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Multilevel Analysis of Just Transition Education[4]

Abstract: Contemporary global and EU policies place emphasis on green, digital and just transitions. In this context, adult education is directly affected, as national policies and practices focus on how adult learning and education can contribute to these transitions. At the same time, the EU's approach has prioritized economic growth and competitiveness, often reflecting a narrowed view of adult education. This exploratory paper seeks to provide insights into the practical implementation of just transition education, drawing on the evolution of adult education for sustainable development. The study examines 49 environmental education practices collected within the Just4All project, aiming to improve the position of various systematically disadvantaged groups. The practices were analyzed using thematic analysis, while being guided by a micro–meso–macro–mega systems framework and focusing on adult learning and education across multiple levels. The analysis identifies key themes and codes, as well as the main strengthening mechanisms and challenges and maps the interconnections across all levels. The findings reveal consistent patterns across interconnected micro, meso, macro and mega levels, distinguished by key actors, types of educational actions and intended aims. While policies tend to frame sustainability practices broadly, they nevertheless highlight learning processes as essential for achieving fair and effective transitions. Overall, the findings suggest that adult education within civil society organizations is a supporting mechanism enabling activism, raising awareness and fostering individual and community engagement in sustainability-related change.

Keywords: just transition, sustainability, adult learning and education, multilevel analysis, sustainable practices

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Višeslojna analiza obrazovanja za pravednu tranziciju[5]

Apstrakt: Akcenat koji se u savremenim globalnim i politikama Evropske unije stavlja na zelenu, digitalnu i pravednu tranziciju utiče i na obrazovanje odraslih, budući da su nacionalne politike i prakse usmerene na to kako učenje i obrazovanje odraslih mogu da doprinesu ovim tranzicijama. EU se, međutim, pretežno usredsređuje na ekonomski rast i konkurentnost, često uz sužen pogled na obrazovanje odraslih. Ovaj istraživački rad ima za cilj da pruži uvid u praktičnu primenu obrazovanja za pravednu tranziciju, oslanjajući se na razvoj obrazovanja odraslih za održivi razvoj. Istraživanje obuhvata analizu 49 praksi ekološkog obrazovanja prikupljenih u okviru projekta Just4All, koje imaju za cilj unapređenje položaja različitih sistematski diskriminisanih grupa. Prakse smo proučili primenom metode tematske analize, uz oslanjanje na teorijski okvir mikro–mezo–makro–mega sistema, pri čemu smo se usredsredili na učenje i obrazovanje odraslih na više nivoa. Kao rezultat, identifikovane su ključne teme i kodovi, kao i glavni mehanizmi osnaživanja i izazovi, uz mapiranje međusobnih veza između svih nivoa analize. Nalazi ukazuju na dosledne obrasce kroz međusobno povezane mikro, mezo, makro i mega nivoe, koji se razlikuju prema ključnim akterima, vrstama obrazovnih aktivnosti i postavljenim ciljevima. Iako politike teže da postave široke okvire za prakse održivosti, one ipak ukazuju na to da su procesi učenja nužni za ostvarivanje pravičnih i delotvornih tranzicija. Nalazi sugerišu da je obrazovanje odraslih u organizacijama civilnog društva pozicionirano kao mehanizam podrške za omogućavanje aktivizma, jačanje svesti i individualnog i zajedničkog angažovanja u promenama povezanim sa održivošću.

Ključne reči: pravedna tranzicija, održivost, učenje i obrazovanje odraslih, višeslojna analiza, održive prakse

Introduction

The term "transition" is broadly used in many scientific disciplines to refer to a non-linear shift from one dynamic equilibrium to another (Loorbach et al., 2017, as cited in Pueyo & Leining, 2023). As pointed out by Pueyo and Leining (2023), transitions are described in social sciences as "systemic" (with multiple causes and at multiple levels), "radical" (disrupting existing modes of economic

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and social activity) and "non-linear" (involving an abrupt move from one system state to another) (Scoones et al., 2015; Loorbach et al., 2017; Newell & Simms 2020, as cited in Pueyo & Leining, 2023). Transitions involve changes in socio-technical systems; they are not solely a matter of individual change, but depend fundamentally on holistic, systemic transformation. These systems provide us with basic services, such as food, energy, shelter, mobility and health, as well as the financial system and other institutions underpinning them. The sustainability transition aims towards collective environmental and social outcomes at the international, national and community levels. It has an increased emphasis on issues of the global commons, especially climate change and is driven by the realization that dominant systems of production, consumption and wealth accumulation are ecologically and socially destructive (Pueyo & Leining, 2023). The green transition needs to be strategically and consciously planned with social justice in mind in order not to exacerbate inequalities and cause further injustices toward already disadvantaged individuals, communities and regions. There has historically been unequal responsibility for climate change, with developed countries, as well as the wealthiest households, being the largest contributors (UNEP, 2023), while the burden of climate change falls disproportionately on developing countries and vulnerable population groups, who are most exposed to its impacts (ILO, 2018).

