**Just Transition: Pathways to Socially Inclusive Decarbonisation**

**Key messages**

* The transition to net zero will not be sustainable if it creates or exacerbates social inequalities. A social justice approach can facilitate the transition and embed it globally.
* Costs and benefits of climate policies – and the ability to shape such policies – are unevenly distributed across time, space and social context. There is not *one* just transition but rather multiple, interdependent transition processes.
* Job creation in itself does not guarantee just outcomes, but must take into account what jobs are created, how secure they are and who has access to them and education for the skills they require.
* Just transitions will look very different in a developing country context, and those countries will need additional support to develop, plan and implement just transition policies.
* Social backlash against decarbonisation is likely if it is not perceived to be just. Policymakers should seek to enable debate around its choices through procedural justice mechanisms, facilitating societal buy-in.
* A range of policy tools exist to address just transition concerns. These include taking an integrated whole-economy approach to governance; agile state intervention; building democratic engagement platforms such as Citizen Assemblies; and open and transparent communication on the political and ethical choices decarbonisation entails.
* Governments should also incorporate just transition provisions into their Nationally Determined contributions, to provide opportunities for review and promote peer-to-peer learning.

**Introduction**

To avoid the worst effects of climate change, the world needs to decarbonise at an unprecedented speed and scale. A growing number of countries, including the UK, have set ‘net-zero’ targets to end their contribution to global warming within the next decades, with differing degrees of popular support.

Various protests in recent decades have highlighted the importance of an integrated approach that accounts for the environmental, economic, social, cultural and psychological dimensions of the transition to a post-carbon economy.[[1]](#endnote-1) This has begun to inform major ‘New Green Deal’ policy initiatives. Covid-19 serves as a stark reminder that socio-economic disruptions tend to worsen social inequalities, with pandemic policies disproportionately affecting low-skilled workers, minorities, women and other vulnerable groups. Concurrently, the Covid-19 response has simulated a rapid, if partial, decarbonisation experience.

Against this backdrop, it is increasingly recognised that the transition to a post-carbon economy needs to be green, sustainable and socially inclusive, with the Paris Agreement referring to the ‘imperatives of a just transition’ and the EU vowing to ‘leave no one behind’ in its proposed Green Deal.

This briefing outlines what kind of governance policies, modalities, institutions, spaces and actors will be required to make sure that the transition is socially inclusive and supported by citizens.

**What is a ‘just transition’?**

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| **International codification of the just transition (JT)**  The [Paris Agreement](http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf) is the first international treaty to refer to the ‘imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities’; alongside references to human rights, gender equality, intergenerational equity and procedural justice. This was reinforced through the adoption of the [Silesia Declaration](https://cop24.gov.pl/presidency/initiatives/just-transition-declaration/) at COP-24 in Katowice. Going forward, a crucial task is the meaningful operationalisation and implementation of the high-level commitment to JT. Beyond the UNFCCC, thinking and guidance on JT is provided by other international organisations, most notably the ILO which has produced [Guidelines for a Just Transition](http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_432859.pdf). |

Growing calls for a just transition (JT) capture the need to share the costs and benefits of ambitious climate action in a fair and equitable manner.[[2]](#endnote-2) This is primarily framed in terms of addressing the employment effects of decarbonisation policies, particularly in the context of the United Nations Framework Convention on Climate Change (UNFCCC) discussions and the Paris Agreement.

Yet while this is rightly a central concern, a narrow ‘jobs versus climate’ frame risks deepening social divisions, pitting ‘winners’ and ‘losers’ of the transition against each other. On the other hand, presenting decarbonisation as a ‘win-win’ project that will deliver ‘green growth’ to everyone threatens to de-politicise the transition and silence those most affected by its negative effects.[[3]](#endnote-3)

This briefing proposes a broader, more nuanced framing of JT that starts by recognising that the costs and benefits of climate policies – as well as the ability to shape such policies – are unevenly distributed across time, space and social context. There is not *one* transition but rather multiple, interdependent transition processes that rarely follow linear trajectories and are experienced differently by different segments of society.

