



SKILLS FOR THE GREEN TRANSITION

EVIDENCE FROM THE EU NEIGHBOURHOOD



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To tackle climate change and promote sustainable development, societies must transition to low-carbon energy sources, prevent ecological collapse and enable human development so that people can thrive in a green economy.

This is in line with the European Green Deal's goals of climate neutrality and reduced inequality. It provides opportunities for governments and organisations to implement changes that make labour markets and education more inclusive, prosperous and conducive to human well-being.

The European Training Foundation (ETF) has assessed policies and progress in skills deployment for the green transition in the EU's neighbouring countries¹. Key findings can help governments address capacity-building needs while enabling long-term social change for a just transition.

¹ Research has been conducted in the following countries: Albania, Algeria, Armenia, Azerbaijan, Bosnia and Herzegovina, Egypt, Georgia, Israel, Jordan, Kazakhstan, Kosovo (this designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ opinion of the Kosovo declaration of independence – hereinafter 'Kosovo'), Kyrgyzstan, Lebanon, Moldova, Montenegro, Morocco, North Macedonia, Palestine (this designation shall not be construed as recognition of a State of Palestine and is without prejudice to the individual position of the EU Member States on this issue – hereinafter 'Palestine'), Serbia, Tajikistan, Tunisia, Türkiye, Turkmenistan, Ukraine and Uzbekistan. In addition to this paper, 17 country reports and two thematic reports (energy and construction) have been produced.

Ambitious green transition targets: National and sectoral strategies show commitment to ambitious green transition targets in line with international agreements such as the United Nations' Sustainable Development Goals², the Paris Agreement and the Energy Community Treaty³. Most countries have roadmaps and strategies to phase out fossil fuels and achieve a renewable, low-carbon and circular economy.

Emphasise skills: Despite ambitious targets, the skills dimension is often downplayed in these national and sectoral strategies, reducing their effectiveness in driving transformative change. These strategies often fail to adequately recognise the need for a skilled workforce or to outline adequate measures to provide essential green skills and competences. Furthermore, the strategies fail to comprehensively describe the range of skills associated with the green transition. They often lack the necessary combination of sustainability mindsets, transversal skills and technical expertise.

Encourage holistic green education reforms: Education systems often focus on imparting accepted knowledge rather than empowering students to thrive in an unpredictable future. In doing so, they sometimes inadvertently perpetuate harmful practices that exacerbate inequality and damage the environment, which is contrary to sustainability goals. Necessary reforms gain little momentum and fail to develop the necessary skills. While there are some positive initiatives, many are fragmented, driven by donors, civil society, ambitious providers, and the private sector rather than by governments, underfunded, and disconnected across education levels. This lack of an integrated approach hinders comprehensive skills development.

² United Nation's Sustainable Development Goals: <https://sdgs.un.org/goals>

³ The Southern and Eastern Mediterranean region is not a part of this treaty.

Strengthen skills intelligence systems to monitor skills demand and supply:

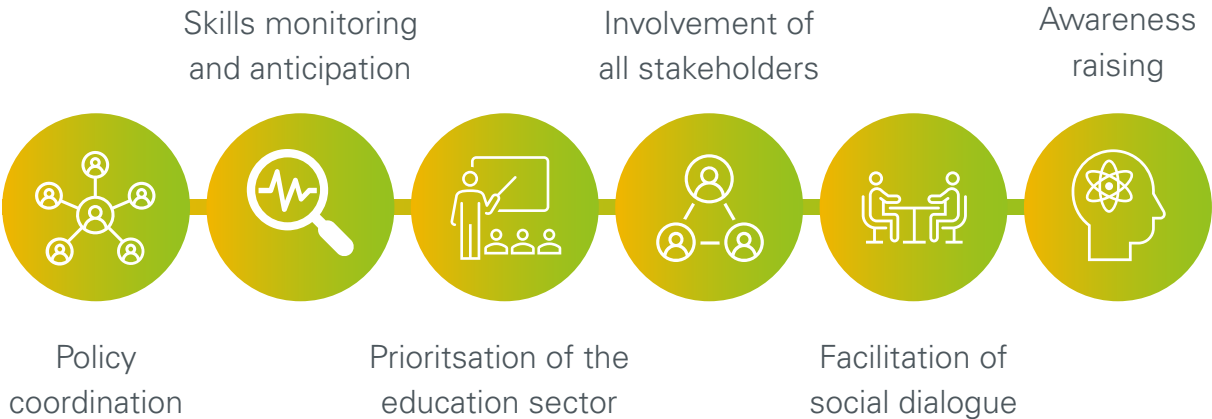
The adage ‘you cannot manage what you do not measure’ is relevant here. Policymakers recognise the challenges of aligning skills development with the green transition. However, limited data on skills and employment hampers accurate planning. Countries therefore need to improve skills deployment to align with green regulations and policies. Only a few countries have labour market monitoring mechanisms that capture general trends rather than specific skills for the green economy. Examples include Egypt, Israel, Serbia, Morocco, Albania and Georgia.

Enhance talent attraction: Many countries have untapped potential to attract talent to the construction and energy sectors. Employer representatives highlight skills shortages as the demand for medium- and high-skilled workers increases in these key developing sectors.

Further examination of skills needs in Albania, Tunisia and Egypt reveals a growing demand for energy sector roles focused on technology, business services and specialist expertise.

