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Original
Just Green Transitions in the EU: Comparing the Cases of Italy, Sweden, Poland, and the Netherlands / Berisha, E., Cotella, G., Puntillo, E., Shaker, Y. - In: The Palgrave Handbook of Just Green Transitions in the Western Balkans and Beyond / Berisha, E., Moodie, J., Allkja, L., Jefti, M.. - ELETTRONICO. - Cham, Switzerland : Palgrave Macmillan, 2025. - ISBN 9783031950742. - pp. 381-403 [10.1007/978-3-031-95075-9_21]

Availability:
This version is available at: 11583/3005177 since: 2025-11-15T14:56:55Z

Publisher:
Palgrave Macmillan

Published
DOI:10.1007/978-3-031-95075-9_21

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28 November 2026

CHAPTER 21

Just Green Transitions in the EU: Comparing the Cases of Italy, Sweden, Poland, and the Netherlands

Erblin Berisha, *Giancarlo Cotella*, *Erika Puntillo*, *and Yahya Shaker*

21.1 Introduction

The urgency of addressing climate change has placed sustainability at the forefront of policy agendas worldwide (van Bommel & Höffken, 2023). Within this global movement, the European Union (EU) has led in promoting the European Green Deal (2019), aiming to achieve climate neutrality by 2050. According to the European Commission (2019), the European Green Deal is a new growth strategy that seeks to transform the EU into a just, fair and prosperous society (Berisha, 2025a, 2025b; Shaker & Berisha, 2025) with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use (Cotella et al., 2016). However, to pursue the transition effectively remains a complex socio-technical problem (Valkenburg & Cotella, 2016). As the EU pursues its ambitious decarbonisation goals,

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E. Berisha et al. (eds.), *The Palgrave Handbook of Just Green Transitions in the Western Balkans and Beyond*,
https://doi.org/10.1007/978-3-031-95075-9_21

there is a pressing need to ensure this transition remains socially equitable and spatially balanced (Berisha, 2025a, 2025b). Therefore, the just transition concept has emerged as a cornerstone of the EU's approach, reflecting a commitment to achieving environmental targets without leaving any region or community behind (García-Mira et al., 2024). Accordingly, the EU just green transitions (Shaker & Persico, 2024) seeks to balance economic, social, and environmental priorities, focusing on regions heavily reliant on fossil fuels and carbon-intensive industries (Koasidis et al., 2023). For these regions, the shift to a green economy represents both an opportunity and a challenge, as it involves significant structural changes and the potential for job displacement and economic restructuring (Theodoropoulou et al., 2024). To address these complexities, the EU has developed a range of supportive policies and financial mechanisms, including the Just Transition Mechanism (JTM) and the Just Transition Fund (JTF), which aim to support affected regions in diversifying their economies, investing in green industries, and fostering workforce adaptability (Berisha, 2025a, 2025b). This chapter provides a comparative analysis of the Just Green Transitions (JGT) frameworks in four diverse EU geographically located countries—Italy (South), Poland (East), Sweden (North), and the Netherlands (West). Each of these countries has developed its "transition" strategies shaped by distinct economic, ecological, and social contexts. Italy and Poland, having a strong industrial base in high-carbon sectors, have focused on regional strategies to manage socio-economic impacts towards transition. Sweden's approach centres on ecological connectivity and biodiversity, while the Netherlands emphasises regional adaptation, innovation, and stakeholder engagement to foster a sustainable industrial transition.

The chapter is structured as follows. After this brief introduction, Sect. 21.2 describes the JGT within EU Policies: It elaborates on the EU's foundational JGT policies, including the JTM and Territorial Just Transition Plans (TJTP), and their role in guiding Member States. Section 21.3 gives a detailed analysis of the JGT frameworks adopted in Italy, Poland, Sweden, and the Netherlands, complemented by comparative tables highlighting differences in policy focus, regulatory frameworks, and key actors. After that, Sect. 21.4 compares and discusses the identified commonalities and differences across the four cases, evaluating the effectiveness of each approach in balancing environmental goals with socio-economic needs. Finally, the conclusion section provides a synthesis of the insights from the comparative analysis, discusses the importance of tailored approaches within the EU's overarching JGT policies framework, and presents recommendations for future JGT policy efforts.

21.2 Just Transition Within EU Policies

The EU's Just Transition framework is part of the European Green Deal, aiming to support sustainable development across Member States by facilitating a climate-neutral economy while minimising socio-economic disruption (Berisha et al., 2025; Moesker & Pesch, 2022). Recognising that the transition

from fossil fuels and carbon-intensive industries can lead to economic shifts that disproportionately affect certain regions (Shaker & Berisha, 2024), the EU established the JTM to provide targeted support (European Commission, 2019). This JTM is designed to help Member States address the structural, economic, and social challenges associated with shifting to a low-carbon economy, ensuring no region or community is left behind. The JTM operates through three main pillars: the JTF, the Invest EU Scheme, and the Public Sector Loan Facility (PSLF) (García-Mira et al., 2024). Each component of the JTM has a specific technical function in promoting transition (Fig. 21.1).

