

EDUCATION POLICY FOR SUSTAINABLE TRANSITION: STRATEGIES AT LOCAL AND REGIONAL LEVEL

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Abstract

Education policy is widely recognized as a cornerstone of sustainable transition, since it sets the conditions under which education systems, infrastructures, and learning practices evolve. The purpose of this paper is to examine the contribution of education policy to sustainable urban and regional development, focusing on strategies that are implemented at local and regional levels of governance. The paper emphasizes the added value of aligning education policy with international sustainability agendas and demonstrates its potential to promote social inclusion, skills development, and community resilience. The study is grounded in a literature review, allowing for a synthesis of knowledge from international and European frameworks, highlighting policy orientations and identifying the challenges that arise in practice. Building on this, the paper aims to provide a comprehensive understanding of how education policy functions as a lever for sustainable transition. The literature review indicates that education policy supports sustainable transition in three main ways: by integrating sustainability-oriented curricula across different levels of education, by promoting the development of green and digital skills required for future economies, and by supporting inclusive measures that reduce social inequalities and address the digital divide. At the same time, the literature highlights persistent challenges, such as fragmented governance structures, unequal allocation of resources, and limited inter-sectoral cooperation, that continue to hinder the effective implementation of such policies. The overall contribution of the paper is to argue that the design and implementation of coherent, multi-level, and evidence-based education policy strategies are essential for achieving resilient and sustainable cities and regions in the 21st century.

Key words: *education policy, sustainable development, sustainable transition, local & regional level, strategies, green and digital skills, sustainability-oriented curricula*

1. PRELIMINARY REMARKS

The growing complexity of global challenges and mega-trends, such as climate change, rapid digital transformation, digital economy, demographic shifts, Covid-19 pandemic as well as deepening socioeconomic and education inequalities has placed increasing pressure on education systems to adapt and respond in meaningful ways (Papadakis & Drakaki, 2025). Within this framework education policy is widely recognized as a crucial tool for shaping sustainable future, as it defines how education systems, infrastructures and learning practices develop and evolve. Nowadays, education and subsequently education policy are no longer viewed as a process of knowledge transmission, but as a transformative force that can strengthen social cohesion and community resilience and equipping individuals with the competencies needed to deal with labour market transitions and ongoing social change (UNESCO, 2021; OECD, 2025a). As UNESCO (2021) has pointed out: *“Forging a new social contract for education is all the more urgent given emerging societal transformations underway and radical disruptions on the horizon. It must address the existing web of inequalities that perpetuate educational and social exclusions, while helping to shape environmentally sustainable, and socially just and inclusive shared futures.”* (p.27).

Sustainable transition, conceived as the shift of societies toward more environmentally responsible, socially fair, and economically balanced societies, requires coordinated efforts and actions across different sectors and levels of government (UN/Committee for Development Policy, 2023). Within this context, education policy has a vital role to play in responding to the needs and demands of the transition, while also shaping the conditions that make it possible. By guiding curriculum changes, resource allocations, governance mechanisms, and strategic priorities, education policy can steer cities and regions toward more resilient and sustainable development trajectories (UNESCO, 2017; OECD, 2018a).

Towards this perspective, international sustainability agendas highlight the importance of education as a foundation for societal transformation, building a more sustainable future. Specifically, the UN 2030 Agenda emphasizes education as a key driver for sustainable development through Sustainable Development Goal 4 (UN, 2015). The OECD’s Future of Education and Skills 2030 Project further highlights the importance of fostering learner agency, adaptability and resilience within education systems (see in detail OECD, 2026).

Similarly, the European Green Deal and the Digital Education Action Plan call for developing green and digital skills to support Europe’s transition to a climate-neutral and innovation-driven economy, highlighting inclusive policies that reduce inequalities and learning environments which prepare citizens for active participation in societal transformation (European Commission, 2019; European Commission, 2020a). Within this framework, local and regional authorities and bodies have a decisive role in transforming these international priorities into concrete, context-specific actions. Through curriculum initiatives, targeted investments and inclusive strategies, they can directly influence how education policy contributes to sustainable urban and regional development (Burns, Köster & Fuster, 2016; European Commission/DG REGIO, 2024).