Address widespread inequalities in accessing skills and decent work to enable the green transition:

In line with the principles of the European Green Deal, countries must prioritise equitable and inclusive transitions as they move towards sustainability. This requires greater commitment to providing relevant education for marginalised groups such as NEETs (not in education, employment or training), women, migrants and people with disabilities. It is also crucial to encourage business and civil society to actively support this process. Given that green jobs can offer improved working conditions and well-being (Valero et al., 2021), expanding access to these opportunities can benefit the workforce as a whole.



Recommendations for supporting skills provision for the green transition in the EU's neighbouring countries

Integrate skills development into sectoral and industrial policies



The promotion of relevant skills, together with a coherent industrial policy linked to the green transition, can only be achieved through close coordination between government agencies and private sector stakeholders. This establishes widely accepted frameworks where all roles and responsibilities are clearly defined.

Sectoral strategies and programme-specific key performance indicators should incorporate the nationally determined contributions and the Sustainable Development Goals to ensure policy implementation and monitoring.

These sectoral strategies should explicitly address skills development through action plans aimed at facilitating industry engagement, school-to-work transitions and social protection linkages focused on learners and workers.

International cooperation is essential, with most neighbouring countries participating in agreements that allow for the sharing of best practices, knowledge, resources and skills programmes to collectively advance the goals of the green transition. This engagement includes partnerships between governments and active participation in the work of international organisations.

Develop a comprehensive government approach to environmental challenges



This requires integrating environmental sustainability across government departments and policies, rather than treating it as a separate issue. Policy coordination for the green transition requires alignment across government levels and sectors – synchronising policies, regulations and incentives for a coherent, sequenced approach.

Structured stakeholder engagement is crucial and should involve diverse groups such as business, civil society, trade unions, employers and academia to take into account different perspectives and to encourage support, innovation and buy-in. Increased collaboration between business and education providers to anticipate the skills needs for green technologies is essential, and can be achieved through measures such as work-based learning, regulatory incentives, tax breaks and financial incentives for lifelong learning and job-relevant training.

Employers and their organisations should set up sector skills committees to discuss industry changes and define the skills and qualifications needed for the green transition.

Provide regular skills forecasts on new skills demanded by the transition to green economies



Bridging skills gaps requires an understanding of the evolving knowledge and skills that employers need compared to what the workforce can offer, both in terms of quantity and quality. Accurate, up-to-date information on job-specific knowledge and skills enables policy planning and informs learners and workers about emerging and current opportunities.

Detailed regional and sectoral data allows countries to align skills development with policy goals. Modern tools such as big data analytics, artificial intelligence and online job postings can be used to provide cost-effective, real-time insights relevant to the green and digital transitions.

Increase funding for green transition education, especially incorporating sustainability and environmental education into curricula



Governments, of course, play a crucial role in funding sustainability initiatives in education. They can allocate budgets specifically for environmental education programmes, curriculum development, teacher training and sustainable school infrastructure.

However, other channels are also possible and desirable. Public-private partnerships can help mobilise resources, with private organisations (especially those with environmental interests) providing funding, expertise or resources to support school sustainability projects.

Education institutions can seek grants and donations from foundations, non-governmental organisations and environmentally conscious companies. These funds can be used to develop and implement green education programmes, establish sustainability initiatives and create eco-friendly infrastructure. Similarly, they can enter into corporate partnerships with environmentally conscious companies to sponsor or fund specific green education initiatives.

Education providers can also increase international aid or grants to support environmental education programmes, especially with the ongoing opportunities offered by the EU, such as the Erasmus+ and Horizon programmes.

Engage with social partners for a worker-centred and just transition



Strong tripartite actors with climate expertise are crucial for effective dialogue on a just transition. Social partners, including employer and employee organisations, have a key role to play in reskilling workers transitioning out of declining carbon-intensive or informal industries (agriculture and construction), as many green jobs are emerging in these sectors.

This social dialogue should ideally take place in a regular and inclusive framework. Relevant stakeholders should be invited to broaden the discussion and draw on different experiences in this emerging field.

Social dialogue is not only an end in itself, but an important means of influencing policies and legislation. It should therefore be integrated throughout the process of moving towards environmentally sustainable economies.

Strengthening social protection for informal workers and expanding access to training helps to make green jobs decent. Social protection is essential for the reintegration of people not in education, employment or training (NEETs).

Promote environmental literacy and sustainability mindsets throughout society



Education is critical for raising environmental awareness and promoting pro-environmental behaviour. It must equip learners with the knowledge and skills to identify and address environmental challenges, while shaping attitudes that drive individual and collective action. Schools play a central role in early environmental education. Effective strategies include:

- Integrating environmental education into formal curricula at all levels to nurture climate and environmental literacy.
- Developing age-appropriate curricula covering environmental topics, conservation, climate change and sustainability.
- Providing professional development for educators to enhance their expertise in environmental education to better engage with and inspire students.
- Fostering collaboration between schools and local environmental organisations for workshops, seminars and campaigns.
- Using digital resources, apps and online platforms to make environmental education accessible and engaging.

These strategies can empower individuals to understand and take action on environmental challenges while promoting commitment to pro-environmental behaviour.

Promote skills for the green transition to support youth access to new job opportunities



Youth unemployment is quite high in many of the EU's neighbouring countries. It is therefore necessary to support these young people, who are often NEETs (not in education, employment or training), and equip them with the skills needed to enter the labour market.