Siloed sectoral approaches do not just hamper the effectiveness of climate action but are also likely to overlook, and thereby exacerbate, its negative side-effects, including a range of energy vulnerabilities and uneven environmental impacts. A whole-systems approach recognises synergies and trade-offs across issues and sectors (e.g. the nexus between land, energy, food, water and minerals) and identifies integrated solutions that balance environmental and socio-economic concerns, engaging with the wider justice implications of fundamentally reorganising global, national, regional and local economies.[[4]](#endnote-4)

JT implicates various justice concerns:

* *Procedural justice:* Making sure affected parties are meaningfully and continually consulted
* *Distributive justice*: Sharing costs and benefits of the transition fairly and equitably
* *Recognition justice:* Recognising that not all members of society are equally valued in current socio-cultural, economic and political arrangements, and that climate change and transitional policies threaten to exacerbate existing inequalities along gender, class and ethnic/racial lines
* *Restorative justice*: Redressing past harm, e.g. through compensation, or reducing the likelihood of future harm, e.g. through implementing transition frameworks for workers from polluting industries.

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| **Socially inclusive decarbonisation**  The individuals, households and communities that stand to be most negatively affected by decarbonisation policies are often already losing out in existing socio-economic arrangements. The transition to a green economy is frequently framed in neoliberal terms (e.g. competition, efficiency, technological innovation), however, neoliberal economics has been complicit in (re-)producing entrenched inequalities.[[5]](#endnote-5) The decarbonisation imperative presents an opportunity to decisively steer societies towards an ecologically *and* socially more inclusive path, reflecting ‘a decision to live in a different type of society, not simply a low-carbon version of the current one.’[[6]](#endnote-6)  In many ways, Covid-19 constitutes a ‘test run’ for how governments respond to transitional risks, with temporary emergency policies disproportionately affecting certain economic sectors, many of which will also bear the costs of long-term decarbonisation policies (e.g. aviation and coal mining), while the benefits of remote, low-carbon working arrangements flow primarily to already socio-economically advantaged groups. Indeed, for these advantaged individuals and communities, this process of inclusive decarbonisation might include the necessity to ‘live with less’; a perhaps uncomfortable narrative that must sit alongside more popularised calls to increase accessibility and affordability of resources and services for the comparatively vulnerable. |

**Current blind spots in the JT debate:**

**Job creation per se does not deliver ‘just’ outcomes***.* It matters what kind of jobs are created, what they pay, how secure they are, and what ripple effects they cause in the local economy in terms of secondary and tertiary opportunities.[[7]](#endnote-7) It matters who is equipped or trained to do the jobs that emerge. Equal access to education and targeted vocational training for lower skilled workers is also vital to ensure that the creation of quality ‘green’ jobs does not just benefit the already advantaged. Beyond employment, policymakers should not lose sight of other justice-related issues, e.g. affordability of green energy, human rights implications of decarbonisation projects, disparities in local adaptation capacities, and cultural and psychological impacts of rapid structural change.

**A recognition justice lens highlights the fact that the effects of climate change and related policy responses will be experienced very differently across place, time and socio-economic status.** Issues of gender, ethnicity, class and age have significant repercussions in relation to energy services, employment, health and welfare. Crucially, the populations most affected – future generations – are least able to influence policy processes. Effects are also highly unevenly distributed geographically, often concentrated in already marginalised areas, communities and regions, or ‘sacrifice zones’.

**JT will look very different in a developing country context**, with high levels of income inequality and (energy) poverty, weak state capacity, informal economies and a lack of organised labour.[[8]](#endnote-8) In many developing and emerging countries, carbon, growth and employment remain tightly coupled. These countries will need additional support to develop, plan and implement JT policies, highlighting the need to address distributive justice not just on a national but also on a global scale.

