

Research article

The Key Dimensions of Just Transitions - From Concept to Policy Practice

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Abstract

A gap exists between the rapid evolution of Just Transition (JT) policies and the slower development of conceptual JT frameworks in academic research. As there is no universally agreed-upon definition of JTs within policy and academic circles, the further conceptualisation of JTs would be useful to provide policymakers with a JT framework that can be adapted to suit different territorial contexts. This conceptual paper develops a JT conceptual framework based on a synthesis of key JT themes identified within both JT academic literature and policy documents. The article contributes to bridging the gap between research and policy in two ways: firstly, by highlighting and exploring ten key dimensions of JTs and their relationship with core themes of justice associated with JTs; and secondly, by providing practical recommendations for integrating these ten JT dimensions into JT policymaking processes across different governance levels. The recommendations are targeted at EU, national, regional, and local-level policymakers responsible for formulating and implementing JT policies. The JT conceptual framework is designed to support policymakers in the development and implementation of balanced and inclusive JT policies that address regional challenges and opportunities and meet the needs of citizens.

Keywords Just Transition · Climate Justice · Multi-Level Governance · Decarbonisation Policy · Regional Resilience

1. INTRODUCTION

There is a dissonance in the relationship between the just transition (JT) concept and policy practice. As Tapia et al (2025) note, academic research on the concept of JT has failed to keep pace with policy developments in this field. The JT paradigm was not built on abstract theoretical and conceptual foundations; indeed, JT emerged as a targeted policy measure focusing on workers affected by industrial transformation, before evolving into a more comprehensive strategic global policy framework (Johansson, 2023). The growing policy salience of JTs within international, national, regional, and local policies has precipitated an increased academic focus on JTs at a conceptual level (Berisha et al., 2025). However, a disconnect between both academic and policy circles remains, as there is no agreed consensus on what constitutes the key dimensions of JTs (Shaker & Berisha, 2025). For policymakers and academics, there is a need to bridge the gap between policy and research by not only identifying what constitutes the key dimensions of JT policies but also providing guidance on how these dimensions can be practically integrated in JT policymaking (Oates & Verveld, 2024; Krawchenko & Gordon, 2021).

In response to this challenge, this article explores the key dimensions of the JT concept and examines how these dimensions can be addressed in JT policy processes. The article provides a JT conceptual framework and policy guidance based on an interdisciplinary synthesis of existing literature and policy documents on JTs. It does not present original empirical data but aims to bridge the gap between the JT concept and policy practice. The paper is split into three main sections. The first section examines the evolution of the JT concept in academic and policy circles, zooming in on different “justice” themes associated with JT objectives and processes. The second section identifies ten core dimensions of the JT concept, highlighting important overlaps and interconnections across this multi-dimensional framework, and outlining how these dimensions interact with key “justice” themes. The third section provides practical recommendations on how each core JT dimension can be integrated within JT policy processes. The recommendations are targeted at EU, national, regional, and local-

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level policymakers responsible for formulating and implementing JT policies. The concluding section outlines how the conceptual framework can be applied in countries at different stages of JT processes, before providing some reflections on future research and policy directions.

2. THE EVOLUTION OF THE JUST TRANSITION CONCEPT IN RESEARCH AND POLICY

The concept of “Just Transitions” has become an increasingly salient topic in contemporary research (Cedergren et al., 2022; Bennet et al., 2019; Heffron & McCauley, 2018), with academics responding to the emergence of JTs as a prominent theme in international climate and environment policy frameworks, including the Paris Agreement, the European Union’s Green Deal (EUGD: European Commission, 2019), and the United Nations 2030 Agenda and Sustainable Development Goals (United Nations, 2015; United Nations, 2023a). JT is an amorphous concept defined and interpreted differently by diverse actors (Oates & Verveld, 2024). While there is no official, agreed-upon definition in policy and academic circles, the term ‘just transition’ broadly refers to a wide range of strategies, policies, and measures designed to ensure no one is left behind in the transition to low-carbon and environmentally sustainable economies and societies (Tavares, 2022).

In the academic field, JTs build on two core concepts, namely “justice” and “transitions” (Cahill & Allen, 2020). Firstly, the term ‘just’ relates to the concept of social justice developed by philosophers and thinkers, including Rawls, Locke, Rousseau, and Kant (Moodie et al., 2021). The notion of JTs encapsulates the complex interplay between achieving climate neutrality while fostering equitable socio-economic outcomes for citizens most at risk from transitions (Cedergren et al., 2022). Consequently, different notions of justice have become central to the JT discourse (Oates & Verveld, 2024). Oates and Verveld (2024) distinguish between overarching justice objectives that JTs strive to achieve and more practical and procedural dimensions of justice that inform JT processes (Ibid). Justice is a normative concept which implies that society and the state should design and implement JTs that benefit all citizens (Stark et al., 2023). The wide range of different justice themes outlined in Table 1 below showcases the complex normativity associated with JT objectives and processes.

Secondly, the term ‘transition’ refers to the shift from fossil fuel dependence to sustainable low-carbon economies and societies. Scientific attention around the transition concept is largely grounded in socio-technical transitions literature. Geels (2002) introduced the notion of ‘sociotechnical transitions’ in a seminal paper on innovation and climate adaptation, which argued that sociotechnical transitions are an outcome of recurrent innovation and technology substitution processes. Geels explains that technical transitions occur as the outcome of interlinkages between developments at multiple levels (multilevel perspective), distinguishing between ‘sociotechnical regimes’ and the ‘sociotechnical landscape’ (Geels, 2002). Socio-technical regimes refer to a group of key stakeholders involved in developing and implementing transitions, and the socio-technical landscape relates to heterogeneous exogenous and endogenous factors influencing transition processes, such as oil prices, economic growth, conflicts, migration, broad political coalitions, cultural and normative values, environmental problems, or climate change. According to Geels, a ‘window of opportunity’ for socio-technical transition is created by tensions in the sociotechnical regimes or by shifts in the sociotechnical landscape which put pressure on the regimes (Geels, 2018). In the case of JTs, climate change can be considered as the sociotechnical landscape tension which has put pressure on businesses, stakeholders, and institutions (the sociotechnical regimes) to take policy action to reduce greenhouse gases (Moodie et al., 2021).