Training opportunities that focus on developing skills relevant to the green transition could help equip young people, including the many who are NEETs, with future-oriented skills to make them more competitive in the evolving labour market.

Steps must therefore be taken to ensure that young people acquire the right skills and competences for current and future green jobs.

Support investment in upskilling and reskilling to adapt to emerging tasks in line with the green transition



Investment is crucial to support skills development for the green transition. Enabling policies and private sector support will not be effective without accompanying investment in upskilling, reskilling, and career guidance.

As structural adjustments in the labour market accelerate, growth and decline in the sector are inevitable. According to ETF research, most of the EU's neighbouring countries do not allocate sufficient resources to employment programmes. Moreover, where programmes exist, they tend to focus on large cities and neglect inclusion.

Perhaps more significantly, there appears to be very little demand for re/upskilling, illustrating a lack of awareness among the workforce of skills needs in a changing labour market context.

Navigating towards a green economy in EU neighbouring countries: skills strategies

The transition to a green economy and the achievement of net zero emissions by 2050 will require a skilled workforce to develop, implement and sustain green practices. This transition involves redesigning all sectors of the economy for sustainability, including production, distribution and decision making. As a result, the workforce will need new skills and competences encompassing knowledge, values, attitudes and behaviours that promote resource efficiency and sustainability.

In line with tools such as GreenComp (Bianchi et al., 2022) and the European Classifications of Skills, Competences and Occupations (ESCO), the ETF approaches skills for the green transition as a combination of three key aspects:

- sustainability mindset
- technical skills
- transversal skills/capacities (see figure).

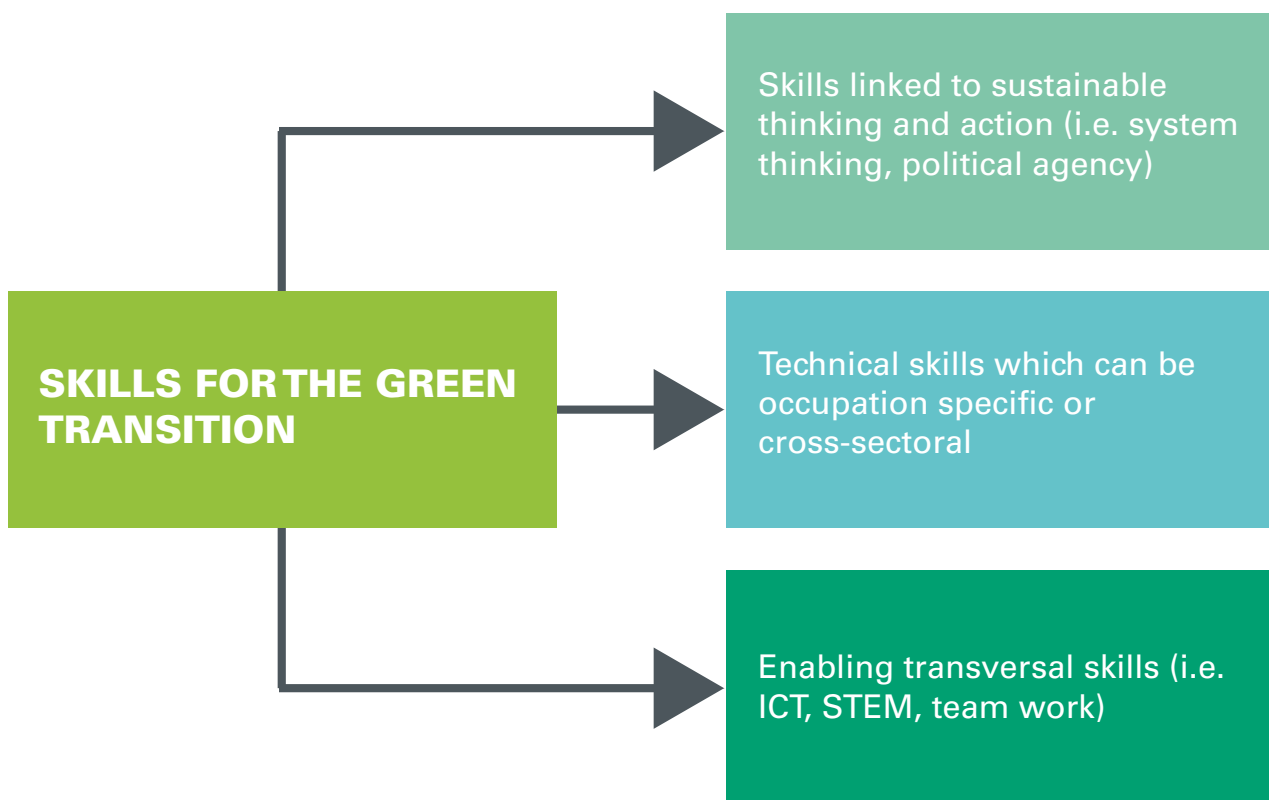
This implies that the necessary skills cannot be developed through a climate literacy course alone. It requires a holistic approach integrating sustainability principles, ethical standards, values, attitudes and behaviours across all forms of education and learning.

The goal is transforming knowledge, skills and attitudes towards sustainability, not just adding concepts to the curriculum.



It is therefore essential that learning and training programmes at all levels of education meet the needs of the green economy, providing learners and workers with sustainability education alongside opportunities for relevant technical reskilling or upskilling.