The purpose of this paper is to examine how education policy supports sustainable transition, with particular emphasis on strategies implemented at local and regional governance levels towards sustainable transition.

2. THE EU STRATEGY FOR SUSTAINABLE DEVELOPMENT AND THE ROLE OF EDUCATION IN SUSTAINABILITY

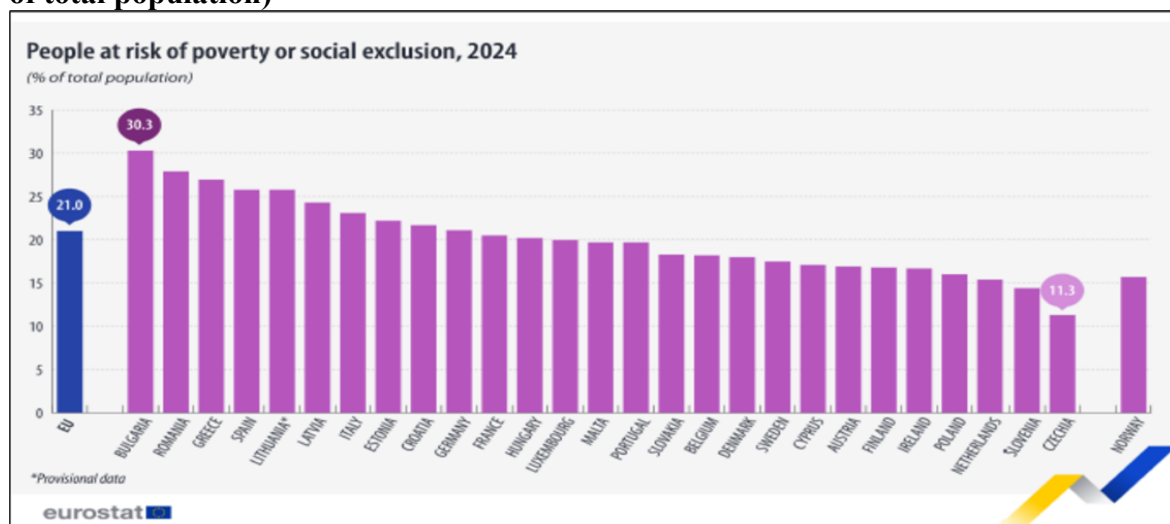
The global economic and fiscal crisis, the COVID-19 pandemic and the continuing energy crisis highlight the essential role of the welfare state in protecting citizens from the multiple

social risks that are being reproduced, intensified or transformed (Papadakis & Tzagkarakis, 2025). Based on international standards, the majority of people in the European Union benefit from a relatively high standard of living. This is due both to the comparatively high levels of income and wealth within the EU (at least for some households) and to the well-developed social protection systems that offer support to a significant portion of the population with lower incomes. (Eurostat, 2025a).

However, broader societal developments, such as the impact of globalisation combined with successive crises, such as the economic and fiscal recession, the COVID-19 pandemic (health crisis), Russia’s war against Ukraine, and the cost-of-living crisis, also constitute major factors that worsen living conditions (see in detail Eurostat, 2025c; Papadakis et al., 2024; Papadakis & Tzagkarakis, 2025; Papadakis & Drakaki, 2025; Drakaki, 2023).

According to Eurostat, in 2024, 21% of the total EU population, equivalent to 93.3 million people, was at risk of poverty or social exclusion, with women being more likely than men to face such risks (women: 21.9%, men: 20%) (Eurostat, 2025b) (see also Figure 1).

Figure 1: Percentage of the EU population at risk of poverty or social exclusion, 2024 (% of total population)



Source: Eurostat (ilc_pees01n) as cited in Eurostat, 2025b: 1.