Table 1. Justice Themes Associated with Just Transition Objectives and Processes

	Justice Theme	Description
Just Transition Objectives	Social	Everyone has a chance for a decent quality of life based on the fair and equitable distribution of resources and opportunities among all members of society.
	Environmental	All members of society have the right to equal protection from environmental and health hazards, and environmental benefits and challenges should be distributed fairly.
	Climate	Addressing the disproportionate impacts of climate change on society by considering historical and current contributions to greenhouse gas emissions.

	Energy	Access to a affordable, reliable, and clean energy is available to all, without discrimination, and energy policies and transitions do not disproportionately harm marginalised communities.
	Ecological	Maintaining a balance between human activities and the natural environment, aiming to prevent ecological harm and ensure that ecosystems are preserved and protected for future generations.
	Economic	A fair and equitable economic system that provides opportunities for all individuals to access basic needs, achieve financial well-being, and reduce income inequality.
	Natural (Resource)	Natural resource justice calls for the wise use of natural resources for the good of all.
Just Transition Processes	Distributive	The fair allocation of resources, challenges, and benefits within society.
	Procedural	The fairness of decision-making processes emphasises the importance of transparent and equitable procedures.
	Recognitional	Acknowledging and respecting the identities, experiences, and cultural differences of individuals and communities, ensuring that they are valued in both social and legal contexts.
	Restorative	Repair previous harms by focusing on reconciliation, rehabilitation, and the active involvement of affected parties in resolving disputes.
	Epistemic	Ensuring that all voices, especially those historically marginalised or underrepresented, are fairly included and respected in the processes of knowledge production, decision-making, and policy formulation.

Source: Author's own adaptation based on Oates & Verveld (2024)

At the policy level, the JT term has evolved within international, national, regional, and local policy frameworks (Tapia et al., 2025). The concept of 'just transition' first emerged in the United States during the 1970s and 1980s when the leader of the American Oil, Chemical, and Atomic Workers Union, Tony Mazzocchi, argued that a "super fund for workers" was required to provide financial and education support for blue-collar workers at risk of unemployment in industries threatened by new environmental legislations (Rosemberg, 2017). In the 1990s, the 'super fund' was retroactively described as a 'just transition fund' and the term "just transition" was officially endorsed by various North American labour organisations.

The 1992 United Nations Conference on Environment and Development led to the establishment of the UN Framework Convention on Climate Change (UNFCCC) to combat human interference with the climate and stabilise greenhouse gas emissions (Tavares, 2022). The first UNFCCC Conference of the Parties (COP) was held in Berlin in 1995, which started climate negotiations that led to the creation of the 1997 Kyoto Protocol (COP III Kyoto Summit). The Kyoto Protocols established legally binding obligations for developed countries to reduce greenhouse gas emissions. Though the term 'just transition' was not central to these discussions, the carbon reduction targets outlined in the Kyoto Protocols were a highly contentious topic for international trade unions as they were concerned about the societal impacts that these targets would have on jobs (Thomas, 2021). The merger between the International Confederation of Free Trade Unions (ICFTU) and the Christian World Confederation of Labour (WCL) into the International Trade Union Confederation (ITUC) in 2006 represented an attempt to strengthen the capacity of international trade unions to influence climate policies (Johansson, 2023). With this merger, the ITUC gained member status within the UNFCCC, and the concept of just transition returned to the forefront of the global climate debate.

As Johansson (2023) notes, working in collaboration with the International Labour Organisation (ILO), the ITUC used the term 'just transition' to illustrate that support for strengthened climate action was compatible with their core mission to secure social justice for workers and affected communities. The notion of just transition was included in the Cancun Agreement at COP16, which noted that 'addressing climate change requires a paradigm shift towards building a low-carbon society [...] while ensuring a just transition of the workforce that creates decent work and quality jobs.' The agreement also recognised 'the importance of [...] promoting a just transition of the workforce [and] the creation of decent work and quality jobs.' (Cancun Agreement cited in Johansson, 2023). The commitment of the ITUC to representing the social impacts of JTs in policy debates within the UNFCCC culminated in the term's inclusion in the 2015 Paris Agreement (COP 21

Paris Summit) which highlighted an imperative to take into account ‘a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities’ (Paris Agreement cited in Johansson, 2023).

In 2015, the ILO published its own guidelines for a JT, where it defined JT as ‘greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent working opportunities and leaving no one behind.’ (ILO, 2015) The ILO guidelines outline the need for high levels of investment in low-carbon technologies; a social dialogue and consultations between policymakers and affected groups; proactive labour market policies based on social protection and worker rights, including financial support and retraining opportunities for the unemployed; early-stage research into the potential socioeconomic impacts of climate policies; and the development of local economic diversification plans (ILO, 2015). The guidelines also make a distinction between social investment policies (e.g., active labour market policies, training and re-skilling policies to increase workers’ employability in a greener economy) and social protection policies (e.g., unemployment and minimum income benefits), meaning that both are required within a just transition framework (Moodie et al., 2021).

