening inclusive skills development and labour market participation of vulnerable groups across the Region, particularly in the context of demographic change, ageing populations, and labour market inclusion challenges.

5.3 Transferability, scalability and key success factors

The analysed good practices demonstrate strong potential for transferability and scalability across the Region, particularly in areas related to lifelong learning, labour market responsiveness, inclusion, and digital and green skills development. However, successful replication depends less on copying individual initiatives and more on adapting governance models, cooperation mechanisms, and implementation approaches to different national or regional contexts.

5.3.1 Main barriers identified across the Region

Table 6 Main barriers for transferability and scalability of best practices

Enabling factor	Why it matters
Fragmented governance structures	• Limits coordination and long-term policy coherence
Project-based implementation models	• Reduces sustainability and continuity of initiatives
Limited institutional and administrative capacity	• Contains implementation and scaling potential
Uneven stakeholder engagement	• Weakens alignment between skills systems and labour market needs
Limited integration into long-term policy frameworks	• Prevents institutionalization and broader systematic impact

5.3.2 What enables successful transferability and scalability?

Table 7 Enabling factors for transferability and scalability of best practices

Enabling factor	Why it matters
Policy integration	• Supports long-term sustainability and institutionalization of initiatives
Multi-stakeholder cooperation	• Strengthens alignment between education systems, employers, and labour market needs
Flexible learning models	• Enables adaptation to different sectors, target groups, and national contexts
Labour market relevance	• Improves employability and reduces skills mismatches
Sustainable financing and institutional support	• Enables continuity beyond project/initiative-based implementation cycles
Local and sectoral adaptability	• Facilitates transferability across different governance and socio-economic contexts

Key takeaway: The analysed practices demonstrated that long-term impact depends not only on innovative initiatives themselves, but on the ability to embed them into coordinated, well-governed, and sustainable skills system across the Region.

6 Recommendations

To support the transition from analysis towards action, this chapter builds on a **SOAR analysis** synthesizing the main findings presented throughout the Study. The framework was applied to consolidate the evidence collected across previous chapters and identify key directions for future action by building on existing strengths, leveraging emerging opportunities, aligning around shared aspirations, and translating them into long-term outcomes.

The SOAR analysis below provides the strategic foundation for the recommendations presented in the following sections (Figure 30):

S STRENGTHS

- Established EUSAIR macro-regional framework connecting EU Member States and enlargement countries around shared development challenges.
- Recognised role of Pillar 5 in linking skills development with social cohesion, labour market participation, inclusion, and regional competitiveness.
- Shared awareness across the Region of skills mismatches, labour shortages, demographic pressures, and the need for stronger education–labour market alignment.
- Strategic sectoral base in areas exposed to transformation, including energy and green transition, transport, tourism, maritime and blue economy, ICT, artificial intelligence, and advanced manufacturing.
- Existing national policy frameworks, reforms, and institutional mechanisms relevant to skills, employment, education, innovation, and Smart Specialisation Strategy priorities.
- Identified good practices across participating countries in lifelong learning, apprenticeships, labour market intelligence, public–private cooperation, social innovation, and inclusion.
- Growing experience in cross-border cooperation through EU-funded programmes, higher education networks, innovation partnerships, and macro-regional initiatives.

O OPPORTUNITIES

- Strengthened global and European policy focus on skills development, lifelong learning, workforce adaptability, and social inclusion.
- Expanded use of labour market intelligence, skills anticipation, forecasting, big data, and evidence-based policymaking in European and international practice.
- Increased global and European demand for digital, green, technical, and transversal skills driven by artificial intelligence, decarbonisation, automation, and industrial transformation.
- Strengthened international momentum for modular learning, micro-credentials, recognition of prior learning, work-based learning, and flexible adult learning pathways.
- Expanded availability of EU and international funding instruments, cooperation programmes, and technical support mechanisms for skills, innovation, employment, and regional development.
- Increased availability of international models for skills ecosystems, skills partnerships, sectoral academies, innovation hubs, living labs, and digital innovation platforms.
- Strengthened external demand for coordinated responses to labour shortages, talent mobility, qualification transparency, and workforce adaptation across borders.

A ASPIRATIONS

- Established EUSAIR skills governance and coordination mechanism.
- Strengthened regional skills intelligence and forecasting capacity.
- Improved alignment between education, labour market, innovation, and Smart Specialisation Strategy priorities.
- Strengthened lifelong learning, upskilling, reskilling, and micro-credential pathways.
- Scaled transferable good practices and innovation instruments across participating countries.
- Strengthened convergence between EU Member States and enlargement countries in skills development.
- Established monitoring system for skills gaps, workforce adaptability, and implementation progress.

R RESULTS

- 1 EUSAIR Skills Coordination Mechanism established, with 1 annual regional stocktaking process on skills priorities.
- 1 common regional approach for skills intelligence developed and 6 sectoral skills briefs prepared for priority sectors.
- 5 education–industry cooperation pilots or curriculum adaptation models developed with employers and innovation actors.
- 5 new or upgraded modular learning, upskilling, reskilling, or micro-credential pathways developed.
- 10 good practices documented, benchmarked, and prepared for adaptation or transfer across countries or sectors.
- 4 cross-border peer-learning, mentoring, study visits, or implementation forums established between EU Member States and enlargement countries.
- 1 monitoring framework with 8–10 core indicators introduced to track skills gaps, lifelong learning, cooperation, and implementation progress.

Figure 30 SOAR analysis

6.1 Strategic recommendations at Macro-Regional Level (EUSAIR)

The findings of this Study indicate that the Region is increasingly affected by shared structural pressures that extend beyond national borders, but at the same time, the analysis demonstrates that while strategic priorities are becoming more aligned across the Region, implementation remains fragmented and uneven, limiting the overall responsiveness and resilience of skills systems. This creates a strong rationale for a more implementation-oriented macro-regional approach to skills development within the Region. EUSAIR can provide added value by acting as an enabling framework for coordination, institution learning, stakeholder mobilization, knowledge exchange, etc. The recommendations presented in this Study have also been informed by the evidence, stakeholder perspectives and emerging initiatives outlined in Annex 3, which provides additional insights into potential areas for macro-regional cooperation and skills development.

The following figures are structured around policy priority areas: **governance and coordination**, **education and training** and **horizontal themes**. The purpose of the table is to translate the analytical findings into actionable macro-regional recommendations, and to show how EUSAIR can support implementation.

Table 8 Strategic recommendations for EUSAIR

Governance and coordination		
Strategic recommendation	**Why it matters**	**Suggested EUSAIR action**
Strengthen EUSAIR's role as a platform for skills governance and coordination	Governance fragmentation and weak cross-sectoral coordination remain among the main barriers to effective implementation across the Region. Skills policies require stronger links between education, labour market, innovation, social inclusion and sectoral development.	• Introduce annual regional stocktaking of skills priorities • Organise cross-pillar thematic workshops • Prepare periodic recommendations for aligning education, labour market, innovation and sectoral priorities
Embed skills development within EUSAIR implementation formats	Long-term impact requires moving beyond project-based cooperation towards more structured implementation mechanisms. Skills development should be positioned as a core implementation priority under Pillar 5 and connected with other EUSAIR pillars.	• Integrate skills priorities into future implementation formats, such as flagships, strategic projects and stakeholder platforms • Link skills actions with EUSAIR implementation mechanisms • Ensure regular follow-up of skills-related initiatives

Education and training			
	Strategic recommendation	**Why it matters**	**Suggested EUSAIR action**
VET	Increase the responsiveness of vocational education and training	VET is central for addressing technical and occupation-specific shortages, but slow curriculum adaptation and uneven employer engagement reduce workforce readiness. This is particularly important in sectors requiring practical, operational and technical skills.	• Support national governance in VET curriculum review • Expand cooperation on work-based learning, apprenticeships and dual education • Pilot short-cycle modular programmes responding to emerging sectoral needs

Education and training			
	Strategic recommendation	**Why it matters**	**Suggested EUSAIR action**
Higher education	Strengthen skills-based, applied and interdisciplinary higher education	Higher education has a key role in developing advanced skills for digitalisation, AI, green transition, innovation, advanced manufacturing, blue economy and sustainable development. Programmes need stronger links with labour market needs and innovation ecosystems.	• Promote exchange on skills-based curricula and learning outcomes • Support cooperation between universities, employers and innovation actors • Encourage applied learning, internships, joint projects and challenge-based learning in strategic sectors
Lifelong learning	Strengthen lifelong learning and workforce adaptability	Strengthen lifelong learning and workforce adaptability	• Promote exchange and testing of adult learning instruments, including training vouchers, modular learning, micro-credentials and recognition of prior learning • Support sector-specific reskilling approaches • Encourage modular training and micro-credentials

Horizontal theme			
	Strategic recommendation	**Why it matters**	**Suggested EUSAIR action**
Skills intelligence	Strengthen regional skills intelligence and evidence-based policymaking	Skills systems remain insufficiently connected to labour market forecasting and emerging workforce needs. Comparable evidence is especially limited for green skills, blue economy skills and advanced digital skills outside ICT.	• Develop a common regional approach for skills intelligence, including skills shortages monitoring, forecasting and labour market analysis • Exchange forecasting methodologies • Publish periodic regional overviews of emerging workforce trends in strategic sectors
Inclusion and participation	Link skills development with labour market	The study shows that skills shortages coexist with labour market participation gaps, including gender disparities, youth disengagement, lower	• Promote macro-regional exchange on inclusive skills policies targeting young people, women, low-skilled adults, older workers, seasonal workers and vulnerable groups • Support cooperation on school-to-work transition measures, career guidance, mentoring and work-based learning

Horizontal theme			
	Strategic recommendation	**Why it matters**	**Suggested EUSAIR action**
	inclusion, youth engagement and social cohesion	employment outcomes among low-skilled adults, demographic ageing and difficulties in school-to-work transitions. Skills development should therefore support not only competitiveness, but also inclusion, decent work and social cohesion across the Region.	• Encourage skills initiatives that combine training with activation, employability and social inclusion measures • Link skills actions with Pillar 5 priorities on youth engagement and employment, decent work and gender equality, and social innovation • Support peer learning on inclusive training delivery in rural, peripheral, coastal, island and less developed areas
Transferability and scaling	Improve transferability and scaling of successful practices	The Region already includes relevant initiatives, but their impact often remains local, fragmented or project-based. Good practices need to be documented, adapted and scaled across countries.	• Establish mechanisms for documenting and exchanging good practices • Support adaptation and replication of scalable models • Develop a regional repository of skills-related practices and implementation tools • Benchmark and document transferable practices across participating countries
EU/non-EU convergence	Strengthen convergence between EU and non-EU	Differences across the Region are increasingly related to implementation maturity, institutional capacity and access to EU tools, rather than only to strategic priorities. Stronger convergence can support gradual alignment and reduce regional disparities.	• Organise peer learning, institutional exchanges and study visits • Support implementation workshops and mentoring activities • Connect countries with complementary experience in VET, adult learning, skills intelligence and sectoral skills development

Key takeaway: The future competitiveness and resilience of the Region will depend less on developing additional strategies and more on the ability to translate shared priorities into coordinated action, stronger implementation, and long-term investment in people and skills.

