



ALIGNING CLIMATE AMBITION AND WORKFORCE DEVELOPMENT IN SERBIA

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EXECUTIVE SUMMARY

Serbia has strengthened its climate policy framework through the adoption of the National Energy and Climate Plan (NECP), the Low Carbon Development Strategy (LCDS) and the updated Nationally Determined Contribution (NDC 3.0). These documents signal a progressive increase in mitigation ambition and a gradual alignment with European Union climate objectives, particularly in the energy sector. At the same time, Serbia's enhanced ambition remains explicitly conditional on access to international financial, technological and capacity building support, reflecting enduring structural and fiscal constraints that shape the country's transition pathway.

Against this backdrop, the report examines how Serbia's climate commitments translate into implications for skills development, employment and workforce preparedness. Using a mixed methods approach combining documentary analysis and qualitative evidence from stakeholder interviews, it assesses the extent to which human capital considerations are integrated into climate policy design and implementation, and whether existing education, labour market and skills governance systems are equipped to support a just and effective transition.

The analysis finds that, despite a more consolidated climate policy architecture, the workforce dimension of Serbia's transition remains weakly articulated and insufficiently operationalised. Human capital considerations are referenced across key strategic documents but are fragmented, unevenly developed and rarely translated into coordinated implementation mechanisms. Climate strategies continue to prioritise mitigation targets, governance arrangements and investment needs, while the implications for labour demand, skills requirements and workforce adjustment are addressed largely in general or declaratory terms.

Labour market and sectoral evidence points to a transition context characterised by limited short term adjustment despite increasing policy ambition. Employment in energy and mining remains relatively stable, wage levels in carbon intensive subsectors are significantly above the national average, and firms largely expect workforce levels to remain unchanged in the near term. These features heighten the social sensitivity of future adjustment and underscore the importance of anticipatory workforce planning. At the same time, trade, production and investment trends reveal uneven adjustment dynamics across subsectors, suggesting differentiated transition pathways and skills needs that are not yet reflected in policy planning.

Finally, governance arrangements constrain the effective integration of workforce considerations into climate action. The formulation of NDC 3.0 and related reporting processes has been largely anchored in environmental governance structures, with limited substantive involvement of institutions responsible for education, employment and skills development. While the Just Energy Transition Plan adopted in 2025 represents a more inclusive approach and explicitly acknowledges workforce adjustment needs, it remains weakly embedded within the broader climate policy framework and is not yet supported by clear implementation, monitoring and financing arrangements. Overall, the findings point to a persistent gap between climate ambition and the preparedness of skills and labour market systems to support Serbia's transition objectives.

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1. INTRODUCTION AND SCOPE

1.1 Purpose of the report

Climate action has reached a critical juncture, driven not only by escalating climate risks but also by concerns relating to air pollution, energy security, economic competitiveness and the requirements associated with European Union (EU) accession. Against this backdrop, this report examines how the Republic of Serbia intends to operationalise its ambitious decarbonisation commitments. Particular emphasis is placed on the workforce dimension of the transition, assessing how just transition principles, strengthened skills intelligence and targeted reforms in education and training systems can enhance preparedness and support inclusive, sustainable economic transformation.

1.2 Structure of the report

This report is structured as follows:

- [Section 2](#) explains the role of NDCs under the Paris Agreement and summarises Serbia's NDC 3.0, including its level of ambition in a regional perspective;
- [Section 3](#) reviews key relevant policies and assesses their implications for human capital development, including skills, education and employment;
- [Section 4](#) outlines the methodology and stakeholder engagement underpinning the analysis;
- [Section 5](#) presents findings from interviews, highlighting perceived challenges and priorities for workforce readiness and coordination;
- [Section 6](#) discusses the main gaps and opportunities for better aligning climate ambition with skills and labour-market systems;
- [Section 7](#) concludes with concise policy pointers;
- the [annex](#) provides supporting materials and references.

2. METHODOLOGY AND STAKEHOLDER ENGAGEMENT

2.1 Methodological approach

This report adopts a mixed-methods approach combining documentary analysis, stakeholder consultations and targeted textual analysis to assess the integration of climate objectives and human capital considerations in Serbia's transition pathway. The objective is to provide a robust and policy-relevant assessment of both strategic intent and implementation capacity.

First, a comprehensive desk review was conducted covering national and sectoral policy documents, including climate strategies, education and training frameworks, labour market policies and skills foresight exercises. This review was complemented by relevant statistical data, academic literature and analytical reports. It provided an overview of the institutional, regulatory and policy landscape governing climate action and workforce development and enabled an assessment to be made of the extent to which existing frameworks are aligned with the objectives of NDC 3.0.

Second, qualitative data were collected through semi-structured interviews with eight key national stakeholders, which explored perceptions of climate ambition, implementation challenges, institutional coordination, skills needs and workforce readiness. This component provided insights into how policies are interpreted and implemented in practice, as well as into constraints that are not always visible in formal policy documents. The interview data were analysed thematically to identify common patterns and divergences across stakeholder groups. These included a representative from three government ministries (the Ministry of Environmental Protection; the Ministry of Labour, Employment, Veteran and Social Policy; and the Ministry of Agriculture, Forestry and Water Management), three academic and civil society organisations (the University of Belgrade Faculty of Mechanical Engineering; the University of Belgrade Faculty of Technology and Metallurgy; and the Renewables and Environmental Regulatory Institute) and two social partner organisations (the Chamber of Commerce and Industry of Serbia and the National Alliance for Local Economic Development).