The growing importance of the JT concept is evident in other key international policy documents, including the UN 2030 Agenda and corresponding 17 Sustainable Development Goals published in 2015. The 2020 European Union Green Deal (EUGD) became the most comprehensive international policy for delivering JTs, providing both an implementation framework and substantial funding (European Commission, 2019). The EU Just Transition Mechanism (JTM) and Just Transition Fund (JTF) were introduced as part of the EUGD to ensure that ‘no person or place is left behind’ because of climate transitions. Financial support for JTs is available to all member states but is targeted at the most carbon-intensive regions and citizens most vulnerable to transition impacts (European Commission, 2021).

This policy overview shows how the JT concept has evolved from a targeted policy measure focusing on workers affected by industrial transformation towards a more comprehensive strategic global policy framework (Tapia et al., 2025). The term ‘Just Transition’ is largely a policy and academic construct rarely used within a societal context or by citizens (Shaker & Persico, 2024). In recent years, the notions of ‘Just Transition(s)’ and ‘Green Transition(s)’ have been used regularly and interchangeably in policy and academic discourse, along with other iterations, such as ‘Green Transformation(s)’ and ‘Just Transformation(s)’ (Shaker & Berisha, 2025). It has also been increasingly commonplace to find compound references combining both these notions, including ‘Green and Just Transition’, ‘Green Just Transition’, and ‘Just Green Transition’ (Ibid). Shaker and Berisha (2025) point out that the use of the words transition(s) and transformation(s) in both singular and plural form creates confusion as to whether JTs represent a singular phase or goal or several parallel phases and goals. Here, it might be helpful to distinguish between ‘transition’ as the overall goal, i.e. the shift to carbon-neutral societies and economies, and ‘transitions’ as the process in reaching this goal, i.e. the multiple ongoing activities across multiple governance levels and policy spheres in helping to meet the transition goal (Berisha et al., 2025). The term JT now serves as an umbrella term that includes a range of different themes and sectors, including climate, environment, energy, water, air, soil, and food policies (Ibid). While definitions of JTs are extremely broad, Moodie et al. (2025) note that several key dimensions of JTs can be identified in policy and academic discourse. The following section provides an overview of key overlapping and interlinked dimensions that make up JT processes.

3. THE KEY DIMENSIONS OF JUST TRANSITIONS

There is currently no universally agreed-upon definition of JTs, and interpretations vary widely across different stakeholder groups (Shaker & Berisha, 2025). Consequently, the methods for achieving JTs are sometimes unclear and dependent on how different actors perceive transitions in terms of scale, context, and time (Krawchenko & Gordon, 2021). This ambiguity largely stems from a lack of awareness of the JT concept and its core dimensions amongst policymakers and citizens. Oates and Verveld (2024) note that developing a shared baseline understanding of JTs could be useful for providing a common foundational policy framework that can be adapted by stakeholders to suit different contexts. This section of the article contributes towards cultivating a baseline understanding of JTs by outlining the key dimensions of JTs to emerge from policy and research, highlighting the complex, multi-dimensional nature of shifting to carbon-neutral economies and societies. The word ‘dimension’ is used here to refer to the different elements of JTs that JT policies and literature address. Moodie et al. (2025) identify ten core dimensions of JTs based on an interdisciplinary synthesis of existing JT literature and policy documents, with texts selected based on their citation numbers and international policy

relevance. This literature and documentary analysis revealed several key words that consistently emerged across the different texts. These keywords relate to different JT aspects that can be identified as essential dimensions of JT processes. The ten JT dimensions selected are not exhaustive and are open to reinterpretation, addition, and evolution, based on alternative texts and newly emerging academic literature and policy documents. The ten core JT dimensions are outlined in more detail below:

- **Social Dimension:** The ‘Just’ element of JTs focuses on ensuring that transition policies promote fairness and social equality (Tavares, 2022). JTs have the potential for generating different forms of societal inequality and exploitation (Eadson & Van Veelen, 2023). Growing unemployment, limited access to skills and training, and the uneven distribution of available funding can lead to the exclusion and displacement of certain societal groups (Mackinnon et al., 2019; Sovacool et al., 2021). In this context, some individuals and societal groups are more vulnerable than others (Carley et al., 2018). Consequently, the notion of ‘social justice’ has become central to the debate surrounding JTs, so no one region or person gets left behind (Wang & Lo, 2021). The ‘just’ elements are clearly reflected in the 2015 just transition guidelines developed by the International Labour Organisation (ILO 2015). The ‘just’ element is also prominent in the EU’s Green Deal and Just Transition Mechanism and Funds. The social elements are highlighted in the EU’s commitment to worker protection rights and reskilling opportunities. The social justice element of JTs is also evident in the Commission’s commitment to an open and inclusive social dialogue with citizens to promote trust and acceptance of JT policies (European Commission, 2019).
- **Economic Dimension:** JTs present both economic costs and opportunities (Kemfert et al., 2020). It is expensive for large industries and businesses to convert to carbon-neutral internal processes. Economic assistance is essential for regions and sectors to undergo JTs, with high levels of investment needed in low-carbon technologies (Green & Gambhir, 2020). While JTs are costly, there is an economic imperative at the heart of the EU Green Deal that views decarbonization as an opportunity for economic restructuring and diversification (European Commission, 2019). Eadson and Van Veelen (2023) point out that new JT economic pathway development policies need to move beyond traditional high-growth and production-oriented paradigms with a single sector focus. They argue that a multi-sector economic pathway development strategy, based on a degrowth perspective and economic models that support human and ecological well-being, might produce more favourable social and environmental impacts (Ibid). They continue that such an economic development approach might also create stronger synergies between industries and businesses, which is essential for developing circular economy models central to the delivery of effective JTs (Ibid). Within the context of JTs, regional economic development and business diversification processes are policy-induced (Toto et al., 2023). Policy tools are, therefore, required to facilitate the development of long-term innovation ecosystems and new regional economic pathways (Grillitsch & Sotarauta, 2020).
- **Green Dimension:** JTs emphasise the need for sustainable and resilient development that can help societies to mitigate and adapt to climate change, protect biodiversity, and stop environmental degradation (Cedergren et al., 2022). In the JT policy sphere, the environmental dimension is most visible in the long-term climate and environmental targets set by international organisations and national governments, such as the EU’s goal to be net zero by 2050 (European Commission, 2019). At the heart of the ‘green transition’ is the goal of developing a ‘green economy’ and ‘green growth’ (Bogovic & Grdic, 2020). The World Bank (2014) defines green growth as the development of an economic system that is ‘efficient in its use of natural resources, clean in that it minimises pollution and environmental impacts and resilient in that it accounts for natural hazards.’ Green growth promotes carbon neutrality and the shift from linear to circular business models based on the efficient use of natural resources and sustainable patterns of production and consumption (Cedergren et al., 2022).
- **Spatial Dimension:** The impacts of climate transformations will not be neutral from a territorial perspective (Rodríguez-Pose & Bartalucci, 2024). The costs and benefits of JTs may not be shared equally, which could contribute to growing territorial disparities and inequalities between regions (Toto et al., 2023). Furthermore, urban and rural areas possess different territorial assets and

