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## The Green Transition will be just – Or it won't succeed

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### ABSTRACT

The European Commission defines the Green Transition as the transformation set out in the European Green Deal. Ensuring that this transition is just is both an ethical requirement and a practical condition for maintaining public support and policy effectiveness. This Perspective proposes a multidimensional framework for assessing justice in Green Transition policies, encompassing distributional, procedural, recognitional, corrective, and transitional dimensions. Considering these dimensions in conjunction helps identify where justice claims converge and where genuine policy trade-offs arise, which should be made transparent and addressed through public deliberation. It sheds light on additional justice considerations which tend to get overlooked in many policy debates that focus predominantly on distributional justice concerns. Moreover, its multidimensionality is helpful in overcoming zero-sum framings which often present impediments for embedding justice throughout the policy cycle.

### 1. The imperative for a just Green Transition

The European Commission (EC) defines the Green Transition as the transformative shift embodied in the *European Green Deal* – the European Union's (EU) overarching growth and climate strategy aiming to make Europe climate-neutral by 2025 (European Commission (EC), 2025a, 2025b). This involves reforming how European economies function, reducing greenhouse gas emissions, cutting pollution, and protecting

ecosystems. Since the announcement of the Green Deal strategy in 2019 (European Commission (EC), (2019)), the EU has delayed some of its goals (Mathiesen, 2025, European Commission: Joint Research Centre et al., 2025). However, the strategy continues to seek to ensure a just transition, so that 'no one is left behind' as a greater shift towards renewable energy, circular economic practices, and sustainable industry unfolds.

The need for a just transition<sup>1</sup> is clearly apparent. There is evidence

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<sup>1</sup> We are conscious of the problematic nature of the term 'transition' in this context. First, as several scholars have noted (e.g. Fressoz, 2024), the term *transition* risks implying a linear and well-bounded process in which one clearly identifiable energy regime is replaced by another. In reality, contemporary energy systems are characterised by layering, overlap, and uneven change rather than a 'transition'. Second, the term 'transition' sometimes masks the inability or unwillingness of political and economic leaders to enable real change (see also Palley, 2013: 193). Given how entrenched the term is in the EU policy context, we use the term when referring to EU policy, while subscribing to the view that the path to more ecologically sustainable futures in Europe will require a reconfiguration of our political economy.

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that climate change and environmental degradation exacerbate existing inequalities and create new forms of injustice (e.g. Barry, Patz, 2015; Romanello et al., 2023; Zahnov et al., 2025). This inequity underscores, first, the ethical necessity of embedding justice into the Green Transition. Second, there is also a strategic reason to do so, as processes perceived as unjust erode public trust, political legitimacy, and social cohesion and support (Slovic, 2000; Velicu and Barca, 2020). Put differently, a Green Transition strategy that is not perceived as just undermines its own feasibility.

At the same time, justice is a concept that includes several dimensions that can overlap or be in tension. In the context of the Green Transition, justice considerations typically focus on the fair allocation of resources, benefits, and burdens – i.e. the distributional dimension of justice. Yet other dimensions are also relevant, namely procedural, recognitional, and corrective aspects of justice. In this article we discuss how such a multidimensional concept of justice for the Green Transition can be integrated in relevant policies. We also address an important impediment to such an integration, namely the dominance of zero-sum thinking – referring to the assumption that benefits to one group or goal will inevitably come at the cost of another.