In recent years, EU policies have prioritized the concept of twin (green and digital) transition. Žiljak (2022) points out that EU education policies have been prioritizing digital and green transition, in particular, after the COVID-19 pandemic. EU adult education policies and the priorities they identify strongly affect national adult education policies and practices. The prominence of twin transition is evident in EU's Digital Education Action Plan (2021 – 2027), which highlights that "we need people to have latest advanced digital skills to support the twin digital and green transitions of society, public services and all parts of the economy" (European Commission, 2020, p. 9). The concept of just transition is also gaining relevance in EU policies. As defined in the Green Deal, "transition can only succeed if it is conducted in a fair and inclusive way" (European Commission, 2019, p. 16). Due to the EU's neoliberal approach and a narrowed view on education that comes with it (Popović, 2014), twin transition is largely framed within the growth paradigm, as corroborated even in the name of the Communication of the European Commission, labelled as "Towards a green, digital and resilient economy: our European Growth Model" (European Commission, 2022), which gives the central role to economy and growth. In light of criticisms of the EU, we adopt a perspective of justice in education that moves beyond addressing

the consequences of injustices through labor market skills and instead seeks to prevent the reproduction of the system producing the existing inequalities.

The roots of the concept of just transition are commonly traced to the United States and Canada in the 1970s, where environmental policies resulted in widespread job losses, which disproportionately affected ethnic minorities (Pueyo & Leining, 2023; Reitzenstein et al., 2018; Wang & Lo, 2021). The concept was later incorporated into the Paris Agreement, gaining broader recognition and spreading across regions and actors, including the EU. Reitzenstein et al. (2018) observe that the meaning of the concept slowly changed as it spread and now encompasses participation in decision-making, the equitable distribution of costs and benefits, compensation for past harms and environmental restoration. Today, just transition is broadly defined as ensuring that "no one is left behind or pushed behind in the transition to low-carbon and environmentally sustainable economies and societies" (UNCDP, 2023, p. 2). At the same time, just transition must be reconciled with considerations of climate justice, equity, resilience and the impacts of climate change (Reitzenstein et al., 2018). Just transition needs to be reconciled with considerations around climate justice, equity, resilience and the impacts of climate change (Reitzenstein et al., 2018). With this analysis, we seek to contribute to a better and more comprehensive understanding of the key factors underpinning successful just transition education initiatives.

Education in the Context of Just Transition

As Smyth observes, from the earliest forms of human learning, education has been about developing the skills and knowledge necessary for survival, cooperation and living in balance with the environment. Over time, however, as societies grew and technologies advanced, the relationship between people and nature shifted toward control and exploitation (Smyth, 2006). This disconnection contributed to environmental crises that, by the late twentieth century, made education for the environment an urgent global concern. Initiatives, such as the Belgrade Charter and the Tbilisi Declaration, recognized that education must go beyond technical knowledge to foster values, awareness and practices preparing individuals to act responsibly within their ecological systems (Smyth, 2006).

In the early 2000s, a range of international initiatives brought increased visibility to the broader role of learning. Campaigns such as *Education for All*, the *United Nations Literacy Decade* and the *Millennium Development Goals* framed education primarily in terms of access, basic skills and gender equality (Orlović–Lovren, 2012). However, the specific contribution of adult education began to

be more clearly recognized with the launch of the UN *Decade of Education for Sustainable Development* (2005–2014) (UNESCO, 2009, as cited in Orlović–Lovren, 2012). While these campaigns have been criticized for their narrow neoliberal conception of adult education (Struckman, 2018, as cited in Elfert, 2019) and their limited attention to structural injustices (Ireland, 2018, as cited in Elfert, 2019), this shift nonetheless points to a more open space in which adult education is understood not merely as a support mechanism for employability or basic literacy, but as a distinct field capable of engaging with complex ecological challenges.

