

POLICY PAPER ON RESKILLING AND UPSKILLING FOR THE JUST TRANSITION NAVIGATING THE JUST TRANSITION

A SKILLS-FIRST FRAMEWORK FOR A JUST AND COMPETITIVE EUROPE



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the European Union**

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Table of Contents

Glossary	3
Project Information.....	5
Executive Summary	7
1. Introduction: The 2026 Policy Landscape	9
2. Key Trends & Realities	10
2.1 European Realities	10
2.2 National Realities	11
3. Challenges & Barriers	16
3.1 European Challenges	16
3.2 National Challenges.....	18
4. Structured Policy Recommendations	21
4.1 Pillar I: Skills-First Learning and Certification Framework.....	22
4.2 Pillar II: Sectoral Transition Partnerships	24
4.3 Pillar III: Social Fairness & Transition Protection	25
5. Implementation & Monitoring Roadmap	27
5.1 Milestone Horizons.....	27
5.2 Operational Governance & European Coordination	28
5.3 Monitoring & Evaluation	29
6. Conclusion	32
References	34

Glossary

European Skills Intelligence Observatory: A centralised European data monitoring and forecasting infrastructure overseen by the Joint Research Centre (JRC). It uses real-time labour market data, vacancy tracking, and macroeconomic modelling to predict emerging skills shortages and industrial structural shifts before they result in widespread unemployment.

Green and Blue Economy Skills: Practical and theoretical competencies required to support sustainable economic activities. *Green skills* focus on terrestrial targets, such as resource recovery, circular industrial design, lifecycle management, and clean technology maintenance. *Blue skills* cover equivalent maritime and coastal domains, including sustainable aquaculture, marine resource protection, and shipping decarbonisation.

Green Transition: The comprehensive structural restructuring of the European economy away from fossil fuel dependence and high-carbon manufacturing toward a low-carbon, circular, and climate-resilient economic model, legally anchored by the European Green Deal.

Green TVET (Technical and Vocational Education and Training): The systematic reform of vocational schooling, technical training centres, and apprenticeship frameworks to structurally embed environmental literacy, eco-design principles, and clean-tech maintenance modules into foundational technical learning tracks.

Individual Learning Accounts (ILAs): Personal, portable virtual accounts that assign specific training entitlements or state-funded financial vouchers directly to individual workers. This allows citizens to autonomously access upskilling or reskilling modules, independent of their current employer's corporate training budget.

Micro-credentials: Compact, quality-assured learning blocks that officially certify the outcomes of short-cycle training experiences. They provide a documented method to verify a specific, narrow technical competency without forcing workers to complete a multi-year formal degree program.

Net-Zero Industry Academies (NZAs): Specialised, sector-specific training consortia established under the Net-Zero Industry Act (e.g. the 2026 Solar and Battery Academies). Their purpose is to co-develop and disseminate standardised, cross-border, accredited training programs to rapidly scale up the European clean-tech workforce.

Reskilling: The process of training a worker in entirely new technical competencies,

operational protocols, or professional disciplines to facilitate a complete cross-sectoral transfer out of a declining or automated industry into a growing segment of the economy.

Skills Anticipation: The proactive, data-driven administrative methodology of tracking structural labour market movements, technological innovation rates, and legislative timelines to reform educational curricula before talent bottlenecks disrupt economic productivity.

Union of Skills: The European Commission's primary strategic framework designed to position human capital development, cross-border qualification portability, and rapid adult learning at the centre of European industrial competitiveness.

Upskilling: The continuous improvement, expansion, or optimisation of a worker's existing professional competencies to keep pace with incremental technological upgrades, digital platform transitions, or green regulatory mandates within their current occupational path.

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Executive Summary

The European Union's shift towards a climate-neutral and more technologically advanced economy is impacting labour markets across all member states. However, rapid changes in the technology sector and environmental conditions are outpacing the ability of educational and training systems to respond effectively. Currently, employers in Europe are experiencing skill shortages in both technical and digital fields. Simultaneously, many workers, including older adults, low-skilled employees, migrants, and those in SMEs, are at risk of being excluded from the labour market because of this ongoing transition (Cedefop, 2024a; European Commission [EC], 2025a). This issue is particularly evident in Cyprus, where the economy is predominantly composed of SMEs that lack the capacity to independently provide workforce development and where climate risks, such as extreme heat, affect workforce efficiency (Republic of Cyprus, 2023).

This policy paper examines the challenges and opportunities associated with reskilling and upskilling within the context of the green and digital transition, linking broader European developments with the national realities of Cyprus during its 2026 Presidency of the Council of the European Union. The paper argues that relying solely on traditional education or market-driven adjustment mechanisms is insufficient for adapting the workforce. Instead, successful policies require coordinated efforts across education, labour market governance, industrial planning, and social protection systems.

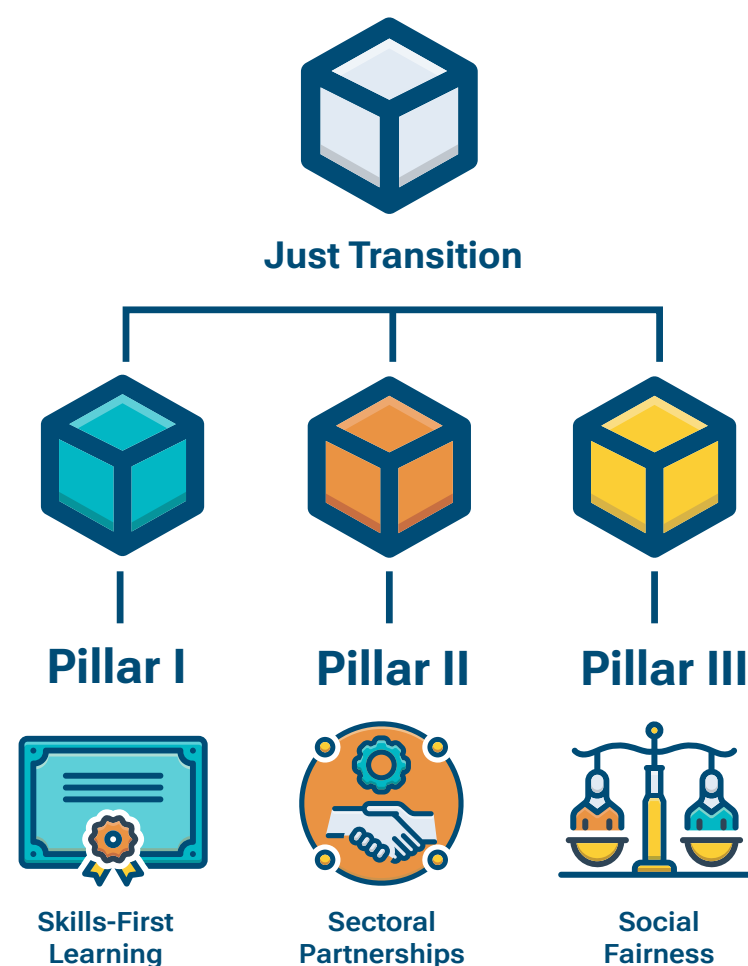
To address these challenges, this paper proposes a three-pillar policy framework.

