

## *The just transition in Bulgaria – mission (im)possible*

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**Abstract.** In connection with the commitments under the EU Green Deal, Bulgaria is facing significant challenges in the strategic planning of the ecological transition and in selecting appropriate measures for the economic transformation of the most affected regions. The current analysis indicates that the country is experiencing delays in implementing the reforms and utilizing the investments co-financed by European funds, which could be detrimental to the sustainable development of the so-called coal regions. At this stage, achieving a just green transition appears to be impossible.

**Key words:** just transition, sustainable regional development, green deal, green economy.

### **Introduction**

The European Union's (EU) ambitious environmental targets for reducing greenhouse gas emissions by 2030 and achieving a climate-neutral European economy by 2050 present a number of challenges for key regions in Bulgaria, whose economic structures are based on coal mining and coal-fired power generation. The green transition in the regions of Stara Zagora, Kyustendil, and Pernik is set to be supported by the recently established EU Just Transition Fund (JTF), which is designed to assist the economic transformation of the affected regions. Approximately BGN 3 billion from the budget of the "Development of the Regions" 2021-2027 (RDP) will be allocated to finance the measures outlined in the Territorial Just Transition Plans (TJTP) for the three so-called coal regions. However, the implementation of the planned grant procedures under the JTF is significantly delayed, raising concerns about the feasibility of achieving the climate neutrality and just transition objectives.

It is imperative that a just transition for affected regions and industries be considered as

an essential component of the ecological transition. Investment in green technologies and innovation are pivotal components of the process of developing and achieving a successful transition to a sustainable regional economy. A just transition focuses on reducing emissions, developing renewable energy sources, and formulating climate change policies. The term "just transition" was first introduced in the United States to capture the efforts of labor unions to protect workers' interests in the face of environmental challenges. The term has gained significant traction in recent times, particularly following the Rio+20 conference, as evidenced by its inclusion in the Paris Agreement and its relevance to the energy transition (Lee & Baumgartner, 2020). The Paris Agreement includes an acceptance of the demands for a just transition of the workforce, decent work and quality job creation in accordance with national development priorities (UN, 2015). The United Nations Research Institute for Social Development (UNRISD) clearly articulates the need for fairness and equity to be integral to the transition to a low-carbon world (Just Tran-

sition Research Collaborative, 2018). The underlying idea is that environmental goals should not be achieved at the expense of job losses, and that the restructuring of economic and political systems should not exacerbate social inequalities while creating alternative employment opportunities free from discrimination, with democratic participation, social equity, the promotion and improvement of rights and working conditions.

### **The theoretical foundations of a just green transition**

The International Labor Organization (ILO) defines a “just transition” as promoting green economy in most fair and inclusive manner as much as possible for both workers, enterprises, and communities without leaving anyone behind and creating proper job opportunities (ILO, 2023). This definition is widely accepted by institutions and scholars. A just transition involves maximizing social and economic opportunities and creating favorable conditions for enterprises, workers, investors, and consumers. It also necessitates the anticipation of employment impacts of measures, the provision of social protection for job loss or change, skills development, the creation of more decent jobs, and the availability of social dialogue, including the right to organize and bargain collectively. Conversely, challenges and risks to the freedom of all concerned and their rights should be minimized.

The prevailing view of a just transition is that the process toward a green economy should be conducted in the most inclusive, objective, and impartial manner, with a strong focus on job creation. However, there is no shortage of different interpretations that argue that a just transition should ensure that the social pillar of ESG is incorporated into the climate actions of business and finance. Furthermore, these interpretations posit that transformation plans should be consistent with ILO principles (Curran et al., 2022). Other researchers highlight the necessity of combining the fundamental principles of justice, namely distributive, procedural, and restorative justice, in order to fully comprehend the concept (Wang & Lo, 2021).

In the context of the European Green Deal, the Sustainable Europe Investment Plan emphasizes the need for equity and the unifying aspect of the transition process, highlighting the

inequalities between countries, regions, and cities at the outset of the transition. It also draws attention to the most vulnerable and affected sectors and businesses undergoing structural changes, particularly regarding skills requirements and relative costs. In response, the EU has established the Just Transition Mechanism, which focuses on the regions and sectors most impacted by the transition, particularly those with the highest carbon consumption or the most workers in fossil fuel-dependent or carbon-intensive industries. The mechanism should help mitigate the social, economic, and environmental impacts, especially for workers affected by the transition, by consolidating budget expenditures to achieve regional climate and social goals (Regulation (EU) 2021/1056, 2021).