These policy developments in adult education for sustainable development have enabled framing adult education within the context of just transition. While earlier initiatives focused on broad environmental awareness and lifelong learning (Orlović – Lovren, 2012), later documents, such as ILO's *Guidelines for a just transition towards environmentally sustainable economies and societies for all* (2015), provide a framework that links sustainability with fairness, inclusion and dignity at work (ILO, 2015). ILO's Guidelines (2015) include economical and labor concerns highlighting the economic role adult learning and education can play in supporting a fair and inclusive transition. For example, greening economies is seen in the framework not just as an environmental necessity, but also as an opportunity to foster growth, create new and better jobs, reduce poverty and strengthen social justice (ILO, 2015). At the same time, the just transition framework calls for coordinated action that respects human rights, addresses inequalities and embeds equity into policies so that environmental sustainability becomes a catalyst for decent work and poverty eradication, rather than a source of exclusion (ILO, 2015). In this way, it foregrounds both the economic and the humanistic dimensions of adult education within just transition.

Three important dimensions of adult education have been identified in the context of justice. First, when it comes to systematically disadvantaged groups, it is essential to consider the learners' broader living conditions and understand the role of education. As Medić and Milošević point out, for many adults living in poverty, education is deprioritized in the face of immediate existential concerns (Medić & Milošević, 2008). Designing educational programs, therefore, requires a holistic understanding of the learners' lives, as well as reliance on partnerships with social support systems to address the gaps preventing education from becoming a relevant and attainable goal. Social services must act as a coordinated safety net: no single service is sufficient on its own; only an integrated and interrelated system of support can provide the foundation for sustained participation in education (Medić et al., 2010). Collaboration across sectors – between education systems and the wider social infrastructure – is thus indispensable for ensur-

ing that adults from disadvantaged backgrounds are both able and motivated to engage in learning.

Another critical prerequisite is the perceived value of education. For those facing difficult living conditions, education must deliver immediate, tangible benefits, projected into the near future, rather than appear as a distant, uncertain goal (Medić & Milošević, 2008). Education programs must be designed to respond to the lived realities of the learners and demonstrate relevance in their day-to-day lives.

Finally, in the context of dominant skills-focused approaches that reduce education to short-term training and labor-market skills development, it is important to emphasize the role of critical thinking as a goal of education. If education is to contribute to justice, it must not rely on reproducing the system and its existing inequalities. As Freire notes, critical thinking goes beyond reproducing the past and understanding the present, as a way of thinking beyond the immediate confines of one's experience and entering into a dialogue with history, imagining a future that would not merely reproduce the present (Freire, as cited in Giroux, 2010). In Freire's view, education based on justice goes beyond the learner's current experiences and supports them in understanding the historical and present injustices shaping their lives, empowering them to imagine and take action toward a different future (Freire, 2017).

Society faces many challenges in promoting a just transition to a low-carbon economy, a transition that does not create or exacerbate injustices. Notably, just transition can only be attained with new educational approaches that revolve around critical thinking and supporting agency, as well as structural and systemic support addressing barriers to participation in education. Therefore, the required educational transformation must be grounded in the principles of critical pedagogy and the dimensions of justice (Mauger, 2023), understood as systemic support and structural change, if it is to avoid reproducing existing inequalities and generating new ones.

We argue that adult learning and education (ALE) in just transition is not only about preparing workers for new labor market demands, but also about enabling individuals to participate in shaping fair and sustainable societies. By fostering dialogue, critical awareness and democratic participation, ALE ensures that vulnerable groups are not excluded from active engagement in society, that communities are empowered to take part in decision-making in social, as well as environmental responsible actions. Without such support and role of ALE, the promise of a truly just transition risks remaining only a policy vision, rather than a lived reality.

Methodology Framework

The micro-meso-macro framework offers a useful lens for analyzing and addressing the complex barriers faced by disadvantaged adult learners. Without understanding individual circumstances (micro), local community dynamics (meso) and the wider societal and institutional context (macro), it is impossible to design truly inclusive educational interventions. As Medić and Milošević note, context gives meaning to a program: it determines whether even the best-designed education initiatives will succeed or fail. The quality of an education program cannot be evaluated separately from the socio-cultural and institutional environment in which it is embedded (Medić & Milošević, 2008).