weaknesses that can either strengthen or impede their capacities and ability to adapt to JTs (Coenen et al., 2012). On a spatial level, the closure of a major industry in one region presents opportunities for other regions to strengthen and diversify their own economic base; however, it can also lead to negative spatial displacement effects with socio-economic and environmental burdens being transferred to other areas (Chlebna et al., 2022). JT plans in one region, therefore, need to carefully consider the potential impacts and knock-on effects on neighbouring regions and municipalities, particularly in regions where businesses rely on the materials provided by large-scale industries that face closure or restructuring (Moodie et al., 2021). The sociology of territory and place is an important element of JTs (Binz et al., 2020). JTs have the potential to negatively impact citizens' place-based socio-cultural identities, particularly in regions where communities have built up around large industries (Eadson & van Veelen, 2023). Garvey et al. (2022: p.2) note that local territorial identities will affect how citizens anticipate and experience industrial change, so there needs to be an 'acknowledgement of divergent identities, cultural histories, and power dynamics, and how these may interact with proposed changes... Space is particularly important to recognition justice in terms of recognising specific place identities and how these may shape the acceptability of transition measures.' Space, place, and territory play a central role in framing socio-cultural identities, which will impact citizens' support and acceptance of JT policies. Understanding these spatial identities and how they might affect citizens' responses to JTs is essential for policymakers to frame and communicate their strategies effectively to local communities (Binz et al., 2020). It is important that concepts that embrace territory and local knowledge guide JT policymaking processes, including place-based policymaking, territorial governance, and active subsidiarity (Moodie et al., 2022).

- **Governance Dimension:** The development and implementation of JTs requires a holistic, multi-actor policymaking approach built on collaborative multi-level governance and planning processes (Avelino & Wittmayer, 2016). Public and private actors across different governance levels (EU, national, regional and local) have a central role in determining the direction of JT pathways and targets (Smith et al., 2005). As Geels (2002) explains, transitions occur as the outcome of linkages between developments at multiple levels. Consequently, proactive multi-level institutional and stakeholder co-operation, based on open and inclusive dialogue, is imperative in responding to the socio-economic challenges and opportunities presented by JTs (Sandmann et al., 2025). The importance of collaborative multi-level governance and planning in JT relates to three main elements: 1) ensuring that JT policies are well integrated and coherent across multiple levels of governance (transnational, national, regional and local levels); 2) empowering sub-national level institutions and actors in policymaking processes to ensure that JT policies are carefully tailored to meet regional specificities and the needs of citizens; 3) developing platforms and tools for building connections, creating synergies, and sharing knowledge and ideas between key policymakers, sectors, businesses, researchers, NGOs, and societal groups (Cedergren et al., 2022). Recent research on the development of Swedish EU Territorial Just Transition Plans highlights that the role of sub-national level actors was constrained in a process dominated by the national governments and sectors (Moodie et al., 2021). Snell (2018) and Eadson and Van Veelen (2023) correctly observe that national governments and sectors inevitably have a large role to play as key drivers in JT processes, given the size and scope of transitions and the primary focus on the biggest polluting industries. However, more can be done to promote place-based and bottom-up governance approaches to JTs (Shaneh et al., 2025). JTs cannot be developed and implemented without effective cross-sector collaboration at regional and local levels (Guerrero & Hansen, 2021). Transformations in one industry can have significant knock-on effects on other sectors and businesses (Moodie et al., 2021). To mitigate against the knock-on effects of transitions, it is important that key large-scale sectors develop roadmaps for industrial transition processes that recognise interlinkages between other reliant sectors and businesses.
- **Democratic Dimension:** Citizen acceptance and support for JTs is largely dependent on inclusive, open, and transparent policymaking processes that proactively engage citizens across the policy cycle, through policy development, implementation, and evaluation (Balz et al., 2024). So far, there has been little meaningful citizen engagement in JT processes, with policymaking dominated by EU and national policymakers and sectoral actors (Georgieva & Ferry, 2023). Policymakers can

implement more inclusive and transparent JT processes using citizen engagement tools and methods that proactively involve citizens in the different phases of the JT policymaking cycle. Citizen engagement needs to move beyond one-way information sharing towards interactive participatory methods, which provide citizens with an opportunity to voice their views and influence the direction of JT policies (Georgieva & Ferry, 2024). Enhanced participation is particularly important for those societal groups and citizens who face the worst socio-economic impacts of JTs. From a societal perspective, trade unions, civil society groups, NGOs, and community groups have an important role to play in representing citizen voices and perspectives in JT policy processes (Eadson & Van Veelen, 2023). NGOs and societal groups have a particularly key role in protecting the most vulnerable groups in society from the negative socio-economic impacts of transitions (Buijs et al., 2024).