## 2. What does it take to make the Green Transition just?

Zimm and colleagues identified five key dimensions of justice – distributional, procedural, recognitional, corrective, and transitional – that are particularly relevant to the Green Transition (Zimm et al., 2024). Our recent Opinion on the Just Transition (European Group on Ethics in Science and New Technologies EGE, 2026) suggests that policy makers at EU, national, and regional levels should consider these five dimensions of justice in conjunction when developing, implementing, and evaluating green transition policies. Each of the five dimensions foregrounds overlapping, but also different concerns. This means that each dimension may direct attention to different groups, harms, and trade-offs, and considering them together allows policymakers to identify both convergences and tensions between justice claims. Where all five dimensions consistently point to the same groups as particularly burdened or disadvantaged, this provides a strong justification for foregrounding efforts to redistribute benefits and risks accordingly. At the same time, assessing these dimensions in conjunction may produce conflicting results – for example, where one group emerges as especially salient from a distributional perspective while another demands priority on corrective grounds. Such conflicts cannot be resolved through technocratic or expert ethical assessment alone. They require public deliberation and institutional mechanisms capable of negotiating competing claims in transparent and accountable ways.

Before we explain how these five dimensions can be used in conjunction to aid policy making, we will outline how each of them are relevant to the Just Transition context. First, *distributional* justice focuses on the equitable allocation of the costs and benefits of the Green Transition across individuals, groups, nationally, and globally. For example, climate policies, such as carbon pricing, can disproportionately burden low-income households, who already face significant socio-economic challenges (e.g. Mengesha & Roy 2025). As a measure of distributional justice, revenues from carbon pricing could be redirected toward social and environmental programmes to mitigate these impacts. Importantly, distributional justice encompasses the present-day allocation of burdens and benefits and does not in itself address how these distributions came about historically, or how they evolve over time. As we explain below, these foci necessitate the inclusion of corrective and transitional justice as distinct dimensions. Relatedly, the principle of distributional justice also extends to global equity. Low-income countries, which have contributed the least to climate change, often experience its most severe consequences. Mechanisms such as the EU's Carbon Border Adjustment Mechanism (CBAM) could be leveraged to support low-income countries in transitioning to sustainable practices (e.g. by channelling revenue into industrial decarbonisation funds or the

building of green infrastructure in low-income countries). This requires, of course, that distributional objectives are not pursued in isolation from historical responsibility and future transition pathways (e.g. Perdana and Vielle, 2022; Oger and Leturcq, 2025).

Second, *procedural* justice emphasises the fairness of processes by which decisions are made, rather than only their outcomes. At all levels of policy making, Green Transition policies should be developed through transparent mechanisms that actively involve diverse stakeholders, including marginalised groups such as low-income households, Indigenous communities, and other groups exposed to disproportionate risks. It also requires the participation of local communities, such as farmers facing drought or coastal residents confronting sea-level rise, and civil society organisations, including environmental NGOs, trade unions, youth climate movements, and health advocates. Existing participatory structures, such as Citizens' Climate Assemblies and EU Citizens' Panels, provide models for ensuring that such voices are heard and integrated into policymaking (Cherry et al., 2021). Procedural justice also demands institutional and legal measures to ensure that public contributions are meaningfully incorporated into decisions (Dryzek, 2022).

As a third dimension, *recognitional* justice addresses the need to respect and value diverse identities, cultures, and perspectives in climate action. Disadvantaged and marginalised groups – such as workers in carbon-intensive industries, Indigenous communities, women, elderly people, or low-income groups – often face intersecting vulnerabilities that amplify the impacts of climate change. Recognitional justice seeks to ensure that the unique experiences, knowledge and perceptions of all societal groups are considered. Adaptation strategies at all levels of policy making should be culturally sensitive and tailored to the specific needs of different communities (Schlosberg, 2004; Ford et al., 2016; Whyte, 2017). Recognitional justice plays a crucial bridging role between distributional and corrective claims, as failures of recognition often underpin both current inequalities and historically rooted injustice.