**Social backlash is likely if the transition is not perceived to be just**. Decarbonisation is occurring against a structural backdrop of vast social and spatial inequality and destabilising erosion of trust in public authority at local, national and global levels.[[9]](#endnote-9) Policymakers need to recognise that the transition is inherently political and power-laden and seek to enable debate and contestation instead of attempting to shut it down. Procedural justice mechanisms can help turning stakeholders into active ‘policy shapers’ rather than passive ‘policy takers’, opening avenues for societal buy-in and pre-empting backlash.[[10]](#endnote-10)

**Market actors can help absorb the negative social externalities of the transition.** Public and private-sector firms will be key partners in implementing JT policies. Investors can also play a critical role by making sure their green strategies incorporate social justice dimensions. Importantly, such initiatives must be open to public scrutiny and accountability.

**Available policy tools:**

**An integrated whole-economy approach to governance** is best suited to accelerate the transition and identify synergies across sectors (e.g. transport and energy) and issue areas (e.g. decarbonisation and digitalisation), while also being mindful of potential opposition and unintended consequences (e.g. the adverse human rights and environmental effects of extracting minerals needed for green technologies).[[11]](#endnote-11) Ambitious, long-term decarbonisation goals should be accompanied by risk assessments that respond to the various justice dimensions outlined above.

**Agile state intervention**will likely be necessary to deliver distributive and restorative justice, e.g. through job creation in green sectors, the implementation of widespread retraining and redeployment programmes, or compensation schemes for individuals and communities that have been negatively affected by the transition. Dedicated JT mechanisms (as incorporated in the proposed [European Green Deal](https://ec.europa.eu/regional_policy/en/newsroom/news/2020/01/14-01-2020-financing-the-green-transition-the-european-green-deal-investment-plan-and-just-transition-mechanism)) can address distributive justice concerns but must be linked to ambitious climate action and ensure that support reaches those that need it most. Phasing out fossil fuel subsidies may free up resources for strengthening social welfare nets. States could also ensure that private sector decarbonisation strategies have a social justice component.

**Moving energy production and distribution closer to end****users** can empower communities to develop local energy (justice) solutions, as well as demonstrate the catalysing role of decentralised decision-making for securing local energy resilience (including to disaster and extreme events which are becoming more frequent).[[12]](#endnote-12) However, for community energy initiatives to be successful, adequate physical infrastructure, investment, transparent government regulation and political will are essential.[[13]](#endnote-13)

**Democratic engagement platforms** must provide room for ongoing debate, recognising that JT is a *process* that needs to be continually renegotiated.[[14]](#endnote-14) This could include ‘deliberative mini-publics’ such as Citizen Assemblies or digital platforms for civic engagement. Importantly, such platforms must provide the most affected and most marginalised individuals and communities with real access to policymaking. Large-scale experiments with direct democracy, such as the *Grand Débat National*, initiated by French president Emmanuel Macron in response to the ‘yellow vests’ protests, offer valuable insights in this regard.[[15]](#endnote-15)

**Open and transparent communication** will be crucial to build trust in and support for the transition. Too often, climate policies and the risks and opportunities they engender are framed in a de-ethicised and de-politicised vacuum, silent on how issues of social (in)justice and democratic exclusion are demonstrated through climate policy. Ensuring ongoing access to information to facilitate meaningful participation in policymaking is an important corollary.[[16]](#endnote-16)

**Continuous learning from success and failure**is imperative for enabling complex, large-scale transitions. A growing number of countries, with varying political coalitions and orientations, from Costa Rica to Cuba, Canada, Germany, New Zealand, South Africa or Spain, have legislated on JT, created JT task forces and/or incorporated JT concerns into long term policy planning.[[17]](#endnote-17) Sub-state experimentation with JT policies, such as in California, also provides opportunities for scaling up success. Finally, successes and failures in responding to the justice implications of Covid-19 may offer lessons for decarbonisation policies.

**Independent interdisciplinary research,** connecting insights across climate, energy, and environmental justice scholarships, can enhance understanding of JT and build empirical evidence of what kind of policies are politically feasible, widely supported, and in line with urgent decarbonisation imperatives. Governments could also establish independent bodies to provide advice and facilitate stakeholder engagement (see Scotland’s [Just Transition Commission](https://www.gov.scot/groups/just-transition-commission/)).