- **Communicative Dimension:** There is a lack of awareness, information, and knowledge on JTs at the societal level (Shaker & Persico, 2024). Citizen awareness, understanding, and inclusion in JT processes is essential for building citizen support and acceptance for JT objectives, actions, and impacts; however, the semantic and terminological ambiguity surrounding JTs risks creating communicative barriers that could lead to a further breakdown in trust between policymakers and citizens (Sanderson et al., 2024). Policymakers cannot automatically assume that all citizens know and understand what JTs are and involve, so a communicative breakdown can be prevented by, firstly, ensuring that the concept of JT is defined simply in a way that is understandable to citizens. Secondly, JTs are communicated to citizens in a manner that the concept is easily recognised and perceived across all levels of society and adaptable to different territorial contexts (Panarello & Gatto, 2023). Social media can play a significant role in raising public awareness of JTs and can be used as a tool for connecting citizens and policymakers (Falkenberg et al., 2022). Shaker and Persico (2024) have shown that the term JT is barely used in policy and social media discourse, with citizens predominantly using terms such as ‘climate change’, ‘global warming’, ‘climate neutrality’, ‘decarbonisation’, and ‘sustainability’. It is vital that policymakers start to use these terms to promote citizen understanding and lay the foundations for increased citizen involvement in policymaking (Fink et al., 2021).
- **Technical Dimension:** The technical component of JTs relates to the complex and costly technological systems changes required to facilitate the shift towards carbon neutrality (Bergek et al., 2008). Geels (2002) argues that transitions are an outcome of recurrent innovation and technology substitution processes, particularly the internal processes of high-polluting sectors and businesses. The importance of the technical dimension of JTs is reflected in the EU’s commitment to investing large sums of money in carbon-neutral and environmentally friendly production technologies, transport, and renewable energies (European Commission, 2019). An emphasis on restructuring the internal technological processes of the largest greenhouse gas-emitting industries has given large sectors (e.g. mining, steel, cement, mineral industries) a prominent position in JT policymaking (Moodie et al., 2021). Narrowing the focus of JT plans on specific sectors is understandable, as transforming the internal processes of large-scale industries is vital for reducing overall emissions; however, one consequence of a limited sectoral approach is that the technical dimension becomes the predominant focus of JT policies (Ibid). The JT technical dimension also relates to the complex finance models required to implement JTs that often require elaborate combinations of public, private, and philanthropic capital (United Nations, 2023b). Furthermore, JTs promote the development of circular innovation ecosystems, which present technical challenges linked to fostering collaboration between multiple sectors and businesses (Serra et al., 2024; Bourdin & Jacquet, 2025).
- **Temporal Dimension:** JT policies are constructed by policymakers to occur within a specific time frame (Levin-Keitel et al., 2018). JTs are, therefore, inherently temporal, possessing both long-term, medium-term, and short-term time-specific aims and objectives developed in line with politically established climate and environmental targets (Berkhout et al., 2004). There are longer-term time-sensitive targets, such as the EU’s target to become carbon neutral by 2050, and shorter-term time-sensitive policies, including the EU Just Transition Mechanism, that supports EU regions in the

implementation of their EU just transition plans until the end of the current EU Cohesion Policy programme in 2027 (European Commission, 2019). Toto et al. (2023) argue that it is counterproductive to set JT targets around specific time frames, as new equilibria and changing contexts force modifications to plans to meet societal needs and demands. Consequently, JTs need not be time specific but considered as a continuous process that requires amendment and adaptability according to new circumstances (Ibid).

- Resilience Dimension:** The impacts of JTs are closely linked to the regional resilience and adaptive capacity of ecological systems, socio-economic structures, governance processes, and the responsiveness of citizens (Loorbach et al., 2017). Resilience thinking has become widely used in relation to climate and environmental transformations, including an assessment of the impact of JTs on communities and ecosystems (Neuhuber, 2025). Regional resilience refers to the ability of an entity or system to recover from a disturbance or disruption (Martin, 2012). More specifically, it refers to a set of regional territorial capitals (e.g. economic, social, environmental, and institutional assets) that enable a region to respond to a policy shock and maintain system stability and durability while adapting to structural changes and moving to new development pathways (Giacometti & Teras, 2019). The shift to carbon neutrality does not constitute a conventional spontaneous policy shock, as JTs and the need for climate action are an established theme within EU, national and regional level policymaking; however, the socio-economic impacts of these transformations require high levels of regional resilience and adaptive capacity, with new JT rules putting pressure on policymakers, industries, businesses, workers, and citizens (Rodríguez-Pose & Bartalucci, 2024). JT plans built on a territorial governance logic that maximises the territorial asset base can serve to enhance regional resilience and adaptive capacity (Bianchi & Richiedei, 2023). At the same time, however, institutional inertia at regional and local levels, caused by a lack of resources, expertise, or entrenched interests, can potentially slow down transition processes, thereby reducing regional resilience (Braams et al., 2024). Institutional inertia can be overcome by fostering inclusive JT policymaking processes that embrace different actors, knowledge types, and community voices (Stark et al., 2023). The direct engagement of communities in JT processes can also potentially enhance the resilience of citizens to react to the challenges and opportunities that JTs present (Balz et al., 2023).