The JTF is the foundational element of the JTM, with a substantial allocation of €17.5 billion for 2021–2027 (European Commission, 2019). This fund supports regions most vulnerable to economic disruptions from the green transition, especially those with industries that rely heavily on fossil fuels, such as coal, peat, and oil shale. The JTF provides these regions with financial support to diversify their local economies, fund workforce reskilling programmes, and improve social cohesion by investing in projects that retain community engagement and support local identity in the face of industrial shifts (Bujdosó et al., 2022). Unlike other EU funds, the JTF is "spatial dependent", meaning that the funds can be used only in the regions/areas with a Territorial Just Transition Plan approved underlined as a priority by the Member States and the European Commission (Moesker & Pesch, 2022). As for the sectors concerned, the JTF is often directed towards projects that promote alternative industries, such as renewable energy, sustainable agriculture, and eco-tourism, which offer new economic opportunities for regions undergoing significant transformation. By funding job training programmes, the JTF also helps workers transition from carbon-heavy sectors to roles in green industries, such as solar and wind energy or sustainable construction, providing long-term employment stability in sectors aligned with the EU's

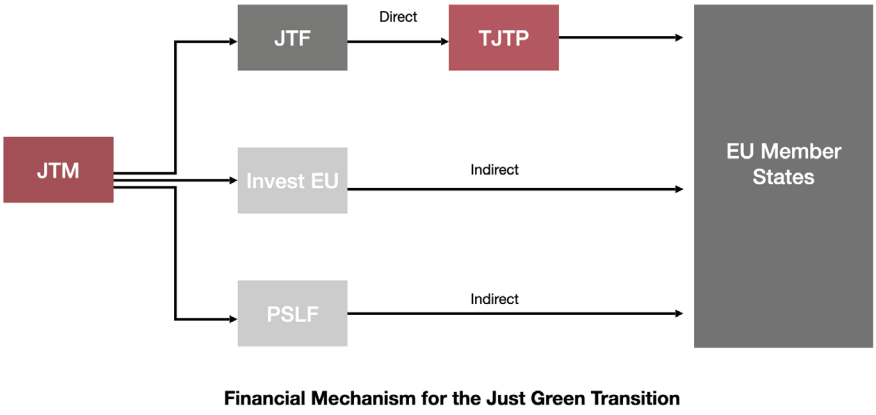

Fig. 21.1 Financial mechanism for Just Green Transitions (*Source* authors' own elaboration)

climate goals. The Invest EU Scheme, a complementary pillar of the JTM, broadens the scope of support by leveraging private investments in sustainable projects across the EU. Where the JTF provides direct funding, the Invest EU Scheme mobilises private finance to develop renewable energy infrastructure, digital technologies, social development projects, and more. The difference is that the funds guaranteed by the Invest EU package can also be used in territories not targeted by any Territorial Just Transition Plan. By using financial instruments such as guarantees and loans, Invest EU helps reduce investment risk, making sustainable projects more attractive to private investors. This risk-sharing model ensures that regions can access sufficient funding for large-scale projects essential for a robust JGT.

Finally, the Public Sector Loan Facility is the third pillar of the JTM and specifically addresses projects that fall outside the scope of private investment but are vital for a comprehensive green transition. This scheme provides preferential loans to public sector bodies, with the EU budget and the European Investment Bank (EIB) co-financing the facility. This allows municipalities, regions, and other public entities to undertake essential projects, such as upgrading infrastructure for energy efficiency, retrofitting social housing with green technologies, and developing sustainable public transportation networks. By financing public initiatives that directly benefit citizens, the Public Sector Loan Facility enhances community resilience and supports a more inclusive transition. Theoretically, these three pillars are designed to work in tandem, creating a coordinated support system that allows Member States to tailor their JGT strategies to specific regional needs. To access JTM funding, each Member State must prepare and submit TJTPs, which must be place-based and region-specific blueprints for managing the transition across the different EU countries. The development of the TJTPs is supposed to be a comprehensive process that begins with assessing each region's socio-economic context and identifying sectors most affected by the transition (European Commission, 2023). This assessment includes analyses of employment dependency on high-emission industries, the vulnerability of certain communities to job displacement, and the capacity for economic diversification. Based on these assessments, Plans prioritise specific actions tailored to the needs of each region. For instance, TJTPs may prioritise reskilling programmes if a region has a high concentration of workers employed in fossil fuel industries or provide targeted support for SMEs and startups in sustainable sectors if economic diversification is a primary challenge. In the paper, the involvement of local stakeholders is considered a crucial factor in developing these plans; consultations with regional authorities, industry representatives, social partners, and civil society organisations help ensure that the proposed actions reflect the perspectives and needs of the local communities. This collaborative process is supposed to strengthen the relevance and acceptance of TJTPs, fostering a sense of ownership and long-term commitment to the green transition among local stakeholders. However, the level of public engagement has varied across the different countries' experiences (García-Mira et al., 2024).

Once the Plans are completed, they undergo a review to ensure alignment with EU-wide climate and social goals. Approved TJTPs receive funding from the JTF, often combined with national resources and additional EU funds, maximising the impact of the financial support. Progress is closely monitored, and performance indicators are set to track the effectiveness of each TJTP in meeting the specified goals. This continuous monitoring allows for adjustments as regional needs evolve, ensuring that the JGT remains responsive to sub-regional dynamics and emerging challenges.

21.3 Presentation and Comparison of the Four Case

This section compares the experiences of four different EU Member States in conceptualising and operationalising their TJTPs, showing a high heterogeneity across them (Fig. 21.2). Indeed, when analysing these four countries implementing their TJTPs, each conceptualises the JGT to reflect its industrial, social, and environmental contexts. Italy and Poland, for instance, focus more on reducing dependency on coal while protecting jobs in fossil-fuel-dependent regions, ensuring economic stability and social support. Sweden, instead, combines a strong interest in green innovation with efforts to reduce social inequalities, aiming for climate neutrality by 2045. Last but not least, the Netherlands pursues a balanced strategy targeting diverse geographical needs, emphasising economic resilience and environmental sustainability.