Pillar I focuses on a Skills-First Learning and Certification Framework aimed at increasing the flexibility and responsiveness of training systems. This pillar proposes a wider use of modular learning pathways, micro-credentials, and short-cycle certifications, as these types of learning can be updated more rapidly than traditional degree programmes. At the European level, these qualifications relate to the European Qualifications Framework (EQF) and digital credential systems, which support the recognition of skills across borders and enhance labour mobility (European Commission, 2025b). In Cyprus, this initiative is supported by the Human Resource Development Authority (HRDA), the Recovery and Resilience Plan (RRP), and the integration of digital credentials into the national "Digital Citizen" platform.

Pillar II suggests the development of Sectoral Transition Partnerships, which bring together employers, vocational providers, trade unions, and public authorities. Within such coordinated training structures, the pillar addresses the limited administrative and financial resources of SMEs to independently manage the workforce's development. The consolidation of training needs across sectors such as maritime logistics, tourism, construction, and energy services allows the alignment of training provision with actual labour market needs and emerging industrial changes (OECD, 2023a). The pillar further proposes the establishment of regional skills hubs in Limassol

and Larnaca to support sector-specific retraining linked to verified labour shortages in these areas.

Pillar III focuses on the social aspects of the transition by prioritising worker protection, inclusivity, and fair access to retraining opportunities. The pillar highlights the importance of enhancing social dialogue frameworks and implementing labour protections that consider climate impacts while providing targeted assistance to vulnerable groups at greater risk of exclusion. Special emphasis is placed on outdoor workers exposed to extreme heat, older individuals facing digital exclusion, and workers displaced by automation in this study. The expansion of digital literacy initiatives and strengthening collaboration with civil society organisations are essential for outreach to underserved communities.



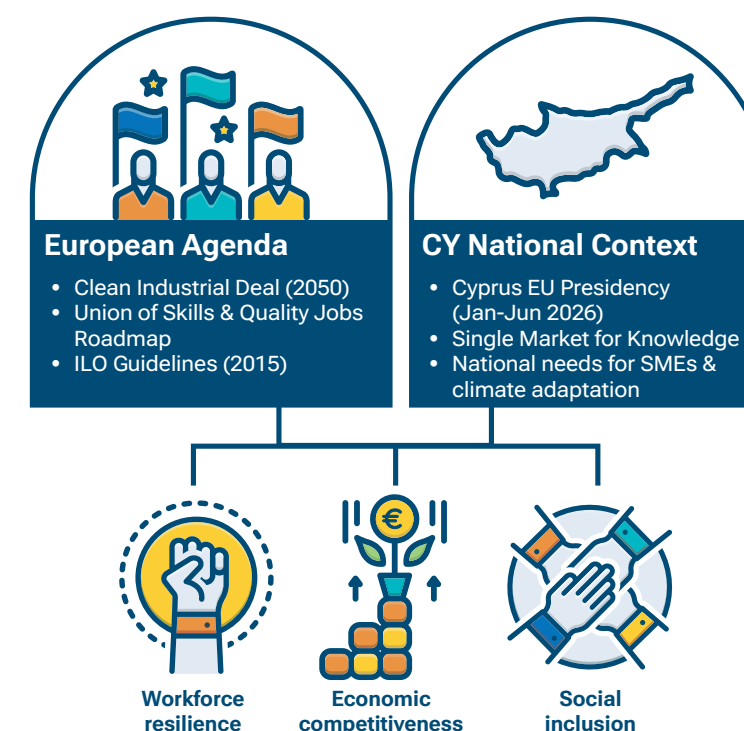
The paper concludes with a roadmap for implementation and monitoring, aligned with the 2026 policy cycle and the deadlines of the Cyprus Recovery and Resilience Plan. To track progress, the framework uses clear metrics tied to the EU's 2030 targets for adult learning and digital literacy. Ultimately, these recommendations support a coordinated, socially balanced approach designed to help the green and digital transitions strengthen economic resilience and social cohesion across Cyprus and the broader European Union.

1. Introduction: The 2026 Policy Landscape

This policy paper examines key trends, challenges, and policy responses related to reskilling and upskilling for a just transition, combining EU-level developments with the national context of Cyprus. It develops a strategic framework aimed at addressing skills-based inequality through targeted interventions at both national and European levels.

The European policy context is shaped by the Clean Industrial Deal (EC, 2025c), which sets the direction for decarbonising the EU economy by 2050. It builds on six core drivers, including skills and quality jobs, supported by the Union of Skills strategy, Erasmus+ funding, and initiatives on skills portability and lifelong learning. The Quality Jobs Roadmap further reinforces this agenda by linking decarbonisation to decent working conditions, social dialogue, and active labour market policies. These initiatives are complemented by monitoring frameworks such as the European Fair Transition mechanism (2026) and are grounded in the International Labour Organisation Just Transition Guidelines (International Labour Organisation [ILO], 2015), which emphasise inclusive transitions that protect groups at risk of labour market disruption.

Cyprus contributes to this agenda through its January–June 2026 Presidency of the Council of the EU, prioritising the development of a single market for knowledge and the improved recognition of skills across Member States. Against this backdrop, the paper explores how reskilling and upskilling policies can strengthen workforce resilience, support economic competitiveness, and promote social inclusion in both Cyprus and the wider European Union.



2. Key Trends & Realities

2.1 European Realities

The EU increasingly views skills as a strategic resource for economic competitiveness, climate action, and social resilience. Workforce development is now closely linked to industrial policy rather than treated as a separate policy area (European Commission, 2025b).