JTs represent a complex framework of interconnected dimensions (Moodie et al., 2025). The complexity of these interconnections is outlined in Table 2 below, which establishes and explains interlinkages between the different JT dimensions. The temporal dimension of JTs is not included in Table 2 as this is considered a key overarching and cross-cutting dimension that impacts on all other JT dimensions in different ways, including 1) policymaking timetables drive JT processes, which have an impact on democratic and governance dimensions; 2) social, economic, green, and spatial JT dimensions are subject to change over time requiring adaptability and flexibility in JT policy processes; 3) the technical dimension of JT policies is based on short, medium and long-term objectives and goals; and 4) the evaluation of JT policy impacts and resilience are measured over time.

Table 2. Interconnections between Key Just Transition Dimensions

JT Dimension	Interconnected JT Dimensions	Description
Social	Spatial, democratic, governance, communicative	The social impacts of JTs will be experienced differently both across and within regions (spatial dimension). The voices of different societal groups need to be represented in JT processes, which require inclusive and open policy processes involving local actors and citizens, based on local knowledge and expertise (spatial, democratic, and governance dimensions). Effective communication channels (communicative dimension) are required to enhance local stakeholder and citizen engagement in JTs and provide a platform to ensure social challenges and citizen needs are represented.
Economic	Technical, spatial,	The shift from energy-intensive to carbon-neutral industrial and business processes (technical dimension) is costly. Some regions, and specific

	governance, resilience	areas within regions (spatial dimension), particularly urban areas, possess a critical mass of financial assets that can drive JT processes. Economic transformation and diversification require cross-sector and multi-actor collaboration in the development of effective circular innovation ecosystems (governance dimension) that contribute to economic growth and development (resilience dimension).
Green	Social, spatial, resilience	The environmental impacts of JTs will be experienced differently by social groups (social dimension) and areas within regions (spatial dimension). The green and resilience dimensions are closely interrelated as they both focus on restoring and maintaining environmental ecosystems and biodiversity.
Spatial	Social, economic, green, governance, resilience.	Different regions, and specific areas within regions, have divergent territorial assets relating to social, economic and green dimensions, which impact their capacity to react to JT challenges and opportunities. The levels of collaboration between public and private actors (governance dimension) at different spatial scales can also impact the effectiveness of regions to adapt to JT impacts (resilience dimension).
Democratic/ Governance/ Communicative	Social, resilience	The democratic, governance, and communicative JT dimensions are grouped together here as democratic JT processes cannot be conducted without effective collaborative multi-level governance structures and clear communication channels at all stages of the policymaking process. The social dimension of JTs cannot be met without open and inclusive processes involving different stakeholders and citizen perspectives, particularly the voices of societal groups most vulnerable to the impacts of JTs. Open and inclusive collaborative JT processes can also enhance resilience by increasing trust and building networks between actors and citizens.
Technical	Economic, governance, temporal	The shift to carbon-neutral processes is based on complex public-private philanthropic funding models (economic dimension) that require multi-actor involvement (governance dimension) over short, medium, and long-term time frames (temporal dimension).
Resilience	Social, spatial, economic, green, governance	The territorial asset base of a region (spatial dimension) relates to existing socio-economic (social and economic dimensions) and environmental conditions (green dimension), which impact on regional resilience levels. The quality of governance and existing levels of collaboration between public and private actors (governance dimension) can also affect the ability of a region to adapt to JTs.

Source: Author's own construction

Trade unions and civil society groups have voiced concern that JT policies are too focused on the economic and technical dimensions, while neglecting the territorial and social dimensions of transition (Moodie et al., 2021). This is largely due to the weak consideration of democratic, governance, and communicative dimensions in JT processes, which are largely dominated by national governments and large sectors driven by economic imperatives rather than social impacts. Furthermore, there has been limited citizen engagement in JTs, and the role of sub-national actors has been curtailed, thereby weakening the social and territorial dimensions of JTs. The territorial and social dimensions of JTs cannot be strengthened if the democratic, governance, and communicative dimensions of JTs are not open to more inclusive and participatory processes that recognise the voices of different regional and local voices, particularly the societal groups most vulnerable to the impacts of transitions. The resilience dimension may not be fully achieved if democratic, governance, and communicative dimensions are not adequately raising citizen involvement, awareness, and understanding of JTs. Furthermore, the social and environmental dimensions of JTs are not easily separated from the spatial dimension of JTs, as the socio-economic and environmental impacts of transitions will be influenced and exacerbated by regional contexts and specificities, particularly existing territorial assets and weaknesses (Rodríguez-Pose & Bartalucci, 2024). The social dimension needs to be carefully considered in relation to different spatial contexts (Teitje & Cresap, 2018). This is confirmed by Nordberg (2020:48), who argues that ‘geography exercises influence over social circumstances, and such circumstances are ignored if the spatial aspect goes unnoticed regarding the concept of justice.’

While the relationship between different JT dimensions is multifaceted, there is also a disconnect between the key JT dimensions outlined and the different justice themes referenced in Table 1. Table 3 below attempts to build connections by identifying which justice themes relate to different JT dimensions.