In Italy, the JGT is seen as essential for achieving sustainable industrial development in line with the European Union's climate objectives (Niewitała-Rej, 2024). According to the data presented by the International Energy Agency (2024), the country is the third largest greenhouse gas emitter in the EU, and its energy sector is the main contributor to total greenhouse gas emissions in 2022.[1] That being said, Italy's approach prioritises decarbonising energy-intensive industries, advancing the circular economy, and fostering a socially equitable transition. Key objectives include job protection, workforce upskilling, and ensuring that no region is overlooked in the transition. The TJTPs focus on regions heavily affected by the move away from fossil fuels, specifically those with economic reliance on high-carbon industries. Italy's strategy identifies the urban area of Taranto in Apulia and Sulcis Iglesiente in southwestern Sardinia as the hardest-hit territories. More specifically, Taranto, home to one of Europe's largest steel mills and one of Italy's largest coal-fired power plants, is a significant contributor to industrial pollution and employs around 10,000 people directly in steel production, with another 10,000 working in related industries. In Sulcis Iglesiente, Italy's last coal mine, Monte Sinni, is set to cease coal production by 2025, impacting 350 jobs in a region already challenged by high youth unemployment, low income, and an ageing population. The area is already characterised by a high

[1] For more info please visit: Europe – Countries & Regions – IEA.

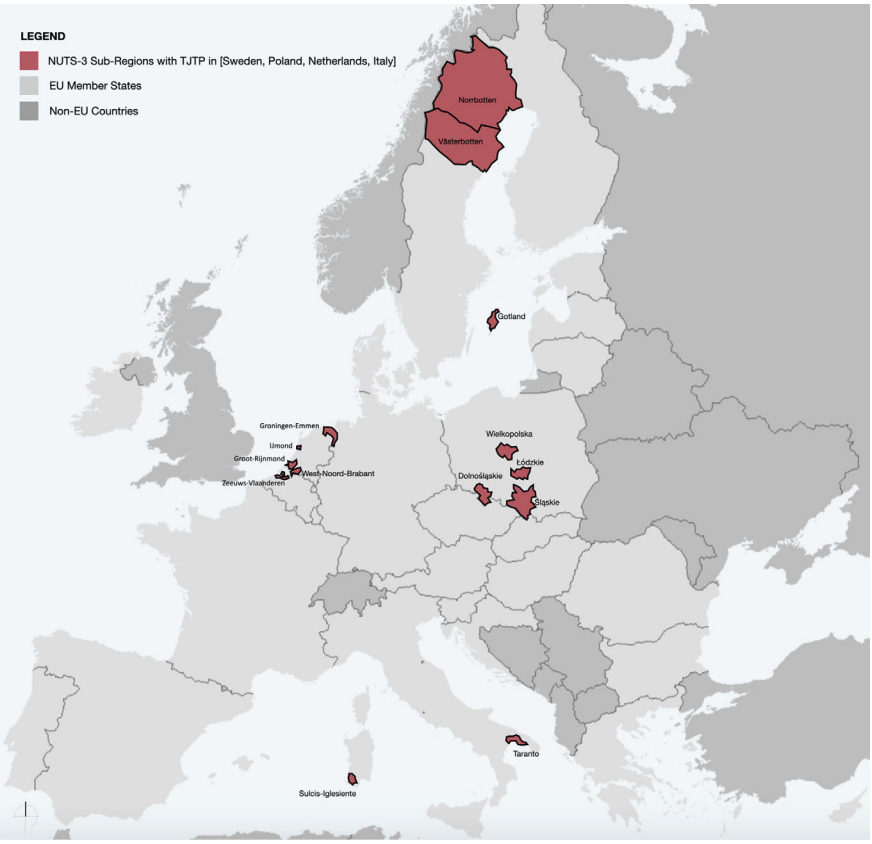

Fig. 21.2 TJTPs in Italy, Poland, Sweden, and the Netherlands (*Source* authors' own elaboration)

percentage of elderly inhabitants, few young graduates, high youth unemployment (35.7%), low per capita income and an overall low quality of life. For these reasons, Italy's National JTF Programme concentrates investment in these two areas, aligning the Territorial Plans with the National Integrated Plan for Energy and Climate (PNIEC). The Italian TJTPs are coordinated with regional programmes financed by the European Regional Development Fund (ERDF) and the European Social Fund Plus (ESF+), as well as other local initiatives, like the Sulcis Plan and Institutional Development Agreement of Taranto.[2] The TJTPs in Italy are closely aligned with the broader national and regional strategies for industrial transition. Accordingly, for each identified area, the TJTPs are designed and implemented consistently with the

[2] Signed on 30 December 2015, this agreement aims to redevelop and develop the area that affects the municipalities of Taranto, Statte, Massafra, Crispiano and Montemesola.

Integrated National Energy and Climate Plan, which lays down Italy's guidelines to decarbonise its economy and achieve climate neutrality by 2050. The National Integrated Energy and Climate Plan (PNIEC) serves as a key policy instrument that complements the TJTPs. The PNIEC sets out Italy's 2030 energy and climate goals, focusing on renewable energy development and energy efficiency in industrial processes. Furthermore, the National Recovery and Resilience Plan (NRRP) inevitably plays a central role in this coordination, as it outlines Italy's green transition goals in line with the EU's broader climate objectives. The PNRR is linked to the TJTPs, particularly in its sections on energy transition, industrial decarbonisation, and workforce reskilling, ensuring that regional efforts align with national targets for reducing carbon emissions and promoting sustainable industries. In terms of funding, the TJTPs are designed to ensure that the JTF is used effectively in conjunction with other national and regional financial instruments, such as regional operational programmes (POR) under EU structural funds. This multi-level coordination between the TJTPs, NRRP, PNIEC, and JTF ensures that both national and regional objectives are met while addressing local socio-economic and environmental challenges.