- **Competitiveness and social protection.** The Competitiveness Compass focuses on closing the innovation gap, decarbonising industry, and reducing strategic dependencies through clean trade and investment partnerships (European Commission, 2025a). The Council Recommendation on Human Capital integrates skills indicators into the European Semester (Council of the European Union, 2026). At the same time, the €86 billion Social Climate Fund (SCF) supports households, workers, and small businesses affected by rising energy and transport costs, with particular attention to lower-income groups and green reskilling opportunities (European Commission, 2026b).
- **Labour market intelligence.** The European Skills Intelligence Observatory, coordinated by the Joint Research Centre, provides information on skills demand and labour market trends to help anticipate shortages and emerging workforce needs (European Commission, 2026a).
- **Skills recognition and mobility.** Through micro-credentials, Individual Learning Accounts, and flexible certification pathways, the EU promotes a skills-focused approach that recognises vocational expertise and work-based competencies alongside university degrees. The Skills Portability Initiative aims to reduce barriers between education systems, labour markets, and qualification frameworks by improving mobility, modernising professional recognition procedures, and simplifying the recognition of qualifications held by third-country nationals (European Commission, 2025g).
- **Union of Skills initiatives.** The EU is piloting a European Vocational Education and Training (VET) Diploma to support automatic recognition of technical qualifications across Member States. Existing tools such as the European Qualifications Framework (EQF), Europass, ESCO, and EURES support the broader vision of a “Single Market for Knowledge” outlined in the Union of Skills strategy (European Commission, 2025c). Together, these measures aim to strengthen labour mobility and skills recognition across the Union, although administrative and regulatory barriers remain (Cedefop, 2022c).
- **Workforce adaptation and regional transition.** As employment declines in some carbon-intensive industries and expands in renewable energy, sustainable manufacturing, and digital infrastructure, many workers are required to move across occupations, sectors, or regions (Cedefop, 2024b; European Commission, 2025b). The Just Transition Fund

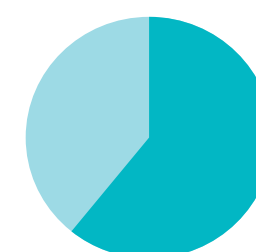
(JTF) supports this process by linking industrial investment with workforce adaptation and regional development, including retraining initiatives in resource recovery, lifecycle management, and clean technology operations (European Commission, 2021a; OECD, 2023b).

- **Job quality and fair working conditions.** The growth of remote, hybrid, and platform work has increased attention to job quality and employment security. In response, the European Commission introduced the Quality Jobs Roadmap and the European Fair Transition Observatory to monitor the social impacts of climate policies and support fair working conditions (European Commission, 2025d; European Commission, 2025e).
- **Education, training, and demographic change.** Climate pressures, labour shortages, and population ageing are increasing demands on education and training systems. Under the Union of Skills framework, the Commission is introducing a STEM Education Strategic Plan and a modernised European Strategy for Vocational Education and Training (European Commission, 2025c). These initiatives respond to a growing challenge: almost four in five SMEs report difficulties finding workers with the required skills (European Commission, 2023d). Lifelong learning and Skills Guarantees are also being promoted to support older workers in remaining active in the labour market (OECD, 2023c; European Commission, 2025c).

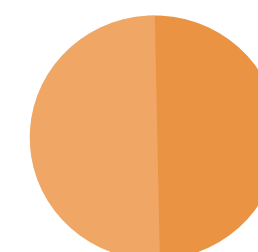
Overall, employability in Europe increasingly depends on a combination of technical expertise, digital competence, environmental awareness, and continuous learning. Lifelong learning is becoming a practical requirement for labour market participation rather than a policy aspiration.

2.2 National Realities

Cyprus combines high tertiary education attainment (60.1% of 25–34-year-olds) with persistent skills mismatches in an economy dominated by services, tourism, construction, and SMEs (Eurostat, 2024; Cedefop, 2023). Many graduates work outside their field of study or below their qualification level, highlighting the need for stronger alignment between education and labour market demand.



**60.1% of youth
(25–34) have a
tertiary degree**



**49.5% (16–74)
possess basic
digital skills.**

Within the European “Single Market for Knowledge”, Cyprus increasingly prioritises skills recognition, labour mobility, and lifelong learning, reflecting both the constraints and opportunities of a small open economy.

2.2.1 Strategic and Institutional Realities

The transition is supported by European funding, national education policies, and workforce development initiatives. A key driver is the Recovery and Resilience Facility and the Cyprus National Recovery and Resilience Plan (RRP), which allocates approximately €21 million to green and digital skills development and aims to support more than 25,600 participants through reskilling and upskilling programmes (European Commission, 2021b).



Key institutional actors include:

- **Ministry of Education, Sports and Youth (MESY):** Leads implementation of the National Strategy for Education, Sustainable Development and Green Transition 2030, promoting sustainability, environmental literacy, civic participation, and lifelong learning through curriculum reform and teacher training (MESY, 2024).
- **Unit of Education for the Environment and Sustainable Development (EESD):** Coordinates Environmental Education Centres in Pedoulas, Athalassa, and Akrotiri, providing sustainability-focused educational programmes and teacher support (EESD, 2026).
- **Human Resource Development Authority (HRDA):** Coordinates vocational training and workforce development programmes, with increasing emphasis on green, digital, and blue economy skills. Priority groups include unemployed individuals, women, low-skilled adults, and workers at risk of labour market exclusion (HRDA, 2024b).
- **Deputy Ministry of Research, Innovation and Digital Policy:** Oversees the National Digital Decade Strategic Roadmap, digital infrastructure development, e-government

services, and the Digital Citizen (Ψηφιακός Πολίτης) platform. It also supports digital skills certification and digital literacy initiatives (Deputy Ministry of Research, Innovation and Digital Policy, 2024a; 2024b).

- **Cyprus Productivity Centre (CPC):** Delivers short, subsidised training programmes focused on digital skills, workplace productivity, and green practices, particularly for small businesses and workers less likely to participate in longer formal qualifications (Ministry of Labour and Social Insurance, 2024).

2.2.2 Labour Market and Social Realities

Climate change, demographic change, and economic restructuring are increasingly shaping labour market realities in Cyprus. As part of the Eastern Mediterranean region, the country is particularly vulnerable to rising temperatures, prolonged droughts, and water scarcity (European Environment Agency, 2023).

Key labour market and social realities include:

- **Climate vulnerability:** Long-term climate data show significant warming in both Nicosia and Limassol, with further increases in annual maximum temperatures projected, particularly in inland and mountainous areas (Kythreotou & Mesimeris, 2022; Department of Environment, 2024).
- **Impacts on outdoor employment sectors:** These pressures are already affecting sectors that rely heavily on outdoor work, especially construction, agriculture, and tourism (Cyprus Ministry of Agriculture, Rural Development and Environment, 2023a). Heat stress, drought, and wildfire risks increasingly influence working conditions, productivity, and infrastructure planning.
- **Labour protection and climate adaptation:** In response, the Ministry of Labour and Social Insurance applies mandatory heatwave regulations during periods of extreme temperatures, temporarily suspending heavy and moderate outdoor work and two-wheeled delivery services (Ministry of Labour and Social Insurance, 2023). Climate adaptation is therefore increasingly linked to labour protection, occupational health, and business continuity.
- **Climate-sensitive economic structure:** Tourism, agriculture, and construction remain major sources of employment while also being highly exposed to climate-related disruption (OECD, 2023a). Recurring droughts and pressure on water resources have heightened concerns regarding long-term sustainability (Kythreotou & Mesimeris, 2022). The severe drought of 2007–2008 exposed many of these vulnerabilities and accelerated investment in desalination and water management infrastructure (Water Development Department, 2017).