6.2 Policy recommendations at National Levels

Building on the challenges and opportunities across the Region, national policy efforts should increasingly focus on strengthening implementation capacity and improving the responsiveness of skills systems to changing labour market conditions. The following table presents policy recommendations at national level. The recommendations are common for all EUSAIR countries, because the study shows that countries across the Region face similar structural challenges: skills mismatches, demographic pressures, uneven labour market participation, slow adaptation of education and training systems, limited adult learning participation, and growing demand for technical, digital, green and transversal skills.

Table 9 Policy recommendations at national levels

Governance and coordination		
Strategic recommendation	**Why it matters**	**Suggested EUSAIR action**
Strengthen national skills governance and coordination mechanisms	Skills policies often involve several ministries, agencies, education providers, employers and labour market institutions. Without stronger coordination, implementation remains fragmented and responses to labour market needs are slow.	• Improve cooperation between education, labour, economy, innovation and sectoral ministries • Define clear responsibilities, timelines and indicators for skills policies • Link skills priorities with national development, employment, innovation and sectoral strategies
Move from strategic planning to implementation and monitoring	Many countries already have relevant strategies, but implementation capacity remains uneven. The main challenge is not only defining priorities, but ensuring that policies are delivered, monitored and adjusted.	• Prepare annual skills implementation plans • Introduce regular implementation reviews • Use measurable indicators for skills policy outcomes

Education and training			
	Strategic recommendation	**Why it matters**	**Suggested EUSAIR action**
VET	Modernise VET and strengthen its labour-market relevance	VET is central for addressing technical and occupation-specific shortages in sectors such as energy, transport, tourism, maritime economy and advanced manufacturing.	• Support review of VET more regularly based on employer input • Expand work-based learning, apprenticeships and dual education • Strengthen cooperation between VET providers, employers, chambers and public employment services

Education and training			
	Strategic recommendation	**Why it matters**	**Suggested EUSAIR action**
	Integrate digital, green and transversal skills into VET programmes	Traditional vocational occupations increasingly require digital tools, sustainability awareness, problem-solving, safety awareness and adaptability.	• Support actors to Introduce digital and green modules into vocational programmes • Develop sector-specific practical training for new technologies and standards • Strengthen transversal skills through practical, project-based and workplace learning • Support continuous professional development of VET teachers and trainers
Higher education	Strengthen skills-based, applied and interdisciplinary higher education	Higher education institutions are essential for advanced skills linked to AI, digitalisation, green transition, engineering, blue economy, advanced manufacturing, sustainable tourism and innovation.	• Expand interdisciplinary programmes combining technical, digital, green and management competences • Strengthen internships, applied research and challenge-based learning • Improve cooperation between universities, employers, clusters and innovation ecosystems • Align higher education programmes with S3 priorities and emerging regional skills needs
	Increase the role of higher education in lifelong learning and regional innovation	Universities should not only educate new graduates, but also support upskilling, reskilling, innovation and technology transfer.	• Develop short professional programmes and micro-credentials • Offer flexible learning formats for employed adults and professionals • Strengthen university–industry cooperation and technology transfer • Link higher education programmes with Smart Specialisation and sectoral priorities
Lifelong learning	Expand adult learning, upskilling and reskilling opportunities	Long formal programmes are often too slow to respond to emerging skills needs. Micro-credentials can support targeted upskilling and reskilling.	• Develop short, flexible and modular training programmes • Introduce or strengthen training vouchers and financial incentives • Promote recognition of prior learning • Target employed workers, unemployed persons, low-skilled adults, older workers, seasonal workers and SME employees
	Use micro-credentials and flexible training pathways for rapid skills adaptation	Long formal programmes are often too slow to respond to emerging skills needs. Micro-credentials can support targeted upskilling and reskilling.	• Develop quality-assured micro-credentials linked to labour market needs • Connect micro-credentials with qualification frameworks where possible • Support blended, online and workplace-based learning • Ensure recognition by employers and education institutions

Sectoral skills		
Strategic recommendation	**Why it matters**	**Suggested EUSAIR action**
Develop national sectoral skills partnerships in strategic sectors	Skills shortages differ by sector and country. National responses should reflect the importance of sectors such as energy, transport, tourism, maritime and blue economy, ICT and AI, and advanced manufacturing.	• Strengthen or establish sectoral skills partnerships, advisory groups and employer-led cooperation mechanisms • Prepare sectoral skills action plans • Use employer surveys and vacancy data to identify priority occupations • Develop targeted training programmes for sectors with high shortages or transformation pressure
Align training provision with technical, digital, green and transversal skills needs	The study identifies these skills as recurring across sectors. Sectoral training should not focus only on narrow technical tasks, but also on digitalisation, sustainability and adaptability.	• Develop sector-specific skills profiles • Update training programmes in line with technological and regulatory changes • Support green and digital transition training in exposed sectors • Promote collaboration between employers, education providers and public employment services

Horizontal theme			
	Strategic recommendation	**Why it matters**	**Suggested EUSAIR action**
Skills intelligence	Strengthen LMI, skills forecasting and evidence-based policymaking	Skills policies need better evidence on current and future labour market needs. Data are especially limited for green skills, blue economy skills and advanced digital skills outside ICT.	• Improve collection and use of vacancy data, employer surveys and graduate tracking • Develop regular skills forecasts and shortage occupation lists • Use LMI for curriculum updates and training priorities • Combine statistical data with qualitative stakeholder input • Establish regular monitoring of emerging skills needs in green, digital and strategic sectors

Horizontal theme			
	Strategic recommendation	**Why it matters**	**Suggested EUSAIR action**
Inclusion and participation	Link skills policies with labour market inclusion	Skills shortages coexist with inactivity, gender gaps, youth disengagement and weak employment outcomes among low-skilled adults. Skills policy should therefore support both competitiveness and social cohesion.	• Target women, young people, low-skilled adults, older workers and vulnerable groups • Strengthen career guidance, mentoring and transition-to-work measures • Link activation policies with training opportunities • Improve access to learning in rural, peripheral, island and less developed areas
Transferability and scaling	Scale successful national and local skills initiatives	Many useful practices remain local or project-based. National systems should identify, evaluate and scale models that work.	• Create national repositories of good practices • Adapt successful models to other regions or sectors • Use EUSAIR cooperation to exchange and compare implementation models
EU/non-EU convergence	Align national skills policies with EU priorities and EUSAIR cooperation	EU Member States and enlargement countries differ in access to EU tools, funding and monitoring systems. Better alignment can support convergence and improve implementation capacity.	• Align national skills priorities with EU green, digital and skills frameworks • Use EU and EUSAIR platforms for peer learning and capacity building • Participate in joint skills initiatives and cross-border pilots • Support recognition of qualifications, micro-credentials and mobility pathways

Key takeaway: The next phase of skills development should focus less on creating new strategies and more on strengthening implementation, improving institutional responsiveness, and ensuring that skills systems evolve at the place of labour market and societal change.

6.3 Recommendations for key stakeholders (education, industry, policy)

The identified challenges, stakeholders' input and examples of best practices show that the most effective approaches are those that create stronger links between skills provision, labour market demand, innovation ecosystems, and implementation capacity. The following recommendations therefore focus on actions that different stakeholder groups can take to strengthen long-term responsiveness and resilience of skill systems across the Region (Figure 31):

1 EDUCATION PROVIDERS
(VET, higher education, adult learning)

Why it matters

Education systems often adapt more slowly than labour market and technological change. They are central for transforming identified skills needs into curricula, learning outcomes and training programmes.

Key actions

- Establish regular employer consultations for programme updates
- Introduce project-based, challenge-based and work-based learning
- Expand micro-credentials, modular learning and flexible training pathways
- Use graduate tracking, labour market evidence and skills forecasts to inform curriculum revisions
- Integrate technical, digital, green and transversal skills across programmes

2 INDUSTRY AND EMPLOYERS

Why it matters

Employer engagement remains uneven, although companies are best placed to identify emerging skills needs, provide workplace learning and support sector-specific skills development.

Key actions

- Participate in skills councils, curriculum reviews and sectoral partnerships
- Offer internships, apprenticeships, traineeships and workplace learning
- Define emerging skills needs on a regular basis
- Co-develop short training programmes and micro-credentials
- Support reskilling of the existing workforce and contribute to employer surveys

3 PUBLIC AUTHORITIES AND LABOUR MARKET INSTITUTIONS

Why it matters

Effective implementation requires stronger coordination, evidence-based decision-making and better alignment between education, employment, innovation and regional development policies.

Key actions

- Introduce regular skills anticipation exercises and shortage occupation reviews
- Link funding decisions to LMI, forecasting and strategic sectoral needs
- Align education, employment, innovation and regional development measures
- Strengthen active labour market measures, career guidance and transition-to-work support
- Monitor implementation using outcome-based indicators

4 INNOVATION ECOSYSTEM ACTORS
(clusters, hubs, accelerators)

Why it matters

Innovation increasingly depends on the rapid translation of knowledge, technology and research into workforce capabilities, especially in digital, green and advanced sectors.