In the Polish context, the term JGT does not exist, primarily, it is both called and focused on the Just Transition. The Polish expected multiple transitions (Tarasova, 2024) are coordinated at the National level between four ministries (The Ministry of Development Funds and Regional Policy, the Ministry of Climate and Environment, the Ministry of Industry, and the Ministry of National Assets), managed, conceptualised, and operationalised at the regional level and implemented at a sub-regional level (Ślimko et al., 2021). The Polish transitions are targeting economic diversification by supporting new green sectors such as sustainable manufacturing and promoting social equity through extensive reskilling and upskilling initiatives, but still in need of a cohesive place-based territorial policy (Nowakowska et al., 2021). Poland's Territorial Just Transition Plans have been developed at the sub-regional level of five regions with high reliance on coal and fossil fuel industries, selected for their socio-economic vulnerability and need for significant support (Ślimko et al., 2021). Poland's transition is distributed at the NUTS-3 level in five mining regions (*Voivodeship*) of Śląskie, Małopolska, Wielkopolska, Dolnośląskie, and Łódzkie, and precisely in only four sub-regions reliant on carbon-intensive industries like hard coal and lignite mining (European Commission, 2023). Śląskie is the largest coal-producing area in the EU, which is undergoing economic diversification, especially in the IT and healthcare sectors. Dolnośląskie is facing several legal and juristically court cases at a cross-border scale with its neighbouring transitioning regions in the Czech Republic and Germany. Wielkopolskie is expected to be the first to shut down the mine in Konin by the next four years. Łódzkie hosts the biggest coal mine in Poland and maybe the EU in Bełchatów, which has been operating since the 1970s and is expected to be shut down by 2035 and has various alternative transitioning scenarios (Ruszkowski, 2021); for instance, to be

transformed into a massive artificial lake and maybe hosting the second nuclear power plant to be finished by 2035. Finally, Małopolskie has not been able to allocate the JTF, but it is in the shadow of the transition of Śląskie meaning that the effects of shutting down the mines in Śląskie will affect its sub-regions even if most of the mines are already closed; thus, the TJTP of Śląskie and Małopolskie aims at cleaner production methods and green industry growth around Kraków region. Additionally, the Lubelskie and Pomorskie Regions were initially included in the first discussions on the transition process, but the European Commission ultimately excluded them from the final list due to their lesser socio-economic dependence on coal compared to the other five regions. In the programming period 2021–2027, 76 billion euros from the cohesion funds and €3.85 from the JTF are supporting the Polish regions in promoting economic, social and territorial cohesion and embracing a Green and Digital transition. The Green Transition's main objectives include investing in nuclear power plants and offshore Baltic windmills farm expected to generate up to 51% of electricity from renewables by 2040 in Pomorskie Region (which is not a JTF region nor does it have a TJTP) and new ideas on the horizon to invest in a second power plant in the Bełchatów sub-region in Łódzkie. Other sectoral investments are in Transport decarbonisation and the development of the Trans-European Transport networks. The green dimension falls into the systematic decarbonisation of the major coal-mining sub-regions that were able to allocate the JTF to close most of the mines by 2049 and towards carbon emission reductions (European Commission, 2023). The majority of the JTF is directed to the biggest mining companies, such as PGE while trying to support the miners financially, especially those who might lose their jobs by 2050. The just transition in Poland is claimed to be investing in reskilling and retraining of the miners and more into infrastructure and new green and digital jobs in the IT sector.

In Sweden, the term JGT is not used officially; instead, the discourse is pretty much split between the Clean Industrial Transition, Green and Digital Transition, and the Social Just Transition, a multidimensional effort that addresses technical, social, and territorial aspects to move towards a low-carbon economy with fairness and inclusivity (Moodie et al., 2021). The Swedish expected transitions are coordinated, managed, and conceptualised at the National level (Tillväxtverket—Swedish Agency for Economic and Regional Growth), operationalised at the Regional level and implemented at the Local level, which is subject to a great level of competitiveness (Gärdebo, 2023). Sweden Just Transition is distributed at the NUTS-3 level in three decarbonisation regions (*Region*).

Sweden's TJTPs are centred on the Nordic regions: the steel industry in Norrbotten, the metal industry in Västerbotten, and the cement industry and high-emission sectors and fossil fuel energy production in Gotland Island in the South of Sweden. These three regions were chosen based on their economic dependence on difficult-to-decarbonize industries, and the Swedish TJTPs aim to support these industries in transitioning by promoting green

technology investments, reskilling workers, and diversifying local economies. Each TJTP is tailored to address both the technical aspects of transitioning away from high-emission production methods and the social challenges associated with these changes, particularly in regions where jobs are closely tied to carbon-intensive industries. Sweden's plans aim to leverage regional strengths and align with national climate goals, creating a transition that not only reduces emissions but also fosters long-term regional development and socio-economic stability. The Green dimension of the transition seeks carbon neutrality by 2045. The Green Transition in the Nordic Region is being promoted as a digital innovation in various sectors, including green hydrogen energy in northern Sweden (Nordic Council of Ministers, 2021). This transformative endeavour is being realised through close collaboration with both major industrial players as Luossavaara-Kiirunavaara Aktiebolag (LKAB),[3] Svenskt Stål AB (SSAB),[4] Heidelberg Materials Cement Sverige (former Cementa)[5] and small to medium-sized enterprises within the region, ensuring a dynamic partnership that drives sustainable innovation and regional growth. Sweden is investing in Hydrogen Energy in what is called H2-Labs, testing the possibilities for climate-neutral hydrogen production (RISE Research Institutes of Sweden, 2022). Additionally, Sweden is seeking to bring around 100,000 highly skilled workers and their families to the Nordic Regions as the industrial transition focuses on an opening up approach and investing in Green Steel mining, besides the reskilling and retraining programme in the so-called green jobs and reducing social and spatial inequalities, which is contrary to the impact of the so-called green mining in the Saami lands (Larsen et al., 2022). In the programming period 2021—2027, 2.2 billion euros from the cohesion funds and 156 million from the JTF are supporting the Swedish regions in the industrial transformation. Planned initiatives in these regions include RandI, the adoption of clean energy technologies and infrastructure. Key focus areas include exploring technologies for large-scale renewable hydrogen production and carbon capture and storage. These efforts are projected to significantly reduce greenhouse gas emissions, with supported enterprises expected to cut emissions by approximately 42% in CO2 equivalent annually. Additionally, a portion of the fund will be allocated to enhancing Gotland's electricity grid capacity (European Commission, 2023).