Financial support is contingent upon the promotion of a transition to low-carbon and sustainable economic activities, ensuring the protection of the most vulnerable citizens and workers through access to retraining programs, employment opportunities in emerging economic sectors, or energy-efficient housing, and the advancement of these objectives. The European Commission advocates the implementation of territorial transition plans at the national and regional levels (EC, 2019). The core principle is that this mechanism, facilitated through the Just Transition Fund (JTF), will protect the interests of citizens in regions most in need of support, as outlined in the formulated plans. To facilitate employment opportunities in new sectors, several measures have been proposed, including the provision of retraining opportunities, the development of energy-efficient housing, investments aimed at combating energy poverty, and improving access to clean, affordable, and secure energy. In the case of sectors with carbon-intensive industries, the intention is to provide support for the adoption of low-carbon technologies and facilitate economic diversification, ensuring that there is a ready supply of sustainable investments and jobs. The recommendation is to encourage the creation of new jobs in the green economy, investment in public and sustainable transport, technical assistance and investment in renewable energy, enhanced digital connectivity, energy infrastructure, district heating, and transport networks. In particular, the investments to be supported are designed to enhance resource

efficiency and guarantee the sustainable development of regions. The promotion of sustainable tourism, the restoration of natural habitats, the construction of environmentally friendly infrastructure, sustainable water management, energy efficiency, the reduction of energy poverty, and the improvement of the energy efficiency of the housing stock are among the key areas to be stimulated. Furthermore, investment will be made in skills enhancement and retraining, in education and social inclusion and social infrastructure where justified in territorial plans, in gender equality, in the development of conservation technologies, and in productive investments in micro, small and medium-sized enterprises (Regulation (EU) 2021/1056, 2021).

The principal objectives of the Just Transition Fund (JTF) are to mitigate the impact of the green transition in the most affected regions by financing the diversification and transformation of the local economy and to counterbalance the negative effects on local employment. Just Transition Fund (JTF) will support a range of investments, including those in clean energy technologies, greenhouse gas emission reduction, industrial site rehabilitation, digital connectivity, and worker retraining (EC, 2021). As a member state of the EU, Bulgaria is directly engaged in achieving the common environmental goals and policies designed to ensure a fair green transition and to move toward a sustainable energy system. These goals and policies are closely linked to the socio-economic development opportunities of individual regions and their environmental conditions. The green transition in Bulgaria is aimed at achieving a sustainable and low-carbon economy, involving the transformation of energy resources and systems, reducing carbon emissions and improving the country's energy efficiency.

### **National Decarbonization Goals and Measures**

The national decarbonization goals are outlined in the Integrated National Climate and Energy and Climate Plan (INECP) of the Republic of Bulgaria for the period 2021-2030, which sets forth the priorities and measures for implementing the national policy in the energy sector and climate action. These goals include increasing the share of renewable energy sources (RES) in the electricity mix to 30.33%, in the heating and

cooling sectors to 42.60%, and achieving a 14.2% share of RES in transportation. The attainment of these decarbonization targets will inevitably necessitate a reduction in the use of fossil fuels such as lignite coal, which Bulgaria possesses in significant quantities and relies on for its energy independence. However, this reduction in coal mining will have a substantial impact on key industries in the affected regions.

To achieve the national goals, various measures and interventions are planned, aligned with the guidelines of European energy and climate policy. Specific measures and investments to support the green transition are incorporated in the National Recovery and Resilience Plan (NRRP), the Territorial Just Transition Plans (TJTP) for the three targeted regions, and the Development of the Regions (RDP) 2021-2027. Bulgaria is among the EU Member States with the highest share of solid fossil fuels in final household energy consumption, which poses a challenge to decoupling GDP growth from energy consumption and greenhouse gas emissions. The industrial, transport, agriculture, and environmental sectors are also expected to be significantly affected, necessitating their transformation (EC, 2020).