Fourth, *corrective* justice addresses harms that have already occurred and seeks to remedy them through restitution, compensation, or other forms of redress. It engages explicitly with historical responsibility and structural harm, including the legacies of colonialism and other extractivist and oppressive regimes and practices which continue to shape vulnerabilities today (e.g. Hanaček et al., 2024). While related ideas have been developed under labels such as restorative justice or Earth system justice (Gupta et al., 2023), they are rarely integrated explicitly into just transition frameworks, where attention tends to focus on forward-looking policy design. At the EU level, instruments such as the Just Transition Mechanism and Social Climate Fund can be interpreted as partial corrective measures insofar as they acknowledge and seek to address accumulated disadvantages (Regulation (EU), 2021/1056; Regulation (EU), 2023/955). Treating corrective justice as a distinct dimension helps clarify when redistribution is insufficient, and when repair of past harm is required. It should also include processes of repairing, reconciling, and restoring relationships after harm (e.g. Forsyth et al., 2021; Robinson and Carlson, 2021).

Fifth, *transitional* justice focuses on the justice implications of large-scale socio-economic transformation itself. Whereas corrective justice looks backward and distributional justice is largely focused on the present as well as on the future at a given moment, transitional justice is explicitly concerned with change over time, recognising that the Green Transition will inevitably create new risks, burdens, and forms of disruption even when well intentioned. While aspects of these challenges are discussed in the Just Transition literature (e.g. Kortetmäki et al., 2025), they are rarely conceptualised as a separate justice dimension. Transitional justice highlights that managing change fairly requires anticipation, compensation, and institutional support for those negatively affected by structural shifts, such as workers in carbon-intensive sectors or communities facing rapid economic configuration (Klinsky and Brankovic, 2018; Stark et al., 2023). By foregrounding temporal dynamics and transformation-related harms,

transitional justice complements the other dimensions of justice and makes explicit why justice cannot be assessed solely at a single point in time.

The value of treating the five justice dimensions becomes clear when applied to concrete policy situations. In some cases, the different dimensions converge on similar conclusions. For example, the rapid phase-out of coal in regions heavily dependent on carbon-intensive industries often emerges as unjust across all five dimensions: distributional justice highlights the concentration of economic losses among already vulnerable workers and communities; procedural justice points to their frequent exclusion from meaningful decision-making; recognitional justice draws attention to the devaluation of local knowledge, identities, and histories tied to industrial labour; corrective justice underscores the role of past policy choices and extractive economic models that have produced long-standing disadvantages; and transitional justice emphasises the risks of abrupt structural change without adequate support. When all five dimensions align in this way, they provide a strong justification for prioritising protective and compensatory measures for these groups.

In other cases, our multidimensional approach reveals tensions. Consider the expansion of renewable energy infrastructure, such as large-scale wind or solar projects. From a distributional justice perspective, these projects may deliver widespread climate benefits and lower energy costs for many, while procedural justice may be reasonably well addressed through consultation processes. Recognitional justice may highlight harms to specific communities - such as rural populations - whose cultural ties to land are insufficiently acknowledged. At the same time, corrective justice may prioritise communities historically exposed to environmental harm elsewhere as deserving greater reparative attention, while transitional justice may identify different groups again as particularly at risk from rapid land-use change or economic displacement. In such cases, the five dimensions do not point to a single prioritised group or solution. Instead, they make visible competing justice claims that cannot be resolved through technical assessment or implementation reporting alone and therefore require public deliberation, political judgement, and institutional mechanisms capable of continuously negotiating trade-offs transparently and democratically.

In addition, conflicts between justice claims can be addressed through layered policy instruments that allow different dimensions to be uncovered and targeted simultaneously rather than sequentially. For instance, large-scale renewable projects could be paired with mandatory local benefit-sharing mechanisms (such as community ownership stakes or guaranteed local energy price reductions) to address distributional concerns; cultural and ecological co-design processes can help to realise recognitional justice; and earmarked transition funds for communities that have borne cumulative environmental harms can advance corrective justice. Transitional justice concerns can be addressed through time-bound protections, such as retraining guarantees, long-term land stewardship contracts, or adaptive zoning rules that allow for periodic reassessment as social and economic impacts evolve.