Key actions

- Create challenge programmes with education providers and companies
- Support interdisciplinary training in AI, digitalisation, sustainability, entrepreneurship and innovation
- Help integrate entrepreneurship and innovation skills into existing programmes
- Support scaling of good practices and transfer of innovative training models
- Connect SMEs with skills development and technology adoption support

SKILLS ECOSYSTEM

5 LOCAL AND REGIONAL AUTHORITIES

Why it matters

Skills needs and implementation capacity vary significantly across territories. Local and regional authorities are essential for adapting national and macro-regional priorities to territorial realities.

Key actions

- Develop regional or local skills plans
- Establish local skills partnerships with employers, education providers and public employment services
- Support pilot actions responding to local labour shortages
- Integrate skills priorities into regional development and Smart Specialisation planning
- Improve access to training in rural, coastal, island, border and peripheral areas

6 CIVIL SOCIETY AND NGOS

Why it matters

Inclusive participation remains essential for reducing labour market inequalities and reaching groups that are often underrepresented in education, training and employment.

Key actions

- Deliver targeted outreach, mentoring and guidance programmes
- Support transitions into education, training and employment
- Co-design inclusion measures for vulnerable and underrepresented groups
- Support participation of women, young people, low-skilled adults, older workers and marginalised groups
- Contribute to social innovation and community-based learning initiatives

7 EUSAIR GOVERNANCE STRUCTURES AND PILLAR 5 ACTORS

Why it matters

EUSAIR can provide added value by connecting national and regional actors, supporting policy learning, strengthening LMI, scaling good practices, and fostering convergence between EU member states and non-EU countries.

Key actions

- Coordinate regional stocktaking of skills priorities
- Facilitate peer learning, study visits and institutional exchanges
- Support cross-border cooperation on skills development in strategic sectors
- Promote transferability and scaling of good practices across countries
- Strengthen regional LMI and exchange of forecasting methodologies
- Monitor progress on macro-regional skills priorities

Figure 31 Recommendations for key stakeholders

Key takeaway: Future-ready skills systems cannot be built by education systems or policymakers alone – long-term impact will depend on whether stakeholders move from consultations to continuous cooperation, co-creation, and shared responsibility for workforce development.

7 Conclusions

7.1 Summary of Key Indicators for future monitoring

The monitoring framework presented in the figure below translates the strategic and policy recommendations into a set of practical indicators for future follow-up. The indicators are structured around the main policy priorities identified in the Study and are intended to support regular assessment of progress in strengthening skills systems across the EUSAIR Region. In line with the implementation roadmap, each indicator is linked to a suggested monitoring target and an indicative implementation horizon, distinguishing between short-term, medium-term and long-term priorities.

Education and training

VET

Medium-term

Key indicator	Suggested monitoring number
VET curricula updated using labour market evidence	At least 2 updated curricula per country per year.
Education–industry cooperation pilots or curriculum adaptation models developed with employers	5 education–industry cooperation pilots or curriculum adaptation models developed with employers
Learners in work-based learning, apprenticeships or dual education	Annual increase of at least 5% in participating learners, where baseline exists
VET teachers and trainers trained in digital, green or sector-specific skills	At least 100 teachers/trainers per country per year, where feasible

Higher education

Medium-term

Key indicator	Suggested monitoring number
Higher education programmes revised towards skills-based learning outcomes	At least 2 revised programmes per country
Interdisciplinary programmes linked to AI, digitalisation, green transition, blue economy or advanced manufacturing	At least 1 programme per strategic field per country, where feasible
Students participating in internships, applied projects or challenge-based learning	Annual increase of at least 5% in participating students, where baseline exists
University–industry cooperation initiatives, joint laboratories or applied research projects	5 university–industry cooperation initiatives, joint laboratories or applied research projects

Lifelong learning

Long-term

Key indicator	Suggested monitoring number
Adult learning participation rate	Annual increase of at least 1 percentage point per country, with a medium-term objective to reduce the gap with the EU average

Medium-term

Key indicator	Suggested monitoring number
Participation in upskilling and reskilling programmes	Annual increase of at least 5% in participants, where baseline exists
New or upgraded modular learning, upskilling or micro-credential pathways developed	At least 5 new or upgraded modular learning, upskilling or micro-credential pathways developed
Financial incentives for adult learning, such as vouchers or training subsidies	At least 1 active financial instrument per country

Sectoral skills

Short-term

Key indicator	Suggested monitoring number
Sectoral skills partnerships or advisory groups established	At least 1 partnership per priority sector
Job vacancy rates and shortage occupation lists in strategic sectors	1 annual update per country and priority sector, where data are available

Medium-term

Key indicator	Suggested monitoring number
Sectoral skills action plans in strategic sectors	At least 3 sectoral action plans per country
Training programmes addressing technical, digital, green and transversal skills in strategic sectors	At least 4 programmes per priority sector

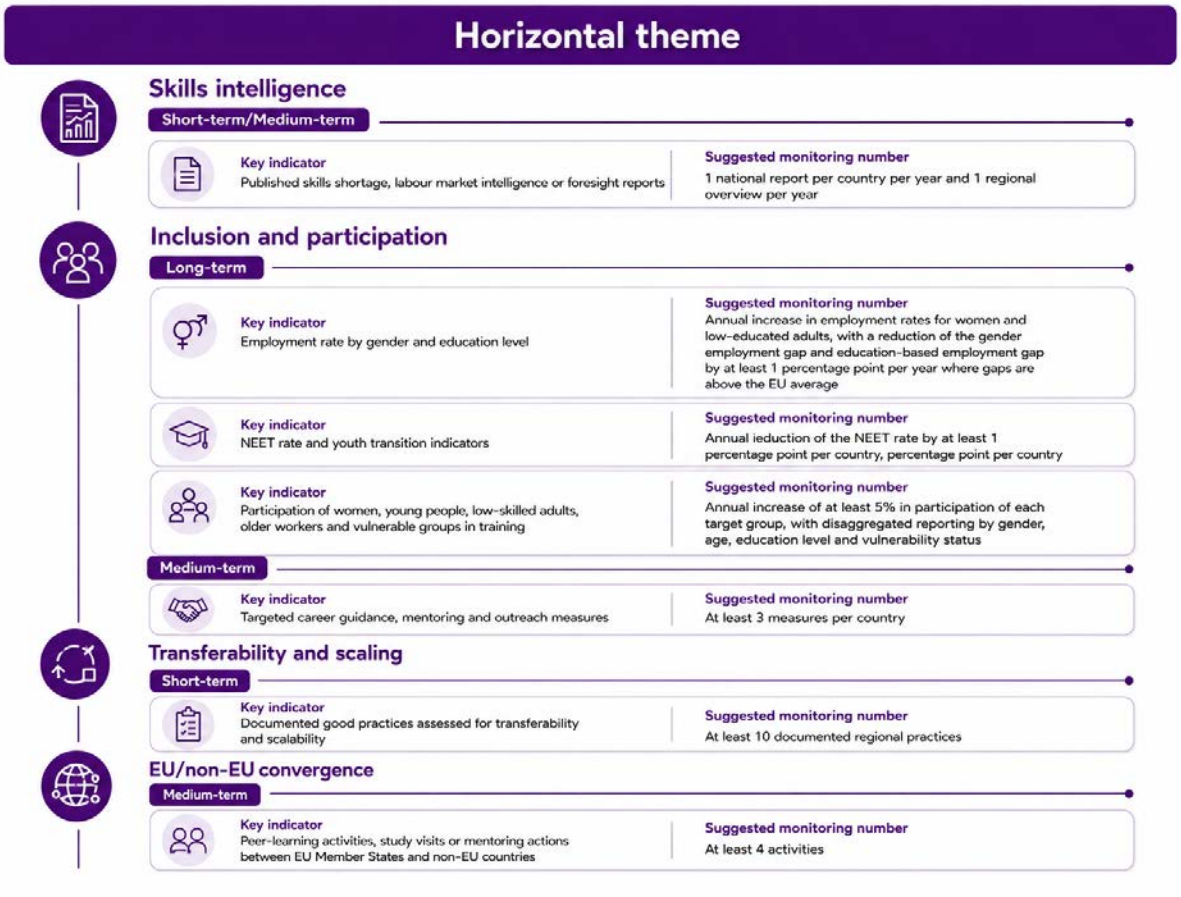


Figure 32 Key indicators for future monitoring

The proposed indicators should be used as a practical monitoring framework for future implementation. They should be updated periodically and combined with qualitative evidence from employers, education providers, public employment services, local authorities and EUSAIR stakeholders. Regular monitoring will be particularly important to assess whether short-term coordination measures are translated into medium-term institutional and sectoral improvements, and ultimately into long-term progress in skills development, labour market adaptability and macro-regional convergence.

7.2 Long-term outlook for the EUSAIR Region

The long-term outlook for the EUSAIR region will be shaped by the ability of countries to respond to demographic change, labour market transformation, digitalisation, artificial intelligence, decarbonisation and sectoral restructuring. These trends are already changing the demand for skills across the Region and will continue to influence competitiveness, resilience and social cohesion in the coming years. The study shows that skills development is not a separate education issue, but a strategic condition for economic transformation, labour market participation and territorial cohesion.

In the long term, the region will face increasing pressure from ageing populations, youth emigration and shrinking labour supply. This means that future growth cannot rely mainly on expanding the workforce. Instead, competitiveness will depend more strongly on productivity, better use of existing human capital, activation of underrepresented groups and continuous upskilling and reskilling. Countries and regions that strengthen lifelong learning and workforce adaptability will be better positioned to respond to labour shortages and changing employer demand.