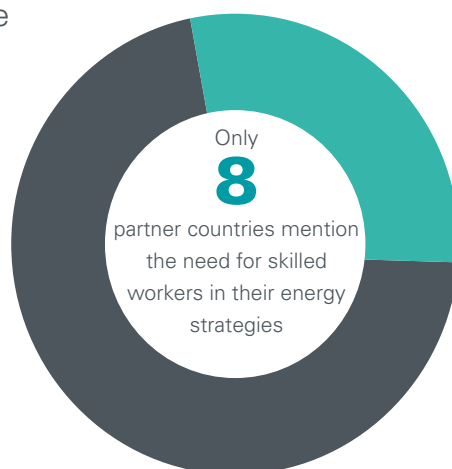
Such programmes must also meet the needs of lifelong learning, create engaging and flexible environments, prepare teachers and trainers, and provide teaching materials that contribute to the development of skills that help people adapt and thrive in changing, complex environments. Most importantly, this will support the timely implementation of the nationally determined contributions.



Integrating skills into national sustainability strategies

The EU's neighbouring countries have developed green transition strategies that contribute to global climate and sustainability efforts while remaining competitive. As part of the Paris Agreement, they have set nationally determined contributions for emission reductions. Additionally, these countries have adopted national sustainability and decarbonisation strategies, as well as plans to expand renewable energy and efficiency.

For example, Serbia made an unconditional commitment to reduce emissions by 13.2% below 2010 levels by 2030. Türkiye committed to net zero carbon emissions by 2053 and Kazakhstan by 2063. Morocco committed to meet 80% of its energy needs from renewables by 2050, Azerbaijan 30% by 2030 and Egypt 42% by 2030.



Renewable energy plans are often among the most discussed policies, with many countries making significant investments in this sector. While the adoption of national sustainability and clean energy strategies is a crucial first step, many of these documents do not sufficiently address the skills needed to achieve these ambitious goals. Only a limited number of countries explicitly recognise the need for a skilled workforce or propose concrete measures in this regard, often only briefly mentioning education and training reforms.

Conversely, the majority of countries acknowledge the significance of integrating green transition skills into their education and training strategies.

However, these strategies do not consistently provide specific details about the essential skills, often primarily emphasising sustainable development and environmental awareness.

The lack of a clear focus on human resource skills in key policy documents hampers the implementation of targeted policies to support the acquisition of skills for the green transition. It also hinders the development of comprehensive approaches to sustainability education



at all levels and the provision of inclusive and equitable skills development opportunities for those who may be vulnerable to displacement resulting from technological changes or the decline of high-carbon sectors. This missed opportunity prevents the enhancement of labour market inclusiveness, particularly for individuals with limited participation.

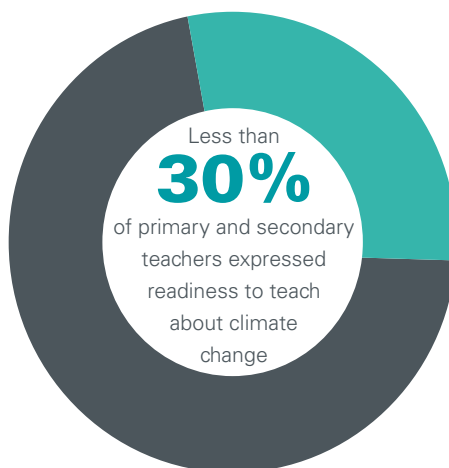
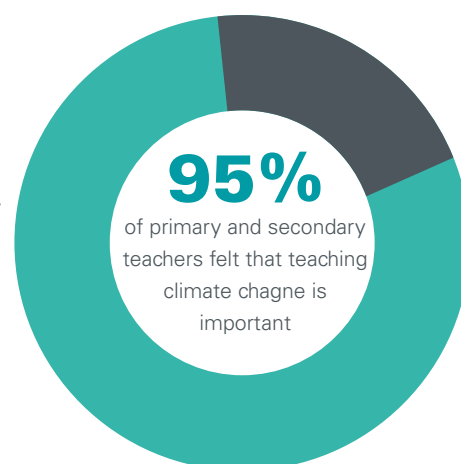
The role of educators as catalysts for change

A major challenge in integrating sustainability competences and green technical skills into education and training systems is the limited awareness of the concepts of green economy and sustainable development among educators (teachers, trainers etc.). These educators need adequate resources to effectively prepare and deliver green transition skills. While trainers can acquire relevant skills and knowledge through professional experience, teachers typically acquire their skills and knowledge in formal educational settings.

The ETF's analysis shows that the majority of teachers in many countries are not adequately prepared or enthusiastic about teaching the skills needed for the green transition. This finding is in line with research by UNESCO, which found that while 95% of primary and secondary school teachers surveyed recognised the importance of teaching about climate change, less than 30% felt prepared to do so (UNESCO, 2023).

However, some countries are making efforts to address this issue by training trainers and teachers on sustainability issues. These efforts often include systematic and continuing professional development programmes for teachers, offering various courses related to sustainable development and the green transition. For example, countries such as Albania, Jordan and Israel have implemented such initiatives, and online learning platforms, such as the one in Türkiye, are also being used to provide training.

Furthermore, in the rapidly evolving landscape of green technologies, it is crucial to ensure that educators have the necessary skills and keep up-to-date with the latest knowledge. Collaboration with the private sector can play an important role in supporting this process. By providing educators with access to cutting-edge technologies, training infrastructure and resources, as well as sharing industry expertise, the private sector can help improve educators' skills. Unfortunately, this potential for collaboration is not fully realised in most EU neighbouring countries.