The Netherlands conceptualises its JGT as a balanced approach towards sustainability, ensuring social equity, economic inclusivity, and environmental resilience. The country's main objectives are achieving social equity and

[3] LKAB is a state-owned Swedish mining company active in Kiruna and Gällivare mines, in northern Sweden. For more info, please visit: LKAB.

[4] SSAB is a global steel company operating in high-strength steels and related services. For more info, please visit: SSAB.

[5] Heidelberg Materials Cement Sverige (formerly Cementa) is one of Sweden's largest building materials companies, which manufacture and sell cement and offer knowledge on the use of Cement products. For more info, please visit: Heidelberg Materials Cement Sweden.

inclusion, bolstering economic resilience and job creation, and fostering environmental sustainability through community engagement. Accordingly, the Commission has adopted 2022 the Dutch TJTP, making €623 million available under the JTF to support a fair transition to a climate-neutral economy. The TJTPs are developed based on regional economic structures, environmental risks, and social demographics, each tailored to address the specific needs of the area. The Fund supports six Dutch regions—Groningen and Emmen, IJmond, Groot-Rijnmond, Zeeuws-Vlaanderen, West-Noord-Brabant and Zuid-Limburg—helping them move away from an economy centred on fossil-fuel extraction or carbon-intensive industries. For instance, in industrial regions like Rotterdam-Rijnmond, the focus is on economic diversification and emissions reduction, given its dependence on high-carbon industries. In urban centres such as Amsterdam, Rotterdam, and Utrecht, the TJTPs prioritise urban sustainability initiatives, promoting green infrastructure and ensuring equitable access to green jobs. Rural and agricultural areas, like Gelderland and Overijssel, focus on sustainable farming practices, renewable energy adoption, and economic diversification to reduce dependency on traditional industries. Coastal and flood-prone areas, including Zeeland and North Holland, concentrate on enhancing climate resilience and sustainable water management. In addition to economic dependency and environmental vulnerability, the Netherlands also considers social needs when determining which regions to prioritise, supporting areas with higher social vulnerabilities. The TJTPs in the Netherlands are closely coordinated with other industrial transition policies and funding instruments to ensure a cohesive approach to achieving a green economy. Netherlands' Climate Agreement and the Subsidy for Stimulation of Sustainable Energy Production and Climate Transition complement the TJTP by reducing and transitioning from carbon-intensive industries and providing subsidies for renewable energy and CO2 reduction technologies, respectively.

21.3.1 Main National Policy Documents and Strategies

Table 21.1 provides an overview of how different countries are addressing the concept of a JGT through national policy documents and strategies. Each of the four countries takes a different approach, shaped by their specific socio-economic and environmental contexts, while also grappling with some shared challenges. In Italy, the focus is on decarbonisation and ensuring social equity in the transition process. In this respect, the country has identified the implementation of the Integrated Plan for Energy and Climate, the National Strategy for Sustainable Development and the National Strategy for Circular Economy as key in addressing the transition process. Together, they are expected to accompany the country in reducing regional disparities, also tackling challenges such as energy poverty, ensuring affordable access to clean technologies, and, in the meantime, securing investments to finance

green infrastructure. Poland, on the other hand, is heavily focused on transitioning away from coal and modernising its industrial sector. In this respect, the country has introduced the National Energy and Climate Plan for 2021–2030, the Responsible Development Strategy and Energy Policy of Poland until 2040. These documents are intended to support the country in transitioning from a carbon-depend to a carbon-free society, considering that it is still deeply reliant on coal for energy and employment. Yet, the process is complicated by the socio-economic impact on coal-dependent regions, such as Silesia, and the challenge of integrating small and medium enterprises (SMEs) into the transition framework, balancing industrial modernisation with decarbonisation efforts. With the introduction of the Swedish Industrial Strategy and the National Energy and Climate Plan, the country emphasises competitiveness, energy efficiency, and further decarbonisation, demonstrating its position as a leader in sustainability efforts. Nevertheless, the country is trying to face risks like deindustrialisation and regional imbalances and ensure a smooth energy transition without exacerbating social or territorial inequalities. Lastly, the Netherlands is focused on industrial decarbonisation and regional adaptation to climate goals. To do so, the country has adopted the National Climate Agreement, which focuses on collaborative efforts across sectors, energy, industry, transport, agriculture, and built environment, the Regional Energy Strategy, which focuses on creating a sustainable energy system benefiting all regional stakeholders, and the National Programme for Sustainable Industry, which aims to lead the country towards sustainability through innovation, technological advancement and collaboration. However, while the policies are forward-looking, challenges such as job displacement, land-use conflicts, and public opposition to certain green initiatives remain significant obstacles.

21.3.2 Organisational Framework and Regulatory Environment

Table 21.2 examines the regulatory and legal settings that each country has outlined to make the transition more feasible. The table showcases distinct national priorities, responsible institutions, and strategies for adapting to emerging trends within the scope of sustainable development and climate goals. For instance, in Italy, Decree-Law No. 80 of 2021, overseen by the then Ministry for the Ecological Transition, focuses on strengthening public administrative capacity to implement JGT policies effectively. The framework is closely aligned with the National Recovery and Resilience Plan, reflecting Italy's emphasis on leveraging EU recovery funds to ensure a transition that supports both climate and economic recovery goals. Poland partially addresses its transition through the Act on Electromobility and Alternative Fuels (2018), for instance. The law is primarily centred on promoting the use of alternative fuels and the development of electromobility, aiming at reducing emissions in the transport sector and advancing the demand for new technologies and