Finally, governments should **incorporate JT provisions into their Nationally Determined Contributions**.[[18]](#endnote-18) This global stocktake provides opportunities to review such provisions and promote peer-to-peer learning. The UNFCCC, ILO, [ITUC](https://www.ituc-csi.org/just-transition-centre) and other international organisations should continue to facilitate real-world evidence fathering (including in developing countries) to inform good practice guidance, e.g. through the Working Group on JT as well as the [Response Measures](https://unfccc.int/topics/mitigation/workstreams/response-measures) forum. This could also be linked to action under the SDGs and other international platforms.

In short, there is no ‘silver bullet’ approach to delivering JT. Policies must ‘connect activities across international organisations, regional and national governments, businesses and investors, the development and philanthropic sectors, and, crucially, the workers and communities who will feel the effects of the transition – whether well or poorly managed – most keenly’.[[19]](#endnote-19)

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1. **References**

   Evans, G. and Phelan, L. (2016). Transition to a post-carbon society: linking environmental justice and just transition discourses. Energy Policy, 99, pp. 329–339. [↑](#endnote-ref-1)
2. McCauley, D. and Heffron, R. (2018). Just transition: Integrating climate, energy and environmental justice. *Energy Policy*, 119, pp. 1-7. [↑](#endnote-ref-2)
3. Newell, P and Mulvaney, D. (2013). The political economy of the 'just transition. *The Geographical Journal*, 179(2), pp. 132-140. [↑](#endnote-ref-3)
4. Robins, N. and Rydge, J. (2019). *Why a Just Transition is Crucial for Effective Climate Action. Inevitable Policy Response. London: Vivid Economics*. Available at: https://www.vivideconomics.com/wp-content/uploads/2019/07/IPR-Just-Transition-discussion-paper\_16-September-2019.pdf. [↑](#endnote-ref-4)
5. Ciplet, D. and Roberts, J. T. (2017). Climate change and the transition to neoliberal environmental governance. Global Environmental Governance, 46, pp. 148-156. [↑](#endnote-ref-5)
6. Healy, N. and Barry, J. (2017). Politicizing energy justice and energy system transitions: Fossil fuel divestment and a “just transition”. *Energy Policy*, 108, p. 453. [↑](#endnote-ref-6)
7. UNFCCC (n.d.). *Just Transition of the Workforce, and the Creation of Decent Work and Quality Jobs*. Technical Paper. Available at: https://unfccc.int/sites/default/files/resource/Just%20transition.pdf. [↑](#endnote-ref-7)
8. Baruah, B. (2016). Renewable inequity? Women's employment in clean energy in industrialized, emerging and developing economies. *Natural Resources Forum*, 41(1), pp. 18-29. [↑](#endnote-ref-8)
9. Mahnkopf, B. (2015). 'Greening Inequality'? The Limits of the Green Growth Agenda. In: F. Hofer and C. Scherrer, C. (eds.), *Combating Inequality. The Global North and South*. London: Routledge. [↑](#endnote-ref-9)
10. Bond, P. (2012). *Politics of Climate justice: Paralysis above, Movement below*. Durban: University of KwaZulu Natal Press. [↑](#endnote-ref-10)
11. Miller, C. A., Richter, J. and O’Leary, J. (2015). Socio-energy systems design: A policy framework for energy transitions. *Energy Research & Social Science*, 6, pp. 29- 40. [↑](#endnote-ref-11)
12. Becker, S. (2017). Our City, Our Grid: The energy remunicipalisation trend in Germany. In: Kishimoto, S. and Petitjean, O. (eds.), *Reclaiming Public Services*. [↑](#endnote-ref-12)
13. Curley, A. (2018). A failed green future: Navajo Green Jobs and energy “transition” in the Navajo Nation. *Geoforum*, 88, pp. 57-65. [↑](#endnote-ref-13)
14. Morris, C. and Jungjohann, A. (2016). *Energy Democracy: Germany's Energiewende to Renewables*. New York: Palgrave MacMillan. [↑](#endnote-ref-14)
15. Dobler, C. (2020*). The 2019 Grand Débat national in France: A participatory experiment with limited legitimacy*. Democracy International [online]. Available at: https://www.democracy-international.org/full-report-2019-grand-debat-national-france. [↑](#endnote-ref-15)
16. Mayer, A. (2018). A just transition for coal miners? Community identity and support from local policy actors. *Environmental Innovation and Societal Transitions*, 28, pp. 1-13. [↑](#endnote-ref-16)
17. Cederlöf, G. (2019). Maintaining power: Decarbonisation and recentralisation in Cuba’s energy revolution. *Transactions of the Institute of British Geographers* 00, pp. 1-20. [↑](#endnote-ref-17)
18. Jenkins, K. (2019). Implementing Just Transition after COP24. Climate Strategies Policy Brief. Available at: https://climatestrategies.org/wp-content/uploads/2019/01/Implementing-Just-Transition-after-COP24\_FINAL.pdf. [↑](#endnote-ref-18)
19. Robins, N., Brunsting, V. and Wood, D. (2018). *Investing in a just transition. Why investors need to integrate a social dimension into their climate strategies and how they could take action*. Grantham Research Institute, p. 7. Available at: http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2018/06/Robins-et-al\_Investing-in-a-Just-Transition.pdf.