Regional disparities will remain an important feature of the Region. Countries differ in economic structure, labour market performance, institutional capacity, data availability and education system responsiveness. Therefore, a common regional skills framework is needed, but it should not lead to uniform policy responses. The long-term opportunity for the Region lies in using the macro-regional framework to reduce fragmentation and support practical cooperation. The Region can add value by connecting countries, education providers, employers, public institutions and innovation actors around shared skills priorities. This includes knowledge exchange, policy learning, joint monitoring tools, cross-border training initiatives, mobility schemes, recognition of qualifications and micro-credentials, and the development of targeted skills corridors. The study identifies the macro-regional approach as particularly relevant because it enables coordinated responses, pooling of expertise and resources, stronger regional competitiveness and better alignment between national systems. If these are achieved, the Region can gradually move from fragmented and uneven responses towards a more coordinated and resilient skills ecosystem. This would support higher-quality employment, improve the capacity of sectors to adapt to the green and digital transitions, strengthen convergence between EU and non-EU countries, and reinforce the role of skills development as a central pillar of long-term competitiveness and social cohesion.

The new EU programming framework for 2028–2034 creates an opportunity for the Region to strengthen skills development as a long-term investment priority. The proposed EU budget places emphasis on simplification, flexibility, strategic alignment and stronger links between reforms, investments and measurable results. This is particularly relevant for the Region, where skills shortages, demographic pressures, labour market fragmentation and uneven institutional capacities require coordinated responses.

The proposed National and Regional Partnership Plans could provide a framework for integrating skills priorities into national, regional and sectoral investment planning. This would allow skills development to be linked not only to education and employment policies, but also to competitiveness, cohesion, digitalisation, green transition, transport, tourism, blue economy and innovation.

The new framework also opens opportunities for macro-regional initiatives connecting EU Member States and candidate countries. EUSAIR could support joint skills forecasting, sectoral skills partnerships, cross-border training, micro-credentials, mobility of learners and trainers, and pilot Skills Corridors in priority sectors such as energy, transport, tourism, maritime economy, ICT, AI, health and advanced manufacturing.

Additional opportunities are linked to strengthened investment in education and skills, Erasmus+, external cooperation through Global Europe, and future support for clean energy, sustainable transport and cross-border infrastructure. These instruments can help improve convergence between EU and non-EU countries in the Region and support the gradual alignment of skills systems with EU priorities.

Overall, the new programming framework should be used to move from fragmented and project-based actions towards a more strategic and coordinated macro-regional approach to skills development. To achieve this, EUSAIR stakeholders should prepare mature project pipelines, embed skills priorities in future national and regional programming documents, and link investments to clear monitoring indicators. In the long term, this would enable the Region to build a more resilient, competitive and inclusive skills ecosystem, capable of supporting labour market adaptability, sectoral transformation and stronger convergence between EU and non-EU countries.

8 Literature

Internet sources

1. CEDEFOP, *ICT professionals: skills opportunities and challenges (2023 update)*, https://www.cedefop.europa.eu/en/data-insights/ict-professionals-skills-opportunities-and-challenges-2023-update, last accessed: 10 April 2026
2. Eurostat, *Digitalisation in Europe – 2026 edition*, https://ec.europa.eu/eurostat/web/interactive-publications/digitalisation-2026?utm, last accessed: 30 April 2026
3. Eurostat, *Employed persons by economic activity (NACE Rev. 2.) (2008–2026)*, https://ec.europa.eu/eurostat/databrowser/, last accessed: 30 April 2026
4. Eurostat, *Participation rate of employees in education and training (last 4 weeks) by NACE Rev. 2 activity (2008–2026)*, https://ec.europa.eu/eurostat/databrowser/, last accessed: 4 May 2026
5. Eurostat, *Seasonality in tourism demand*, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Seasonality_in_tourism_demand, last accessed: 4 May 2026
6. European Commission, *2025 State of the Digital Decade package*, https://digital-strategy.ec.europa.eu/en/policies/2025-state-digital-decade-package, last accessed: 5 May 2026
7. European Commission, *A European approach to micro-credentials,* https://education.ec.europa.eu/education-levels/higher-education/micro-credentials?utm, last accessed: 5 May 2026
8. European Commission, *Clean Industrial Deal: A plan for EU competitiveness and decarbonisation*, https://commission.europa.eu/topics/competitiveness/clean-industrial-deal_, last accessed: 7 May 2026
9. European Commission, *Cooperative, connected and automated mobility (CCAM)*, https://transport.ec.europa.eu/, last accessed: 7 May 2026
10. European Commission, *Digitalising transport – towards smart and sustainable mobility*, https://digital-strategy.ec.europa.eu/en/policies/digitalisation-mobility?utm_, last accessed: 8 May 2026
11. European Commission, *Digitalising transport – towards smart and sustainable mobility*, https://digital-strategy.ec.europa.eu/en/, last accessed: 8 May 2026
12. European Commission, *EU Blue Economy Observatory – Croatia*, https://blue-economy-observatory.ec.europa.eu/country-profiles/croatia_en?utm_, last accessed: 11 May 2026
13. European Commission, *EU Blue Economy Observatory – Greece*, https://blue-economy-observatory.ec.europa.eu/country-profiles/greece_en?utm_, last accessed: 11 May 2026
14. European Commission, *EU Blue Economy Observatory – Italy*, https://blue-economy-observatory.ec.europa.eu/country-profiles/italy_en?utm_, last accessed: 11 May 2026
15. European Commission, *EU Blue Economy Observatory – Slovenia*, https://blue-economy-observatory.ec.europa.eu/country-profiles/slovenia_en?utm_, last accessed: 11 May 2026

16. European Commission, *Industry 5.0*, https://research-and-innovation.ec.europa.eu/research-area/industrial-research-and-innovation/industry-50_en?utm, last accessed: 2 April 2026

17. European Commission, *Innovation in education*, https://education.ec.europa.eu/education-levels/higher-education/innovation-in-education, last accessed: 12 May 2026

18. European Commission, *Joint Research Centre, Transport Infrastructure*, https://joint-research-centre.ec.europa.eu/, last accessed: 11 May 2026

19. European Commission, *Landmark agreements towards achieving net-zero emissions from global shipping by 2050*, https://transport.ec.europa.eu/news-events/news, last accessed: 12 May 2026

20. European Commission, *Smart Mobility – Achieving seamless, safe and efficient connectivity*, https://transport.ec.europa.eu/transport-themes/, last accessed: 12 May 2026

21. European Commission, *Strategic Insights into the EU's Advanced Manufacturing Industry*, https://single-market-economy.ec.europa.eu/industry/advanced-manufacturing/strategic-insights-eus-advanced-manufacturing-industry_en, last accessed: 12 May 2026

22. European Commission, *Sustainable urban mobility*, https://transport.ec.europa.eu/transport-themes/urban-transport/, last accessed: 13 May 2026

23. European Commission, *The digital transition of tourism*, https://transport.ec.europa.eu/tourism/, last accessed: 2 April 2026

24. European Commission, *Transport and the Green Deal*, https://commission.europa.eu/topics/transport-and-tourism/, last accessed: 15 May 2026

25. European Council, Council of the European Union, *Renovation wave: creating green buildings for the future*, https://www.consilium.europa.eu/, last accessed: 15 May 2026

26. EU Strategy for the Adriatic and Ionian Region, https://www.adriatic-ionian.eu/, last accessed: 2 April 2026

Documents

1. CECIMO (2025), *Insights beyond the skills gap*, https://www.cecimo.eu/publications/insights-beyond-the-skills-gap/

2. CEDEFOP (2020), *Empowering adults through upskilling and reskilling pathways: Vol 1: adult population with potential for upskilling and reskilling*, http://data.europa.eu/doi/10.2801/691134

3. DNV MES India Private Limited (2025), *DNV Maritime Forecast To 2050*, https://imare.in/wp-content/uploads/2025/

4. ENISA (2022), *European Cybersecurity Skills Framework*, https://www.enisa.europa.eu/publications/european-cybersecurity-skills-framework-role-profiles

5. European Commission (2022), *Communication from the Commission on a European Strategy for Universities*, https://education.ec.europa.eu/sites/default/files/2022-01/communication-european-strategy-for-universities-graphic-version.pdf?utm_

6. European Commission (2024), *The EU Pact for Skills – Skills Partnerships for the Tourism Ecosystem*, https://pact-for-skills.ec.europa.eu/document/

7. European Commission (2025), *Blue economy skills survey: Presentation of results and key findings*, https://maritime-forum.ec.europa.eu/theme/ocean-literacy-and-blue-skills/blue-skills/study-support-and-design-skills-development-blue-economy_en

8. European Commission (2025), *The EU Blue Economy Report 2025*, https://op.europa.eu/webpub/mare/eu-blue-economy-report-2025/

9. European Commission, Commission Recommendation (EU) 2024/236 of 29 November 2023 on means to address the impact of automation and digitalisation on the transport workforce, https://eur-lex.europa.eu/legal-content/

10. European Commission, COM(2020) 789 final, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Sustainable and Smart Mobility Strategy – putting European transport on track for the future*, https://eur-lex.europa.eu/legal-content/

11. European Commission, COM(2023) 161, SWD(2023) 68, *Proposal for a Regulation of the European Parliament and of the Council on establishing a framework of measures for strengthening Europe's net-zero technology products manufacturing ecosystem (Net Zero Industry Act)*, https://single-market-economy.ec.europa.eu/

12. European Commission, COM(2023) 757 final, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Grids, the missing link – An EU Action Plan for Grids*, https://eur-lex.europa.eu/legal-content/EN

13. European Commission, 2020/C 417/01, *Council Recommendation of 24 November 2020 on vocational education and training (VET) for sustainable competitiveness, social fairness and resilience*, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=oj:JOC_2020_417_R_0001

14. European Commission: Directorate-General for Employment, Social Affairs and Inclusion, Fulvimari A., Garaffa R., Kunertova L., Van Der Vorst C. et al. (2025), *Estimating labour market transitions and skills investment needs of the green transition – A new approach*, Publications Office of the European Union, https://data.europa.eu/doi/10.2767/4332366