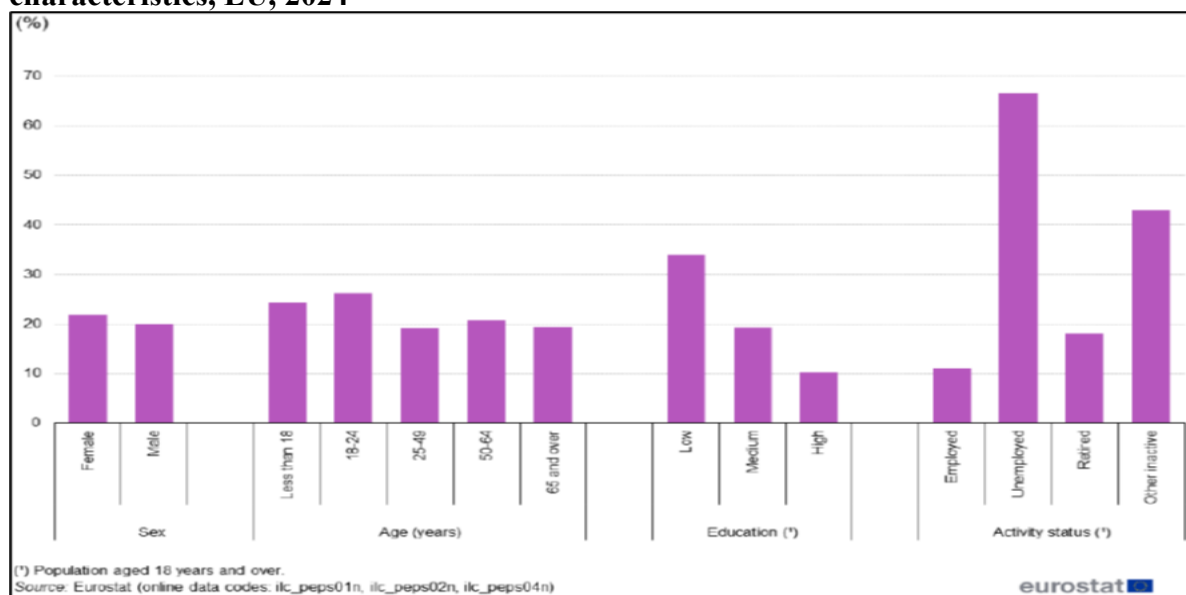
In 2024, at the EU level, employment status appeared to significantly influence the risk of poverty or social exclusion. Specifically, 10.9% of employed people and 66.6% of unemployed individuals were at risk. Additionally, 21.9% of the EU population, meaning more than one-fifth of EU citizens, living in households with dependent children was at risk of poverty or social exclusion in 2024 (Eurostat, 2025b).

Socio-demographic characteristics such as age, educational level, gender, and country of birth/nationality can influence an individual’s living conditions (Eurostat, 2025a: 85). Specifically, in 2024 (Eurostat, 2025b: 4) (Figure 2):

- ✓ The risk of poverty or social exclusion in the EU was higher for women (21.9%) than for men (20.0%).
- ✓ Young adults aged 18-24 faced the greatest risk (26.2%), followed by children under 18 (24.2%). Adults aged 25-49 had the lowest risk (19.2%), with rates of 20.8% for those aged 50-64 and 19.4% for people aged 65 and over.
- ✓ Educational attainment played a major role: 33.9% of adults with low education (ISCED 0-2) were at risk, compared with 19.3% of those with medium education (ISCED 3-4) and only 10.2% of those with tertiary education (ISCED 5-8).

- ✓ Employment status was also decisive: In 2024, 66.6% of unemployed people aged 18+ were at risk, while 43% of inactive individuals (excluding retirees) faced similar vulnerability. By contrast, 18.1% of retirees and 10.9% of employed people were at risk of poverty or social exclusion.

Figure 2: People at risk of poverty or social exclusion, analysed by socio-economic characteristics, EU, 2024



Source: Eurostat (online data codes: ilc_peps01n, ilc_peps02n, ilc_peps04n, as cited in Eurostat, 2025b: 4).

Within this context, education constitutes a major parameter for people’s personal development, strengthening of their employability and active participation in society as well as their social inclusion (European Commission, 2020b). While OECD (2018) highlights that: *“Education has a vital role to play in developing the knowledge, skills, attitudes and values that enable people to contribute to and benefit from an inclusive and sustainable future. Learning to form clear and purposeful goals, work with others with different perspectives, find untapped opportunities and identify multiple solutions to big problems will be essential in the coming years. Education needs to aim to do more than prepare young people for the world of work; it needs to equip students with the skills they need to become active, responsible and engaged citizens.”* (OECD, 2018a: 4).