To avoid relegating justice to one-off compensation procedures, institutions at all levels of policymaking must be required to revisit decisions over time. Embedding renewable infrastructure projects within review cycles with sunset clauses or mandatory post-implementation evaluations creates space for adjustment if initial justice trade-offs prove untenable. In this way, democratic deliberation is not confined to a single decision point but becomes an ongoing process through which justice claims remain contestable, responsibilities traceable, and political choices accountable. This is particularly significant in light of the development of the intertemporal assignment of rights, for example to future generations, in various jurisdictions.

### **3. Challenges in operationalising justice in Green Transition policies: the trap of zero sum thinking**

Policy-making towards a Just Green Transition must address the

interwoven crises of climate change, biodiversity loss, and ecological degradation while aiming to achieve social equity and economic stability. Adding to this complexity are diverse variables, many of which are difficult to pinpoint and quantify, and whose interactions create emerging properties. Policymakers must navigate unpredictable environmental impacts, rapidly evolving technologies, and shifting societal needs (also due to demographic changes). This requires adaptive governance approaches that combine universal standards with local adaptability (Brunner and Lynch, 2013; Wagenaar and Prainsack, 2021; Nolte and Lindenmeier, 2024; Hakiman and Sheely, 2025), and that do not plan merely for the short term. EU institutions, national governments, and regional and local authorities should prioritise anticipatory assessments, learning and flexibility to respond effectively to unforeseen challenges and to integrate new knowledge as it emerges.

Considering this complexity, the prevalence of zero-sum thinking in political climate justice debates presents a considerable barrier to achieving a Just Green Transition. Also because of the dominance of distributional justice aspects in Green Transition policy discourse, public debates on climate measures are often underpinned by the assumption that gains for one group must come at the expense of another or framing ecological sustainability and economic growth as mutually exclusive goals (Nordensvard and Ketola, 2022; Burgstaller and Florack, 2025). While helpful in some very specific situations, zero-sum thinking is often both simplistic and counterproductive. It risks undermining collective action by fostering division and resistance, particularly among those who perceive themselves as bearing the brunt of the Green Transition's costs.

Zero-sum thinking is problematic also for a multidimensional approach to justice. When gains for one group are considered entailing significant losses for another, this forecloses the possibility of addressing multiple justice claims simultaneously. When justice dimensions are assessed in isolation and framed in oppositional terms - for example, jobs versus climate action, affordability versus ambition, or climate protection versus social protection - policy debates tend to collapse into distributive trade-offs. Some trade-offs are real and inevitable - for example, when urgently needed renewable energy infrastructure imposes land-use burdens on specific communities, or when absolute emission caps are in place. In most cases, however, conflicts that are framed as zero-sum are not intrinsically so. They appear as, or become, zero-sum situations because of contingent political choices, institutional arrangements, or narrow temporal horizons. Public budgets, for example, are not fixed facts of nature but products of fiscal rules, taxation choices, and spending priorities. Treating them as immovable transforms distributive questions that could benefit society at large into artificial zero-sum conflicts, even though alternative revenue mechanisms, debt instruments, or longer-term investment strategies could expand the available policy space.

Similarly, conflicts between climate ambition and social protection often arise because policies are designed in silos or evaluated over short time frames. Measures such as carbon pricing may initially appear to pit emissions reductions against affordability, yet this tension largely disappears when revenues are recycled, complementary investments are made, or transition periods are extended. What may look like a zero-sum trade-off is frequently the result of policy design that externalises costs onto specific groups or moments in time rather than distributing them more equitably. Recognising that constraints can be malleable allows a multidimensional justice approach to fulfil its purpose: not to deny conflict where it actually exists, but to distinguish between truly unavoidable trade-offs and those that persist only because alternative political and institutional choices have been foreclosed. For example, compensating workers affected by coal phase-outs through retraining, regional investment, and social protection need not undermine climate goals, but can strengthen transitional and corrective justice while sustaining political support. Similarly, investments in energy-efficient social housing can advance not just distributional justice for low-income households but also recognitional justice by addressing lived

vulnerabilities and transitional justice by cushioning long-term structural change. In short, while zero-sum framings truncate the analytical and political potential of a multi-dimensional justice approach, replacing deliberation over how to align justice claims with a narrow focus on who must lose, the multidimensional approach can reveal where losses can be prevented, shared more fairly, or transformed into collective gains.