15. European Commission: Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (2025), *Transition Pathway for Tourism – Taking Stock of Progress by 2024*, Publications Office of the European Union, https://data.europa.eu/doi/10.2873/1096076

16. European Commission: Directorate-General for Mobility and Transport, ECORYS and Hellenic Institute of Transport (2021), *Study on the social dimension of the transition to automation and digitalisation in transport, focusing on the labour force – Final report*, Publications Office, https://data.europa.eu/doi/10.2832/95224

17. European Labour Authority (2025), *EURES Report on Labour Shortages and Surpluses 2025*, Publications Office of the European Union, Luxembourg, https://www.ela.europa.eu/

18. European Labour Authority (2025), *Labour Shortages and Surpluses in Europe 2024*, https://www.ela.europa.eu/en/publications/

19. The EU Pact for Skills – Regional Skills Partnerships for Blue Skills in EUSAIR (*Blue Skills in EUSAIR*)

20. European Training Foundation (2024), *Skills for the Green Transition: Evidence from the EU Neighbourhood*, https://www.etf.europa.eu/

21. Eurostat (2024), *2024: Nearly 50% of EU Electricity Came from Renewables*, https://ec.europa.eu/eurostat/web/products-eurostat-news/

22. Fabiani J. et al. (2025), *Strategic Insights into the EU's Advanced Manufacturing Industry: Trends and Comparative Analysis*, Publications Office of the European Union, Luxembourg, https://dx.doi.org/10.2760/7959469

23. FAO (2024), *In Brief to The State of World Fisheries and Aquaculture 2024: Blue Transformation in Action*, Rome, https://doi.org/10.4060/cd0690en

24. IEA (2025), *Global EV Outlook 2025*, Paris, https://www.iea.org/reports/global-ev-outlook-2025

25. IEA (2025), *World Energy Employment 2025*, https://iea.blob.core.windows.net/

26. IEA (2024), *Energy Technology Perspectives 2024*, https://www.iea.org/reports/energy-technology-perspectives-2024

27. OECD (2020), *Accelerating Digitalization: Critical Actions to Strengthen the Resilience of the Maritime Supply Chain*, https://thedocs.worldbank.org/en/doc/

28. OECD (2022), *Multi-dimensional Review of the Western Balkans: From Analysis to Action*, OECD Development Pathways, OECD Publishing, Paris, https://doi.org/10.1787/8824c5db-en

29. OECD (2024), *OECD Tourism Trends and Policies 2024*, OECD Publishing, Paris, https://doi.org/10.1787/80885d8b-en

30. OECD (2024), *Western Balkans Competitiveness Outlook 2024: Albania*, Competitiveness and Private Sector Development, OECD Publishing, Paris, https://doi.org/10.1787/541ec4e7-en

31. OECD (2024), *Western Balkans Competitiveness Outlook 2024: Bosnia and Herzegovina*, Competitiveness and Private Sector Development, OECD Publishing, Paris, https://doi.org/10.1787/82e0432e-en

32. OECD (2024), *Western Balkans Competitiveness Outlook 2024: Montenegro*, Competitiveness and Private Sector Development, OECD Publishing, Paris, https://doi.org/10.1787/ead1588e-en

33. OECD (2024), *Western Balkans Competitiveness Outlook 2024: North Macedonia*, Competitiveness and Private Sector Development, OECD Publishing, Paris, https://doi.org/10.1787/8207326d-en

34. OECD (2024), *Western Balkans Competitiveness Outlook 2024: Serbia*, Competitiveness and Private Sector Development, OECD Publishing, Paris, https://doi.org/10.1787/3699c0d5-en

35. OECD (2026), *Progress in Implementing the European Union Coordinated Plan on Artificial Intelligence (Volume 2): Uptake in High-Impact Sectors*, OECD Publishing, Paris, https://doi.org/10.1787/3ac96d41-en

36. Transport Community (2021), *Strategy for Sustainable and Smart Mobility in the Western Balkans*, https://www.transport-community.org/

37. UN (2025), *2025 Review of Maritime Transport: Staying the Course in Turbulent Waters*, https://unctad.org/system/files/official-document/rmt2025_en.pdf

38. UNESCO IIEP (2023), *Short Courses, Micro-Credentials, and Flexible Learning Pathways: A Blueprint for Policy Development and Action*, https://unesdoc.unesco.org/ark:/48223/pf0000384326

39. WEF (2025), *Future of Jobs Report 2025*, https://reports.weforum.org/docs/WEF_Future_of_Jobs_Report_2025.pdf

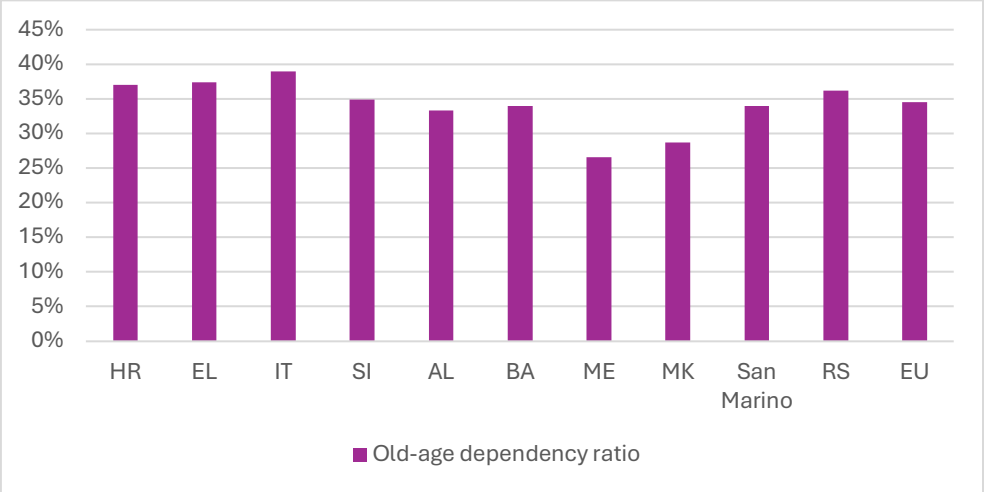
40. World Bank Group (2026), *Adjusting to Shocks, Mobilizing Untapped Potential: Western Balkans Regular Economic Report No. 29, Spring 2026*, https://documents1.worldbank.org/

9 Annexes

9.1 Annex 1 Overview of labour market trends

9.1.1 Demographic ageing and shrinking labour supply

The Region is affected by a clear trend of population ageing, although the intensity of demographic pressure differs across countries. The chart below shows old-age dependency ratio[44] in countries of the Region and EU.



Source: Eurostat

Chart 7 Old-age dependency ratio

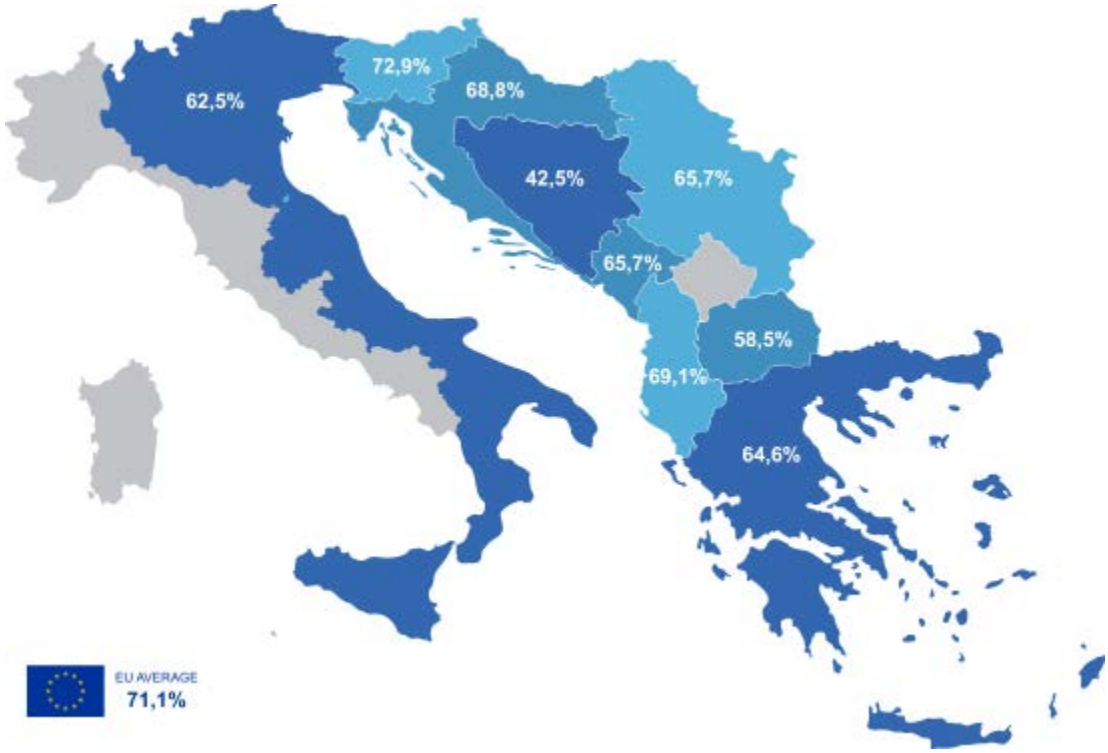
Population ageing is already a major challenge in the Region, particularly in EU Member States such as Italy, Greece and Croatia, while Western Balkan economies, despite younger population structures, are increasingly affected by youth emigration, shrinking labour supply and gradual ageing.[45] These trends are expected to intensify by 2050, placing growing pressure on labour markets and deepening skills shortages in key sectors. In this context, strengthening lifelong learning, upskilling, reskilling and the participation of underrepresented groups will be essential for sustaining competitiveness and economic resilience.[46]

9.1.2 Heterogeneity of labour market performance

According to the most recent available Labour Force Survey data, employment rates[47] in EU Member States of the EUSAIR region show varying levels of convergence towards the EU

[44] The ratio between the population aged 65 and over and the working-age population (typically defined as those aged 15–64). It indicates how many older individuals are economically supported by every 100 persons of working age and is commonly used to assess the pressure of ageing on labour markets, pension systems, and public finances.
[45] https://ec.europa.eu/eurostat/databrowser/view/tps00198/default/table?lang=en&category=t_demo.t_demo_ind; https://data.worldbank.org/indicator/SP.POP.DPND.OL?locations=BA&utm_source
[46] https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/new-push-european-democracy/impact-demographic-change-europe_en
[47] The employment rate is the proportion of employed persons within the total population of a specified age group (typically 15–64 or 20–64), expressed as a percentage, and is used to measure the level of labour market participation.

average but overall remain below or around it. In the EU part of the Region, Slovenia shows the strongest labour market performance, while Croatia is moving closer to the EU average. Greece and Italy continue to face weaker employment outcomes, reflecting persistent structural challenges.[48] The figure below shows the employment rate for the population aged 15-64.