At the European level, the right to quality, inclusive education, training, and lifelong learning is included in the European Pillar of Social Rights as its first and fundamental principle, while also contributing to the support of the social market economy and democracy by promoting freedom, diversity, human rights, and social justice (European Commission, 2020b).

Furthermore, since sustainable development is: i) a core principle of the Treaty on European Union and ii) a major priority for the EU’s internal and external policies (European Commission, 2025c.), the European Union redefined its development strategy in 2020 on the basis of sustainability, with the green and digital transitions forming its main axes of transformation (European Commission, 2020b).

The overarching aim is to fully align the EU strategy with the 17 UN SDGs and, consequently, to ensure the complete implementation of the UN 2030 Agenda. The E.C. President’s political guidelines and the European Commission’s annual work programmes constitute the Commission’s strategy to implement the SDGs (see in detail European Commission, 2025c) (Figure 3).

Figure 3: The European Commission's holistic governance approach towards the SDGs implementation



Source: European Commission, 2025c.: https://commission.europa.eu/strategy-and-policy/sustainable-development-goals/eu-approach-sdgs-implementation_en?prefLang=en

Education policy at the national, regional, and local governance levels increasingly aligns with international and European sustainability initiatives. Specifically, the UNESCO ESD¹ for 2030 agenda calls for concrete actions and changes in curricula, school governance (leadership), teachers’ training and learning environments, encouraging countries to integrate sustainability across all education levels (UNESCO, 2020). Furthermore, the OECD’s Future of Education and Skills 2030 framework supports this perspective by highlighting the importance of developing adaptable and resilient learners who can act autonomously and manage uncertainty effectively (OECD, 2018a).

At the European level, the Digital Education Action Plan 2021-2027 identifies digital transformation as a prerequisite for inclusive and sustainable education systems, especially, in reducing the digital divide and enhancing people’s digital competences (European Commission, 2020a; European Commission, 2025a). In addition, the European Green Deal initiative emphasizes the need for reskilling and upskilling to support the green economy, placing education policy as a central pillar of Europe’s transition towards sustainability (European Commission, 2019; European Commission, 2025b).

Taking into account the above mentioned, local and regional authorities and bodies play an important role in transforming and reshaping these international and European agendas and mega-projects into actionable and manageable policies. Moreover, effective and well-functioning governance processes are essential for ensuring better coordination among the various levels of educational authorities (central, regional, and local), as well as among schools, teachers (via professional bodies and unions), and parents (through both formal and informal channels, such as parent associations), all of whom shape education policy and service provision (OECD, 2025b). However, disparities in resources, institutional capacity, and governance structures often result in uneven implementation of policies (European Commission/DG REGIO, 2024).

¹ESD: Education for Sustainable Development

3. EDUCATION POLICY FOR SUSTAINABLE TRANSITION AT LOCAL AND REGIONAL GOVERNANCE LEVELS

The role of education is of vital importance for social inclusion and subsequently for social sustainability. However, in the EU severe and multi-parametric socio-economic inequalities affect education, where the inter-generational transition of educational achievement (or even poverty) is evident all across Europe and affects people's and, mainly, young people's life chances (Papadakis 2022; Papadakis et al 2024; Papadakis & Drakaki, 2025).

Governance in the field of education policy constitutes an issue of major importance and, at the same time, considerable complexity. This is due, on the one hand, to the close interconnection between education policy and two other major public policies, namely employment policy and macroeconomic policy, at the international, supranational, and national levels, and, on the other hand, to the continuously evolving socio-economic, political, and cultural context from the late 20th to the early 21st century. Within this framework, education policy is formulated, designed, implemented, monitored, and evaluated, while prevailing conditions and labour market needs consistently influence and reshape these processes over time (Drakaki, 2018).

Moreover, contemporary education systems have become more complex due to the presence of multiple governance levels and an expanding range of stakeholders (Burns, Köster & Fuster, 2016). In this context, *"multilevel governance can be defined as an arrangement for making binding decisions that engages a multiplicity of politically independent but otherwise interdependent actors -private and public- at different levels of territorial aggregation in more-or-less continuous negotiation/deliberation/ implementation, and that does not assign exclusive policy compétence or assert a stable hierarchy of political authority to any of these levels."* (Schmitter, 2004: 49).