- **Agricultural adaptation:** Agriculture illustrates how these transitions are unfolding in practice. Traditional farming is increasingly combined with digital monitoring technologies, water-efficient irrigation systems, and more sustainable production methods. Through initiatives such as the Smart Specialisation Strategy (S3Cy) 2030 and the EU-supported Carbonica Excellence Hub, Cyprus is promoting digital capacity, resource efficiency, and technological adaptation within the agri-food sector (Deputy Ministry of Research, Innovation and Digital Policy, 2024a).
- **Demographic pressures:** Older workers remain concentrated in sectors vulnerable to restructuring, automation, and climate-related disruption, increasing the importance of lifelong learning and age-inclusive training. The Cyprus Productivity Centre has expanded digital literacy and introductory green-skills programmes for adults aged over 55.
- **Migrant labour and inclusion:** Sectors facing persistent labour shortages continue to rely heavily on migrant workers, highlighting the need for inclusive reskilling opportunities and equitable access to training (European Commission, 2023a).

2.2.3 Civil Society and Participatory Realities

Civil society organisations (CSOs) play an increasingly visible role in climate adaptation, sustainability education, and the social dimensions of the green transition. Organisations such as BirdLife Cyprus, Terra Cypria, and Friends of the Earth Cyprus contribute to awareness campaigns, educational activities, and local sustainability initiatives (Friends of the Earth Cyprus, 2023; Terra Cypria, 2024).

The baseline operational realities shaping public participation and civic capacity across Cyprus include:

- **Access to technical documentation:** Policy consultations are often marked by delayed access to technical information and key framework documents in their early stages.
- **Organisational scaling:** Civil society capacity is uneven, with clear disparities between well-resourced networks and smaller, local organisations.
- **Administrative navigation:** Engagement with state institutions requires navigating complex, multi-layered bureaucratic procedures.
- **Policy integration:** CSO contributions, particularly on social equity and community-level environmental concerns, are inconsistently reflected in final legislative outputs (CARDET, 2024).
- **Digital skills baselines:** Demographically, only 49.5% of individuals aged 16–74 possess at least basic digital skills (European Commission, 2025h). Gaps are most evident

among older adults and lower-skilled groups, even as green technologies increasingly rely on digital and automated systems.

Despite these challenges, CSOs remain important providers of non-formal education, community engagement, and lifelong learning. CARDET has played a significant role in advancing lifelong learning, skills development, and the just transition in Cyprus and across Europe by combining evidence-based research with the implementation of innovative education, vocational education and training (VET), adult learning, digital transformation, and social innovation initiatives. Through partnerships with governments, public authorities, educational institutions, and employers, CARDET has supported the development of more inclusive lifelong learning systems that respond to changing labour market needs. A notable example is its contribution to the Cyprus Lifelong Learning Strategy 2021–2027, supporting the Ministry of Education, Sports and Youth through research, stakeholder consultation, strategic planning, and evidence-based policy recommendations. The strategy places particular emphasis on digital transformation, the green transition, inclusion, and lifelong upskilling and reskilling.

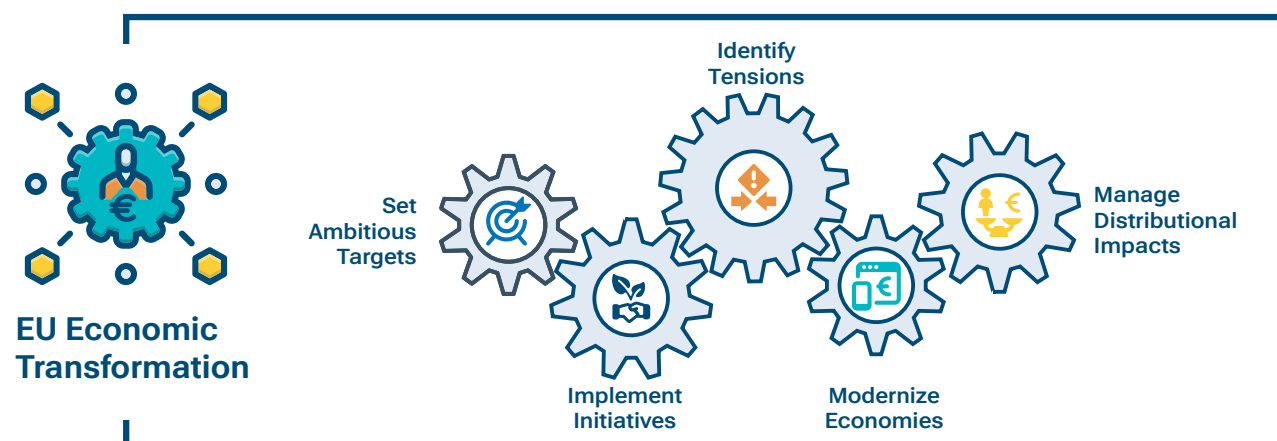
Building on this policy work, CARDET has translated strategic priorities into practice through European and national initiatives that strengthen green and digital skills across different population groups. Projects such as JUST4ALL promote inclusive adult learning, social innovation laboratories, and green and digital skills for disadvantaged groups; Green VET Choices develops gamified learning resources and career guidance to encourage participation in green vocational education; PartnerUP strengthens collaboration between adult education providers, employers, and policymakers to improve lifelong learning pathways; and ADULTDIGITALUP supports the digital competence of adult educators working with low-qualified adults.

Overall, Cyprus is adapting to the combined pressures of climate change, digitalisation, demographic change, and economic restructuring. These developments increasingly link workforce development, environmental resilience, and social inclusion, reinforcing the need for flexible learning systems, accessible reskilling pathways, and meaningful collaboration between public institutions, employers, and civil society.



3. Challenges & Barriers

3.1 European Challenges



The EU transition to a climate-neutral and digitally driven economy is both a technological and socio-economic transformation. While the European Green Deal and related initiatives set ambitious targets, implementation exposes tensions between decarbonisation, labour market capacity, and regional inequality. Governments are therefore required to modernise economies while managing distributional impacts on workers and communities.