    **Suggested Further Reading (to go in separate doc)**

    Beatty, C. Fothergill, S. and Gore, T. (2019). *The State of the Coalfields 2019*. Sheffield University: Centre for Regional Economic and Social Research. Available at: [https://www4.shu.ac.uk/research/cresr/sites/shu.ac.uk/files/state-of-the-coalfields-2019.pdf](https://eur01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww4.shu.ac.uk%2Fresearch%2Fcresr%2Fsites%2Fshu.ac.uk%2Ffiles%2Fstate-of-the-coalfields-2019.pdf&data=02%7C01%7C%7C104e189ba9264697b55408d7ca65fa6a%7C1faf88fea9984c5b93c9210a11d9a5c2%7C0%7C0%7C637200411646695504&sdata=29Tk2gkl6Dxx5jeKztocDKZPQ0BIjpKh9u4iqMEX4zo%3D&reserved=0).

    Bowen, W. M. and Wells, M. V. (2002). The Politics and Reality of Environmental Justice: A History and Considerations for Public Administrators and Policy Makers. *Public Administration Review*, 62(6), pp. 688-698.

    Broto, V.C., Baptista, I., Kirshner, J., Smith, S. and Alves, S.N. (2018). Energy justice and sustainability transitions in Mozambique. *Applied Energy*, 228: 645-655.

    Bulkeley, H., Carmin, J-A, Castan-Broto, V., Edwards, G. A. S. and Fuller, S. (2013). Climate justice and global cities: Mapping the emerging discourses. *Global Environmental Change*, 23, pp. 914-925.

    Cross, J. and Murray, D. (2018). The afterlives of solar power: Waste and repair off the grid in Kenya. *Energy Research & Social Science*, 44, pp. 100-109.

    Derickson, K. D. and MacKinnon, D. (2015). Toward an Interim Politics of Resourcefulness for the Anthropocene’. *Annals of the Association of American Geographers*, 105, 2, pp. 304-312.

    Finley-Brook, M. and Holloman, E. L. (2016). Empowering Energy Justice. *International Journal of Environmental and Research and Public Health*, 13 (926), pp. 1-19.

    Gass, P. and Echeverria, D. (2017). *Fossil Fuel Subsidy Reform and the Just Transition: Integrating approaches for complementary outcomes.* International Institute for Sustainable Development (IISD). Available at: <https://www.iisd.org/sites/default/files/publications/fossil-fuel-subsidy-reform-just-transition-summary.pdf>.

    Gellert, P. K. and Ciccantell, P. S. (2020, forthcoming). Coal’s Persistence in the Capitalist World-Economy: Against Teleology in Energy ‘Transition’ Narratives. *Sociology of Development*, 6(2), forthcoming.