Third, a targeted text analysis of the NDC 3.0 was conducted to identify where and how human capital dimensions (skills, education and training, employment, inclusion and just transition) are articulated in the document. The NDC text was converted into a searchable file and analysed using a structured keyword protocol grouped into thematic clusters (e.g. skills/training; jobs/employment; inclusion/social protection; stakeholders/social dialogue). For each cluster, we recorded keyword occurrences and reviewed concordance lines (keyword-in-context excerpts) using AntConc to check meaning and distinguish general statements from operational content. This corpus-assisted approach follows established corpus-assisted discourse study methods in which corpus tools support (but do not replace) qualitative interpretation of policy texts (Baker, 2006; Partington et al., 2013; Taylor and Marchi, 2018). The resulting evidence was then mapped to the relevant NDC sections (targets, measures, governance and implementation arrangements) to clarify how workforce considerations are framed and whether they are linked to delivery mechanisms.

Findings from these three sources were systematically compared and triangulated. This approach allows for a more comprehensive understanding of the relationship between policy commitments, institutional arrangements and implementation realities, strengthening the overall validity of the analysis.

2.2 Limitations

This study was conducted within practical constraints related primarily to time and resource availability, which shaped the division of labour between the ETF and locally recruited experts. In-country data collection and stakeholder interviews were conducted in person and carried out by

national experts rather than ETF staff. As a result, ETF engagement relied on documented outputs, interview summaries and debriefings, which limited opportunities for direct observation and for extended, iterative exchanges with stakeholders beyond the structured interview setting.

These constraints were mitigated by using experienced country experts with strong contextual knowledge and by systematically triangulating evidence. Information obtained from stakeholder interviews was cross-verified against policy documents, statistical data and analytical sources, allowing for consistency checks and validation across qualitative and quantitative inputs. This approach strengthened the robustness of the findings despite the indirect nature of ETF field engagement.

The eight stakeholders interviewed were selected to capture key institutional perspectives across government, social partners and international organisations. While this sample provided informed and relevant insights, it represents only a subset of the broader ecosystem of actors involved in climate action and human capital development. Consequently, the findings should be interpreted as indicative rather than exhaustive, reflecting dominant institutional dynamics and policy orientations rather than the full diversity of stakeholder views.

3. NATIONAL CLIMATE COMMITMENTS: WHAT THE NDCS SAY AND WHY THEY MATTER

3.1 Why NDCs matter

Under the United Nations Framework Convention on Climate Change (UNFCCC), commitments to reduce greenhouse gas (GHG) emissions are articulated through Nationally Determined Contributions (NDCs), which are updated on a five-year cycle and which, since 2024, have been supported by Biennial Transparency Reports. While NDCs are formally centred on mitigation and adaptation, they have progressively evolved into broader instruments of sustainable development, integrating environmental, economic and social objectives. The current NDC cycle (NDC 3.0) reflects this evolution by placing stronger emphasis on long-term transformation pathways aligned with the 1.5°C temperature objective (UNFCCC, 2024).

NDCs matter for skills, jobs and systems planning because they translate climate ambition into forward looking sectoral trajectories that shape future labour demand, influence public and private investment decisions and provide a strategic reference point for aligning education, training and employment policies with decarbonisation and adaptation objectives (UNFCCC, 2024). By signalling anticipated structural shifts in production systems and technologies, NDCs create expectations about emerging occupations and competencies, thereby offering an institutional anchor for human capital development and workforce planning (ILO, 2025).

By articulating mitigation and adaptation priorities across sectors, NDCs can function as coordination devices for skills anticipation, enabling labour market and educational institutions to plan reskilling and upskilling interventions ahead of technological and industrial change, thereby reducing skills mismatches and transition frictions (ILO, 2017; Cedefop, 2018). When explicitly grounded in just transition principles, NDCs further link climate ambition to employment strategies, social protection and inclusive growth, positioning climate policy as a potential driver of decent work rather than a source of labour market disruption (Glynn et al., 2020). However, this coordinating function is not automatic: where climate targets are weakly embedded in educational, labour market and skills governance frameworks, NDCs remain largely declaratory, with limited capacity to support policy coherence or effective socioeconomic transformation.

3.2 Overview of Serbia's NDC

As a Party to the UNFCCC, Serbia first articulated its mitigation commitment through its initial NDC submitted in 2015, which pledged a 9.8 % reduction in greenhouse gas (GHG) emissions by 2030 compared to 1990 levels. This initial commitment reflected an early stage of climate policy development and preceded the establishment of a more comprehensive national climate governance framework (Government of Serbia, 2015).

Because these commitments were developed at different points in time and use different reference years (and, in later submissions, exclude LULUCF), their targets are not directly comparable; taken together, however, they show a clear trajectory of progressively higher ambition.

Serbia's second NDC (NDC 2.0), submitted in 2022, marked a significant increase in ambition. It committed to a 13.2 % reduction in GHG emissions by 2030 compared to 2010 levels, equivalent to a 33.3 % reduction relative to 1990 levels, excluding land use, land use change and forestry (LULUCF). While this represented a notable strengthening of mitigation ambition, the underlying assumptions regarding policies and measures remained largely unchanged from the first NDC, indicating continuity in the policy approach rather than a shift towards structural transformation (Government of Serbia, 2022).