3.1.1 Institutional Delays and Policy Fragmentation

- A persistent gap exists between policy ambition and implementation capacity, particularly in education, vocational training, and labour market adaptation, where reforms often progress more slowly than technological change (Sikora, 2020; European Commission, 2025c; Cedefop, 2024b).
- Investments in renewable energy, digital infrastructure, and industrial decarbonisation frequently outpace workforce readiness, contributing to skills shortages in sectors such as renewable energy, sustainable construction, and smart infrastructure (ILO, 2015; Cedefop, 2022c).
- Differences in energy systems, administrative capacity, and economic structures across Member States create uneven implementation of transition policies (Hafner & Raimondi, 2020).
- Regulatory fragmentation within the internal energy market continues to constrain cross-border investment and market integration (Pepermans, 2018).

3.1.2 Territorial Inequalities and Energy Vulnerability

- The transition affects regions unevenly, with coal-dependent, industrial, and carbon-intensive regions facing greater disruption than more diversified economies (Berkowitz et al., 2025).
- Although the Just Transition Fund and Cohesion Policy provide support, limited administrative capacity can reduce the effectiveness of available funding.
- Rising energy prices, housing renovation costs, and transport expenses create affordability pressures that may increase social vulnerability and weaken support for transition measures among low-income households (Volodzkiene & Streimikiene, 2025).
- The Social Climate Fund aims to mitigate these pressures through targeted support for vulnerable households and SMEs (European Commission, 2026b), although concerns remain regarding its long-term effectiveness in maintaining public support for the transition.

3.1.3 Demographic Pressures and Skills Shortages

- Population ageing is increasing pressure on European labour markets, particularly in technical sectors with ageing workforces (International Labour Organization, 2019a).
- Persistent skills gaps among younger workers limit the ability of labour markets to meet growing demand in emerging green and digital occupations, while deficiencies in literacy, numeracy, and digital competencies continue to restrict participation in advanced training (European Commission, 2025c).
- The need to reskill ageing workforces places increasing pressure on education, training, and lifelong learning systems, particularly as workers seek to remain economically active for longer (OECD, 2023c).
- Unequal access to training opportunities risks reinforcing labour market exclusion among vulnerable groups.
- Labour mobility remains constrained by differences in qualifications, licensing systems, and administrative procedures, contributing to persistent skills shortages despite available labour elsewhere in the EU (European Commission, 2025g).

3.1.4 Participation, Trust, and Social Legitimacy

- Maintaining public trust and perceptions of fairness remains a key challenge for the successful implementation of the just transition. Trade unions, civil society organisations, and local authorities continue to raise concerns regarding limited participation in decision-making processes and insufficient transparency in resource allocation (Filho & Pons-Giralt, 2024).
- Stakeholders emphasise the need to balance climate objectives with employment security, regional cohesion, and energy affordability (International Labour Organization, 2015).
- Where communities perceive transition costs as unfairly distributed or decision-making as exclusionary, support for climate policies tends to decline (Carley & Konisky, 2020; McCauley & Heffron, 2018).
- Social dialogue is increasingly recognised as a core governance mechanism for ensuring legitimacy and maintaining public support throughout the transition process.

3.2 National Challenges

Although Cyprus shares broader EU pressures linked to the green and digital transitions, its challenges are shaped by small economic scale, a service-based structure, and limited institutional capacity. Heavy reliance on tourism, construction, agriculture, and low-value services increases exposure to climate risks, labour shortages, and economic adjustment pressures during the transition (European Commission, 2023a; OECD, 2023a).

Seasonal tourism further intensifies these challenges by placing significant pressure on infrastructure, energy systems, and water resources during peak periods (Directorate General Growth, Ministry of Finance, 2023). These conditions increase the complexity of implementing a just transition, requiring labour market restructuring, stronger policy coordination, and more inclusive workforce measures within demanding RRF implementation timelines (European Commission, 2021b).

3.2.1 Structural Skill Mismatches and Labour Market Fragmentation

- There is a persistent mismatch between high levels of educational attainment and labour market needs, particularly in occupations linked to the green and digital transition (Eurostat, 2024).
- Overqualification and horizontal mismatches coexist with shortages in engineering,

renewable energy, sustainable construction, and applied STEM fields (Cedefop, 2023; European Commission, 2023b).

- A longstanding preference for academic pathways limits participation in TVET, reducing the supply of technical skills required for emerging sectors (European Commission, 2023b).
- Skills shortages are further reinforced by limited vocational training capacity in green and digital disciplines (MESY, 2024).
- Weak alignment between education outcomes and economic diversification contributes to the concentration of graduates in lower-productivity sectors (OECD, 2023a).

3.2.2 SME Capacity Constraints and Uneven Transition Readiness

- The predominance of SMEs creates transition challenges, as many firms lack the financial and administrative capacity to invest in training, digitalisation, and environmental upgrades (European Commission, 2021).
- Complex funding and compliance requirements can limit access to public support, particularly for smaller firms in rural areas and traditional sectors (OECD, 2023).
- Local authorities face similar resource and technical capacity constraints (Directorate-General Growth, 2023).
- As a result, transition readiness remains uneven, with larger firms generally better positioned to access funding, expertise, and workforce development opportunities.

3.2.3 Digital Gaps and Unequal Access to Reskilling

- Below-average digital skill levels constrain workforce adaptability and limit participation in emerging green and digital sectors, with only around half of the population aged 16–74 possessing at least basic digital competencies (European Commission, 2024a).
- National institutions, including the HRDA, are under increasing pressure to meet ambitious reskilling targets under the RRF (Republic of Cyprus, 2023).
- Adult learning participation remains constrained by time, cost, limited employer support, and low awareness (European Commission, 2023b).
- Emerging sectors such as smart energy, logistics, water management, sustainable tourism, and precision agriculture increasingly require combined technical, environmental, and digital skills (Cedefop, 2024a).

3.2.4 Climate Vulnerability and Sectoral Exposure

- Climate vulnerability presents a growing challenge for Cyprus, with rising temperatures and projected increases by 2050 expected to intensify pressures on economic activity, labour productivity, and public infrastructure, particularly in inland regions (Kythreotou & Mesimeris, 2022; Department of Environment, 2024).
- Increasing drought, wildfire, and water scarcity risks threaten the resilience and long-term sustainability of key sectors, including agriculture, tourism, construction, and water management (Department of Meteorology, 2024).
- Climate impacts disproportionately affect low-income households, migrant workers, and those in manual or seasonal employment, although limited national data restricts targeted policy responses (Kythreotou & Mesimeris, 2022).
- Adaptation measures, including investments in cooling systems for schools and public buildings, highlight the increasing links between climate resilience, labour protection, and social policy.

3.2.5 Limited Social Dialogue and Participatory Gaps

- Social dialogue remains fragmented despite the involvement of trade unions, employers, local authorities, and civil society organisations in consultation processes (ILO, 2015).
- CSOs report limited access to technical information and insufficient influence on policy design, while smaller organisations face resource and staffing constraints (Terra Cypria, 2024).
- Perceptions of consultation as largely procedural can weaken the integration of social equity concerns into transition planning.
- Limited participation risks undermining public trust, policy effectiveness, and support for reform.