Table 21.1 Main National Policy documents and strategies on JGT (*Source* authors' elaboration)

Country	*Key documents*	*Policy focus*	*Challenges*
Italy	Integrated Plan for Energy and Climate, National Strategy for Sustainable Development, National Strategy for Circular Economy	Decarbonization, social equity	Regional disparities, energy poverty, securing investments
Poland	National Energy and Climate Plan for 2021–2030, Responsible Development Strategy, Energy Policy of Poland until 2040	Transition from coal, industrial modernisation	SME integration, managing socio-economic impacts in coal regions
Sweden	Swedish Industrial Strategy Basis for the government's upcoming climate action plan and climate report National Energy and Climate Plan (NECP) for Sweden	Competitiveness, decarbonisation, greenhouse gas reduction, energy transition, energy efficiency	Avoid de-industrial, reduce territorial unbalance and ensure energy transition
Netherlands	National Climate Agreement, Regional Energy Strategy, National Programme for Sustainable Industry	Industrial decarbonization, regional adaptation	Job displacement, land-use conflicts, public opposition

infrastructure. Sweden takes a leadership role with its Climate Policy Framework (2017), managed by the Swedish Government in collaboration with the Climate Policy Council and the Swedish Environmental Protection Agency. The framework targets net-zero greenhouse gas emissions by 2045 and a full transition to renewable energy by 2040; to achieve these goals, the framework integrates climate goals into all sectors and requires the government to adopt a climate action plan every four years. The Netherlands, under the Climate Act (2019) and the Ministry of Climate and Green Growth, aims for climate neutrality by 2050, with an interim target of 49% less greenhouse gas emissions by 2030. The law includes innovative measures such as the introduction of a CO_2 tax for large emitters and expanded support for the circular economy (such as subsidies for CO_2 reducing technologies), illustrating a forward-thinking approach to integrating economic and environmental sustainability into its transition strategy.

Table 21.2 National Regulatory/Legal Frameworks on JGT (*Source* authors' elaboration)

Country	*Law name*	*Responsible body*	*Main focus*	*Adaptation to emerging trends*
Italy	Decree-Law No. 80 of 2021 "Urgent Measures for Strengthening the Administrative Capacity of Public Administrations for the Implementation of the National Recovery and Resilience Plan (PNRR) and for the Efficiency of Justice", 2021	Ministry for the Ecological Transition	Strengthening public capacity for implementing JGT policies	New framework specifically aligned with the PNRR
Poland	Act on Electromobility and Alternative Fuels, 2018	Ministry of Climate and Environment	Supporting alternative fuels and clean transport	Updated to promote zero-emission transport infrastructure
Sweden	Sweden's Climate Policy Framework, 2017	Swedish Government, Climate Policy Council, Swedish Environmental Protection Agency	Achieve net-zero greenhouse gas emissions by 2045	Update the climate action plan
Netherlands	Climate Act, 2019	Ministry of Climate and Green Growth	Achieving climate neutrality by 2050	Introduces CO_2 tax and expanded support for circular economy

21.3.3 Instruments and Levels of Just Green Transition

Table 21.3 outlines a comparative analysis of the main instruments introduced by each country. It distinguishes between central and regional levels and details the specific instruments, roles, and competencies involved in the implementation process. Generally, national strategies and funding instruments set overarching frameworks at the central level, ensuring alignment with regional and local plans. These include measures such as Italy's National JTF Programme and the Netherlands' Subsidy for Stimulation of Sustainable Energy Production and Climate Transition, emphasising financial support and regulatory incentives. At the regional level, localised strategies focus on implementing transition goals in vulnerable or industrial areas, such as Poland's

TJTPs and Sweden's Regional Climate and Energy Strategies. More in detail, these plans prioritise economic diversification, coal phase-out, and regional development through close collaboration with national policies and local authorities. Importantly, the table also highlights the critical linkages between central and regional efforts, showcasing coordinated approaches to achieving sustainable development and addressing region-specific challenges.

Table 21.3 Instruments and Levels of JGT (*Source* authors' elaboration)

Country	*Level*	*Instrument name*	*Role and competences*	*Linkages*
Italy	Central	National Just Transition Fund (JTF) Program, National Recovery and Resilience Plan (PNRR)	National strategy, coordinating across regional plans	Aligns with regional operational programmes
	Regional	Sustainable Development Regional Strategies	Local implementation, with focus on vulnerable regions	Coordinates with central strategic plans
Poland	Central	Industrial Policy, Responsible Development Strategy	National strategy, supports coal-reliant regions	Integrates regional and local plans
	Regional	Territorial Just Transition Plans (TJTPs)	Regional economic diversification and coal phase-out	Links with local governments to support JGT
Sweden	Central	Sweden's Framework, Just Transition Fund	The regulatory framework, Financial support	Linked with regional and local authorities through County Administrative Boards (CABs) and national agencies
	Regional	Regional Climate and Energy Strategies, Territorial Just Transition Plans (TJTPs)	Regional plans with a focus on the most exposed transition regions	County Administrative Boards coordinate with regional and local au-thorites,
Netherlands	Central	Subsidy for Stimulation of Sustainable Energy Pro-duction and Climate Transition (SDE++), National C02 Tax	National incentives for renewable energy and CO_2 reduction	Collaborates with regional green industry strategies
	Regional	Regional Energy Strategy, Industrial Plans	Regional adaptation for sustainable industry goals	Links local initiatives with national JGT targets

21.3.4 Key Actors in TJTP Development and Implementation

Table 21.4 identifies the key governmental and administrative actors involved in Territorial Just Transition Plans' development and implementation phases across the four countries under investigation. The table distinguishes between central and regional levels, highlighting the roles played by national ministries, agencies, and regional authorities in each phase. In the development phase, central-level actors such as Italy's Ministry of Environment and Energy Security, the Department for Cohesion Policies and the South, and Sweden's Swedish Agency for Economic and Regional Growth are responsible for designing overarching strategies and frameworks to guide the Just Transition process. These institutions set priorities, funding mechanisms, and policy directions. During the implementation phase, regional and provincial authorities coordinate, ensuring that TJTPs are executed effectively and tailored to local needs. For example, Marshal Offices in Poland and Regional Governments in Italy (e.g., Sardinia and Puglia) or in the Netherlands (e.g., Groningen) play a crucial role in adapting central strategies to regional contexts. The table underscores the collaborative approach required between central and regional actors to achieve a successful transition. While central actors provide strategic direction and funding, regional entities oversee practical implementation, adapting policies to address region-specific socio-economic and environmental challenges.