The most recent submission, NDC 3.0, further increases Serbia's mitigation ambition by committing to a 40.1 % reduction in GHG emissions by 2035 compared to 1990 levels, again excluding LULUCF (Government of Serbia, 2025a). For the first time, this commitment is formulated as an explicitly conditional, economy-wide mitigation target, with achievement dependent on the availability of adequate financial resources to support the implementation of just transition and energy transition measures. This represents an important evolution in Serbia's climate policy framing, acknowledging both implementation constraints and the distributional implications of decarbonisation.

The discourse analysis of the Serbian NDC presents a climate policy narrative in which human capital plays a limited explicit role. The few references that do appear tend to be high level, descriptive, or disconnected from operational climate measures. This does not imply an absence of related policies elsewhere in the national framework but rather indicates that such dimensions are not prominently articulated in the submitted NDC text.

According to NDC 3.0, the conditional mitigation target is aligned with the National Energy and Climate Plan (NECP) for the period up to 2030, with a long-term vision extending to 2050. The NECP was adopted following a public consultation process and supported by two multisectoral working groups involving representatives from relevant ministries, public and private enterprises, civil society organisations and international partners (Government of Serbia, 2024b). The NDC documentation further indicates that, in both NDC 2.0 and NDC 3.0, mitigation targets were identified with consideration of costs and broader social, economic and environmental impacts, primarily through analytical work undertaken in the context of the NECP and the Low Carbon Development Strategy (LCDS).

The NECP establishes an overall emissions reduction target of 40.3 % by 2030 compared to 1990 levels, including LULUCF, but does not define indicative targets for 2035. Among the policies and measures identified to achieve these objectives, the NECP recognises the importance of behavioural change, including through education, training and awareness-raising initiatives, as well as the implementation and monitoring of just transition measures and a related Action Plan. However, the progress indicators associated with these measures are not consistently linked to concrete actions or measurable outputs, which limits their operational clarity and their usefulness for monitoring implementation (Government of Serbia, 2024b).

Both the NDCs and the NECP are grounded in the Low Carbon Development Strategy, adopted in 2023. The LCDS sets a general objective of reducing GHG emissions (excluding LULUCF) by 33.3 % by 2030 compared to 1990 levels and outlines longer-term pathways for aligning Serbia's emissions trajectory with that of the European Union in an affordable and socially fair manner (Government of Serbia, 2023). Beyond mitigation, the LCDS explicitly promotes the transition towards a climate-neutral economy and a climate-resilient society. Nevertheless, there is currently no systematic public reporting on progress towards the achievement of the LCDS objectives, nor has implementation of the NECP policies and measures been assessed in Serbia's first Biennial Transparency Report (Government of Serbia, 2024).

3.3 Regional perspective

Serbia's NDC 3.0 commits to an economy-wide greenhouse gas emissions reduction of 40.1 % by 2035 compared to 1990 levels, with this level of ambition explicitly conditioned on the availability of international financial, technological and capacity-building support (Republic of Serbia, 2025). In comparative perspective, this places Serbia among the more ambitious Western Balkan countries in terms of long-term mitigation targets, particularly relative to Bosnia and Herzegovina and North Macedonia, whose updated NDCs either articulate lower economy-wide reductions or provide less explicit differentiation between unconditional and conditional ambition (CAN Europe, 2025). While Montenegro signals comparatively strong mitigation intent, its smaller and less carbon-intensive economic structure implies lower absolute decarbonisation requirements than Serbia's energy- and industry-intensive economy (World Bank, 2024). Compared with the EU, whose NDC commits to a legally binding and largely unconditional net reduction of at least 55 % in greenhouse gas emissions

by 2030 and an indicative 66–72.5 % reduction by 2035, Serbia's mitigation pathway remains both less ambitious in absolute terms and more strongly dependent on external support, reflecting differences in economic structure, fiscal capacity and access to climate finance (Council of the EU, 2025). Across the region, including Serbia, conditionality remains a defining feature of enhanced ambition, and a significant share of additional emissions reductions in Western Balkan NDCs is contingent on external support, while links between conditional mitigation pathways and workforce, skills development and just transition measures remain only partially developed (ETF, 2023; World Bank, 2024).

4. CLIMATE POLICIES AND INDUSTRIAL GOALS: IMPLICATIONS FOR HUMAN CAPITAL

4.1 Key national climate policies and governance

Over the past two years, Serbia has consolidated its national climate policy framework by adopting several core strategic documents, notably the National Energy and Climate Plan (NECP), the Low Carbon Development Strategy (LCDS) and updating its Nationally Determined Contribution (NDC 3.0). Together, these documents articulate Serbia's commitment to greenhouse gas (GHG) emissions reduction and economy-wide decarbonisation, with a particular focus on the energy sector. In addition to mitigation objectives, they also refer to broader socioeconomic goals, including employment creation, improved competitiveness and the principles of a just transition. Relevant public institutions and stakeholders were involved at different stages of the development of these policy documents, although to varying degrees and with differing mandates.

Complementing this framework, Serbia adopted the Just Energy Transition Plan until 2030, which places explicit emphasis on education and training, labour market adjustment, enterprise support, lifelong learning, vocational education and training and tertiary education as enabling factors for the green transition. The development of the Plan involved a range of stakeholders; however, its obligatory status and legal enforceability remain unclear, raising questions regarding its role within the broader policy hierarchy and its capacity to steer long-term implementation.