Table 3. Relationship Between Just Transition Dimensions and Justice Themes

JT Dimension	Relevant Justice Themes	Description
Social	<i>Social, Distributive, Recognitional, Restorative</i>	The social dimension of JTs stipulates that the costs and benefits of JTs are shared across all citizens. JT policies should recognise the perspectives and needs of all citizens by protecting societal groups most vulnerable to the impacts of JTs and building bridges between different societal groups.
Economic	<i>Distributive, Economic</i>	The economic dimension of JTs relates to distributive and economic justice themes and the fair allocation of financial resources to address the technical, social, and environmental challenges and benefits presented by JTs.
Green	<i>Environmental, Climate, Energy, Ecological, Natural (resource)</i>	The green dimension of JTs attributes to all climate and environmental justice themes that advocate the need for the reduction in greenhouse gases, protecting biodiversity and ecosystems, sharing natural resources, and developing clean and renewable energy.
Spatial	<i>Recognitional, Epistemic, Distributive</i>	Different territorial socio-economic and environmental contexts inform and guide JT processes (recognitional justice), with local stakeholders and citizens bringing important territorial knowledge and expertise into the process (epistemic justice). There is also a need to ensure that the challenges of benefits of JTs are shared across territories and not confined to one specific area (distributive justice).
Governance/ Democratic	<i>Procedural, Recognitional, Restorative, Epistemic</i>	The governance and democratic dimensions of JTs relate to JT policymaking processes that are inclusive and open (procedural justice), recognise different contexts and perspectives (recognitional justice) and welcome different types of knowledge (epistemic justice) in deliberative processes that seek to reduce conflict and find consensus amongst stakeholders (restorative justice).
Communicative	<i>Procedural</i>	Transparent JT processes based on procedural justice are required to enhance citizen and stakeholder awareness and understanding of JTs using jargon-free language that is accessible to all.
Technical	<i>Climate, Environmental, Energy, Natural (resource)</i>	The impetus to support industries and businesses with the transition to sustainable, carbon-neutral, and circular technical processes is driven by the need to reduce the impact of greenhouse gases on the planet. Justice themes related to climate, environment, energy, and natural resources are the catalysts for this technical change.
Temporal	<i>Climate, Ecological, Restorative</i>	The temporal dimension of JTs is reflected in climate, ecological, and restorative justice themes, which emphasise past and future timelines regarding the restoration and protection of the climate and environmental ecosystems.
Resilience	<i>Procedural, Restorative, Ecological</i>	Resilience relates to building strong environmental ecosystems (restorative and ecological justice) and enhancing the capacities of citizens to adapt to the impacts of JTs. The latter requires open and inclusive JT processes (procedural justice) that proactively engage citizens and promote learning and understanding.

Source: Author's own construction

4. INTEGRATING JUST TRANSITION DIMENSIONS INTO JUST TRANSITION POLICY PROCESSES

Policymakers need to carefully consider and address each key JT dimension if they are to facilitate the production of balanced JT policies. This requires policymakers to build policymaking frameworks that integrate and reflect on these dimensions at the very outset of JT processes. Krawchenko & Gordon (2021) note that there remain several gaps in our understanding of how to create pragmatic JT processes involving governments, stakeholders, and citizens. Indeed, there is limited practical guidance for policymakers on how to develop and implement JTs. The ILO's (2015) just transition guidelines provided one attempt to inform and instruct policymakers, albeit from a normative trade union perspective. New guidelines are required for policymakers based on the latest research and conceptual developments, including the key JT dimensions outlined above. Table 4 below provides recommendations for addressing key JT dimensions within JT policymaking processes. The recommendations are targeted at EU, national, regional, and local policymakers responsible for developing and implementing JT policies.

Table 4. Recommendations for Integrating JT Dimensions into JT Policy Processes

JT Dimension	JT Policy Process Recommendations
Social	<ul style="list-style-type: none"> - Conduct social impact assessments to identify which societal groups and communities are most at risk to the impacts of JTs. - Societal groups and NGOs should develop JT social roadmaps highlighting and addressing the main social challenges posed by JT policies within regions. - Ensure that industrial sector JT roadmaps highlight and address the potential social impacts of JTs for workers and communities. - Map any proposed JT policy social actions with existing national social welfare measures to avoid policy duplication.
Economic	<ul style="list-style-type: none"> - Promote the development of diverse multi-sector regional economic pathways that support sustainable and circular business models and ecological wellbeing. - Allocate some (not all) available JT public funding to promote sustainable production and consumption patterns in industries and businesses. - Spread available public JT funding between public and private actors by ensuring that JT procurement processes include all essential JT stakeholders, especially underrepresented actors like societal groups, NGOs, and SMEs. - Avoid funding duplication by mapping EU, national, regional, and local JT policy budgets to ensure that available funding is spread as evenly as possible across different JT dimensions.
Green	<ul style="list-style-type: none"> - Conduct environmental impact assessments focused on identifying the highest polluting regions and those regions most at risk from the environmental impacts of JTs. - Evaluate the levels of exposure of regions to different types of climate and environmental hazards. - Map regional natural and biodiversity protected areas. - Focus JT policies on the promotion of green circular business models that promote the shared and efficient use of natural resources.
Spatial	<ul style="list-style-type: none"> - Ensure that JT policy processes include up-to-date territorial evidence based on regional and local knowledge, expertise, information, and perspectives. - Use territorial analysis to identify which geographic areas within regions are most at risk to the socio-economic and environmental impacts of JTs. - Conduct a JT territorial capital assessment and SWOT analysis in each region to identify areas of regional JT strengths, challenges, threats, and opportunities. - Conduct a territorial impact assessment focused on examining how JTs in one region will impact surrounding regions and municipalities. - Assess the potential impact of JTs on social and community territorial identities.
Governance	<ul style="list-style-type: none"> - Identify EU, national, regional, and local JT policy overlaps to promote policy coherence across governance levels. - Strengthen vertical governance by enhancing the role of regional and local authorities and stakeholders in EU and national-level JT policymaking processes.