Furthermore, Table 21.5 identifies the key sectoral and non-governmental actors involved in Territorial Just Transition Plans' development and implementation phases across the four countries. The table distinguishes between the Energy, Mining and Industry sectors and non-governmental sectors such as NGOs and local communities, highlighting the key actors in each phase. From the analysis, it emerges that key actors from the energy and mining sectors are involved in both the development and implementation phases in all countries except for the Netherlands, where, instead, the main sectoral actors involved in the shift to green technologies are from the industry and business sectors. On the contrary, in Poland, the industry sector is not relevant, while key actors from energy (i.e., *PGE Polska Grupa Energetyczna, Tauron Polska Energia, Enea*) and mining (i.e., *Polska Grupa Górnicza (PGG)* play an important role in both the development and the implementation phases. Regarding non-governmental actors, environmental NGOs are involved in all the countries but with differences in the phases; for instance, in the Netherlands, they participated in consultations to ensure that the plans considered both environmental and social impacts, and similarly, in Sweden, they were involved in the development phase. On the other hand, in Poland, environmental NGOs are involved in the implementation phase of the TJTP only, while in Italy, their presence can be traced both in the development and implementation phases. Finally, for what concerns local communities, they are similarly involved in the Netherlands and Sweden for the development phase where they are consulted,

Table 21.4 Key governmental and administrative actors in TJTP development and implementation (*Source* authors' elaboration)

Country	*Level*	*Phases*	*Key actors*
Italy	Central	Development	Ministry of Environment, Department for Cohesion Policies and the South
	Regional and Provincial	Coordination/ Implementation	Regional Governments (e.g., Sardinia, Puglia) and Provincial authorities (e.g., Sulcis Iglesiente and Taranto)
Poland	Central	Development	Ministry of Development Funds, Ministry of Climate and Environment
	Regional	Implementation	Marshal Offices, Regional Development Agencies
Sweden	Central	Development	Swedish Agency for Economic and Regional Growth, Swedish Energy Agency, Swedish Environmental Protection Agency, Swedish Public Employment Service
	Regional	Implementation	Regional Authorities responsible for adapting TJTPs over-seeing execution in collaboration with sectoral
Netherlands	Central	Development	Ministry of Economic Affairs, Ministry of Climate Policy
	Regional and Provincial	Implementation	Regional and Provincial Authorities (e.g., Groningen)

especially in Sweden, to ensure that the transition reflects local needs and mitigates adverse socio-economic impacts. Conversely, in Poland, they are involved in the implementation phase, while in Italy, they have a further coordination responsibility through the Local Action Groups.

Table 21.5 Key sectoral and non-governmental actors in TJTP Development and Implementation (*Source* authors' elaboration)

Country	*Sector*	*Phases*	*Key actors*
Italy	Energy	Development/ Implementation	National energy companies (i.e., ENI, Enel), Regional energy agencies (i.e., Agenzia Regionale per l'Energia, ASSET—Agenzia regionale Strategica per lo Sviluppo Ecosostenibile del Territorio; ASSET—Agenzia regionale Strategica per lo Sviluppo Ecosostenibile del Territorio
	Mining	Development/ Implementation	Mining companies (i.e., Carbosulcis)
	Industry	Development/ Implementation	Industrial associations (i.e., Confindustria)
	Others	Development/ Implementation	Research institutions (i.e., Consiglio Nazionale delle Ricerche (CNR)
	NGOs	Development/ Implementation	Environmental NGOs, Labour Unions (i.e., Legambiente Sulcis, CGIL, CISL)
	Local communities	Coordination/ Implementation	Local Action Groups (i.e., LAG Sulcis Iglesiente Capoterra e Campidano di Cagliari), third-sector associations, civic associations
Poland	Energy	Development/ Implementation	PGE Polska Grupa Energetyczna, Tauron Polska Energia, Enea and other state-owned companies involved in the energy and fuel industry
	Mining	Development/ Implementation	Polska Grupa Górnicza (PGG) and other state-owned companies involved in the energy and fuel industry
	Others	Implementation	Trade unions

(continued)

Table 21.5 (continued)

Country	*Sector*	*Phases*	*Key actors*
	NGOs	Implementation	WWF Poland, Greenpeace Poland, Polish Green Network (Polska Zielona Sieć)
	Local communities	Implementation	Local society organisations, local business associations
Sweden	Energy	Development/ Implementation	Vattenfall, Svenska Kraftnät
	Mining	Development	LKAB, SSAB, Cementa AB, SMA Mineral AB
	Industry	Development/ Implementation	Cementa AB (Gotland), Preem AB (Västra Götaland)
	NGOs	Development	Environmental and civil society organisations, academic institutions
	Local communities	Development	Local communities and citizens
Netherlands	Industry	Development/ Implementation	Businesses and industries
	NGOs	Development	Social Partners and Civil Society: Unions, business associations, and environmental NGOs

21.4 Discussion

The comparative analysis of the cases of Italy, Poland, Sweden, and the Netherlands reveals distinct approaches to the JGT, reflecting on the one hand each country's different social, economic, and environmental contexts and, on the other hand, that different administrative and spatial governance traditions that characterise them. In particular, the respective levels of centralisation/decentralisation that characterise each country's approach to spatial governance[6] seem to play a role in providing the institutional anchoring to the domestic implementation of the EU JGT framework. While all four countries adhere to the EU's JGT framework, their strategies diverge in the policy focus, regulatory framework, and stakeholder engagement.