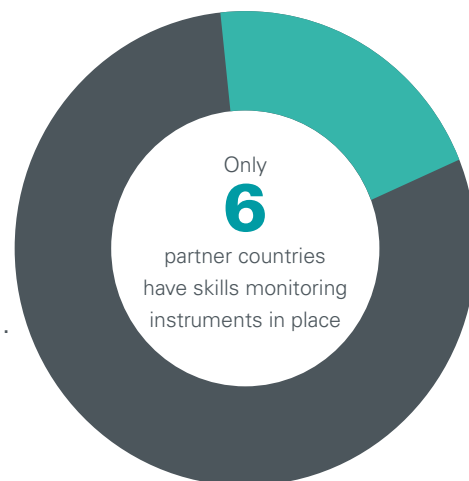




Lack of skills monitoring systems, especially in the context of the new skills required for the green economy

As the demand for skills is rapidly evolving, the capacity to identify, analyse and use labour market skills, commonly referred to as skills intelligence, becomes an essential prerequisite for facilitating responsive structural changes in economies transitioning toward circular and green models.

This shift necessitates disruptive labour reallocations and a pressing need for new skills.



Interestingly, only six countries out of 28, namely Albania, Egypt, Georgia, Israel, Morocco and Serbia, have reported the existence of regular skills monitoring mechanisms. However, these systems mainly focus on monitoring general labour needs and trends, such as employment, wages and vacancies, without paying specific attention to the skills requirements for the deployment of green technologies and broader transitions to sustainable practices.

Currently, the most readily available data for all countries is derived from ILO statistics on the energy sector, complemented by comprehensive analysis conducted by ETF, albeit limited to selected countries (ETF, 2020; ILOSTAT n.d.). For example, between 2017 and 2020, the share of employment in the energy sector, including all three subcategories detailed in Table 1, ranged from 0.33% (Lebanon) to 4.01% (Belarus).

Subcategories for which data on energy sector employment is available	Mining and coal lignite (NACE B5)
	Electricity, gas stream and air conditioning (NACE D)
	Extraction of crude petroleum (NACE B.06.1)

Table 1. Subcategories covering the energy sector

Unfortunately, disaggregated data on employment in the renewable energy sector and energy efficiency technologies are not yet available for these countries. Labour market trends are derived from IRENA estimates, which suggest that up to 50% of global employment in the energy sector is related to renewable energy. Furthermore, due to ongoing expansion, this share of the workforce is expected to more than double by 2030.

While EU neighbouring countries are expected to follow this trend, some may lag behind due to their high reliance on fossil fuels and political considerations.

Among these countries, the share of non-renewable energy sources in total energy supply varies widely, ranging from 58.88% (Tajikistan) to 98.64% (Azerbaijan), with figures of 86% (Türkiye), 63% (Morocco) and 75% (Serbia) (IRENA, 2022). The limited availability of monitoring mechanisms poses a significant challenge for these countries in tracking labour market dynamics, including the skills required for the green transition and the supply of skilled workers.

This limitation hampers their ability to adapt training and employment programmes to ensure the provision of up-to-date skills and competences. It also makes it difficult to formulate targeted, quantified policies and implement support mechanisms for skills and employment stakeholders, including education institutions, private sector entities, civil society organisations and workers.

Governance and coordination mechanisms for the green transition

The transition to a green economy involves different sectors and policies, including energy, transport, agriculture and waste management. Effective governance mechanisms play a crucial role in harmonising and integrating these different areas, avoiding conflicts and overlaps. They provide the necessary structure and framework for managing the complex transition to a green economy, enabling streamlined coordination, policy coherence, stakeholder engagement, data-driven decision making and optimal resource allocation. These mechanisms are central to achieving environmental sustainability and combating climate change.

In addition, governance mechanisms are essential to ensure policy coherence by aligning national, regional and local policies with overarching green economy objectives. This alignment reduces uncertainty for businesses and investors and creates a more favourable environment for sustainable practices.

In terms of government efficiency and regulatory



capacity, most EU neighbouring countries lag behind advanced EU economies. The government effectiveness indicator assesses 'the quality of policy formulation and implementation and the credibility of the government's commitment to such policies' (Kaufmann et al., 2010). Scores on this composite index, derived from 48 indicators from 16 sources, typically range between -2.5 and 2.5, with higher scores indicating better governance. However, with the exception of Israel, all of these countries scored below 1 in 2021, suggesting limited institutional capacity to respond quickly to shocks and societal changes due to suboptimal coordination and administrative culture (Demirgüç-Kunt and Torre, 2022).

Nevertheless, in several of the EU's neighbouring countries, particularly in Central Asia, Eastern Europe and the Western Balkans, government policies and incentives play a key role in driving the green transition. In Kyrgyzstan, for example, important changes in tax regulations, including provisions to support the green economy, are instrumental in driving the transition. In countries such as Albania and Moldova, government policies and actions revolve around the EU's approximation process, serving as a key driver and incentive to introduce regulations that enable the green transition.



Within ETF partner countries, there are examples of concerted efforts through cooperation between different institutions. One such example is the Inter-Ministerial Working Group on Climate Change in Albania, which acts as a coordinating body for all institutions involved in climate change-related activities. Another is the National Council for Sustainable Development in Kyrgyzstan, which is responsible for coordinating and evaluating national development strategies and priorities. However, even in these countries, coordination at a broader level between different stakeholders, including representatives of the private sector, remains a challenge.