### **Green Transition and the National Recovery and Resilience Plan**

The Green Transition is also a pivotal element of the National Recovery and Resilience Plan, which is oriented toward a green and digital transformation of the economy. The plan explicitly states that investments will complement the initiatives outlined in Just Transition Plans funded by the Just Transition Fund (JTF). As outlined in the NRRP, efforts to facilitate the green transition should prioritize the accelerated deployment of renewable energy sources and hydrogen, enhanced actions to improve the energy efficiency of the economy, and the promotion of sustainable mobility (Council of Ministers of Republic of Bulgaria, 2022). The country has set a target of achieving a 26% share of renewable energy in gross final energy consumption by 2024. Regarding the reduction in energy intensity and carbon intensity of the economy over the period 2021-2024, the target is a cumulative reduction of 10% (Council of Ministers of Republic of Bulgaria, 2022).

The majority of the resources outlined in the National Recovery and Resilience Plan (NRRP) are directed towards the “Green Bulgaria” priority. This priority focuses on the sustainable management of natural resources to meet the current and future needs of the economy and society while ensuring long-term environmental sustainability (Council of Ministers of Republic of Bulgaria, 2022). The components of “Green Bulgaria” include the following: a low-carbon economy; biodiversity and sustainable agriculture; and the reduction of the carbon footprint and energy intensity of the economy. The green transition is to be implemented through measures aimed at increasing the energy efficiency of multi-family residential, public, and business buildings, as well as promoting renewable energy production. Additionally, the plan includes actions to modernize the country's electricity grid, liberalize the electricity market, and implement low-carbon energy solutions.

The specific reforms and investments in this component include, first and foremost, the establishment of a National Decarbonization Fund, which is expected to become the primary financial instrument for facilitating the renovation of Bulgaria's building stock by 2050. This fund, which will succeed the Energy Efficiency and Renewable Sources Fund, has an established business model but has not yet been structured or operationalized. The proposed amendments to the Energy Efficiency Act have yet to be adopted. Another notable reform envisaged in the NRRP is the definition and specification of energy poverty criteria within the Energy Act, which also remains to be finalized. Additionally, plans have been proposed to facilitate investments in energy efficiency for residential buildings, as well as the introduction of a program to finance individual renewable energy measures in residential buildings, the implementation of energy-efficient municipal outdoor lighting systems, and the development of a financing mechanism for energy efficiency and renewable energy projects. Furthermore, the plan encourages the production of electricity from renewable energy sources through the construction of 1.4 GW of new renewable electricity generation capacity, the construction and commissioning of renewable electricity storage facilities with a minimum of 3,000 MWh of usable energy capacity, and the

digital transformation and enhancement of the information and real-time systems of the Electricity System Operator, and the development of geothermal energy use for the production of electricity and heat. Other reforms include the preparation and adoption of a National Roadmap for improving the conditions and unlocking the potential for development of hydrogen technology and hydrogen production and supply mechanisms; a scheme to support pilot projects for green hydrogen and biogas production; liberalization of the electricity market; and improvements in the corporate governance of state-owned companies in the energy sector.

Reforms in the NRRP specifically related to the just transition include the development of a low-carbon economy, the establishment of an Energy Transition Commission, and the creation of a Roadmap to Climate Neutrality, as well as the decarbonization of the energy sector. The Energy Transition Commission delineates prospective scenarios and pathways for the decarbonization of the Bulgarian energy sector, in addition to potential measures for a just transition. It also identifies the requisite financing needs, as well as conducting environmental and socio-economic impact assessments. The phased plan for coal phase-out includes several milestones set for 2024, 2026, 2030, 2035, and 2038 (Council of Ministers of Republic of Bulgaria, 2022, p. 112). The territorial just transition plans, based on decarbonization scenarios, are expected to reflect and maintain a connection with the activities of the Just Transition Mechanism and the Energy Transition Commission.

The reform of the power sector's decarbonization strategy is aimed at reducing carbon emissions from coal-fired power generation by 40% from the 2019 baseline level, with the objective of achieving this reduction by 2025, as indicated by the 2026 data. In this regard, the Climate Change Mitigation Act will be updated to establish a plan for the gradual phase-out of coal-fired power plants by 2038, introducing a regulatory cap on their carbon dioxide emissions effective from January 1, 2026 (Council of Ministers of Republic of Bulgaria, 2022). The Act would incorporate measures aligned with those planned and funded by the Just Transition Fund to address the socio-economic impacts. This reform also involves creating a state enterprise,

“Conversion of Coal Regions”, under the Ministry of Energy to carry out reclamation activities.