What helps in this context is an approach that emphasises the interconnectedness of ecological, economic, and social goals. Addressing inequality and environmental degradation simultaneously can yield synergistic benefits. National and European policies that reduce energy poverty by improving access to renewable energy not only mitigate climate change but also enhance social equity. By rejecting crude zero-sum thinking and embracing a holistic approach, policymakers can foster a shared sense of purpose and responsibility, ensuring that the Green Transition benefits and is accepted and gains the support of all segments of society.

An additional challenge lies in creating the conditions for meaningful and informed societal acceptance and commitment the Green Transition. Once justice-focused policies and evaluation metrics have been developed, effective communication and public engagement are needed to communicate the meaning and importance of these policies (e.g. Gray and McArdle, 2025). This, in turn, requires more than merely presenting scientific facts to publics. Transparent and inclusive dialogue that welcomes diverse perspectives can build public trust and enhance the legitimacy of climate policies. Making consultation processes more transparent and accessible, publicly sharing both draft and final plans along with clear explanations of the choices made and their expected impacts, and facilitating structured dialogues with local communities before key decisions are finalised are essential components of the EU's required policy shift.

#### 4. Improving the implementation and evaluation of Just Transition policies

To ensure that the Green Transition is just, justice cannot remain a declaratory principle confined to policy documents, it must be embedded throughout the policy cycle, from agenda-setting and design to implementation, monitoring, and revision. The European Green Deal, and particularly the EU's just transition architecture does mark an attempt to move beyond rhetorical invocations of justice toward operationalisation, notably through the creation of dedicated funding instruments, eligibility criteria, and governance procedures tied to decarbonisation processes. At the same time, operationalising a multidimensional understanding of justice poses particular challenges in the EU context. Despite normatively ambitious climate policies, implementation often falls short (e.g. Dupont et al., 2024; Kovács et al., 2024): adoption varies across member states, local actors are weakly involved, and administrative capacities are uneven. By channeling support through project-based funding and requiring alignment with predefined transition pathways, the EU shifts responsibility for social adjustment to member states and regions. This narrows the capacity of just transition policies to address structural inequalities and reproduces existing territorial and institutional asymmetries within the Union.

A further challenge lies in translating abstract justice principles into context-sensitive policy instruments and socially robust Territorial Just Transition Plans. As the multidimensional framework makes clear, different justice dimensions generate distinct - and sometimes competing - policy demands. Yet current funding rules and evaluation practices prioritise rapid disbursement, absorption rates, and timely delivery remaining largely subordinate to competitiveness, growth, and emissions-reduction priorities, while giving insufficient weight to whether policies actually reduce inequalities, address historical harms, or mitigate Green Transition-related risks. This narrows attention to limited distributive outputs while sidelining corrective and transitional justice.

The EU's Just Transition Mechanism and Social Climate Fund illustrate both the promise and the limits of existing approaches for achieving a Green Transition that would also be just (Regulation (EU), 2021/1056; Regulation (EU), 2023/955). While these instruments explicitly aim to support affected regions, communities, and workers, their success is assessed largely through financial and emissions-related indicators. This means that justice remains unevenly measured, with limited attention to procedural inclusion, recognitional adequacy, and corrective effects. Effective Just Transition policies require assessment tools and performance indicators that systematically capture impacts across all five justice dimensions (e.g. Markkanen and Anger-Kraavi, 2019; Crespy and Munta, 2023).

Using the multidimensional justice framework proposed in this paper (building on IIASA, 2025), human rights standards can provide concrete benchmarks or indicators for identifying and addressing justice deficits in implementation. Anchoring climate action in enforceable rights helps ensure that the Green Transition delivers not only environmental benefits but also respect for dignity, participation, and substantive equality, particularly for those most exposed to its social and economic disruptions (e.g. Schäfer et al., 2020; Meier et al., 2022).