The ETF's analysis highlights a persistent obstacle cited by stakeholders across the EU's neighbouring regions – a lack of coordination, which is particularly pronounced in countries with a relatively short history of statehood, characterised by unstable, fragmented institutional structures. This lack of proper coordination between governmental bodies hampers the integration of green transition skills into the education system, as no one entity takes the lead in this critical task. As a result, there is minimal cooperation between the various actors, which makes it difficult to standardise education and training approaches.



Securing resources for the green transition of education: Funding the green future

Achieving climate neutrality requires resources, and education and training is no exception. The ETF's findings show



that education budgets in many countries are often insufficient to meet political ambitions and commitments. Typically, these budgets are primarily allocated to salaries, with occasional injections from public or international sources to adapt infrastructure, develop innovative curricula and improve service delivery to individuals and businesses.

To counter this historical trend, countries have adopted a more diversified approach to financing. They involve the private sector in funding through public-private partnerships, sectoral bodies for skills analysis, work-based learning and even household contributions to cover education costs.

However, in several countries there is insufficient investment in the green transition, particularly in the education sector. Examples include Armenia, Egypt, Kosovo, Moldova, Lebanon and Tajikistan. In these countries, governments rely heavily on non-state sources of funding, with international organisations playing a key role in driving change in both industry and education.

In most countries, governments rely mainly on public funding to adapt their education systems to the needs of the green economy, making international cooperation a key driver of change in both industry and education. While the energy sector shows more private-sector initiatives in renewables and training employees, such efforts should be extended to all sectors of the economy, as sustainability affects every facet of the economy.

Evolving labour markets across sectors

The green transition is transforming employment in different sectors and at different skill levels. By 2035, the number of high-skilled workers is expected to increase in most sectors, while medium-skilled jobs will remain relatively stable and low-skilled jobs will decrease (see Table 2). Nevertheless, the green transition and the introduction of new green technologies will affect all workers, who will need to upskill and reskill in order to remain relevant in the labour market.

It's important to note that highly educated people can be employed in a variety of roles, including technicians and elementary occupations. For example, in construction, the most populous occupation, there's an increasing demand for high-skilled workers

compared to the situation two decades ago (Cedefop, 2023). As countries transition from fossil fuel to renewable energy production, the demand for medium-skilled energy workers (e.g. installers and technicians for solar photovoltaic/wind turbine/biomass systems) and high-skilled workers (e.g. engineers) is expected to increase (ILO, 2019).

This suggests a shift in the occupational structure towards higher-skilled profiles, a trend consistent with all ETF studies on the future of skills. Recent data analysis shows that in most countries, the labour force is predominantly composed of medium-skilled workers (ILO, 2019).

ETF studies have also highlighted a growing demand for T-skills, i.e. vertical specialisation in a specific technology or field, with the ability to apply it horizontally across jobs.

Multidisciplinarity has emerged as a significant trend across different sectors of the economy. While significant reskilling is needed, some job losses are also expected, especially for low-skilled workers in traditional energy sectors (see Table 3). Of course, each economic context is unique and each country needs to make detailed projections of employment opportunities to ensure that they benefit the local population.

Among ETF partner countries, the highest share of

Low-skilled workers	Tunisia – 6.91 %
Medium-skilled workers	Armenia – 74.11 %
High-skilled workers	Israel – 51.55 %

*Table 2. Workers by skill levels in ETF partner countries
Source: Created by PPMI based on ILO data*

A fair and equitable green transition for workers

IRENA estimates that the transition to green energy offers a significant opportunity to create employment, particularly in medium-skilled occupations. To realise this potential, however, proactive government intervention is essential. While the transition to a greener economy and the growing demand for green skills are promising, there are concerns about the fairness of these transitions for different social groups. This transition has the potential to perpetuate inequality and disadvantage certain communities, and may fail to improve conditions for low-skilled workers (Valero et al., 2021).



Skill levels	Nature of change	Example of occupations	Example from ETF partner countries in need of those skills
Occupations requiring a low level of skills	Generic change, i.e., environmental awareness; adaptations to work procedures, use of new materials, compliance with environmental regulation (e.g. labour law)	Refuse/waste collectors, dumpers	Morocco is a regional leader in green transition; the shift of employment towards a more sustainable economy is mainly determined by increased provision of green jobs in agriculture and fisheries, where a large majority of workers have low-level skills.
Occupations requiring a medium level of skills	New green occupations emerging; some existing occupations undergoing significant changes in technical skills and knowledge	New occupations: wind-turbine operators, solar-panel installers Changing occupations: roofers; technicians in heating, ventilation and air conditioning; plumbers	Bosnia and Herzegovina, as a fossil fuel-dependent country, will require effort to retrain coal sector workers to transition to other sectors. Most demanded professions are expected to be wind turbine technicians and workers specialised in selling, installing and maintaining rooftop solar panels.
Occupations requiring a high level of skills	High focus on new green occupations Significant changes to some existing occupations in terms of technical skills and knowledge	New occupations: agricultural meteorologists; climate-change scientists; energy auditors and consultants; carbon-traders Changing occupations: building facilities managers; architects; engineers	To address climate change issues and increase its competitiveness at the global level, Israel will require more high skilled workers with scientific knowledge, especially in some sectors such as agri-food and ICT. Kazakhstan faces a shortage of workers with the skills and knowledge in the field of information technologies.