### **Planning and advancing the just transition process**

In 2020, the European Commission (EC) recommended that resources from the Just Transition Fund (JTF) be allocated to two NUTS3 regions identified as the most affected by the transition to a climate-neutral economy due to their coal mining activities and coal-based energy production. These regions are the Stara Zagora district, home to the Maritsa Basin (the primary lignite coal deposit in Bulgaria), and the area around the municipality of Bobov Dol in the Kyustendil district. The European Semester report on Bulgaria highlights that the Bulgarian economy has some of the highest levels of energy and carbon intensity in the EU. According to EC assessments, the potential decommissioning of coal-fired power plants due to competitive pressures could result in the loss of more than 20,000 direct jobs concentrated in the Southeast and Southwest NUTS2 regions. When considering the secondary effects on employment, the number of affected workers could exceed 56,000. This would have a significant negative impact on the economies of the affected regions and an undesirable social effect. In this context, the state managed to negotiate that investments from the Just Transition Fund (JTF) also cover the Pernik district, as well as an additional 10 municipalities from the Haskovo, Sliven, and Yambol districts, which are linked to the Maritsa Basin through employment and workforce mobility.

But apart from market reasons, coal mines and electricity generation capacity facilities in the three regions will inevitably be impacted to achieve the goals of the Green Deal. Therefore, the districts of Stara Zagora, Kyustendil and Pernik will face an inevitable economic transformation in the coming decades and the risk of worsening socio-economic and demographic problems. This is where the state and the EU have a role to play in ensuring a just green transition and mitigating the consequences of the cessation of coal mining and related economic activities. Some researchers have estimated the necessary costs of cash compensation, pensions and benefits under different options for the closure of coal-fired power plants and the cessation of coal mining. The pessimistic

scenario foresees the closure of all power generation and coal mining facilities in the Maritsa East and Bobov Dol-Pernik regions as early as 2025, which would have the most severe social consequences—approximately 21,000 workers would be laid off, resulting in a minimum of BGN 710 million in costs over five years for compensation paid by employers, as well as unemployment benefits, pensions, and assistance paid by the state (Hristoskov, 2021).

In this context, Bulgaria initiated the development of Territorial Just Transition Plans (TJTP) for the three regions. The Ministry of Energy (ME) was designated as the policymaking body, which is a rather peculiar decision, as the ME lacks the necessary administrative capacity for strategic regional development planning and/or economic transformation. It would have been far more logical for this process to be led by the Ministry of Regional Development and Public Works (MRDPW), which is responsible for regional policy planning and manages the main EU co-financed regional development program, or by the Ministry of Economy and Industry, which develops and implements economic policy. The facts indicate that the decision to designate the ME as the lead government body for fair transition planning was misguided. The ME outsourced the preparation of the TJTP to an external consultancy organization. The process of preparing and approving the TJTP took far too long (2021-2023), resulting in the loss of €100 million from the planned funds under the Just Transition Fund (JTF). The integration of stakeholders in the three regions is insufficient, which negatively impacts the quality of the strategic documents and the lack of specific interventions in the plans that would facilitate economic transformation and sustainable development in the respective regions. The debate on energy transition and energy mix (i.e., the question of what should replace coal-fired power generation capacity) has dominated discourse, rather than the economic transformation of coal regions and the pursuit of an equitable environmental transition. The lack of clarity in the just transition policy led to several changes in the National Recovery and Resilience Plan (NRRP) and the Integrated National Climate and Energy and Climate Plan (INECP) and to the country's refusal to set a fixed date for the closure of coal-fired power plants.

In the 2023 report, the EC also indicates that the Bulgarian economy remains the most carbon-intensive in the EU, with greenhouse gas emissions exceeding the EU average by four times. In 2021, the share of fossil fuels constituted 63% of Bulgaria's energy mix, with coal accounting for 26%, nuclear for 22%, and renewables for 15%, which is lower than the EU average of 18%. Additionally, the report highlighted a shortage of workforce and skills in key sectors and professions that are pivotal for the ecological transition. In light of these findings, the EC experts advise that the country should take prompt and decisive action to reduce its reliance on fossil fuels and accelerate the transition to clean energy. This should be achieved through the accelerated deployment of renewable energy sources, including storage capacity, to enhance the flexibility of the energy system. The recommendations also include adopting an active policy for providing and acquiring the skills necessary for the ecological transition, increasing the energy efficiency of buildings, and measures to address fuel poverty should be implemented (EC, 2023).