#### 5. Conclusion: toward a just Green Transition

The urgency of embedding justice in a systematic way in the Green Transition cannot be overstated. Justice should not be treated as a secondary concern or a constraint on climate action, but as a constitutive element of what a shift towards more ecologically sustainable futures entails in the first place. Approaching justice as an add-on rather than a core principle may undermine the EU's climate ambitions. The Green Transition opens a rare window of opportunity to address entrenched injustices and to align ecological sustainability with broader social and economic transformation. If it succeeds, it could serve as a template for other societal transformations demonstrating how different forms of justice can be operationalised in a complementary way.

Using a multidimensional understanding of justice – encompassing distributional, procedural, recognitional, corrective, and transitional dimensions – can help to identify situations in which justice claims converge, as well as those in which they conflict, making visible the trade-offs that inevitably accompany transformative change. While the framework does not offer technocratic solutions to such tensions, it can help to clarify where justice considerations point towards a clear path forward, and where political judgement and democratic deliberation are required. It also helps to identify where interests of different groups are aligned, sometimes in contrast with political narratives that foreground zero-sum narratives.

Realising a just Green Transition depends not only on ambitious targets or financial instruments, but on embedding justice considerations throughout the policy cycle, from agenda-setting and design to implementation, monitoring, and revision. It also requires moving beyond narrow metrics of efficiency or emissions reduction towards evaluation frameworks capable of capturing distributional impacts, lived experiences, and longer-term transition effects, which reflect justice concerns. Sustained public engagement and education are essential in this process, not as add-ons, but as core elements of democratic climate governance capable of building legitimacy and enabling societies to navigate difficult trade-offs.

Ultimately, grounding the Green Transition in justice is both an ethical aspiration and a condition for durable and transformative climate action. Institutionalising multidimensional justice at the heart of climate policy can help facilitate a societal shift towards ecological sustainability and social equity – and one that is also politically legitimate.

#### CRediT authorship contribution statement

**Neves Maria:** Writing – review & editing, Writing – original draft,

Conceptualization. **Nils-Eric Sahlin**: Writing – review & editing, Writing – original draft, Conceptualization. **Nikola Biller-Andorno**: Writing – review & editing, Conceptualization. **Jeroen van den Hoven**: Writing – review & editing, Conceptualization. **Thérèse Murphy**: Writing – review & editing, Conceptualization. **Tamar Sharon**: Writing – review & editing, Conceptualization. **Takis Vidalis**: Writing – review & editing, Conceptualization. **Mihalis Kritikos**: Writing – review & editing, Conceptualization. **Barbara Prainsack**: Writing – review & editing, Writing – original draft, Formal analysis, Conceptualization. **Migle Laukyte**: Writing – review & editing, Conceptualization. **Paweł Łuków**: Writing – review & editing, Conceptualization. **Fruzsina Molnar-Gabor**: Writing – review & editing, Conceptualization.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Data availability

No data was used for the research described in the article.