Not much research has been conducted in the field of education for just transition. Therefore, our research is explorative in nature, aiming to provide insight into the characteristics of environmental education initiatives that focus on social justice.

With this objective in mind, we apply thematic analysis to examine 49 environmental education practices aimed at improving the position of systematically disadvantaged groups, primarily migrants, adults with low levels of formal education and women. These practices were collected within the framework of the JUST4ALL project, in which six national, regional and global civil society organizations compiled examples of good practice in adult education in the context of just transition. Our analysis seeks to identify the key characteristics of just transition education across the micro, meso, macro and mega levels.

Boeren defines the micro level as related to individual learner who is the central agent in the participation process, the meso level as encompassing the role of education and training providers, their structural components and the macro level as related to countries, their education systems and policies (Boeren, 2017, pp. 164–166). In Dafni Kek Foundation's publication, the micro level focuses on the course, content and methods applied by the trainers and the needs of the learners, the meso level refers to the community level, encompassing ALE organizations, providers, projects, supporters of engagement and moderators of networks, while the macro level encompasses policies and systems (Dafni Kek, 2022, pp. 39–40). Lima & Guimaraes further conceptualize this framework, adding the mega level. They define the micro level as concerning small groups and interactions among individuals, the meso level as encompassing organizations, the macro level as concerning the state and the mega level as concerning international and supranational organizations (Lima & Guimaraes, 2011, p. 12). Adding the mega level is valuable, as the contemporary globally present neoliberal approach to adult education places the burden of participation on the individual learner,

neglecting the structural inequalities and responsibilities of various national and international actors.

Based on these definitions, we will perceive the micro level as the one focusing on the learners and their needs and the education process (methods and content); the meso level as comprising organizations and their interactions through networks, projects, coalitions, etc.; the macro level as encompassing the states and their policies; and the mega level as focusing on the international arena and policymaking within it.

Applying an adapted micro-meso-macro framework, Medić and Milošević explore the barriers faced by adults with low levels of formal education who re-entered education later in life. These barriers include: personal challenges, such as low confidence and internalized stereotypes; family-related obstacles, such as caregiving responsibilities; microsocial barriers, such as negative perceptions of education in their communities; and macrosocial barriers, such as unadapted curricula, discriminatory attitudes among educators and lack of tailored support. Many of these barriers, particularly those operating at the macro level and often originating there, are rooted in structural inequality and cannot be addressed without systemic, intersectoral action. In the context of just transition, these barriers may manifest differently from those observed in formal education settings. Nevertheless, addressing them requires a coordinated systemic response. The micro-meso-macro-mega approach remains valuable, as it centers the learners' lived realities and enables analysis of comprehensive cross-sectoral solutions, contextualized in broader national and international systemic inequalities. Our research examines the aspects of just transition education across these levels, focusing not only on the barriers and challenges related to participation in education at the micro, meso and macro levels, but also on strengthening mechanisms for improving just transition education and addressing these barriers at all these levels.

Guided by these findings, we believe that understanding individual circumstances (micro level), dynamics between partners (meso level) and the wider societal and institutional context (macro and mega levels) is crucial for designing truly just educational interventions.

Thematic Analysis

Thematic analysis is a method used to identify, analyze and report patterns (themes) within data. It enables the organization and description of data, as well as the interpretation of key aspects of the research topic (Boyatzis, 1998, as cited

in Braun & Clarke, 2006). The outcome of thematic analysis consists of themes and the codes that constitute them. A theme captures a salient aspect of the data in relation to the research question and represents a patterned response or meaning across the dataset. Codes identify specific features of the data (themes) that refer to "the most basic segment, or element, of the raw data or information that can be assessed in a meaningful way regarding the phenomenon" (Boyatzis, 1998, p. 63, as cited in Braun & Clarke, 2006, p. 18).

Drawing on the analytical framework of micro, meso, macro and mega levels, our analysis focused on identifying themes present at all these levels. To provide a clear and systematic overview of the identified themes and their associated codes, we present the findings graphically in the form of a schematic representation (Figure 1).

Analysis

The objective of this paper was to apply thematic analysis to identify strengthening mechanisms and challenges of just transition adult education at the micro, meso, macro and mega levels, analyzing 49 best practices selected by national, European and global civil society organizations.