The revised program strategy of the Development of the Regions (RDP) 2021-2027 indicates that the transition to a low-carbon economy will significantly alter labor market dynamics, with the Stara Zagora region being the most affected, given that up to 80% of jobs in coal-based mining and energy enterprises could be affected by the decarbonization process in the area. Currently, the unemployment rate in the region is one of the lowest in the country. It is anticipated that the social impact will be considerably more pronounced if the number of indirectly affected family members and indirectly affected jobs are taken into account. In the long term, the reduction of employment in coal-fired mines and power plants will necessitate the provision of alternative employment opportunities. However, there is a risk that the job losses in the Stara Zagora region may not be fully offset by the interventions planned for financing with European funds, including the creation and development of new SMEs. Therefore, to ensure the successful implementation of the Territorial Just Transition Plans (TJTP), the program allows for the inclusion of production investments in large enterprises. Targeted investments to address the socio-economic and environmental consequences of the

transition to climate neutrality and the cessation of coal mining and coal-based power generation will be crucial for the development of the two affected planning regions (South-East and South-West Regions) and for preventing the exacerbation of regional disparities. The Kyustendil region is already the most vulnerable in terms of socio-economic and demographic trends, as the gradual phase-out of coal mining and coal-fired electricity production has been ongoing for nearly two decades. In the Pernik region, it is expected that by the end of 2030, more than 2,000 people will be seeking alternative employment opportunities (MRDPW, 2023).

The regional program structures the interventions under the Just Transition Fund (JTF) into three main areas: support for industries in sustainable energy solutions and economic diversification, and the creation of new jobs; social support for employment through upskilling and reskilling of the existing workforce and transition to alternative employment; and the diversification of the local economy through the development of new economic sectors, support for start-ups, and the development of enterprises, including research and development, aimed at redirecting to new jobs following the cessation of mining and coal-based energy sectors.

The planned investments under the Development of the Regions Program (RDP) 2021-2027 will support activities for training, upskilling, and reskilling of individuals affected by the transition, as identified through workforce mapping, which is yet to be conducted. With a budget of BGN 1 million, the Ministry of Labor and Social Policy (MLSP) will attempt to identify the existing general and specific skills of workers in the coal energy sector, assess the gaps in their skills, and develop a detailed training plan to acquire new knowledge and skills. This plan aims to enhance the employment prospects of those who may potentially lose their jobs due to the transition, by facilitating their integration into new industries.

The promotion of economic diversification represents a crucial aspect of territorial development strategies for regions reliant on coal mining. In addition to investments aimed at promoting economic activity, co-financed by other European funds and mechanisms, the resources from the Just Transition Fund (JTF) will be utilized to create

and/or develop new industrial zones, including the repurposing of land affected by coal mining and leveraging existing energy infrastructure. These funds will also support the establishment of technology hubs, laboratories for the development of new products and technologies, business incubators, conference facilities, centers for regional economic development initiatives, and the promotion of cultural/sustainable tourism, commercial and cultural centers, digitization, and more. To mitigate the negative socio-economic consequences of the transition to climate neutrality, the development of new economic activities is planned, including the implementation of energy-efficient technologies and know-how, and the attraction of investments through incentives for creating new jobs, specifically targeting individuals of working age from the potentially affected workforce. The planned support for production investments in SMEs, including start-ups, as well as in large enterprises in the Stara Zagora region, is directed towards priority sectors with development potential in the respective region.

Investments in sustainable energy solutions and the development of independent green energy facilities utilizing renewable energy sources (RES) near industrial parks will also be encouraged. At the same time, within the three administrative regions, measures are planned for the reclamation and restoration of disturbed lands and industrial infrastructure, with the aim of enabling their reuse for the development of alternative economic activities and the diversification of the local economy. To compensate for the phased closure of coal-fired power plants, the Just Transition Fund (JTF) is expected to support the sustainable energy solutions identified in the respective Territorial Just Transition Plans (TJTP). These solutions include the creation of capacity for green hydrogen production and the establishment of a hydrogen value chain, photovoltaic parks with energy storage facilities and/or green hydrogen production, and related infrastructure, as well as infrastructure for wind energy generation. Additionally, support is anticipated for research, development, and the implementation of eco-innovations. Opportunities are envisaged for the development of the innovation ecosystem in the regions, fostering collaboration between universities, businesses, and research organizations.