### References

- Barry, S.L., Patz, J.A., 2015. Climate change, human rights, and social justice. *Ann. Glob. Health* 81, 310–322.
- Brunner, R., Lynch, A., 2013. *Adaptive Governance and Climate Change*. Springer.
- Burgstaller, L., Florack, A., 2025. Sacrificing for the environment: The role of non-zero-sum beliefs. *J. Environ. Psychol.* 103, 102577.
- Cherry, C., Capstick, S., Demski, C., Mellier, C., Stone, L., Verfuert, C., 2021. *Citizens' climate assemblies: Understanding public deliberation for climate policy*. Project Report. Cardiff University.
- Crespy, A., Munta, M., 2023. Lost in transition? Social justice and the politics of the EU green transition. *Transf. Eur. Rev. Labour Res.* 29, 235–251.
- Dryzek, J.S., 2022. *The Politics of the Earth*. Environmental Discourses. Oxford Univ. Press.
- Dupont, C., et al., 2024. Three decades of EU climate policy: Racing toward climate neutrality? *WIREs Clim. Change* 15, e863.
- European Commission (EC), 2019. *The European Green Deal*. Communication No. COM, p. 640. (<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1576150542719&uri=COM%3A2019%3A640%3AFIN>) (final. Available at).
- European Commission (EC). *Green Transition*. Available at: ([https://reform-support.ec.europa.eu/what-we-do/green-transition\\_en](https://reform-support.ec.europa.eu/what-we-do/green-transition_en)) (accessed 26 December 2025) (2025a).
- European Commission (EC). *The European Green Deal*. Available at: ([https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal\\_en](https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en)) (accessed 26 December 2025) (2025b).
- European Commission: Joint Research Centre, Marelli, L., Trane, M., Barbero Vignola, G., Gastaldi, C., Guerreiro Miguel, M., Delgado Callicó, L., Borhardt, S., Mancini, L., Sanye Mengual, E., Gourdon, T., Maroni, M., Georgakaki, A., Seigneur, I., M'Barek, R., Acs, S., Listorti, G., et al., 2025. *Delivering the EU Green Deal - Progress towards targets*. Available at: (<https://data.europa.eu/doi/10.2760/3105205>). Publications Office of the European Union, Luxembourg.
- European Group on Ethics in Science and New Technologies (EGE), 2026. *Towards a Just Green Transition: Addressing Structural Inequalities*. Publications Office of the European Union, Brussels.
- Ford, J.D., et al., 2016. Including Indigenous knowledge and experience in IPCC assessment reports. *Nat. Clim. Change* 6, 349–353.
- Forsyth, M., et al., 2021. A future agenda for environmental restorative justice? *Int. J. Restor. Justice* 4 (1), 16–38.
- Fressoz, J.B., 2024. *More and more and more: An all-consuming history of energy*. Random House.
- Gray, E.K., McArdle, R., 2025. Communities and the European Green Deal: opening 'sites of struggle' for a democratic energy transition. *J. Eur. Integr.* 47, 193–215.
- Gupta, J., et al., 2023. Earth system justice needed to identify and live within Earth system boundaries. *Nat. Sustain.* 6 (6), 630–638.
- Hakiman, K., Sheely, R., 2025. Unlocking the potential of participatory planning: How flexible and adaptive governance interventions can work in practice. *Stud. Comp. Int. Dev.* 60, 43–80.
- Hanaček, K., Kröger, M., Martínez-Alier, J., 2024. Green and climate colonialities: Evidence from Arctic extractivisms. *J. Polit. Ecol.* 31, 538–566.
- IIASA. *Applied Justice Taxonomy and Assessment Framework (AJUST)* (International Institute for Applied Systems Analysis, 2025). Available at: (<https://iiasa.ac.at/models-tools-data/ajust>) (accessed 11 January 2026).
- Klinsky, S., Brankovic, J., 2018. *The Global Climate Regime and Transitional Justice*. Routledge.
- Kortetmäki, T., Timmermann, C., Tribaldos, T., 2025. Just transition boundaries: Clarifying the meaning of just transition. *Environ. Innov. Soc. Transit.* 55, 100957.
- Kovács, A.D., Farkas, J.Z., Vasárus, G.L., Balla, D., Kiss, E., 2024. Climate policy contradictions in light of the policy paradigms - the case of the Visegrád Countries. *Environ. Sci. Policy* 154, 103689.