At international and regional level, Serbia signed the Sofia Declaration on the Green Agenda for the Western Balkans in November 2020, committing to align with the European Union's objective of achieving climate neutrality by 2050 through the mainstreaming of climate policy and reforms in the energy and transport sectors. To date, however, the 2050 climate neutrality target has not been transposed into national legislation and the Climate Change Law is scheduled for revision in 2027 (RCC, 2024). While formal steps towards implementation of the Green Agenda have been reported, available progress indicators, including total and sectoral GHG emissions, point to limited measurable change. Moreover, although the Sofia Declaration foresees economy specific and regional awareness-raising plans across all five pillars, including the integration of Green Agenda objectives into education system reforms, practical developments in these areas remain limited at both national and regional levels.

Independent monitoring has highlighted persistent governance and implementation challenges. The 10th Shadow Report on Chapter 27 by the Coalition 27 notes that implementation of the Green Agenda at regional, national and local levels has been uneven and characterised by weak planning, limited ambition and non-transparent processes, with reform timelines frequently postponed to the end of planning cycles (Coalition 27, 2023).

From an institutional perspective, climate governance in Serbia is primarily anchored in the Ministry of Environmental Protection, which holds overall responsibility for climate change policy, while the Ministry of Mining and Energy leads the planning and implementation of energy-related strategies, including the NECP and the Just Transition Plan; the latter further assigns responsibilities to ministries responsible for labour and education, notably in relation to the preparation of a National Strategic Plan for Green Skills, and identifies employers' organisations as relevant stakeholders in supporting implementation measures, including awareness-raising activities.

Intersectoral coordination is formally supported by the National Climate Change Council (NCCC), which was established in 2021 as a government advisory body and a platform for cooperation between central government institutions, academia, local self-governments and civil society organisations. In practice, however, the Council has met irregularly and has functioned primarily as an information exchange forum rather than as a strategic coordination body, with limited publicly available information on follow-up actions or the mainstreaming of climate objectives into sectoral policies (World Bank, 2024). In addition, the Just Transition Plan envisages the establishment of an

Interministerial Government Committee, a dedicated Just Transition Unit within the Ministry of Mining and Energy, and ad hoc working groups to coordinate and monitor implementation. To date, limited information is available regarding the operationalisation status of these mechanisms.

Beyond formal government structures, a range of non-state actors contribute to the climate and transition policy ecosystem through consultation, advocacy and implementation support. These include business and employer organisations, trade unions, civil society organisations and research institutions. Organisations such as the National Alliance for Local Economic Development and the Chamber of Commerce and Industry of Serbia have notably played a role in promoting public–private dialogue, articulating reform proposals and highlighting the need for education and skills development aligned with the green and digital transitions. Trade unions have also articulated positions on workers' rights and social dialogue in the context of the low-carbon transition. Higher education institutions and research bodies have contributed expertise to thematic working groups, notably during the preparation of the NECP. Overall, stakeholder involvement in climate-related policymaking has largely been through temporary working groups established for specific policy processes rather than through permanent, institutionalised coordination mechanisms.

4.2 Human capital development and climate commitments

At European level, the European Commission has consistently identified persistent gaps between education and training provision and labour market needs in Serbia, including in the context of the green and digital transitions (European Commission, 2023). This assessment is reflected in Serbia's Reform Agenda, which constitutes the core policy instrument underpinning the EU Growth Plan for the Western Balkans. The Reform Agenda identifies the energy sector, the green and digital transitions, human capital development and private sector competitiveness as interlinked priorities for reform and goes on to explicitly link access to substantial EU funding to the implementation of specified reforms and achievement of performance benchmarks.

This broader policy framework explicitly recognises the importance of a just transition. Implementation of a Just Transition Action Plan is identified as one of the closing benchmarks under Chapter 27 of the EU *acquis*, signalling the relevance of workforce adjustment, social protection and skills development in the context of climate and energy reforms. This emphasis is particularly relevant given the size, wage structure and relative employment stability of sectors exposed to the transition. As of the fourth quarter of 2024, employment in Serbia's energy and mining sector stood at approximately 85 925 workers, representing a slight year-on-year decline of 0.8 % (Statistical Office of the Republic of Serbia, 2024). Short-term labour market expectations point to limited employment dynamism: in the first quarter of 2025, 72 % of firms in the sector reported unchanged employment levels, while only 9.3 % anticipated employment growth in the second quarter (Serbian Chamber of Commerce, 2025a). Based on ETF country monitoring and harmonised labour force statistics, employment in Serbia's energy sector (NACE Rev.2, Section D) accounts for approximately 1.5–1.7 % of total employment, a proportion that is broadly in line with neighbouring Western Balkan economies and comparable to the EU average, reflecting the capital-intensive nature of the sector rather than country-specific structural divergence (European Training Foundation, 2026).

At the same time, wage levels in carbon-intensive segments of the economy remain significantly above the national average, increasing the social sensitivity of workforce transitions. In January 2025, average salaries in crude oil and natural gas exploitation were reported to be approximately 2.7 times higher than the national average, with nominal year-on-year growth exceeding 60 %. Other subsectors, including coal mining, metal ore extraction and oil derivatives production, also recorded wages well above the national mean (Statistical Office of the Republic of Serbia, 2025). These wage premiums imply that job losses or occupational shifts in transition-affected sectors could result in substantial income adjustments for workers, reinforcing the need for proactive reskilling, redeployment and income support measures as part of just transition planning.