Source: Eurostat, Observatory on Employment in the Western Balkans

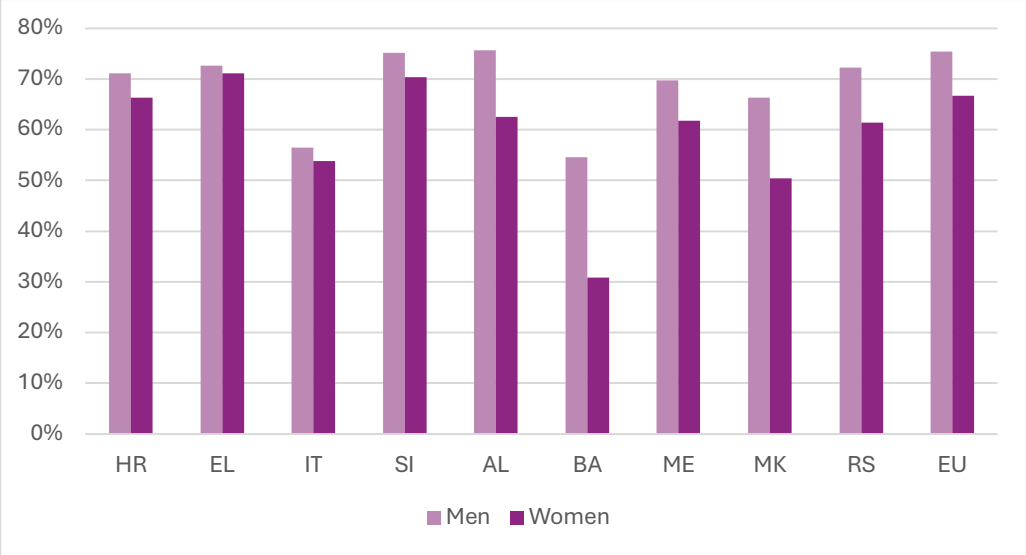
Figure 33 Employment rate for the population aged 15-64

In the Western Balkans, labour market performance presents a more heterogeneous picture. Some countries of the Western Balkans show employment levels comparable to parts of the EU EUSAIR area, while others continue to face significantly weaker labour market participation. Bosnia and Herzegovina stands out as the most affected, with substantially lower employment levels.

9.1.3 Persistent labour market participation gaps (gender and education)

Labour market participation across the EUSAIR region is characterised by persistent disparities, particularly along the dimensions of gender and educational attainment. The chart below shows gender-based disparities across the Region.

[48] Data for San Marino is not available.



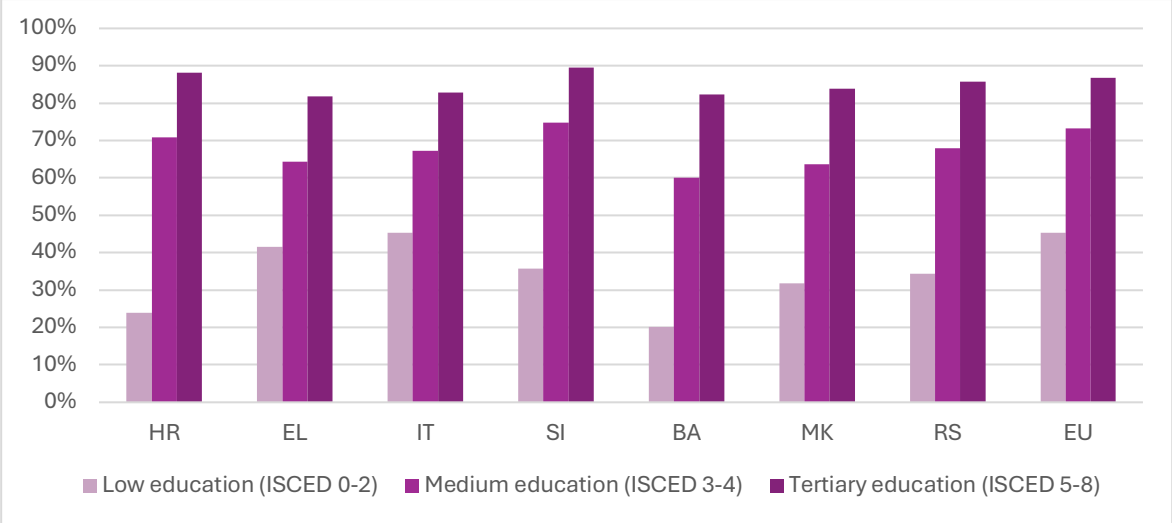
Source: Eurostat

Chart 8 Gender-based disparities

Within the EU part of the Region, Slovenia and Croatia show relatively more moderate gender gaps, while Greece and Italy face wider disparities. In the Western Balkans, gender-based employment disparities are generally more pronounced than in the EU part of the Region. The challenge is particularly severe in Bosnia and Herzegovina, where female labour market participation remains exceptionally low.[49]

At the same time, employment outcomes are strongly linked to educational attainment, with higher employment rates consistently observed among people with higher levels of education. The graph below shows employment rates in different education level, including low education (ISCED 0-2), medium education (ISCED 3-4) and tertiary education (ISCED 5-8).

[49] Data for San Marino is not available.



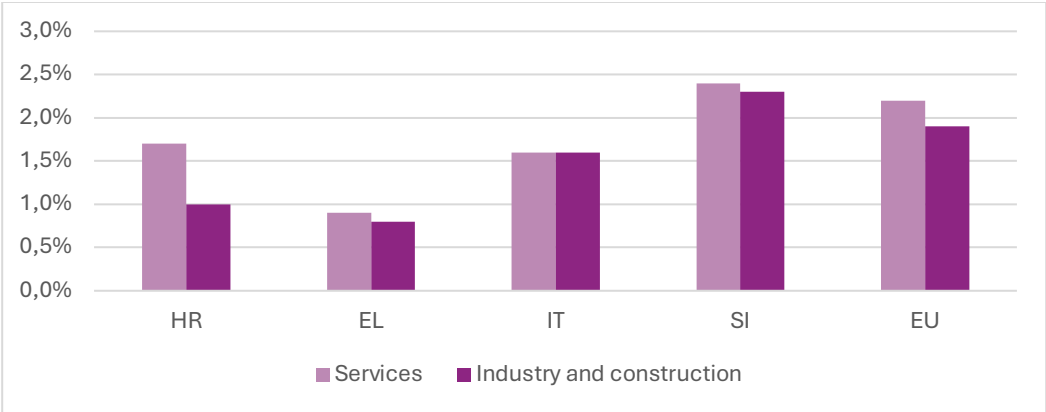
Source: Eurostat

Chart 9 Employment rate by education level

In both EU Member States and Western Balkan economies, people with tertiary education are much more likely to be employed, while individuals with low levels of education face significantly weaker labour market prospects. Although the intensity of this pattern varies between countries, tertiary-educated workers are generally better integrated into the labour market, while low-skilled groups remain more exposed to unemployment and exclusion, both in EU Member States and Western Balkan economies.[50]

9.1.4 Sectoral restructuring towards services and knowledge-intensive activities challenges

Labour demand across the EUSAIR region shows clear sectoral differences, particularly between services and industry, although patterns vary significantly across countries. The graph below shows job vacancy rates in services and industry and construction.



Source: Eurostat

Chart 10 Job vacancy rates in services, and industry and construction

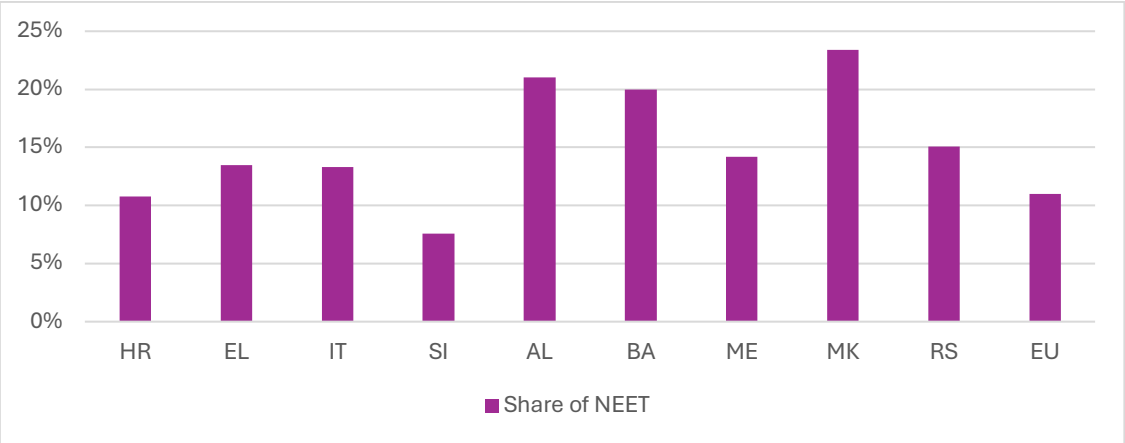
[50] Data for Albania, Montenegro and San Marino is not available.