Policy Focus and Regional Targeting

[6] For a thorough, comparative overview of spatial governance in Europe see: Nadin et al. (2024).

Italy and Poland have prioritised decarbonising high-carbon regions through targeted investments in coal-reliant areas, but their strategies reflect different historical and economic dependencies. Italy, with its industrial regions of Puglia and Sardinia, has crafted TJTPs to balance decarbonisation with social equity by addressing job displacement and workforce reskilling. Poland's plans for Silesia and other coal-heavy regions underscore the importance of economic diversification, focusing on retraining programmes and promoting green industries as a replacement for coal-dependent employment. In contrast, Sweden's focus on ecological connectivity and biodiversity aligns closely with its national values of environmental stewardship and industrial transition (Steel in Norbotten e Västerbotten and Cement in Gotland). In this respect, the Netherlands' emphasis on regional customisation and stakeholder engagement represents a middle ground. The Netherlands combines industrial decarbonisation and ecological sustainability elements by developing adaptable TJTPs through extensive consultation with regional stakeholders. This approach fosters a high degree of local ownership, especially in regions like Groningen and the Port of Rotterdam, where industrial transformation is critical.

Regulatory Frameworks and Funding Coordination

Regulatory frameworks across the four countries reflect varying levels of centralisation and regionalisation. To some extent, all countries have experienced a hybrid approach to designing and implementing TJTPs. In general terms, while the central level has been leading in coordinating national interests when dealing with EU institutions, the regional (and provincial level in Italy and in the Netherlands, too) has been coordinating contextual needs and priorities. In this respect, the role of the Voivodship in Poland is a good case when it comes to discussing the regionalisation process of TJTPs. The Netherlands stands out for its integrated funding approach, combining national programmes like the SDE++ subsidies with EU funding sources like the JTF. This structure simplifies access to funding and aligns financial incentives with local priorities, allowing for targeted support in industrial and urban areas. However, the complexity of navigating these funding streams may disadvantage smaller businesses and local communities needing more resources to engage with the available support mechanisms fully.

Stakeholder Engagement and Inclusivity

When it comes to stakeholder engagement, the four countries under investigation present a complex interplay of central and regional actors, as well as sectoral and non-governmental stakeholders. Key actors at the central level provide strategic direction and funding, while regional authorities ensure context-sensitive applications. For instance, central ministries and agencies in Italy and Sweden are responsible for the frameworks to guide the transition, but local adaptation is pivotal, as seen in Poland through the Marshal Offices

and in Italy with the role of provincial authorities, tailoring strategies to unique socio-economic and environmental conditions. Sectoral actors from energy, mining, and industry further influence these processes, with distinct national patterns reflecting the different economic landscapes. Poland's reliance on energy and mining sectors contrasts with the Netherlands' focus on industrial and business entities driving green technology adoption. Non-governmental stakeholders such as environmental NGOs and local communities underscore the need for inclusivity. NGOs, while variably engaged across countries, provide critical oversight to balance environmental and social considerations, particularly in Sweden and the Netherlands' development phases. Local communities, similarly, ensure grounded, equitable transitions, their involvement ranging from consultative roles in Sweden to coordination responsibilities in Italy. These dynamics highlight that achieving a just transition is not merely a technical or economic challenge but a deeply collaborative endeavour. By weaving together central strategy, regional implementation, and diverse stakeholder input, TJTPs navigate the delicate balance of addressing immediate economic impacts while steering towards sustainable, long-term transformation.

21.5 Conclusion

The JGT are a key component of the European Green Deal, intended to ensure that the shift towards a climate-neutral economy is both environmentally sustainable, socially equitable and territorial balanced. This chapter has shown that Italy, Poland, Sweden, and the Netherlands have adopted varied approaches to the JGT, reflecting these Member States' distinct economic, ecological, social and institutional contexts. Italy and Poland have focused their TJTPs on tackling coal and carbon-intensive industries (the case of Taranto in Italy is emblematic) and have developed transition strategies that focus heavily on socio-economic resilience and industrial decarbonisation. Italy's TJTPs are committed to addressing regional disparities, focusing on workforce reskilling and promoting investment in vulnerable post-industrial areas. Poland's strategy similarly focuses on coal-dependent regions like Silesia, where economic diversification and retraining programmes are prioritised to mitigate the social impact of coal phase-out. Sweden's approach emphasises the transition of coal-depended regions: the steel industry in Norrbotten, the metal industry in Västerbotten, and the cement industry in Gotland. The Netherlands presents an adaptable model of regional engagement and innovation, driven by a combination of stakeholder consultation and extensive use of funding mechanisms like SDE++ subsidies and the JTF. This stakeholder-driven approach allows for regionally tailored TJTPs that address industrial decarbonisation and social equity. Including local governments, industry representatives, and environmental organisations fosters a collaborative environment for JGT, although the complexity of the funding system may pose challenges for smaller entities. The four cases do not represent the

heterogeneity of approaches adopted by all EU Member States. However, they offer a wide spectrum of possible approaches. In conclusion, the varied approaches of Italy, Poland, Sweden, and the Netherlands underscore the importance of tailoring JGT strategies to the specific challenges and opportunities within each Member State. Effective JGT implementation requires alignment with EU policies and a flexible framework for local adaptation, stakeholder engagement, and cross-sectoral integration. This study represents a preliminary comparison of the current situation without considering the implementation consequences and the impact of the TJTPs in each country. However, it offers a good reference for Western Balkans countries that have not yet started to think about transition plans.

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