Based on the above mentioned, over the years, several countries have gradually tried to decentralise their education policy, and consequently their education systems towards the autonomy of regional and local authorities and bodies in the fields of resource allocation, teacher professional development/skills development etc., aiming at enhancing efficiency and innovation and addressing social and educational inequalities (Waslander, Pater & van der Weide, 2010; OECD, 2016).

Specifically, in education governance, the central authority is responsible for ensuring high-quality, efficient, and equitable education. However, decentralised decision-making, which introduced to strengthen local steering, requires that all parts of the system work towards shared and common goals (Hooge, Burns & Wilkoszewski, 2012; OECD, 2016). At the same time, the involvement of different stakeholders as well as the management of system complexity, seems to make it difficult to maintain a coherent focus to the whole system, towards sustainable transition. Also, the mismatch between the priorities of local and regional actors and central regulations may create misunderstandings and tensions in accountability and governance processes in the field of education (Hooge et al., 2012).

Based on the above mentioned, education policy plays a crucial role in enabling sustainable transition at local and regional governance levels in the framework of examining the following fields: i. the potential of the sustainability-oriented curricula and ii. the importance of green and digital skills.

Regarding the development of sustainability-oriented curricula toward the integration of sustainability into education systems, it turns out that sustainability-oriented curricula enhance critical thinking and action competences which are essential for individuals within the framework of the transformations occurring in the labour market, environment and society in modern times (UNESCO, 2021). Especially, the transformation of curricula toward a more Education for Sustainable Development (ESD) perspective helps students to develop better

thinking skills, problem-solving skills and values for sustainable development, while learning to adapt to evolving complex situations, learning to act as responsible citizens at local, national and international levels in terms of ESD issues and participating in democratic decision making and (Laurie, Nonoyama-Tarumi, Mckeown, & Hopkins, 2016).

At this point, it should be mentioned that the integration of ESD is most effective when i. it adopts a multidisciplinary framework and is embedded throughout the entire curriculum and ii. teachers' capacity and training concerning ESD pedagogy and issues related to sustainable development has improved and carried out respectively (Laurie et al., 2016).

Moreover, green and digital skills have been raised of vital importance policy priorities and strategic goals in the national and European agendas aligned, directly, with the green and digital transition and, consequently with the achievement of SDGs of UN 2030 Agenda (see in detail UN, 2015). Specifically, at European level, the green transition, that is linked with the climate neutrality and emissions reduction and focusing on reshaping the European Union into a contemporary, resource-optimized and competitive economy (European Commission, 2019; European Commission, 2025b), needs skills related to sustainability competences in the following areas valuing sustainability, promoting nature, systems thinking, critical thinking etc. (see in detail European Commission/JRC - Bianchi, Pisiotis & Cabrera, 2022).

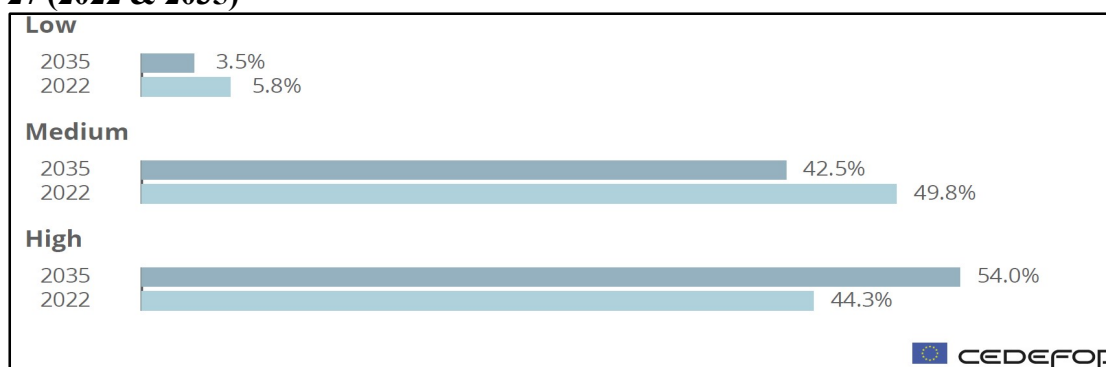
Toward this perspective, Vocational Education and Training (VET) is essential for addressing economic and social changes preparing people for the abovementioned transformations, and enabling workforce to transition into greener sectors and occupations (Cedefop, 2022). As Cedefop (2022) highlights the necessity of cooperation among VET, governments, local and regional authorities and bodies as well universities, research centers and institutions and employers.