At the EU level, demand is slightly stronger in services than in industry and construction, confirming the growing importance of service-based and knowledge-intensive activities. However, this pattern is not uniform across EUSAIR EU Member States. In Slovenia and Italy, labour demand is relatively balanced between services and industry-related sectors. In contrast, Greece and Croatia show stronger demand in industry and construction than in services, indicating that service sectors are not the main drivers of labour demand in all parts of the Region.

In the Western Balkans, comparable job vacancy data are not available, but broader evidence confirms a gradual shift in employment patterns. Between 2011 and 2022, employment declined in agriculture and mining, while increasing in services, particularly in ICT, tourism, and business services. This trend is most visible in Serbia and North Macedonia, while in countries such as Montenegro and Kosovo, growth has been more strongly driven by tourism-related activities. Despite this shift, knowledge-intensive sectors still account for a relatively small share of total employment, and growth in services is often concentrated in lower-productivity activities. At the same time, some progress is visible in manufacturing, where higher-value subsectors are expanding, although from a low base.[51]

9.1.5 Youth labour market integration (NEET)

Youth labour market integration remains a key challenge across the Region, particularly when measured through the young people aged 15–29 who are neither in employment, education, nor training (NEET). NEET share is widely used to assess structural barriers in the transition from education to the labour market and highlights the risk of long-term exclusion, especially among vulnerable groups. The chart below shows NEET rates.



Source: Eurostat, International Labour Organization

Chart 11 NEET rates

[51] https://documents1.worldbank.org/curated/en/099100625100539134/pdf/P512916-fe1dc2c8-b236-4cfe-ad18-88303a06122e.pdf

Across the EUSAIR Region, youth labour market integration continues to vary significantly between countries. Slovenia and Croatia show more favourable outcomes, indicating stronger integration of NEET. In contrast, Italy and Greece continue to face more persistent challenges related to youth unemployment, school-to-work transitions and labour market segmentation. For Western Balkan countries, youth disengagement also remains a relevant challenge, with North Macedonia, Albania and Bosnia and Herzegovina particularly affected.[52]

[52] Data for San Marino is not available.

9.2 Annex 2 Policy Framework Overview

Country	Key skills policy frameworks	Main strategic focus
Croatia	• National Development Strategy 2030 • National Plan for the Development of Education and Training • Croatian Qualifications Framework • Adult Education Act	• Education reform, labour market adaptability, and digital and green transition • Strengthening lifelong learning and work-based learning
Greece	• National Strategy for Sustainable and inclusive Growth • Law 4763/2020 on VET and Lifelong Learning • Hellenic Qualification Framework	• VET reform and labour market relevance • Upskilling, reskilling and digital transition alignment
Italy	• National Strategy for Sustainable Development • National Qualifications Framework • National System for Certification of Competences • Programme for the Employability Guarantee of Workers • National Plan for Digital Skills	• Large-scale employability and reskilling reforms • Strong integration of skills, innovation and regional development
Slovenia	• Slovenian Development Strategy 2030 • Resolution of the National Programme of Higher Education to 2030 • Resolution on the National Programme of Adult Education 2022-2030 • Slovenian Qualification Framework	• Lifelong learning and workforce adaptability • Integration of skills development within innovation systems
Albania	• National Employment and Skills Strategy 2023-2030 • National Strategy for Development and European Integration 2022-2030 • National Education Strategy 2021-2026 • Albanian Qualifications Framework	• Employment and skills integration • Competence-based education and digital transformation
Bosnia and Herzegovina	• Development Strategy of the Federation of Bosnia and Herzegovina 2021-2027 • Qualifications Framework in Bosnia and Herzegovina • Priorities for the Development of Higher Education 2016-2026 • Strategic Platform for the Development of Adult Education in the Context of Lifelong Learning • Framework for the Development of VET in Bosnia and Herzegovina	• Strengthening employability and lifelong learning • Gradual alignment with EU standards
Montenegro	• National Strategy for Sustainable Development until 2030 • Montenegrin Qualifications Framework • National Employment Strategy 2021-2025	• Improving employability and workforce participation • Development of digital competencies and innovation capacity
North Macedonia	• National Development Strategy 2024-2044 • Macedonian Qualifications Framework • Employment and Social Reform Programme	• Education reform and workforce adaptability • Youth employability and digital skills development
Serbia	• Serbian 2025 Programme • Education Development Strategy 2030 • National Qualifications Framework of Serbia • National Employment Strategy 2021-2026	• Economic modernisation and digital transformation • Expansion of reskilling and LMI
San Marino	• Economic Development Strategy of San Marino • Alignment with the European Higher Education Area and Bologna Process	• Economic diversification and innovation-driven growth • Alignment with European education and labour market standards

9.3 Annex 3 Cross-border cooperation and macro-regional dimension

9.3.1 Current state of cooperation in skills development

Cross-border cooperation in skills development across the Region has expanded significantly in recent years, particularly through EU-funded programmes, higher education networks, innovation partnerships, and macro-regional initiatives. Cooperation is increasingly focuses on shared regional challenges relates to labour shortages, workforce adaptability, demographic change, digitalization, youth employability, and green and digital transition priorities.

The growing interconnectedness of labour markets, economic transformation processes, and demographic pressures has increased the importance of macro-regional approaches to workforce development. As a result, cooperation is gradually evolving from isolated mobility and project-based activities towards broader partnerships connecting education systems, labour market actors, innovation ecosystems, and regional development priorities across the Region.

The following overview summarizes the most commonly observed trends of cross-border cooperation identified through macro-regional initiatives, EU-funded programmes, and existing partnerships activities across the Region:

Figure 34 Cooperation trends in the Region

9.3.2 Good practices: Existing cooperation mechanisms and initiatives

The following examples illustrate some of the most relevant existing mechanisms and initiatives supporting macro-regional and cross-border cooperation in skills development, innovation, mobility, entrepreneurship, and workforce adaptability across the Region.

Table 10 Initiatives supporting cross-border cooperation

Initiative type	Example of cooperation	Contribution to macro-regional cooperation
Erasmus+ partnerships and mobility schemes	• Erasmus+ Blended Initiative Programmes (BiPs) • European Universities Alliance such as UNIADRION cooperation activities and SEA-EU • Erasmus+ Cooperation Partnerships	• Support student and staff mobility, joint curricula development, lifelong learning, digital education, and institutional cooperation
Interreg and IPA cooperation initiatives	• Interreg IPA ADRION projects (e.g. Smart Adria, Digitrans) • Interreg Euro-MED projects (Dialogue4Innovation, REVIVE)	• Facilitate cross-border cooperation related to digital transformation, social innovation, entrepreneurship, sustainable regional development, innovation ecosystem, and capacity-building process
Cross-border entrepreneurship and innovation initiatives	• EIT Health initiatives • EIT Deep Tech Initiative • European Digital Innovation Hubs (EDIHs) • EIT Community Hubs • Startup Europe • Digital Europe Programme initiatives	• Support innovation ecosystems, digital and deep-tech skills development, entrepreneurship, technology transfer, and cross-border cooperation between research, education, industry, and innovation actors across Europe
Employment, labour mobility, and work-based learning initiatives	• EURES network • ALMA initiative (Aim, Learn, Master, Achieve) • Pact for Skills • European Alliance for Apprenticeships	• Support labour mobility, employability, work-based learning, upskilling, apprenticeships, and workforce integration across borders
Macro-regional stakeholder and cooperation platforms	• EUSAIR governance mechanisms and For a • EUSDR initiatives • EUSAL initiatives • West Balkan Common Regional Market • Regional Cooperation Council • Union for the Mediterranean • Central Europe Initiative	• Facilitate macro-regional dialogue, policy learning, stakeholder engagement, labour mobility, regional coordination, and cooperation between EU member states and non-EU countries
Regional cooperation and social innovation networks	• European Association for Local Democracy (ALDA) • European Social Innovation Competence Centre • Regional social innovation and inclusion networks	• Support social innovation, inclusive labour market participation, community-based skills development, lifelong learning, participatory governance, and territorial cohesion on regional

The analysed initiatives highlight **several common patterns** for strengthening more sustainable, inclusive, and strategically coordinated macro-regional cooperation across the Region:

- **Cross-border cooperation is expanding beyond traditional mobility activities towards broader partnership**s connecting education, innovation, labour market development, and entrepreneurship ecosystems

- **Multi-stakeholder cooperation** involving education providers, employers, public institutions, innovation actors, NGOs represents **a key enabling factor** for sustainable macro-regional cooperation
- **Digitalization, green transition, entrepreneurship, and workforce adaptability** are becoming **major drivers** of **regional cooperation initiatives** across sectors
- **EU-funded programmes** and **macro-regional initiatives** play an important role in strengthening institutional learning, knowledge exchange, and cooperation between EU member states and non-EU countries
- **Innovation ecosystems** such as living labs, digital innovation hubs, and EIT initiatives increasingly connect skills development with research, technology transfer, and regional competitiveness priorities
- **Existing cooperation initiatives** demonstrate strong potential for **scaling joint training activities, mobility schemes, innovation partnerships, and lifelong learning** across the Region.