	<ul style="list-style-type: none"> - Ensure regional and local JT policy priorities are adequately addressed and integrated into EU and national-level JT plans. - Enhance horizontal governance and cross-sector collaboration by building industrial symbiosis networks and circular innovation ecosystems. - Develop physical and digital platforms to build connections and dialogue between key JT stakeholders. - Develop JT governance action plans highlighting the key roles and responsibilities of different public and private actors, and citizens, at each stage of the JT policy process. - Map interlinkages between large industrial sectors and other businesses to assess the impact and knock-on effects of industrial transitions on reliant stakeholders. - Enhance public authority cooperation by exploring the potential for creating interregional, intermunicipal, and cross-border JT collaboration platforms. - Build the knowledge and capacities of public authorities to formulate and implement effective JTs.
Democratic	<ul style="list-style-type: none"> - Ensure that JT policymaking processes are open, inclusive, and based on equal access to all. - Explore the potential of using citizen engagement tools (standard and digital) to engage local citizens directly in JT policymaking processes. - Overcome power asymmetries and reduce the potential for policy domination by national policymakers and sectoral actors by creating deliberative policy co-creation processes that facilitate discussion around multi-actor perspectives, including policymakers, sectors, trade unions, universities, SMEs, NGOs, societal groups, and citizens. - Ensure that traditionally underrepresented groups are invited and actively involved in JT policy processes, particularly societal groups, NGOs, and SMEs that often lack the time and resources to participate. - Create forums for societal groups and NGOs to ensure that citizen perspectives are adequately represented, especially the views of communities most affected by the potential impacts of JTs.
Communicative	<ul style="list-style-type: none"> - Raise citizen awareness and understanding of JTs by using jargon-free language that is accessible to all and easy to comprehend. - Utilise social media and other information dissemination channels to raise stakeholders' and citizens' awareness about the possibility of participating in JT policymaking processes. - Widely communicate JT policy decisions, highlighting the main actions to be taken and providing a communication channel to receive stakeholder and citizen feedback on policy proposals. - Keep citizens up to date with JT policy processes by disseminating the results of JT policies throughout the implementation and evaluation phases of the policymaking process.
Technical	<ul style="list-style-type: none"> - Provide industries and businesses with practical examples of JT technical processes and models to guide their transformation towards sustainable carbon / carbon-free internal processes. - Create platforms for industries and businesses to share knowledge and experiences related to JT technical practices.
Temporal	<ul style="list-style-type: none"> - Build a balanced JT temporal portfolio including short, medium and long-term JT policy goals and targets. - Let the policy determine the timeline, establishing which JT policy objectives can be achieved quickly and which policy objectives require more time. - Set realistic timelines for assessing JT policy impact using measurable monitoring and evaluation indicators. - Be prepared to adapt timelines according to changing contexts and newly emerging JT policy challenges and opportunities.
Resilience	<ul style="list-style-type: none"> - Examine the adaptive capacity of regions, assessing existing institutional, economic and social structures and their preparedness to cope with the impacts of JTs. - Develop JT policies that focus on the promotion of environmental and biodiversity protection and recovery.

	<ul style="list-style-type: none"> - Assess how the existing territorial asset can be used to respond to the challenges and opportunities presented by JTs. - Prioritise JT policies that promote sustainable energy and food systems at the regional level. - Build citizen resilience by identifying what types of education and training needs are required to help them adapt to new regional JT labour markets (from basic education to academic, vocational, and life-long learning opportunities).
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Source: Author's own construction

5. CONCLUSION

Despite its widespread adoption in policy and academic discourse, the term JT faces definitional ambiguities, often compounded by varied interpretations of JTs and their key dimensions (Verveld & Oates, 2024). This paper attempts to bridge the gap between JT research and policy by identifying the key dimensions of the JT concept and providing recommendations on how these dimensions can be practically addressed in JT policy processes. It is important that EU, national, regional, and local JT policies are developed and implemented on a well-defined just transition concept (Moodie et al., 2021). The key JT dimensions outlined in this article provide policymakers with a framework or checklist for formulating balanced JT policies. As there is no one-size-fits-all approach to JTs, it is essential to acknowledge the rights of the EU, nation states, and regions to interpret and implement the JT concept and dimensions in different ways in diverse contexts, while also attempting to provide some coherent conceptual guidance so JT policies adequately address all key JT dimensions and justice themes. The multi-dimensional JT framework outlined in this paper underscores the need for adaptive, context-sensitive JT approaches that prioritise long-term sustainability, but remain flexible to newly emerging territorial JT challenges and opportunities (Moodie et al., 2025).

The JT framework can be applied by policymakers in EU member states that are more advanced in their transitions to help evaluate and restructure ongoing processes, but it can also be used as a starting point for countries outside the EU embarking on transition processes. Taking a multi-dimensional approach to JTs is essential for countries going through industrialisation processes that must strike a balance between regional development needs and climate and environmental sustainability. In these countries, it is important to ensure that economic growth and diversification, driven by industry, do not come at the expense of addressing social and environmental challenges. An inclusive multi-actor and territorial approach is also pivotal in countries where large industrial sectors can potentially dominate JT processes due to powerful vested interests and close connections with policymakers. These potential pitfalls and power asymmetries further illustrate that JTs are not merely economic, technical, or environmental endeavours, but are inherently social, political, and territorial processes that can enhance regional resilience (Berisha et al., 2025). Further research is, however, needed to identify and establish links between each core JT dimension and existing JT policy and process best practices. This practical operationalisation of JT dimensions would further support policymakers in achieving integrated JTs that harmonise all JT dimensions, prioritise equity, and respond to heterogeneous territorial contexts.

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