Especially, to implement the European Green Deal, regional bodies should tailor VET programs to local green sector needs, fostering deep structural changes in the economy. This shift will fundamentally alter labor market dynamics, making workforce retraining essential. Such priorities are already deeply embedded in EU VET strategies and the European Skills Agenda to ensure a smooth transition, highlighting upskilling and reskilling as vital tools for managing these labor market changes (see in detail European Commission, 2025d).

At the same time, the digital transition is affecting almost every sector of contemporary societies. Digital literacy, critical digital skills and online problem-solving ability are essential for both employability and active citizenship (van Laar et al., 2017). Furthermore, the digitalisation of the labour market, the automation of work, the growth of the digital economy, and the expansion of teleworking, which increased significantly during the COVID-19 pandemic, are creating new conditions and challenges. These developments increase the need for the workforce to acquire new skills, especially for those with significant digital skill gaps, while also leading to the loss of many jobs as a result of automation and the digital transformation of the labour market (INE GSEE/Antonopoulou, 2023; European Commission, 2018; OECD, 2018b).

Further, digital technologies and, more broadly, the digital economy have transformed the labour market both in the EU and globally, creating new job opportunities while also automating certain occupations. At the same time, labour demand is shifting toward jobs with higher digital intensity, meaning positions that require digital, and often specialized, skills (Cedefop, 2025a). It is indicative that in 2021, 85% of jobs in the EU required at least basic digital skills, while between 2020 and 2021 about 14% of adult workers saw their job tasks replaced by new digital technologies. According to Cedefop forecasts for 2035, the average share of employment in high-tech occupations in the EU is expected to reach 11.4% (Cedefop, 2025a). While it is expected to decline in traditional forms of employment, such as secretarial support, accounting, administration and low-skilled work (Papadakis, Petousi, Tzagkarakis, 2023) (see also Figure 4).

Figure 4: Cedefop forecasts for future employment (%) by educational level in the EU-27 (2022 & 2035)



Source: Cedefop, 2025b: <https://www.cedefop.europa.eu/en/tools/skills-intelligence/trend-focus/future-jobs?etrans=en&etransnolive=1>

It is worth mentioning, that based on the “Education and Training Monitor 2025”, regarding students’ digital skills, the situation is particularly unfavorable, as 42.5% of students do not reach the basic level of proficiency, mainly due to inequalities in access and insufficient teacher training (European Commission/DG EAC, 2025: 6). Furthermore, the state of play is even more difficult with regard to the level of proficiency of adults in digital skills. Specifically, adult participation in Lifelong Learning (LLL) in the EU was 39.5% in 2022, which is still far from the EU target of 60% for 2030. In 2023, only 56% of people aged 16-74 had at least basic digital skills (European Commission/DG EAC, 2025: 8).

As World Economic Forum (2021) has pointed out: *“The profound effects of technological progress on the world economy, taken together with globalization and demographic change, have led to a pressing societal problem: how to equip people with the skills they need to participate in the economy – now and in the future. Governments, businesses and educational institutions are not currently helping people acquire the skills they need to succeed. Millions of people are already being left behind because of volatile market conditions, the effects of COVID-19, or because they work in industries that are being replaced by new sectors. All of this highlights a critical need for reskilling and upskilling. There is an enormous opportunity to reconfigure the world of work at this critical juncture and embark on an upskilling revolution that will give people across the world the ability to participate fully in the future of work, whatever that might be.”* (World Economic Forum, 2021: 4)

These priorities for developing and upgrading citizens’ digital skills are reflected in the European Commission’s Digital Education Action Plan (2021-2027), in which EU’s actions and strategies focus on i. promoting the development of a high-quality and effective digital education ecosystem and ii. strengthening digital skills and competences to support the digital transformation (see in detail Alexiadou & Rambla, 2023; European Commission, 2020a; European Commission, 2025a).