Micro Level

The micro level refers to learners and their perceptions of the educational context. We identified the following themes at this level: *Learners*, *Educational Approaches*, *Educational Aims*, *Needed Action and Individual Challenges*. The most frequent codes identified for the theme *Educational Aims* include: sustainability framework, environmental justice and green transition. As expected, the basis was sustainable, green, just, climate transition, but also adapting to European values and promoting active participation of learners in their immediate environment. The theme *Learners* is described mostly through codes that describe marginalized and disadvantaged groups, those most affected by climate change: women, the elderly, migrants, unemployed individuals and persons with disabilities. Other important codes regarding learners include professionals working with learners (volunteers, trainers, scholars, adult educators) and civil society (social workers, activists, policymakers, family members). We see an unbreakable connection between the micro – meso and macro levels: working with individuals

primarily to increase their competences as global citizens. The *Educational Approaches* theme is structured around five codes. First, discourse or the general theoretical approach in which the initiative is framed (formal learning, informal learning, novel forms of adult education, whole institution approach, hybrid approach). Second, methods capture how initiatives are organized and which activities (such as workshops, project-based learning, creative dance, group sessions, sustainable curricula and collaborative learning) are implemented. The third code concerns *aims*, defined as the objectives the initiatives seek to achieve, including soft-skills development, job readiness, strengthening local connections and protecting the rural environment. Fourth, *indicators of change* refer to measures used to assess whether these aims have been achieved; they include employment rates, safety measures, littering and pollution levels and access to healthcare. Finally, *results* denote the tangible outputs of the initiatives, including products, services or outcomes, such as clothing exchange schemes, environmentally friendly aprons, souvenirs, toolkits, books, articles, public debates and artworks.

The codes identified within the *Action* theme describe both what was concretely done – practice examples (eco-tourism, school mural painting, communal tree planting) and the factors that enabled these practices to produce tangible results. The practices include, for example, eco-tourism initiatives, school mural painting and communal tree planting and their key success factors (stakeholder engagement, involvement of active users of green spaces, empowerment of citizens to take action). . The initiatives were implemented either in schools or in broader communal spaces, targeting local communities. Empowering citizens to act emerged as the most frequent and significant success factor.

The Challenges theme is present at all levels. Importantly, examining how challenges manifest at different levels provides valuable insights for developing strategies to address them. At the micro level, there are *Individual Challenges* – cognitive and affective barriers, such as fear of not being able to understand the content, or feeling overwhelmed by discussions of climate change and its implications for everyday life and the future (as well as insufficient funding, lack of qualified tutors or lack of access to learning materials).

Meso Level

The meso level centers on partnerships and collaboration among various actors and sectors. Four key themes were identified at this level: Challenges, Actors Involved, Partnership Aims and Community Engagement. Within the *Com-*

munity Challenges theme, the identified codes include barriers originating at the macro level (political narratives and gender norms) that are addressed at the meso level and education participation barriers (housing and financial insecurity). Correspondingly, the theme *Partnership Aims* consists of three codes: addressing macro level barriers, reducing barriers to access education and mobilizing communities to engage with environmental issues. Efforts to identify and collaborate with partners willing to engage in politically sensitive topics and challenge traditional gender norms helped mitigate obstacles related to partnership formation. Barriers to educational access were addressed through intersectoral collaboration, which enabled a more comprehensive response to learners' diverse needs that limited participation in education. Community engagement was achieved through the use of public spaces as a way to support community action in the learners' immediate environments and through the application f artistic methods to challenge dominant narratives. Closely linked to partnership aims is the *Actors Involved* theme, which highlights the distinct roles played by different partners in advancing these aims. The key actors identified include researchers, environmental organizations, artists and local communities. These actors participated in different types of partnerships, such as scholarly and researcher networks, national and regional projects and collaboration with municipalities, social services, civil society, community centers and VET providers. Researchers contributed by identifying community needs and challenging dominant narratives, while collaboration between educational and non-educational organizations facilitated the removal of education participation barriers related to housing and financial constraints. *Community engagement* played an important role across practices, rendering just transition more relevant for learners by providing them with opportunities to work collectively on changing green public spaces. Public spaces functioned as sites for community learning about and participation in just transition. Participatory learning, learning through art and action research offered communities a way to practice change, such as through community tree planting and shared resource management. These creative partnerships were important in that they simultaneously provided immediate economic benefits for learners, making sustainability a more relevant issue for them.