3.2.6 Demographic Pressures and Workforce Sustainability

- Sustaining an adequate workforce is becoming increasingly difficult due to population ageing, persistent labour shortages, and continued dependence on migrant labour (European Commission, 2023a).
- Programmes delivered by the HRDA and Cyprus Productivity Centre have expanded support for older workers, particularly in digital and green skills development (CPC, 2024).

- Lifelong learning opportunities remain unevenly distributed, especially among lower-qualified and intermittently employed workers.
- Migrant labour remains critical in agriculture, tourism, construction, and domestic services, raising additional concerns related to language barriers, occupational safety, and equitable access to training (European Commission, 2023a).

4. Structured Policy Recommendations

The structural bottlenecks, socio-economic inequalities, and climate-related vulnerabilities outlined in the preceding sections indicate that a just transition cannot be achieved through incremental adjustment alone. Across the European Union and Cyprus, there is a persistent mismatch between fast-moving technological and environmental change and the slower pace of institutional adaptation in education, training, and labour governance. While clean technologies evolve rapidly, often within short innovation cycles, qualification systems and workforce planning continue to operate on multi-year revision timelines. This creates recurring labour shortages in technical sectors, constrains SMEs, and increases exposure to economic and climate-related risks among low-skilled, older, and migrant workers.

Against this background, the 2026 policy cycle offers a critical window for aligning workforce development with the implementation phase of the Clean Industrial Deal and the Union of Skills Agenda. In Cyprus, this alignment is further shaped by its Presidency of the Council of the EU and the ongoing implementation of the Recovery and Resilience Facility (RRF), including binding milestones linked to large-scale upskilling and reskilling targets (European Commission, 2025a; Republic of Cyprus, 2023). Therefore, policy responses need to move beyond broad strategic commitments and focus on delivery mechanisms that can operate within these constrained timeframes.

Pillar I



Skills-first learning & certification framework

Pillar II



Sectoral transition partnerships

Pillar III



Social Fairness & Transition Protection

The three policy pillars below translate the diagnostic findings into operational interventions across institutional, sectoral, and social dimensions (see Box 4.1).

Box 4.1: Structural Policy Matrix

Identified Labor Market & Climate Crisis	Proposed Policy Counter-Measure
1. Institutional Lag in Skills Systems Traditional education and vocational training systems cannot update curricula at the speed required by emerging green and digital technologies.	Pillar I: Skills-first learning and certification framework Development of modular, stackable micro-credentials and short-cycle certifications linked to real-time labour market needs and cross-border recognition.
2. SME capacity constraints Small and medium-sized enterprises lack the financial and administrative capacity to design and implement structured upskilling programs.	Pillar II: Sectoral transition partnerships Creation of sector-based training consortia combining public funding, employer networks, and training providers to reduce costs and improve access should be prioritised.
3. Uneven participation and climate exposure The limited inclusion of vulnerable workers in training systems, combined with increasing occupational exposure to heat stress and climate risks, is a concern.	Pillar III: Social Fairness & Transition Protection Integration of occupational safety standards, targeted training access, and stronger involvement of social partners in program design.

Detailed analyses of the operational steps, funding structures, and concrete implementation timelines for each of these three policy pillars are presented in Sections 4.1, 4.2, and 4.3, respectively.



4.1 Pillar I: Skills-First Learning and Certification Framework

Policy Rationale

The green and digital transition is advancing faster than formal education and training systems can adapt. Across Europe, including Cyprus, university programmes and vocational qualifications often require lengthy revision cycles, while technological change in sectors such as renewable energy, smart infrastructure, and industrial automation is significantly

faster (Cedefop, 2024a). This mismatch contributes to persistent skills shortages despite relatively high levels of formal educational attainment.

Modular learning and micro-credentials

- **Framework Focus:** Pillar I addresses this gap through the expansion of modular learning pathways based on micro-credentials and short-cycle certifications. This approach aligns with EU priorities on labour mobility and mutual recognition of skills under the European Education Area and the 2026 Cyprus Presidency agenda (European Commission, 2025c).
- **Stackable Units:** Rather than relying solely on long-cycle degrees or traditional TVET qualifications, the framework promotes smaller, stackable units of learning that can be updated in line with labour market needs. For example, technicians in wind energy or grid management can access targeted short courses on safety systems or digital telemetry without completing full multi-year programmes (Cedefop, 2024a).
- **Technical Infrastructure:** These micro-credentials are increasingly supported by EU tools such as the European Qualifications Framework (EQF), ECVET, and the European Digital Identity Wallet, which facilitate cross-border recognition and verification of skills. In Cyprus, implementation is supported through the national “Digital Citizen” platform, operated by the Deputy Ministry of Research, Innovation and Digital Policy (2026a), providing a secure infrastructure for credential storage and verification.

Funding and national implementation

- **Primary Channels:** In Cyprus, implementation will be primarily channelled through the Human Resource Development Authority (HRDA) and Recovery and Resilience Facility (RRF) mechanisms. Existing national strategies already prioritise large-scale upskilling linked to green and digital transitions (Republic of Cyprus, 2023).
- **SME Support:** Pillar I builds on this framework by introducing more flexible certification models that respond faster to sectoral change. This is particularly important for SMEs, which dominate the Cypriot economy but often lack capacity for structured workforce training (OECD, 2023a). Publicly subsidised short-cycle programmes therefore remain essential, especially in sectors facing rapid technological change.
- **Operational Agility:** An independent electrician could access certified short training on EV charging installation without interrupting their business operations. Existing HRDA schemes already provide a basis for this expansion through employer-supported training and multi-company seminars (HRDA, 2024), which can be further developed into modular certification pathways for self-employed and seasonal workers.
- **Strategic Risk:** Effectiveness depends on alignment with labour market demand. Evidence from EU experience shows that reskilling is less effective when certification

systems operate independently of employers and sectoral actors (Cedefop, 2024a).

Social Dialogue and Governance

Social dialogue is therefore central to Pillar I. Micro-credentials must be developed in coordination with employers, trade unions, and public authorities to ensure labour market relevance and avoid fragmentation of qualifications.

Within Cyprus, strengthened tripartite cooperation through the HRDA can support coordinated curriculum design and responsiveness to emerging needs. Employers can identify skills shortages, while trade unions ensure quality standards and equitable access. In practice, joint approval mechanisms—such as employer and union validation of training modules in construction or green technologies—can strengthen legitimacy and uptake of certifications (International Labour Organization, 2015). Lifelong learning in this context becomes a mechanism for labour market resilience, not only employability.