Table 3. Anticipated changes in skills demand

Source: Created by PPMI based on ILO data and ETF country reports

These concerns stem from limited access to basic resources, such as social protection, education and training programmes and technologies needed for active participation in the green economy. Factors such as increasing digitalisation, high migration rates and discrimination against disadvantaged groups exacerbate these issues. In the Western Balkans and the Eastern Partnership region, influenced by their socialist past, concerns about the social fairness of past transitions persist. In Montenegro, for example, the term ‘transition’ often implies the closure of industries without the creation of new jobs.



Low-skilled workers may face particular obstacles in the green transition, as shifts in key employment sectors may disproportionately affect them. Traditional energy sectors, such as coal mining and oil drilling, typically employ low-skilled workers, making their transition to new green energy occupations challenging. In addition, increasing automation and advanced technologies in green jobs often require higher and medium skill levels, which can further disadvantage low-skilled workers (OECD, 2017).

Furthermore, the prospects for low-skilled workers during the green transition may be limited and depend on the location and specific needs of the green energy sector. Young people not in employment, education or training (NEETs) may also face challenges without appropriate measures, including skills development initiatives, career guidance and social protection to support their upskilling.

In line with global trends, women in the EU's neighbouring countries remain underrepresented in the labour market, especially in the energy sector and in educational programmes that equip them with skills for the green transition (e.g. STEM programmes). While the renewable energy sector shows a more encouraging picture, with a third of the workforce being women (IRENA, 2022), many countries lack gender-sensitive policies and training opportunities, hindering women's equal participation. For example, Georgia, Israel and Kyrgyzstan have the highest levels of female participation in various energy sectors, while Jordan and Egypt have the lowest levels of female participation in renewable energy (7% and 9% respectively). In the construction sector, women's participation remains below 10% both in the EU and in the EU's neighbouring countries (Eurostat, 2021a).

Migrant workers face barriers that prevent them from accessing equivalent education and training opportunities as local workers. These barriers can include language and cultural barriers that hinder their participation in green transition training programmes.

In addition, they often face difficulties in having their prior learning and qualifications recognised, resulting in a significant proportion of migrants working in the informal labour market. This is particularly relevant for countries with large migrant populations such as Jordan, Lebanon and Türkiye.

Rural communities may have limited opportunities to participate in the green transition compared to their urban counterparts. This is due to limited access to education and training programmes, insufficient infrastructure for green energy projects, and inadequate investment in rural areas. This is particularly true in countries with high rural employment, where the majority of the population is employed in agriculture and has limited access to technological advances and reskilling or upskilling opportunities (e.g. Georgia, Moldova, Egypt, Jordan and Bosnia and Herzegovina).

People with disabilities face challenges due to limited inclusion in education and training programmes and the labour market. Data on the employment of workers with disabilities in green economy-related sectors are mostly unavailable due to limited monitoring systems. However, available data for six countries (Armenia, Israel, Lebanon, Moldova, Palestine and Serbia) show that Israel has the highest level of employment of people with disabilities at 5.47%, while Serbia has the lowest at 0.46%.

Share of female workers in relevant energy field (as of 2021)			
Country	Mining of coal and lignite	Extraction of crude petroleum and natural gas	Electricity, gas, steam and air conditioning supply
Kyrgyzstan	6.12%	20.28%	16.64%
Georgia	0%	37.16%	11.96%
Israel	NA	32.28%	26.28%
Poland	10.6%	NA	24.5%

Highest share of youth unemployment in selected ETF partner countries and EU Member States (as of 2021)	
Jordan	40.1%
Tunisia	37.8%
North Macedonia	36.1%
Spain	31.3%
Bulgaria	14.7

Policies and actions for green transition opportunities

Effective and transparent transition strategies

Developing transparent, coordinated and long-term transition strategies across industries is essential to stimulate change and investment in the green transition (ETF, 2023). These policies and strategies should be complemented by coherent monitoring systems to track progress and adjust policies as necessary to achieve their objectives. Successful monitoring systems for green skills require a clear identification of relevant data sources and appropriate tools for timely and accurate data collection and integration. Currently, only a few countries have labour market monitoring tools in place, and these often lack a focus on green skills and occupations. Multi-stakeholder cooperation and flexible monitoring systems are essential to adapt to changing skills requirements. Monitoring these developments will enable governments to integrate skills needs into their policies and ensure alignment with green skills requirements and developments.

Tailored education programmes

Education programmes at all levels, from primary to higher and vocational education, should provide relevant sustainability competences. However, the provision of sustainability competences varies between education levels and countries. In Moldova, for example, secondary and higher schools offer elective courses such as environmental education and renewable energy sources. In Egypt, students can access training in green buildings and water management at the vocational education and training (VET) level. Meanwhile, the Kyrgyz State Technical University offers specific skills for engineers in the energy sector, with a focus on renewable sources. Curricula at all levels of education, including for educators, need to ensure that learners and workers acquire up-to-date skills and competences. Stakeholder involvement in the development of VET programmes and curricula can also play a crucial role in reflecting the needs of employers.

Inclusiveness and equal opportunities

To ensure inclusiveness and equal opportunities, education programmes need to take into account the needs of different social groups, including women, NEETs, migrants, older people and people with disabilities. Targeted support for upskilling and reskilling of these disadvantaged groups is crucial, especially as many green jobs can have challenging working conditions. Integrating environmental protection measures can improve the quality of jobs. This requires planning accessible and inclusive education programmes, such as offering online materials and physical access for people with disabilities, materials and training in multiple languages, and strengthening digital infrastructure. To promote inclusive education and equal employment opportunities,

countries can offer online courses, flexible learning pathways, micro-credentials, career guidance, mentorship programmes, and coordination with other support services.