For an objective observer, however, it is challenging to foresee the successful realization of all these expectations, reforms, and measures by the end of 2026, as required by the regulations of the Just Transition Fund (JTF) and the recovery and resilience mechanism. The managing authority of the Development of the Regions (RDP) 2021-2027 has planned the implementation of several grant procedures, including: support for sustainable energy renovation of multi-family residential buildings, including addressing energy poverty; support for workers in the affected sectors through training for upskilling and reskilling; mapping the skills of indirectly affected individuals in the regions most impacted by the climate transition; diversification and adaptation of SMEs to the economic transition; support for industrial and logistics parks and zones; and support for production investments in large enterprises in the Stara Zagora region (MRDPW, 2024). Of the aforementioned procedures, only the first, pertaining to energy efficiency in MFRBs, has been officially launched in mid-2024, with the deadline for project proposals set for is 19/09/2024. In consideration of the duration of the evaluation process, it can be reasonably inferred that the first funded projects will be known in early 2025. The launch of grant procedures with a direct contribution to the targeted regional economies is anticipated by the end of 2024, leading to the conclusion that the implementation of purely business projects that would support the green transition will commence at the earliest in the second half of 2025.

### Conclusions

The just transition policy in Bulgaria lacks a clearly defined perspective and specific socio-economic priorities. There is a lack of clarity regarding the vision for the requisite economic transformation that is necessary to achieve the climate goals that have been adopted. The policy is not encapsulated within a single strategic document; instead, its individual objectives and elements are dispersed across various plans and programs. The primary focus has shifted to energy and the green transition, with an exclusive emphasis on environmental aspects, as evidenced by the planned financial allocations and the set targets for decarbonization, increasing the share of renewable energy and building green hydrogen

and energy storage infrastructure. The measures outlined in the Territorial Just Transition Plans (TJTP) of the concerned regions are similar and structured around three pillars. However, it cannot be definitively stated that they fully account for the specific conditions and potential of the territories involved, with the exception of those for the Stara Zagora region, where the need for investment in large enterprises is justified. There are no clear indicators to measure the impact and expected results of the transition in terms of the circular economy, employment and income. While increasing energy efficiency, retraining employees in affected sectors and creating new jobs are important steps, they do not in themselves automatically guarantee a just transition or sustainable development of the regions.

Given the considerable delays in the planning and contracting process, it is increasingly unlikely that the Just Transition Fund (JTF) and National Recovery and Resilience Plan (NRRP) funds will be fully utilized by the end of 2026. This raises serious concerns about the viability of the just transition policy, as well as the potential for planned investments to fail, leading to negative impacts on the national budget and regional economies. These issues arise from the delayed implementation of reforms, suboptimal management decisions, insufficient administrative capacity within the Ministry of Energy (ME), and the central executive's reluctance to decentralize the transformation process by delegating authority and responsibilities to regional and local institutions to better accommodate local specificities and the desires of the population, as well as accelerate project implementation. The proposed coordination and management mechanism for the Territorial Just Transition Plans (TJTP) at both national and local levels appears overly complex, which may further hinder inter-ministerial coordination and the implementation of the partnership principle among stakeholders. Conversely, the evolving political situation also impedes a comprehensive discourse on the anticipated scale and socioeconomic consequences of the green transformation on regions and pivotal industries. It also obstructs the development of effective and consensual strategies to address forthcoming challenges in light of potential transition pathways.

The interventions outlined in the National Recovery and Resilience Plans (NRRPs) that align with the green transition are also critically lagging. Not all of the planned reforms in the National Recovery and Resilience Plan (NRRP), which are prerequisites for European Commission funding, have been fully implemented. The economic transformation program, including investments in technological upgrading of SMEs, circular economy initiatives, and energy efficiency measures for businesses, is currently underway but with a low uptake of funds. The energy renovation of multi-family residential buildings is stalled due to appeals, while green measures for sustainable urban mobility and the construction of hydrogen and energy storage infrastructure have yet to commence. Moreover, a significant portion of the investments in SMEs, sustainable mobility, and energy efficiency of the building stock will not be implemented in the coal regions.