4.2 Pillar II: Sectoral Transition Partnerships

Policy Rationale

Reskilling is most effective when it is directly aligned with labour market needs, particularly in sectors undergoing rapid technological or environmental change (ILO, 2015). Traditional vocational systems often update curricula too slowly to reflect industrial developments. Sectoral transition partnerships address this by linking employers, sectoral organisations, and training providers to jointly identify emerging skills needs and design targeted, short-cycle training pathways.

Partnership model & european context

- **Operational Realities:** These partnerships enable more responsive, modular, and workplace-based training aligned with operational realities (Feyer, 2024). Employers are often the first to identify shifts in production systems, energy infrastructure, or digital operations, making their involvement critical for timely skills adaptation.
- **SME Resource Pooling:** By pooling training needs across firms within the same sector, partnerships reduce costs, share expertise, and improve access to specialised training that individual firms could not provide independently (OECD, 2023a). Public authorities can then better target funding, while employers contribute technical and regulatory knowledge.
- **EU Initiatives:** At EU level, this approach is reflected in initiatives such as the

Net-Zero Industry Academies under the Net-Zero Industry Act (EC, 2024b), which aim to standardise training across key clean technology sectors including hydrogen, batteries, solar energy, and heat pumps.

- **Intelligence Tools:** EU labour market intelligence tools, including Cedefop forecasting systems and the European Skills Intelligence Observatory, further support anticipatory workforce planning (Cedefop, 2024b; European Parliament, 2025). However, implementation remains uneven across Member States due to differences in institutional capacity and employer engagement (Brunello & Wruuck, 2019).

Cyprus: SME-Dominated Economy

In Cyprus, sectoral partnerships are particularly relevant due to the dominance of SMEs and micro-enterprises, many of which lack capacity for structured workforce planning (European Commission, 2021b). Expecting individual firms to independently organise green and digital training is often unrealistic given financial and administrative constraints (Apostolopoulos et al., 2023).

Sectoral coordination through the HRDA provides a practical mechanism for addressing this gap (HRDA, 2024b). Training can be aligned with sector-specific needs in tourism, logistics, energy, shipping, and construction (CCCI & CEA, 2025). For example, in ports and logistics, joint training programmes in Limassol and Larnaca could cover green port operations and digital compliance systems. This allows workers to acquire stackable micro-credentials linked directly to occupational transitions rather than requiring firms to develop internal training capacity (Cedefop, 2024a). Long-term effectiveness depends on stable governance, simplified administrative procedures, and sustained SME participation. Without this, partnerships risk being concentrated among larger firms with greater institutional capacity (Eurofound, 2023a).



4.3 Pillar III: Social Fairness & Transition Protection

Policy Rationale

Climate and technological transitions are more likely to succeed when distributional effects are perceived as fair. Without active policy intervention, benefits tend to accrue unevenly, reinforcing labour market inequalities (Eurofound, 2023a). Pillar III therefore integrates skills policy into a broader framework of social protection, linking retraining with income security, employment continuity, and labour rights during structural change (ILO, 2015).

European context & inclusive transition for cyprus

- **Displacement Risks:** At EU level, automation and AI are reshaping employment structures, increasing attention to displacement risks and adequacy of social protection systems (European Commission, 2025h). Emerging policy frameworks such as Skills Guarantee initiatives aim to ensure access to subsidised reskilling pathways for displaced workers (ILO, 2019b).
- **Employment Standards:** The Quality Jobs agenda further emphasises employment standards in emerging green and digital sectors, aiming to prevent increased labour market segmentation and precariousness (European Commission, 2020b; OECD, 2023b).
- **Targeted Vulnerabilities:** In Cyprus, social protection must address vulnerabilities among older workers, rural populations, and sectors exposed to climate risks, particularly agriculture, construction, and tourism. A National Just Transition Action Plan could link unemployment benefits more directly to structured retraining pathways, combining income support with compulsory access to certified training programmes, as seen in other EU contexts (OECD, 2023c).
- **Climate-Resilient Arrangements:** Given Cyprus' exposure to extreme heat, labour policy should also incorporate climate-resilient working arrangements. Temporary work interruptions during heatwaves could be used as opportunities for short-cycle training, online or on site, provided adequate protection and compensation mechanisms are in place (ILO, 2015).
- **Digital Gaps and CSO Trust:** While national initiatives such as the Digital Decade Roadmap and Digital Citizen Academy provide a framework for digital skills development, outreach gaps remain among older and rural populations. Collaboration with civil society organisations can strengthen access and trust-based engagement with vulnerable groups (CARDET, 2024; Dimitriou et al., 2025).

5. Implementation & Monitoring Roadmap

This roadmap sets out the institutional and operational steps required to implement the Just Transition Skills Framework within the 2026–2030 cycle. It aligns labour market reform, skills development, and climate adaptation measures with EU funding instruments and Cyprus’ national administrative structures. The emphasis is placed on delivery capacity, inter-institutional coordination, and measurable labour market outcomes.

To ensure administrative clarity and operational continuity, the implementation roadmap is structured into three parallel phases. This matrix aligns immediate funding compliance targets with decentralized regional expansion and long-term socio-economic protection frameworks.

5.1 Milestone Horizons

Table 5.1: Implementation and Monitoring Roadmap Matrix

Implementation Phase	Core Policy Objective	Key Actions	Potential Institutional Owners
Phase 1: Compliance & Target Execution (RRP Milestone Target)	Secure pending EU recovery funding lines by meeting strict, volume-driven baseline workforce targets.	* Secure final RRF funds: Finalize all pending funding disbursements upon verified metric completion. * Train 25,600 training cohorts: Rapidly scale and validate green, digital, and blue skills short-cycle programs to meet binding targets.	Human Resource Development Authority (HRDA); Ministry of Labour and Social Insurance; Ministry of Education, Sports and Youth (MESY)

Phase 2: Decentralised Sectoral Rollout (Medium-Term Implementation)	Shift from macro volume targets localized, market-driven training infrastructure that supports small businesses.	* Launch regional Skills Hubs: Establish physical centers in Limassol and Larnaca for shipping, logistics, and energy services. * Pool SME training demand: Aggregate cross-firm training requirements to co-design low-cost, short-cycle compliance pathways.	HRDA; Cyprus Chamber of Commerce and Industry; Cyprus Energy Agency; local municipalities
Phase 3: Social Protection & Inclusion Integration (2030 Target Alignment)	Integrate active retraining pathways with structural climate adaptation, income security, and digital equity mandates.	* Deploy Social Climate Fund: Fund targeted income protection and retraining during eco-structural shifts. * Convert heatwave stops to training: Systematize compensated, asynchronous digital training during mandated climate stoppages.	Ministry of Labour and Social Insurance; Deputy Ministry of Research, Innovation and Digital Policy; CSOs

5.2 Operational Governance & European Coordination

To prevent parallel tracking and administrative delays, institutional responsibilities and funding lines are explicitly divided across European and national actors.