Lifelong learning and private sector engagement

Providing skills for the green transition is vital through lifelong learning, including job-relevant training for workers. However, educational strategy documents often lack this focus. Encouraging private companies to support the development of green skills for their workers, through measures such as tax breaks, regulatory incentives and certification, is essential. Social partners, representing both employers and employees, can contribute to relevant lifelong learning by identifying skills needs, designing training programmes and promoting social dialogue. Albania, for example, is introducing a work-based learning model in its VET system and involving social partners in the curriculum development process (ETF, 2020).

Funding for skills and international cooperation

In countries with limited financial resources, setting up skills funds in partnership with the private sector can be a solution. These funds play a crucial role in supporting the transition to a low-carbon future, particularly in the Global South, where there is a growing demand for medium- and high-skilled workers (ILO, 2019). Skills funds help address skills gaps and provide financial support for individuals and organisations seeking to develop skills in areas such as waste management, eco-friendly construction and sustainable transport. Large-scale partnerships between private and public organisations, such as the Renewable Energy Pact for Skills, support the reskilling and upskilling of workers by providing resources, guidance on funding options and partnership opportunities (European Commission, 2021).



Collaboration and public awareness

Strengthening cooperation between stakeholders at the national and international levels is crucial. International cooperation can provide financial support and collaboration in developing green skills. For example, collaborative projects between the United Nations Development Programme and the Ministry of Education in Kazakhstan have been successful in developing environmental education models. Coordination of local stakeholders, including businesses, social partners, civil society organisations and local communities, can enhance innovation in the green economy and integrate social and employment needs into green policies. Cooperation can also raise public awareness and promote the green transition. Partnerships often involve NGOs and schools to organise activities focused on environmental protection and green education. For example, the Armenian NGO 'Women in Climate and Energy' runs projects to raise environmental awareness among students. Government agencies can work with renewable energy companies to develop training programmes for the installation of solar panels, thereby aligning the objectives of public and private entities. EU-level policies, such as the European Green Deal, also encourage alignment with EU standards and support the green transition in partner countries. International commitments on climate change and sustainable development further encourage investment in green technologies and sustainable opportunities.



The experience of the ETF's partner countries underlines the importance of skills in driving the green transition. In addition, several other key drivers are supporting the greening of economies. Key trends in the greening of the energy and construction sectors in the ETF's partner countries and the main drivers behind these changes are outlined below.

Key trends in the green energy and construction sectors in ETF partner countries

Key trends in the green energy sector

The green transition in the energy sector is crucial to achieving the goals of the Paris Agreement, such as limiting global temperature rise to 1.5-2°C. Countries are making progress toward greening their energy sectors, and partner countries are following the global trend. The main trends in the greening energy sector in partner countries are as follows:

1. Increasing the share of renewable energy sources: In 2022, the contribution of renewable energy from partner countries accounted for 3.7% of global renewable energy generation. Among the ETF's regions, the Western Balkans and Türkiye stood out with 2.05% of global renewable energy generation.
2. Increasing energy efficiency: ETF partner countries have achieved different levels of energy efficiency through the implementation of various energy efficiency projects. Countries like Albania, Egypt and Israel are characterised by the lowest TES/GDP ratio, amounting to 2.5.
3. Electrification: In some partner countries, such as Algeria (96.6% in 2020) and Israel (92% in 2021), electricity generation remains heavily dependent on fossil fuels.
4. Circular economy approach: Partner countries such as Montenegro, Kosovo, Moldova, Türkiye, Georgia, Ukraine and Serbia have actively embraced the circular economy concept and are implementing strategies, projects and policies to support it.

Key trends in the green construction sector

Due to its resource-intensive nature, the construction sector is one of the main contributors to climate change. Given these environmental concerns, the importance of improving the resource efficiency and environmental sustainability of the sector has grown worldwide, including in ETF partner countries. Key trends in the green construction sector include:

1. Greening buildings: ETF partner countries are prioritising greener construction with improved energy efficiency. Uzbekistan, for example, mandates energy-efficient appliances in new housing, while North Macedonia is aligning energy and construction laws with efficiency goals.
2. Investing in greener infrastructure: In 2021, global private investment in infrastructure projects was greener compared to previous years. Countries such as Kyrgyzstan, Albania and Egypt have made sustainability a priority when investing in strategic infrastructure projects.

3. Use and reuse of sustainable resources: The circular economy is integrated into ETF partner countries' strategic plans. For example, Serbia's Circular Economy Roadmap focuses on the management of secondary raw materials, resource independence and environmental security.

Key enablers of green transition in the energy and construction sectors

ETF partner countries vary in their progress towards greening their economies and their commitment to achieving green economy goals. An overview of their experiences underlines that each country faces different challenges in the transition to a green economy. Nevertheless, there are several key drivers that are facilitating the green transition across all countries in both the energy and the construction sectors. These factors include:

- international commitments to achieve the Sustainable Development Goals,
- enabling and articulating national-level policies and sectoral strategies,
- technological progress and innovation,
- national and foreign investment in green energy technologies,
- public-private partnerships to facilitate the green transition.









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