As in the green transition, so in the digital transition, synergies and collaborations among schools, universities, research centres and local and regional authorities are essential for effective implementation of education policy within the framework of sustainable development. In particular, coordinated actions and collaborations between education and VET providers (such as the Centres for Training and Lifelong Learning of the Universities (KEDIVIM), Vocational Training Centers etc.), employers and public authorities at local and regional levels is necessary in order to support sustainable regional development and people’s skills development and upskilling by implementing evidence-based targeted training-

reskilling programmes aligning with regional and local market needs-in-skills (Ramsarup, McGrath & Lotz-Sisitka, 2023; Papadakis, Drakaki & Tzagkarakis, 2026).

The above mentioned, in conjunction with the different dimensions of the broader transformation taking place in the labour market (see in detail Papadakis, 2025), underline the importance of LLL and VET as major education policy mechanisms. In particular, VET, as a key active labour market policy, plays a decisive role both in enhancing employability and in promoting social sustainability at local and regional governance level (see Papadakis & Drakaki, 2025).

4. CONCLUSIONS AND POLICY RECOMMENDATIONS

4.1. Conclusions

The paper examined the role of education policy as a key driver of sustainable transition, focusing on how strategies at local and regional levels can support sustainable development. The analysis confirms that education constitutes a fundamental domain within the Sustainable Development Agenda both at international and European levels (European Commission, 2025c; UN, 2015; UNESCO, 2020, 2021).

Furthermore, education policy supports sustainable transition through i. sustainability-oriented curricula and education for sustainable development for embedding sustainability priorities and goals across education systems (UNESCO, 2021; Laurie et al., 2016), ii. the development of citizens' green and digital skills, which have emerged as major priorities for future economies and labour market transformations, reinforcing the need of education and training systems that can respond to rapidly changing skills demands, reducing inequalities and addressing the digital divide, strengthening, consequently, social cohesion and resilience (European Commission, 2025a, 2025b; European Commission/JRC - Bianchi, Pisiotis & Cabrera, 2022, van Laar et al., 2017; Alexiadou & Rambla, 2023; Cedefop 2022, 2025a).

Within this framework, the study underlines the importance of VET and LLL as crucial fields of education policy for enhancing employability, supporting reskilling and upskilling needs and providing evidence-based targeted training/reskilling programmes, and facilitating labour market transitions at local and regional levels (Papadakis et al., 2026; Papadakis, 2025; Papadakis & Drakaki, 2025).

The study, also, highlights the significance of governance and collaboration arrangements for effective implementation of education policy at sub-national levels (Hooge et al. 2012; OECD, 2016). In particular, the implementation of education policy within a multi-level governance implementation requires cooperation among education and training providers and relevant regional/local bodies and authorities, especially, in the design and delivery of training and reskilling programmes aligned with regional/local labour market needs (Papadakis et al., 2026; Ramsarup et al., 2023; Cedefop 2022).

4.2. Policy Recommendations

Based on the above mentioned, several policy issues emerge that need to be addressed, especially at local and regional levels:

- Education and training policies should strengthen the alignment between education and training systems and regional and local labour market needs, especially through VET and LLL initiatives that provide training-reskilling and upskilling programmes.
- Effective implementation requires stronger cooperation among education and training providers, local and regional authorities, labour market stakeholders and social partners, particularly in the planning, design and delivery of training-reskilling programmes adapted to local socio-economic and labour market needs and conditions.

- Regional and local education policies should enhance the development of green and digital skills through coordinated initiatives and actions that respond to fast-changing socio-economic and labour market demands.
- Regional and local authorities should support capacity-building and professional development initiatives and actions for teachers and educators in integrating sustainability and digital competences into teaching and learning practices, while encouraging whole-school approaches to sustainability.
- Greater emphasis should be placed on inclusive education policy at local and regional levels aimed at reducing socio-educational inequalities and addressing the digital divide, thus strengthening social cohesion and sustainable regional development.

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