The interaction between the meso and micro levels is evident, as partnerships and the actors involved influence the methods employed, the learners with access to education and the challenges they encounter. At the same time, partnerships address challenges originating at the macro level, such as political narratives

and gender norms. Although these challenges arise at the macro level, they are mediated and addressed at the meso level, shaping both the nature of partnerships and their aims.

Macro Level

At the macro level, *Advocacy* is a theme that emerges as a key mechanism for promoting green and digital skills, improving the quality of employment and influencing national policies toward systematic change (the most relevant codes include progressive policy shaping, systemic change and sustainable development advocacy). The analyzed practices also reveal that some *Governance* efforts focus on practical sustainable actions (the codes include tree planting, urban gardening and family-oriented green initiatives), reflecting the importance of empowering sustainable behavior through alignment with the learners' needs and living realities. This could be attributed to the fact that the practices originate from civil society organizations, which tend to endorse the connection between governance and learners. Across countries, strong alignment is evident amongst *National Policies*. This theme has a strongest presence on the macro level. Prevailing codes emphasize equality, social justice, active citizenship and community participation. Even though employability is one of the primary priorities of EU policies (Maksimović, 2011; Popović, 2014), the analyzed practices place a strong emphasis on active citizenship, typically treated as a secondary priority. The fact that this dimension is more prominent in the analyzed practices can be explained by the fact that they originate from civil society, which tend to prioritize more humanistic and justice-oriented dimensions of adult education. Similar alignment is visible in *policy recommendations*, which consistently call for stronger partnerships, clearer sustainability values and enhanced community involvement as means of reinforcing existing efforts. However, *Structural Challenges* remain pervasive; they include limited funding, institutional barriers, weak coordination and difficulties in the education sector. Despite these challenges, *Sustainability Practices* consistently emerge as a recurring theme in national policies, framed through a broad focus on institutional strengthening, social inclusion, economic resilience and environmental responsibility. The key codes include ethnic and gender equality, circular economy practices, policy and practice alignment, illustrating a shared commitment to building more sustainable and equitable systems.

Mega Level

At the mega level, the analysis highlights a unified global vision centered on embracing digital and green transition while ensuring equity, inclusion and visibility for all. The overarching goal is to create conditions where sustainability is promoted globally and across all levels: from governance and institutional structures to individual and community practices. The *Future Aims* theme covers the change requisite for successful transition (digital, economic, ecological actions and multi-level adaptation), human rights advocacy and worldwide promotion. The strong influence of *Global and EU Policies* is evident, with codes covering legislation, governance frameworks and funding mechanisms that support sustainable development (EU Green Deal, Just Transition Fund, DigiComp framework, etc.). The EU's regulatory and programmatic role is particularly prominent, as many of the analyzed countries either belong to the EU or align their strategies with its directives. Overall, the mega level findings emphasize focus on a globally coordinated approach to *Sustainability*, one that integrates technological advancement with environmental responsibility and social justice (the codes include socio-economic development, environmental sustainability and global change), ensuring that the green and digital transitions are not only efficient, but inclusive and fair as well. Most of the practices rely on Sustainable Development Goals (SDGs) and their presence is evident in the identified codes. To conclude, analysis at the mega level indicates that the promotion of sustainability must be global in scope and operate across multiple levels of action, from governance structures to individual practices and community actions – micro, meso and macro level key notes are therefore essential to achieve the aims articulated at the mega level.

Results

The thematic analysis revealed a certain pattern amongst themes at different levels. Micro, meso and macro levels are described through the *actors* involved (learners at the micro level, community at the meso level and stakeholders engaged in advocacy and governance at the macro level). Across all three levels, the analysis also identifies corresponding forms of *action*—various approaches to adult education at the micro level, public and community-based learning at the meso level and advocacy and policy change at the macro level—along with their respective *aims* (fostering green everyday life at the micro level, motivat-

ing communities and mitigating barriers at the meso level and promoting active citizenship and policy change at the macro level). *Challenges* likewise manifest at each level: *individual challenges* at the micro level (cognitive and affective barriers faced by learners); *community challenges* at the meso level (partnerships and participation in education); and *structural challenges* at the macro level (financing, institutional and coordination difficulties). The mega level shows a different structure of analysis, but it is dependent on all previously described themes at the micro, meso and macro levels. Alignment with the SDGs and a global shift towards sustainability cannot be realized either without change at the individual, community and national levels, or without addressing the challenges identified at each of these levels.