    Granoff, I., Hogarth, J. R., Wykes, S. and Doig, A. (2016). *Beyond coal. Scaling up clean energy to fight poverty.* London: Overseas Development Institute. Available at: <https://www.odi.org/sites/odi.org.uk/files/resource-documents/10964.pdf>.

    Heffron, R, and McCauley, D. (2018). What is the ‘Just Transition’? *Geoforum*, 88, pp. 74-77.

    Jenkins, K. (2018). Setting energy justice apart from the crowd: Lessons from environmental and climate justice. *Energy Research & Social Science*, 39, pp. 117-121

    Lamberti, F., Mazzucato, M., Roventini, A. and Semieniuk, G. (2017). *The Green Transition: Public Policy, Finance and Innovation.* Available at: http://www.isigrowth.eu/2018/06/25/the-green-transition/.

    Madlener, R. (2020). Sustainable energy transition and increasing complexity: Trade-offs, the economics perspective and policy implications. In: R. Galvin (ed.), *Inequality and Energy. How Extremes of Wealth and Poverty in High Income Countries Affect CO2 Emissions and Access to Energy*. London: Academic Press.

    Markkanen, S. and Anger-Kraavi, A. (2018). Social impacts of climate change mitigation policies and their implications for inequality. *Climate Policy*, 19 (7), pp. 827-844.

    McCauley, D., Heffron, R., Stephan, H. and Jenkins, K. (2013). Advancing energy justice: the triumvirate of tenets, *Int. Energy Law Rev*, 32 (3), pp. 107–110.

    Mulugetta, Y. and Castan Broto, V. (2018). Harnessing deep mitigation opportunities of urbanisation patterns in LDCs. *Current Opinion in Environmental Sustainability*, 30, pp. 82-88.

    # Mulvaney, D. (2019). *Solar Power. Innovation, Sustainability, and Environmental Justice*. Oakland: University of California Press.

    Nature Geoscience (2020). Mining’s climate accountability. Editorial. *Nature Geoscience*, 13, p. 97.

    Patterson, J. J. et al. (2018). Political feasibility of 1.5C societal transformations: the role of social justice. *Current Opinion in Environmental Sustainability*, 31, pp. 1-9.

    Power, M. and Kirshner, J. (2019). Powering the state: The political geographies of electrification in Mozambique. *Environment and Planning C: Politics and Space*, 37(3), pp. 498-518.

    Routledge, P., Cumbers, A. and Driscoll Derickson, K. (2018). States of Just Transition: realizing climate justice through and against the state. *Geoforum*, 88, pp. 78-86

    Scrase, I. and Smith, A. (2009). The (non-) politics of managing low carbon socio-technical transitions. *Environmental Politics*, 18(5), pp. 707-726.

    Sikor, T. and Newell, P. (2014). Globalizing environmental justice? *Geoforum* 54, pp. 151-157.

    Snell, D. (2018). ‘Just transition’? Conceptual challenges meet stark reality in a ‘transitioning’ coal region in Australia. *Globalizations*, 15(4), pp. 550-564.

    Stevis, D. And Felli, R. (2015). Global labour unions and just transition to a green economy. *International Environmental Agreements*, 15, pp. 29-43.

    UNEP (2008). *Green jobs: towards decent work in a sustainable, low-carbon world.* United Nations Environment Programme (UNEP). Available at: <https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_098506.pdf>.

    UNRISD (2018). *Mapping Just Transition(s) to a Low-Carbon World.* United Nations Research Institute for Social Development (UNRISD). Available at: http://www.unrisd.org/jtrc-report2018.

    Walker, G. and Cass, N. (2007). Carbon reduction, ‘the public’ and renewable energy: Engaging with socio-technical configurations. *Area,* 39(4), pp. 458-469.

    Williams, S. and Doyon, A. (2019). Justice in energy transitions. *Environmental Innovation and Societal Transitions*, 31, pp. 144-153. [↑](#endnote-ref-19)