The delayed approval of the Territorial Just Transition Plans (TJTP) for the three most affected regions, coupled with the lack of clear commitments to the closure of coal-fired power plants and the reduction of their greenhouse gas emissions, raises serious concerns about the commitment of public institutions to a just transition and the effective utilization of opportunities under European solidarity. The possible loss of EU funding under the Just Transition Fund (JTF) and the NRRP would be detrimental to the future development of these regions and negatively impact socio-economic growth factors and public finances. Postponing the inevitable shutdown of coal-fired power plants exacerbates environmental risks, delays the conversion of the affected territories, and threatens their sustainable transition. Targeted up-skilling and retraining measures for potentially affected workers are crucial for their inclusion and effective redeployment into promising alternative sectors and should be implemented as a priority and with accelerated urgency.

Bulgaria could achieve sustainable and equitable development that meets the challenges of climate change, but this requires firm decisions and vigorous action to implement the planned investments, especially in the affected regions. In order to achieve the significant benefits of the green transition for society, the economy and the environment, significant further efforts are



undoubtedly needed from the state, business organizations and society to achieve sustainable development in the regions. The comprehensive and timely implementation of all planned interventions, not solely those funded by the EU, is essential for the success of the desired transformation. At this stage, however, this mission seems impossible.

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### References

- Council of Ministers of Republic of Bulgaria. (2022). National Recovery and Resilience Plan/ Version 1.5 [Ministerski savet na R. Bulgaria. (2022). Natsionalen plan za vazstanovyavane i ustoychivost /Versia 1.5]. Retrieved from <https://nextgeneration.bg/14>
- Curran, B., Robins, N., Muller, S., Subramoni, A., & Tickell, S. (2022). *Making Transition Plans Just: How to embed the just transition into financial sector net zero transition plans*. London, Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science. Retrieved from <https://www.lse.ac.uk/>
- EC. (2020). National Report for Bulgaria for 2020. [EK. (2020) Natsionalen doklad za Bulgaria za 2020 g.]. Retrieved from <https://www.minfin.bg/>
- EC. (2023). National Report for Bulgaria for 2023. [EK. (2023). Natsionalen doklad za Bulgaria za 2023 g.]. Retrieved from <https://www.minfin.bg/>
- EC. (2019). Communication from the Commission to the European parliament, the European council, the Council, the European economic and social committee and the Committee of the regions - The European Green Deal. Retrieved from <https://eur-lex.europa.eu/>
- Hristoskov, Y. (2021). Impact of Decarbonization on Employment in the Energy Regions in Bulgaria. Conference proceedings „Economic, regional and social challenges in the transition to a green economy“, Plovdiv University Press, 328-340
- ILO. (2023). Achieving a just transition towards environmentally sustainable economies and societies for all. Retrieved from <https://www.ilo.org/>
- Just Transition Research Collaborative. (2018). Mapping Just Transition(s) to a Low-Carbon World, UNRISD. Retrieved from <https://www.unclearn.org/>
- Lee, S., & Baumgartner, L. (2020). How just transition can help deliver the Paris Agreement. Retrieved from <https://climatepromise.undp.org/>
- Regulation (EU) 2021/1056 (2021) of the European Parliament and of the Council of 24 June 2021 establishing the Just Transition Fund Official Journal L 231. (2021). Retrieved from <https://eur-lex.europa.eu/>
- MRDPW. (2023). Updated Program Strategy for the "Development of the Regions" Programme 2021-2027. [MRRB. (2023). Aktualizirana Programna strategija na Programa „Razvitie na regionite“ 2021 – 2027 g.]. Retrieved from <https://bgregio.eu/>
- MRDPW. (2024). Indicative Annual Work Programme for 2024 of the "Development of the Regions" Programme 2021-2027. [MRRB. (2024). Indikativna godishna rabotna programa za 2024g. na Programa „Razvitie na regionite“ 2021-2027 g.]. Retrieved from <https://bgregio.eu/>
- UN. (2015). Paris Agreement. Retrieved from <https://unfccc.int/>
- Wang, X., & Lo, K. (2021) Just transition: A conceptual review. *Energy Research & Social Science*, 82, 102291. doi: 10.1016/j.erss.2021.102291.

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