In this context, Serbia adopted a Just Transition Plan for the energy sector in July 2025 (Government of Serbia, 2025b). Preparation of the Plan involved ministries responsible for education and labour,

alongside other public institutions and stakeholders, including the Ministry of Labour, Employment, Veteran and Social Policy, the National Employment Service, local self-governments, enterprises potentially affected by the transition, and civil society organisations. This process is widely regarded as an example of relatively inclusive stakeholder engagement in climate-related policymaking, but there are still limits to which representative workers' and employers' organisations can be systematically involved, as well as limits dictated by the clarity of implementation arrangements and the availability of dedicated financing.

By contrast, the formulation of Serbia's National Communications, Nationally Determined Contributions (NDCs) and Biennial Transparency Reports (BTRs) has been more narrowly anchored in environmental governance structures. The Ministry of Environmental Protection chairs the working groups responsible for these processes. In the case of NDC 3.0, the working group was primarily tasked with providing data and technical inputs and reviewing draft documents and did not include representatives of institutions responsible for education and labour, civil society organisations or local governments. Public consultation on NDC 3.0 was conducted through the broader NECP consultation process, without a dedicated consultation specific to workforce or employment implications. As a result, human capital considerations were only marginally reflected in the final NDC submission.

More broadly, despite the growing rhetorical recognition of green and just transition principles across strategic documents (including the Reform Agenda, NECP, NDC 3.0, LCDS and the first Biennial Transparency Report) human capital and behavioural change dimensions remain weakly embedded and insufficiently operationalised. This gap is notable given the ongoing structural pressures affecting energy- and resource-intensive activities. In early 2025, these sectors accounted for over 15 % of Serbia's total exports, despite a year-on-year decline in export value, while imports increased, resulting in a widening trade deficit (Statistical Office of the Republic of Serbia, 2025). Industrial production trends further point to uneven adjustment dynamics, with outputs rising in coal and metal ore extraction but declining in electricity generation and oil refining (Statistical Office of the Republic of Serbia, 2025).

The sectoral employment analysis underpinning the LCDS identifies mining, quarrying and electricity supply as sectors likely to experience net job losses because of the transition, while agriculture and forestry are projected to see net employment gains (Government of Serbia, 2024). However, these projections are not accompanied by a coherent set of coordinated, time-bound and adequately financed measures to support workforce transitions in vulnerable sectors or regions. Similarly, the Reform Agenda does not establish explicit operational links between just and green transition objectives and human capital development priorities.

Institutional and conceptual gaps further constrain the effective integration of workforce considerations into climate strategies. Serbia still lacks a formal definition of green jobs, despite the Employment Strategy for 2021–2026 calling for the adoption of such a definition to support job creation and statistical monitoring. The Employment Strategy itself is not aligned with green transition objectives, and there is no official system for tracking green employment outcomes (Tigran et al., 2025). The Strategy for the Development of Education in the Republic of Serbia 2030 acknowledges the implications of climate change for education but does not specify concrete actions, targets or implementation mechanisms relating to green skills.

The Just Energy Transition Plan until 2030 constitutes a partial exception, as it includes specific measures relating to education and worker reallocation, with particular emphasis on higher education and lifelong learning. One of its key proposed actions is the preparation of a National Strategic Plan for Green Skills, including an analysis of workforce structures, potential redundancies and local labour market needs, envisaged for implementation during the period 2027–2029. To date, however, this agenda remains at an early stage, with neither a clearly articulated strategic framework nor concrete implementation plans for the promotion and monitoring of green jobs, despite the scale of the employment, wage and productivity adjustments that Serbia's transition trajectory implies.

5. WHAT STAKEHOLDERS SAY: FINDINGS FROM THE INTERVIEWS

5.1 Perceptions of climate ambition and feasibility

Stakeholders consistently highlighted weaknesses in policy coordination and governance arrangements as a major constraint on the effective integration of climate objectives with economic, education and labour policies. While ministries responsible for education and labour were formally consulted during the preparation of climate strategies, including the NDC, their involvement was largely procedural and did not translate into substantive contributions to policy content. The composition of working groups was reported to depend heavily on the convening institution, with limited safeguards to ensure that participating representatives possessed the technical mandate or expertise required to address the cross-sectoral workforce implications of the transition.

In principle, existing intersectoral bodies are recognised as relevant coordination platforms; in practice, their role remains limited. The National Climate Change Council (NCCC) reestablished under the 2021 Law on Climate Change, functions primarily as an advisory forum chaired by the Ministry of Environmental Protection. Although its membership includes representatives from several ministries, academia, business organisations and civil society, stakeholders noted the absence of institutions directly responsible for labour market policy and employment services, notably the Ministry in charge of labour and the National Employment Service. As a result, labour market and workforce adjustment considerations are weakly reflected in climate-related deliberations.

Similar coordination gaps were identified across other advisory and social dialogue bodies. Institutions responsible for qualifications governance, education quality assurance and employment services operate largely in parallel to climate and energy policymaking structures, with limited systematic interaction. While social dialogue institutions formally cover issues relating to employment, training and environmental protection, climate and energy transition concerns are not addressed in a structured or sustained manner.

5.2 Skills, education and workforce readiness

Stakeholders broadly agreed that Serbia faces significant challenges in preparing its workforce for the green transition, particularly due to the absence of a coherent, system-wide approach to human capital development aligned with climate objectives. Although skills shortages and mismatches are widely perceived as a growing constraint in transition-relevant sectors, these assessments are not supported by robust, up-to-date national data or analytical frameworks. Climate and energy strategies, including the NDC, do not systematically define labour demand or skills requirements, while existing sectoral employment analyses rely on outdated inputs, which limits their usefulness for workforce planning.