9.3.3 Barriers to cross-border cooperation

Despite the growing number of macro-regional and cross-border initiatives across the Region, several barriers, based on stakeholders' inputs, continue to limit the continuity, scalability, and long-term sustainability of cooperation in skills development and workforce adaptation. Furthermore, barriers are often interconnected, affecting not only implementation, but also the broader ability to develop more integrated and sustainable macro-regional cooperation ecosystems:

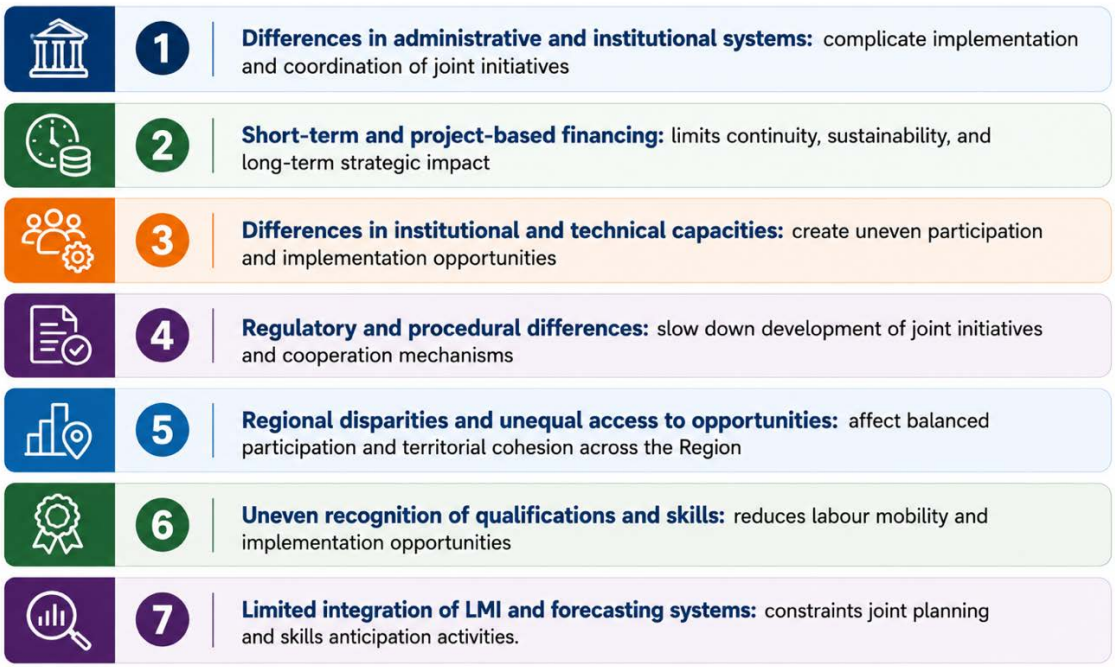


Figure 35 Barriers to cross-border cooperation

Key takeaway: The main challenge of macro-regional cooperation in the Region is no longer initiating cooperation itself, but ensuring its continuity, strategic alignment, and long-term sustainability across different national and institutional contexts.

9.3.4 Opportunities for enhanced macro-regional cooperation, skills corridors and joint initiatives

The concept of **skills corridors** represents a potential next step in the evolution of macro-regional cooperation. Skills corridors can be understood as structured and long-term cooperation frameworks connecting countries, education systems, labour market actors, employers, innovation ecosystems, and public institutions around workforce and skills development priorities. **Their objective** is to support more coordinated, continued and integrated cooperation in workforce development, mobility, lifelong learning, innovation, and labour market adaptation across sectors facing similar transformation pressures and skills shortages.

The analysed initiatives demonstrate that the Region already possesses a strong foundation for gradually developing such cooperation models across several shared strategic priorities and sectors:

Table 11 Potential skills corridors in the Region

Potential skills corridor	Main cooperation focus	Examples of possible cooperation approaches
Digital and AI Skills Corridor	• Joint responses to digital transformation, low digital literacy, and ICT workforce shortages	• Joint regional AI and cybersecurity academies involving universities, VET providers, and EDIHs • Shared online training platforms/programmes for advanced digital skills • Regional booth camps and short-term mobility programmes for ICT students and professionals
Green transition and Sustainability Skills Corridor	• Workforce adaptation for sustainable and low-carbon sectors	• Development of joint skills curricula for renewable energy and circular economy • Joint training programme for green technologies • Cross-border industry-academia pilot projects linked to S3
Tourism and Hospitality Skills Corridor	• Addressing seasonal labour shortages and improving workforce quality	• Adriatic-Ionian training network connecting tourism schools, universities, and employers • Regional apprenticeship and seasonal exchange programmes • Joint certification scheme for sustainable and digital tourism competencies
Healthcare Skills Corridor	• Addressing ageing populations and healthcare workforce shortages	• Regional simulation-based healthcare training programmes • Exchange schemes for healthcare students and professionals • Joint digital health and telemedicine education initiatives • Cooperation between medical faculties, hospitals, and health innovation hubs
Blue Economy and Maritime Skills Corridor	• Development of specialized maritime and coastal economy competencies	• Development of specialised maritime and coastal economy competencies • Joint maritime training programmes, upskilling and reskilling schemes, and practical placements designed in cooperation with education providers and industry actors • Establishment of a regional blue skills intelligence mechanism to identify current and future skills gaps, emerging occupational profiles and training needs • Cooperation between maritime faculties, VET providers, ports, blue economy clusters, research organisations, public authorities and businesses to align education and training with real labour market needs • Regional competence centres for sustainable maritime technologies and coastal resilience, acting as practical hubs for training, demonstration, applied research and knowledge transfer • Promotion of blue careers and ocean literacy among young people and coastal communities, in order to increase the attractiveness of maritime professions and address workforce shortages
Innovation and Entrepreneurship Corridor	• Strengthening regional innovation and startup cooperation	• Cross-border startup accelerators and entrepreneurship bootcamps • Living labs connecting startups, universities, and industry • Regional innovation challenges and mentoring programmes supported by EIT Community Hubs
Youth Employability and Labour Mobility Corridor	• Improving school-to-work transitions and workforce integration	• Regional internship and traineeship schemes • Cross-border mentoring and career guidance programmes • Expansion of initiatives in cooperation with Youth Council • Joint employability initiatives targeting young people and vulnerable groups

Key takeaway: The Region has strong potential do develop macro-regional skills corridos addressing shared needs in strategic sectors but it will require stronger long-term coordination, willingness and institutional coordination.

9.3.5 Role od EUSAIR

EUSAIR plays an important role in supporting macro-regional cooperation model, as through its macro-regional governance framework, it facilitate dialogue, knowledge exchange, stakeholder engagement, and cooperation between EU member states and non-EU countries around shared development challenges. Main areas where EUSAIR can provide added value:

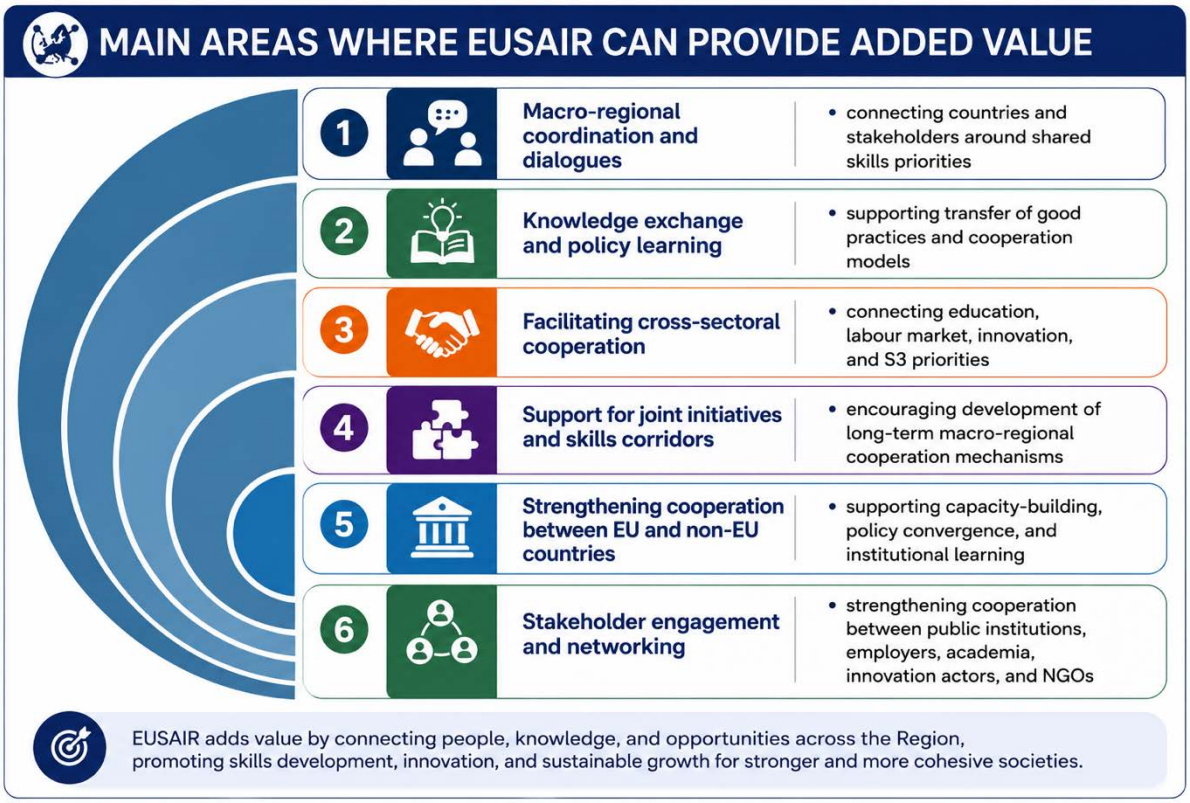


Figure 36 EUSAIR's added value to macro-regional cooperation

9.3.6 Added value of the macro-regional approach

The Region is characterized by increasingly interconnected labour market, demographic, innovation, and sustainability challenges that require stronger cooperation beyond isolated national approaches. In this context, the macro-regional approach creates opportunities for countries to address shared transformation pressures through more coordinated, complementary and long-term cooperation models.

By connecting countries around shared priorities and complementary capacities, the macro-regional framework enables:

1. **More coordinated response to shared challenges**: supports joint approaches to labour shortages, demographic change, and digital and green transition pressures
2. **Pooling of expertise and resources**: enables sharing of knowledge, infrastructure, innovation capacity, and good practices across countries

3. **Stronger regional competitiveness**: supports development of larger and more connected innovation, skills, and entrepreneurship ecosystems
4. **Reduction of regional fragmentation**: strengthens alignment and cooperation between different national systems and governance levels
5. **Greater visibility within European framework**: strengthens positioning of the Region priorities within EU frameworks, programmes and initiatives.

Key takeaway: The main added value of the macro-regional approach lies in its ability to connect countries, sectors, and stakeholders around shared challenges and complementary strengths, creating stronger and more resilient regional cooperation ecosystems than isolated national approaches alone.