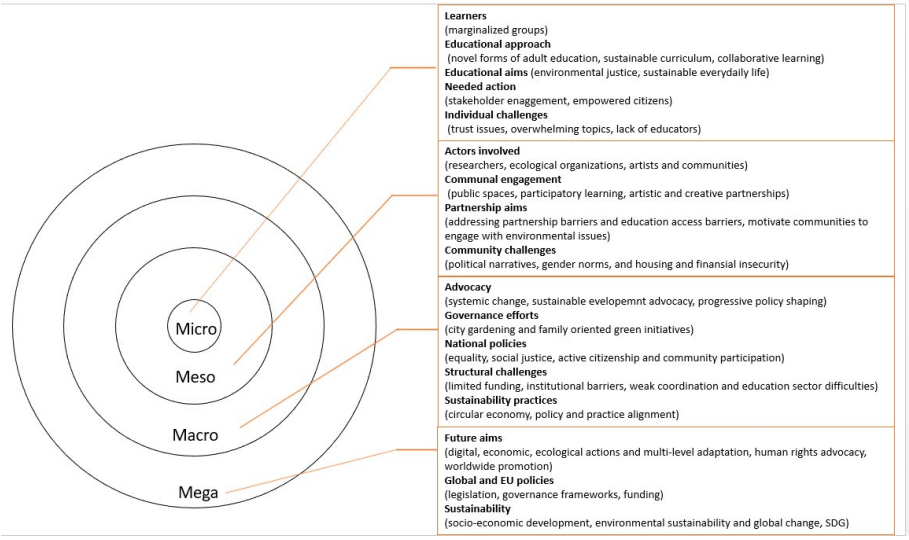

Figure 1. Main identified themes and codes at the micro, meso, macro and mega levels

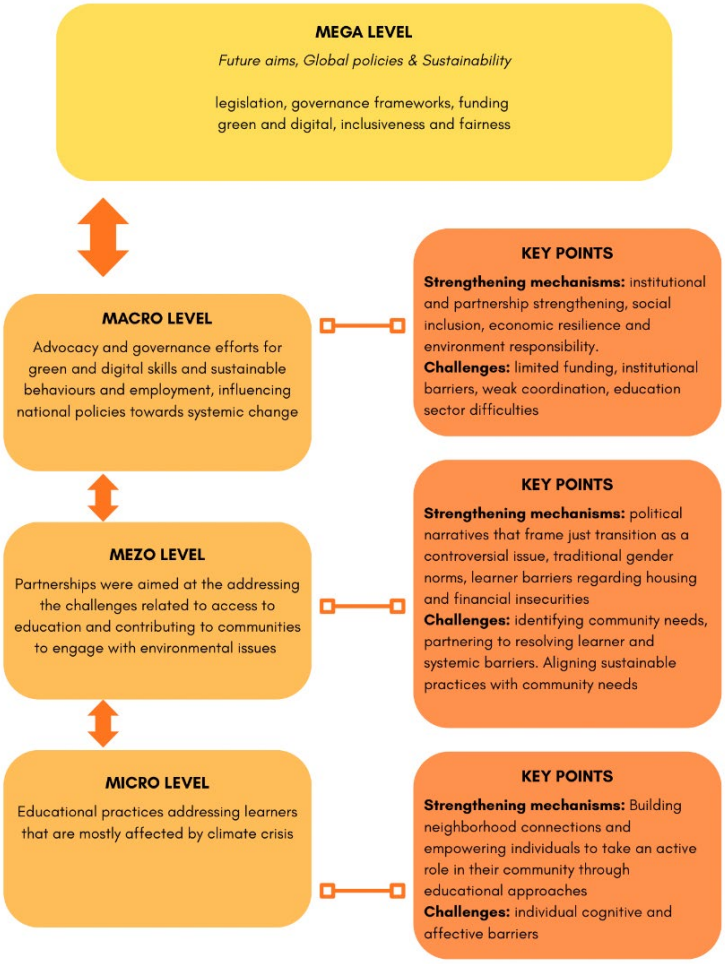

Figure 2. Key points; strengthening mechanisms and challenges at the micro, meso and macro levels

The following four main aspects were extracted at all levels – actors, actions, aims and challenges – through the primary thematic analysis, which consisted of identifying various themes and codes. These findings provided us with a deeper understanding of interaction between the key aspects at all levels. Figure 2 provides a concise overview of the micro, meso and macro levels, highlighting the strengthening mechanisms and challenges identified at each level on the basis of the thematic analysis. The interactions among these levels suggest that

successful transitions can be deliberately designed and guided from above (top-down), while also emerging organically from below (bottom-up). Crucially, the findings indicate that an effective just transition requires a combination of both approaches.