Education and training systems were perceived to be insufficiently adapted to emerging needs for green skills across all levels: from early years to vocational training, higher education and adult learning. While isolated initiatives have emerged, such as the introduction of interdisciplinary academic programmes relating to climate change, the stakeholders emphasised that these remain fragmented and insufficient in scale. There is no comprehensive strategy guiding curriculum reform, teacher training or the systematic integration of green skills into education and training provision. This lack of strategic direction was seen as a key barrier to leveraging education systems as an enabler of the transition.

Workforce transition planning was identified as a critical gap. Stakeholders noted that the green transition is expected to affect a wide range of occupations beyond high-emission sectors, requiring substantial investment in reskilling and upskilling to support both occupational mobility and productivity

within existing jobs. While the Just Transition Plan acknowledges these challenges and foresees the development of a National Strategic Plan for Green Skills, its measures were widely perceived as preparatory, with unclear implementation arrangements, limited legal anchoring and insufficient clarity regarding financing. Concerns were also raised about the lack of a defined coal phase-out timeline, which constrains workers' and communities' ability to make informed transition decisions.

Finally, stakeholders pointed to persistent shortcomings in the consideration of inclusion and distributional aspects. Gender equality and the situation of disadvantaged groups are only marginally reflected in climate and skills policies and are rarely translated into targeted measures or monitoring frameworks. Overall, stakeholders viewed the NDC and related climate strategies as underutilised instruments for articulating workforce preparation needs, mobilising investment in education and training, and supporting a just and inclusive transition.

6. DISCUSSION: KEY GAPS IN ALIGNING CLIMATE AMBITION WITH HUMAN CAPITAL DEVELOPMENT

Serbia's climate policy framework has been significantly consolidated in recent years through the adoption of the NECP, the LCDS and the updated NDC 3.0. Together, these instruments articulate clearer mitigation objectives and signal gradual alignment with European Union climate goals, particularly in the energy sector. However, this consolidation has not been matched by a comparable strengthening of the human capital dimension of the transition. Workforce implications remain weakly articulated, unevenly integrated and insufficiently operationalised across climate-related strategies.

Skills intelligence and anticipation

A central gap concerns the evidence base needed to translate long-term decarbonisation trajectories into actionable workforce planning. Despite increasing climate ambition, short-term labour market adjustment remains limited: employment in energy and mining is relatively stable, firms largely expect workforce levels to remain unchanged and the wage premiums in carbon-intensive subsectors are substantial. These conditions point to a risk of delayed and potentially abrupt adjustment rather than gradual labour reallocation.

In this context, the absence of anticipatory skills intelligence increases the risk of social resistance and distributional tensions once transition pressures intensify. Climate strategies do not yet translate decarbonisation pathways into concrete assumptions about the timing, scale and nature of labour demand shifts. Skills anticipation and labour market intelligence systems are insufficiently developed to identify transition-related skills needs in a systematic and timely manner, while sectoral employment projections rely on outdated inputs and are weakly connected to recent trends in wages, production, trade and investment. This limits policymakers' and education providers' ability to distinguish between short-term stability and longer-term structural risk.

Responsiveness of education and training systems

Public administration capacity

Where education and training are referenced in climate strategies, they are primarily framed as capacity-building for climate governance (e.g. emissions trading systems and carbon accounting) rather than as instruments for large-scale workforce transformation. This narrow framing constrains the role of education and training systems in supporting occupational change and productivity adjustment within existing jobs. The absence of a formal definition of green jobs and a corresponding monitoring framework further weakens policy coherence and the targeting of employment and training measures.

Inclusion and participation challenges are amplified by the distributional profile of transition-exposed employment. High wage differentials in affected sectors raise the opportunity cost of occupational mobility and increase the social sensitivity of job losses, reinforcing the need for proactive reskilling, redeployment and income support measures. Yet skills and employment continue to be treated largely as enabling or accompanying factors rather than as core components of transition risk management.

Institutional fragmentation underpins many of these gaps. Climate governance remains primarily anchored in environmental and energy institutions, while education, labour market and skills governance structures operate largely in parallel. Although coordination bodies exist, workforce considerations have not been systematically mainstreamed into climate policy formulation. This is particularly evident in the NDC 3.0 process, which did not substantively involve institutions responsible for education and employment, contributing to the limited reflection of human capital dimensions in climate commitments.

Inclusion and participation gaps

The Just Energy Transition Plan adopted in 2025 represents a partial departure from this pattern by explicitly acknowledging workforce adjustment needs and foreseeing measures relating to education, worker reallocation and lifelong learning. However, it remains weakly embedded within the broader climate policy framework and is not yet supported by clear implementation, financing or monitoring arrangements, which limits its transformative potential.

One further constraint is the persistent financing gap in workforce preparation for the green transition. Climate strategies do not systematically assess or cost the human capital investments required to support reskilling, upskilling and labour market adjustment. As a result, interventions remain fragmented and project-based, and links between climate ambition, workforce needs and financing strategies remain weak. Without clearer prioritisation and costing of human capital measures, education and labour market systems are unlikely to be adequately prepared to support Serbia's transition objectives.