Governance responsibility and funding steering

- **The Tripartite Engine:** Funding allocation and curriculum validation rely on a strict tripartite governance model between the government, employer organisations, and

trade unions to match training with active shortages and guarantee legal recognition within collective bargaining arrangements (HRDA, 2024b; ILO, 2015).

- **The Digital Portability Bridge:** The Deputy Ministry of Research, Innovation, and Digital Policy handles digital implementation by expanding the “Digital Citizen” platform and ensuring complete interoperability with the European Digital Identity Wallet for seamless cross-border micro-credential verification.
- **The Quality Jobs Agenda:** EU-level coordination incorporates wage, safety, and employment quality indicators into the European Semester monitoring processes to guarantee that green transition initiatives do not generate insecure or precarious work (European Commission, 2020b; OECD, 2023b).
- **The Inclusion Mandate:** Member States will systematically direct European Social Fund Plus (ESF+) resources toward technical education and green training tracks, setting strict targets to fix the underrepresentation of women and marginalized cohorts in STEM and energy fields (European Parliament, 2025).
- **Core Framework Risks:** Managing bodies must actively monitor the uneven digital infrastructure in rural areas and prevent quality assurance drop-offs during the rapid scaling of micro-credentials. Furthermore, procedures must be simplified to ensure administrative complexities do not lock out small businesses and civil society providers.

5.3 Monitoring & Evaluation

Monitoring mechanisms are necessary to assess whether public investment in retraining and transition policies translates into measurable labour market outcomes. Therefore, progress should be evaluated through a combination of European benchmarks, national administrative data, and sector-specific labour market indicators (see Table 5.2).



European Benchmarks



National Administrative Data



Sector-specific Labour
Market Indicators

Table 5.2: Key Performance Indicators for the Just Transition Framework

Policy Indicator	Target Horizon (2026–2030)	Baseline / Current Status (Cyprus)	Institutional Primary Owner
Adult Training Participation	60% annual participation by 2030	~48% (2025 estimate)	HRDA / Ministry of Labour and Social Insurance /Ministry of Education, Sports and Youth
Basic Digital Competency	80% of active population with basic digital skills	50% (2024 baseline)	Deputy Ministry of Research, Innovation and Digital Policy / Ministry of Education, Sports and Youth
Vulnerable Group Inclusion	25% of training placements reserved for high-risk groups	Fragmented baseline data	Ministry of Labour and Social Insurance/ Ministry of Education, Sports and Youth /CSOs
Cross-Border Skills Portability	Full integration of micro-credentials within EU digital systems	Pilot-stage deployment	Deputy Ministry of Research, Innovation and Digital Policy / Ministry of Education, Sports and Youth/ European Education Area

The monitoring framework increasingly relies on real-time labour market intelligence rather than retrospective employment reporting. Tools developed by Cedefop and the European Skills Intelligence Observatory allow public authorities to track emerging shortages, sectoral contraction, and evolving occupational demand more dynamically (Cedefop, 2024b; European Parliament, 2025).

This allows training provision to adjust more rapidly when sectors face accelerated technological changes. For instance, declining demand in routine administrative or conventional mechanical occupations may require faster expansion of training in areas such as electric vehicle maintenance, digital compliance systems, and sustainable logistics

management (Brunello & Wruuck, 2019).

However, long-term sustainability remains dependent on institutional continuity beyond temporary EU funding cycles. Active labour market measures, training allowances, and local outreach programmes require stable national funding commitments to remain operational after the current RRF period concludes. In addition, the administrative complexity surrounding public funding procedures may continue to limit the participation capacity of smaller civil society organisations and local community providers.

6. Conclusion

The transition to a green and digitally driven economy is no longer a future policy objective but an immediate labour market challenge for both the European Union and Cyprus. The analysis presented throughout this paper shows that current education, training, and labour market systems are not adapting at the same pace as technological change, environmental regulations, and industrial restructuring. Across the EU, persistent gaps remain between strategic climate ambitions and the institutional capacity required to prepare workers for changing employment forms (Cedefop, 2024b; ILO, 2015). In Cyprus, these pressures are intensified by the dominance of small- and medium-sized enterprises (SMEs), uneven participation in lifelong learning, digital skill gaps, and growing climate-related pressures on sectors such as construction, tourism, agriculture, and logistics (OECD, 2023a; European Commission, 2023a).

The three-pillar framework proposed in this study responds directly to these structural constraints. The first pillar focuses on expanding flexible learning pathways through modular certifications and micro-credentials that can respond more quickly to labour market changes than conventional degree structures. The second pillar strengthens sectoral transition partnerships, particularly in industries where SMEs lack the administrative and financial capacity to independently organise the workforce adaptation. The third pillar links retraining and labour market adjustment to broader questions of social protection, occupational safety and equitable access to lifelong learning. Together, these measures position workforce adaptation as a central condition for sustaining economic competitiveness and social cohesion during the transition process.

The timing of implementation is particularly significant during the 2026 Cyprus Presidency of the Council of the European Union and the final execution phase of the national Recovery and Resilience Plan (RRP). Meeting the August 2026 RRP milestones remains critical for securing the final EU disbursements and expanding the infrastructure needed to support large-scale reskilling initiatives (European Commission, 2021b). Within this framework, the Human Resource Development Authority (HRDA), regional sectoral skills hubs, and the integration of digital certification systems through the “Digital Citizen” platform provide practical mechanisms for linking training provision more directly to labour market demand and cross-border skills recognition (HRDA, 2024b; Deputy Ministry of Research, Innovation and Digital Policy, 2026a).

Simultaneously, this study demonstrates that training policy alone is insufficient if broader inequalities remain unaddressed. Older workers, low-skilled adults, migrant workers, and rural populations continue to face greater barriers to digital participation and access to structured reskilling opportunities. Similarly, workers in outdoor sectors are increasingly

exposed to climate-related occupational risks, particularly during periods of extreme temperatures. Addressing these vulnerabilities requires stronger coordination between labour market policy, social protection systems, climate adaptation planning and public digital inclusion initiatives (Eurofound, 2023b; Dimitriou et al., 2025).

Ultimately, the effectiveness of a just transition will depend less on the number of strategies announced and more on whether institutions are capable of coordinating education systems, employers, trade unions, and local communities around measurable labour market outcomes. In this sense, the Cypriot case illustrates a broader European challenge: the transition is not only technological or environmental but also institutional and social. Without sustained investment in workforce adaptation, inclusive governance, and accessible lifelong learning systems, existing inequalities are likely to deepen, rather than diminish, during the transition process.

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