- Markkanen, S., Anger-Kraavi, A., 2019. Social impacts of climate change mitigation policies and their implications for inequality. *Clim. Policy* 19, 827–844.
- Mathiesen, K. Ursula von der Leyen amputates the Green Deal to save its life. *Politico* (25 June), available at: (<https://www.politico.eu/article/ursula-von-der-leyen-green-deal-eu-politics-economy-policy/>) (accessed 26 December 2025) (2025).
- Meghesha, I., Roy, D., 2025. Carbon pricing drives critical transition to green growth. *Nat. Commun.* 16, 1321.
- Meier, B.M., Bustreo, F., Gostin, L.O., 2022. Climate change, public health & human rights. *Int. J. Environ. Res. Public Health* 19, 13744.
- Nolte, I.M., Lindenmeier, J., 2024. Creeping crises and public administration: a time for adaptive governance strategies and cross-sectoral collaboration? *Public Manag. Rev.* 26, 3104–3125.
- Nordensvard, J., Ketola, M., 2022. Populism as an act of storytelling: Analyzing the climate change narratives of Donald Trump and Greta Thunberg as populist truth-tellers. *Environ. Polit.* 31, 861–882.
- Oger, A., Leturcq, P., 2025. The EU CBAM's reform and remaining implementation challenges for low- and middle-income countries. *Institute for European Environmental Policy* (accessed 11 January 2026).
- Palley, T.I., 2013. Gattopardo economics: The crisis and the mainstream response of change that keeps things the same. *Eur. J. Econ. Econ. Policies* 10 (2), 193–206.
- Perdana, S., Vielle, M., 2022. Making the EU Carbon Border Adjustment Mechanism acceptable and climate friendly for least developed countries. *Energy Policy* 170, 113245.
- Regulation (EU), 2021. 2021/1056 of the European Parliament and of the Council of 24 June 2021 establishing the Just Transition Fund. *Off. J. Eur. Union L* 231, 1–20.
- Regulation (EU), 2023. 2023/955 of the European Parliament and of the Council of 10 May 2023 establishing a Social Climate Fund and amending Regulation (EU) 2021/1060. *Off. J. Eur. Union L* 130, 1–51.
- Robinson, S.A., Carlson, D.A., 2021. A just alternative to litigation: applying restorative justice to climate-related loss and damage. *Third World Q.* 42 (6), 1384–1395.
- Romanello, M., et al., 2023. The 2023 report of the Lancet Countdown on health and climate change: the imperative for a health-centred response in a world facing irreversible harms. *Lancet* 402, 2346–2394.
- Schäfer, L., Künzel, V. & Jorks, P. *A human rights-based approach to climate and disaster risk financing*. Germanwatch Policy Paper (2020). Available at: ([https://www.germanwatch.org/sites/default/files/Human%20Rights%20Based%20Approach%20to%20CDRF\\_0.pdf](https://www.germanwatch.org/sites/default/files/Human%20Rights%20Based%20Approach%20to%20CDRF_0.pdf)) (accessed 11 January 2026).
- Schlosberg, D., 2004. *Reconceiving environmental justice: global movements and political theories*. *Environ. Polit.* 13, 517–540.
- Slovic, P., 2000. *The Perception of Risk*. Earthscan Publications.
- Stark, A., Gale, F., Murphy-Gregory, H., 2023. Just transitions' meanings: a systematic review. *Soc. Nat. Resour.* 36, 1277–1297.
- Velicu, I., Barca, S., 2020. The just transition and its work of inequality. *Sustain. Sci. Pract. Policy* 16 (1), 263–273.
- Wagenaar, H., Prainsack, B., 2021. *The Pandemic Within: Policy Making for a Better World*. Policy Press.
- Whyte, K., 2017. Indigenous climate change studies: Indigenizing futures, decolonizing the Anthropocene. *Engl. Lang. Notes* 55, 153–162.
- Zahnnow, R., Yousefnia, A.R., Hassankhani, M., Cheshmehzangi, A., 2025. Climate change inequalities: a systematic review of disparities in access to mitigation and adaptation measures. *Environ. Sci. Policy* 165.
- Zimm, C., Mintz-Woo, K., Brutschin, E., et al., 2024. Justice considerations in climate research. *Nat. Clim. Change* 14, 22–30.