7. POLICY POINTERS

7.1 Embed skills governance within climate and energy decision-making

Serbia's climate and energy policy architecture would benefit from formally embedding skills and VET governance within climate and energy decision-making structures, rather than treating skills as ancillary enablers. This implies stable institutional interfaces between: (i) climate and energy governance (NECP/NDC implementation structures and the Just Energy Transition Plan) and (ii) skills governance (Ministry of Education, Agency for Qualifications, Office for Dual Education and NQFS, National Employment Service and relevant quality assurance bodies).

Concrete steps to operationalise this integration include:

- Formalise participation of education, employment and qualifications institutions in climate/energy coordination bodies, with clear mandates and responsibilities.
- Move coordination from information-sharing to delivery by establishing routines for: agenda setting, decision-logging, follow-up actions and periodic public reporting on implementation.
- Use sector partnership mechanisms more systematically (e.g. sector skills councils) to translate transition-related investment plans into: updated qualification standards, curriculum revisions and training offers; strengthen private sector representation and clarify SSC deliverables.

7.2 Align skills anticipation and labour market intelligence with climate priorities

A central measure is to strengthen labour market intelligence and skills anticipation so that climate ambition is translated into actionable workforce planning. Evidence and stakeholder input point to a persistent gap between reform intentions and the availability of reliable data on implementation results, particularly for VET learner outcomes.

Priority actions include:

- establishing an outcome-focused monitoring system for VET, with agreed indicators and data owners, covering as a minimum: completion, progression, employment outcomes and transitions to further learning;
- strengthening measurement of learning outcomes, including through system level assessment reforms where feasible (and defining interim solutions if major reforms are delayed), so that VET performance can be tracked beyond inputs and activities;
- linking skills anticipation to delivery decisions (qualification standards, curriculum updates, provider accreditation and funding for training) and ensuring that findings are used in policy cycles rather than remaining stand-alone analyses;
- increasing the transparency and visibility of monitoring activity so that stakeholders can reflect on the results and their implications for learners' pathways and adjust measures accordingly.

7.3 Adapt learning programmes, delivery capacity and work-based learning in transition-relevant sectors

Education and training systems should be adapted to support transition-relevant skills development at scale across IVET, higher (applied/dual) education and adult learning. Priorities should shift from isolated initiatives to a delivery approach that ensures: (i) curriculum responsiveness, (ii) teaching and training capacity and (iii) credible work-based learning (WBL) with quality assurance and outcome tracking.

Priority actions include:

- introducing monitoring practices that track both school-based and work-based learning, including: placement availability, duration/quality, learner experience, employer feedback, and assessment of practical skills;
- increasing company involvement in WBL for both secondary and higher education students, including support for in company instructors/mentors and structured feedback loops between employers and providers; strengthen teacher/trainer and instructor capacity, tracking not only participation in CPD but also coverage in priority sectors and the impact on teaching/training practices;
- using strengthened SSCs (or a dedicated energy/transition skills platform) to validate curricula, support employer engagement and keep provision aligned with evolving sector demand.

7.4 Integrate workforce considerations across government

Workforce considerations should be treated as a cross-government implementation requirement rather than as a sectoral add on. Stakeholder feedback points to a need to streamline reform processes, reduce duplication and improve cross-ministry coordination so that reforms translate into measurable outcomes for learners and employers. The Serbian Reform and Growth Plan offers an opportunity to reinforce such cross-government coordination by anchoring workforce measures within a broader reform and investment framework.

Actions to make cross-government implementation more effective include:

- clarifying the sequencing of reform processes (e.g. qualification standards updates, provider accreditation, RPL, Youth Guarantee training offers) and aligning planning cycles across institutions;
- strengthening interagency delivery chains linking: qualification standards → curricula → provider capacity → WBL placements → assessment → graduate tracking;
- ensuring that public employment services and ALMP instruments are connected to training supply, especially in the context of Youth Guarantee implementation and scale-up;
- improving the visibility of results and decisions (what is being implemented, by whom and with what outcomes) in order to widen engagement and support continuous improvement.

7.5 Embed inclusion and just transition considerations in workforce planning for the green transition

Inclusion should move from general recognition to operational implementation through targeted measures and monitoring. Flexible pathways (including adult learning and non-formal VET) need to be expanded to support those at risk of exclusion and to enable occupational mobility as transition pressures increase.

Actions include:

- using Youth Guarantee rollout as an inclusion accelerator, ensuring that education/training offers are real, funded and accessible in pilot territories and that the lessons learned there inform national scale up;
- expanding and diversifying non-formal VET/adult education providers and programmes, addressing constraints such as limited territorial coverage of recognised providers and insufficient supply of accredited programmes aligned with labour market demand;
- strengthening recognition of prior learning (RPL) to shorten reskilling pathways for adults changing occupations and workers transitioning from declining subsectors;
- strengthening guidance and outreach so that potential beneficiaries understand the available pathways and labour market value of training; and so that employers can better navigate training options.

7.6 Embed skills and workforce planning within NDC implementation and financing

Skills and workforce planning should be embedded in implementation frameworks and linked to financing strategies. A recurring challenge is that measures exist but implementation tracking and outcome evidence are insufficient to steer reforms and investments.

Priority actions include:

- developing costed, time-bound implementation plans for workforce measures (curricula updates, teacher/instructor development, WBL expansion, adult learning supply, RPL), with named responsible institutions and annual milestones;
- creating a monitoring framework that tracks delivery and outcomes, including graduate outcomes and WBL quality; publishing the results to support accountability and course correction;
- using monitoring outputs to steer financing and reform sequencing; scaling what works and redesigning what does not;
- linking workforce measures to relevant financing vehicles (including EU-related reform and growth instruments where applicable) to strengthen coherence between climate ambition and human capital investments.