Discussion and Conclusion

This paper analyzed just transition practices using thematic analysis, guided by a micro–meso–macro–mega systems framework. The analysis identified key themes and codes, as well as the main challenges and strengthening mechanisms at each level (micro, meso, macro and mega) and mapped the interconnections among these levels.

As Reitzenstein et al. (2018) emphasize, dialogue with all stakeholders, together with clear political guidance and commitment, is essential for providing planning certainty, adequate social measures and a just transition for workers, affected communities and investors. Accordingly, in examining the key elements of successful just transition practices, this study considers all analytical levels – learners at the micro level, stakeholders at the meso level and political guidance at the macro level – as well as the interactions between them. Only through such a holistic approach can just transition be realized in a manner that is both socially just and economically viable. Climate ambition and just transition should therefore not be framed as an either/or choice. Rather, governments bear responsibility for shaping change by offering citizens greater certainty about the transition while protecting them from the most severe impacts of climate change (Reitzenstein et al.,2018).

The micro level describes educational practices addressing learners who are most affected by the climate crisis. At this level, the emphasis is on individual learners – their cognitive and affective barriers such as fear of being unable to understand the content or feeling overwhelmed by discussions of the impacts of climate change on their everyday lives and futures. These constitute the key identified challenges. The main strengthening mechanisms include building trust between learners and educators, fostering neighborhood connections and empowering individuals to engage in their communities through educational approaches.

The meso level focuses on partnerships and the importance of community engagement. Partnership challenges addressed at this level include gender, controversial political narratives on just transition and the learners' housing and financial insecurity. Strengthening mechanisms include identifying community

needs and aligning sustainable practices with them, in order to address the learners' issues and secure their active participation. A direct connection to the micro level key points can be observed here.

The macro level focuses on green and digital advocacy and governance efforts influencing national policies towards systemic change. Structural challenges include limited funding and weak coordination among institutions responsible for building a system of educational support for just transition. Strengthening mechanisms aim at institutional and partnership strengthening.

The mega level interacts with all other levels and provides general future aims, global policies and sustainability actions of the system as a whole. Both the challenges and strengthening mechanisms at this level relate to legislation, governance frameworks and funding. The analysis reveals that strengthening mechanisms and challenges identified at the micro, meso and macro levels are reflected in inclusive green actions at the mega level.

In conclusion, there is no perfect blueprint for a just transition that can be applied across sectors and regions. Transitions are challenging and real-world processes of change will never be ideal. Early planning, stakeholder involvement and political and financial commitment can, however, significantly mitigate risks and create new opportunities.

In reality, green transitions are not driven by a single actor or narrative; rather, they converge, compete with and reinforce each other (Newell & Simms 2020, as cited in Pueyo & Leining, 2023). Transitions are therefore polycentric and multi-dimensional. Building alliances between these actors is central to move the transition forward (Pueyo & Leining, 2023).

Successful transitions can be designed and guided from above (top-down), but they can also emerge organically from below (bottom-up): an important conclusion is that a combination of both approaches is necessary.

Although this paper examines a limited number of practices, it seeks to conceptualize the importance of adult education as an emerging narrative in just transition and provide insight into the new practices that are arising in this field.

While policies tend to frame sustainability practices broadly, as seen at the macro level when discussing their impact on different practices (such as institutional strengthening, social inclusion, economic resilience and environmental responsibility), they nonetheless point to learning processes as necessary for achieving fair and effective transitions.

The findings suggest that adult education in civil society organizations is positioned as a supporting mechanism for enabling activism, awareness-building and individual and community engagement in sustainability-related changes.

This positioning reflects a more holistic understanding of adult education, extending beyond the preparation of adults for the labor market. Such a holistic approach is also evident in how barriers to participation are addressed. While the neoliberal approach shifts responsibility for participation to the individual, the practices analyzed here demonstrate how civil society organizations and their partners address contextual participation barriers at the meso and macro levels, with a view to making education accessible for different groups. Therefore, civil society organizations have the potential to position adult education for just transition in a more holistic and humanistic manner, countering the narrow neoliberal views of adult education.

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