ANNEX

Interview guide

Topic	Question
Policy and planning	Are ministries responsible for education, vocational training, skills development and employment actively involved in NDC development (not referring to capacity-building for assessing and formulating CC strategy, but regarding employment needs and skills in new and existing jobs)? If yes, which ones and how? How do the NDC commitments align with national employment and social protection strategies (including informal workers) and education/VET policies (including non-formal types)? Do mitigation/adaptation strategies come with a skills development component?
Coordination and social dialogue	Which coordination mechanisms are in place (to link CC with economic, employment and education policies)? And in NDC in particular? How does the government engage with other stakeholders? Who are the key government entities in the development of the NDC? Are social partners involved and how (major industrial/private sector players, employer/business/sectoral organisations, representatives of SMEs, trade unions, NGOs, representatives of informal workers)?
Data and info	What are the data gaps and requirements for evaluating and monitoring progress relating to jobs and skills for transition? Which institutions/systems are in charge of employment development and skill needs identification? Have assessments been conducted or are they planned to anticipate the skills needed for green jobs, including upskilling and reskilling requirements? If so, do these use quantitative and/or qualitative approaches? What mechanisms or instruments exist to track the impact of decarbonisation policies on employment and skills development?
Jobs and skill needs	What is the current situation in terms of the availability of a trained workforce (in priority sectors)? What policies, programmes or strategic frameworks exist (or are planned) to support workers and small businesses in the green transition? What groups/jobs/occupations need reskilling/upskilling? Which employment shifts will occur, which jobs/skills will become obsolete and which new ones will emerge? What are the skill needs and skills shortages that act as barriers to implementing climate targets (priority sectors)? What are the retraining and upskilling needs? Are there (criteria) for 'green' competence standards in new/existing jobs?
Education and VET	What approaches are currently being used (nationally, regionally and/or locally) to develop skills and competencies? What is the impact of education and VET on employment (adequacy)? Has an evaluation been conducted of the capacity of the existing education and training system to support a just transition? If so, what are the key challenges and barriers that it faces in providing skill development for new and existing jobs? What levels are considered critical (secondary, TVET, higher) and types (general/formal; apprenticeships and practical work; short-flexible courses; lifelong learning)? What are the considerations and criteria for curricula in education/VET for transition-relevant training and skills?

Topic	Question
Finance and investment	Are there any social programmes/funding in place to cushion the negative employment effect and support reskilling/upgrading? If so, how are these delivered and funded? If so, has an evaluation been done on their results (how many shifted jobs, found a new job, stayed in their old job, etc.)? Are there strategies in place to secure international and/or domestic funding for education and skills development relating to climate action?
Inclusivity	To what extent are gender aspects and social inclusion aspects (disadvantaged groups, minorities, youth, rural) taken into account in formulating (mitigation/adaptation) measures and related skills development?
NDC 3.0	What elements of the employment and skills transition should be in the NDC, in your opinion? One, more or all of the following? ■ references to reskilling or upskilling programmes for workers in sectors negatively affected by climate policies (yes/no), ■ strategies/system for identifying and anticipating evolving green job requirements, skills and needs (yes/no), ■ integration of human capital and skills component as a separate component in NDC or as entries in sections describing (each of) the mitigation and adaptation measures? (yes/no), ■ coordination among line ministries – such as education, employment, environment (CC) and economy (and sectors) – along with involvement of and consultation with social partners (yes/no), ■ job development and skills training of specific groups (women, youth, disadvantaged, etc.) (yes/no), ■ investment and financing needs for transition-relevant education and training (yes/no).

ABBREVIATIONS

ALMP	Active labour market policy
AntConc	Concordance software for corpus analysis
BTR	Biennial transparency report
CAN Europe	Climate Action Network Europe
CBAM	Carbon Border Adjustment Mechanism
CC	Climate change
CCIS	Chamber of Commerce and Industry of Serbia
Cedefop	European Centre for the Development of Vocational Training
COP30	30th Conference of the Parties
CPD	Continuing professional development
ETF	European Training Foundation
EU	European Union
FDI	Foreign direct investment
GARI	Report on the Implementation of the Green Agenda for the Western Balkans Action Plan
GHG	Greenhouse gas
GoS	Government of Serbia
ILO	International Labour Organization
IVET	Initial vocational education and training
LCDS	Low Carbon Development Strategy
LFS	Labour Force Survey
LULUCF	Land use, land use change and forestry

MRV	Monitoring, reporting and verification
NCCC	National Climate Change Committee
NALED	National Alliance for Local Economic Development
NDC	Nationally Determined Contribution
NECP	National Energy and Climate Plan
NGO	Non-governmental organisation
NQFS	National Qualifications Framework of Serbia
OECD	Organisation for Economic Co-operation and Development
PPMI	Public Policy and Management Institute
RCC	Regional Cooperation Council
RPL	Recognition of prior learning
RS	Republic of Serbia
SME	Small and medium-sized enterprise
SSC	Sector skills council
TVET	Technical and Vocational Education and Training
UNFCCC	United Nations Framework Convention on Climate Change
VET	Vocational education and training
WBL	Work-based learning
WB6	Western Balkans Six
WEF	World Economic Forum

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