



ISSN: 1695-7253 e-ISSN: 2340-2717
investig.regionales@aecr.org

AECR - Asociación Española de Ciencia Regional
www.aecr.org
España – Spain

Just transition in post-mining regions: Governance and socioeconomic strategies in Wales and León

Pablo García-García

Just transition in post-mining regions: Governance and socioeconomic strategies in Wales and León

Investigaciones Regionales - Journal of Regional Research, 66, 2026/3

Asociación Española de Ciencia Regional, España

Available on the website: <https://investigacionesregionales.org/numeros-y-articulos/consulta-de-articulos>

Additional information:

To cite this article: García-García, P. (2026). Just transition in post-mining regions: Governance and socioeconomic strategies in Wales and León. *Investigaciones Regionales – Journal of Regional Research*, 2026/3(66), 111-119. <https://doi.org/10.38191/iirr-jorr.25.008>



Just transition in post-mining regions: Governance and socio-economic strategies in Wales and León

*Pablo García-García**

Received: 27 March 2025

Accepted: 18 July 2025

ABSTRACT:

A just transition is essential for sustainable policies and a net-zero economy, ensuring that climate action is aligned with social justice and inclusive of vulnerable communities. This note compares the just transition frameworks of Wales and León (Spain), both post-mining regions, which have developed regionally tailored approaches. By examining governance structures, stakeholder engagement, economic restructuring methodologies, and challenges in implementation, this note highlights the distinct and shared features of these frameworks, offering insights into their potential for addressing both ecological and social inequalities in transitioning to a low-carbon future.

KEYWORDS: Just transition; net-zero economy; post-mining regions; governance; economic restructuring.

JEL CLASSIFICATION: Q56; O18.

Transición justa en regiones post-minería: Gobernanza y estrategias socioeconómicas en Gales y León

RESUMEN:

Una transición justa es esencial para las políticas sostenibles y una economía de cero emisiones netas, asegurando que la acción climática esté alineada con la justicia social y sea inclusiva de las comunidades vulnerables. Esta nota compara los marcos de transición justa de Gales y León (España), ambas regiones post-mineras, que han desarrollado enfoques regionales adaptados. Al examinar las estructuras de gobernanza, la participación de las partes interesadas, las metodologías de reestructuración económica y los desafíos en la aplicación, esta nota destaca las características distintas y compartidas de estos marcos, ofreciendo perspectivas sobre su potencial para abordar tanto las desigualdades ecológicas como sociales en la transición hacia un futuro bajo en carbono.

PALABRAS CLAVE: Transición justa; economía de cero emisiones netas; regiones post-mineras; gobernanza; reestructuración económica.

CLASIFICACIÓN JEL: Q56; O18.

1. INTRODUCTION

Just transition, rooted in labour movements, is central to sustainable policies and a net-zero economy, ensuring climate action aligns with social justice and includes vulnerable communities (Abram et al., 2022; Galgóczi, 2022b, 2022a; Gerrard & Westoby, 2021; Heffron, 2021; Johansson, 2023; Wang

* Departamento de Economía y Estadística, Facultad de Ciencias Económicas y Empresariales. Universidad de León, España.
pagag@unileon.es

Corresponding author: pagag@unileon.es

& Lo, Galgóczi, 2022b, 2022a; Gerrard & Westoby, 2021; Heffron, 2021; Johansson, 2023; Wang & Lo, 2021). Scholarly discourse presents just transition as multidimensional, encompassing distributional, recognition, procedural, and restorative justice: fair cost-benefit sharing, inclusive decision-making, and redress for past injustices (McCauley & Heffron, 2018). These principles align with environmental justice frameworks, which seek to rectify past inequities in the distribution of environmental harms and benefits (Evans & Phelan, 2016).

Workforce diversity is a key challenge in the net-zero transition, with job creation potentially deepening inequalities in energy, transport, agriculture, and construction. Underrepresented groups—women, ethnic minorities, and disabled workers—require proactive measures, as emphasised in the UNFCCC Just Transition work programme (Reay, 2024). A just transition requires clear fairness definitions, public consultation, and equitable policies (Ternes et al., 2024).

Governance is crucial in enabling just transitions, as highlighted in international climate agreements such as the Paris Agreement and the Rio+20 Earth Summit (Harrahill & Douglas, 2019). Just transition frameworks differ significantly in scope and governance. However, five key themes are central to these frameworks: Governance, Economic/Fiscal Policy, Jobs/Labour, Environment/Energy, and Social Justice (Ullman & Kittner, 2024). On the global stage, the ILO advocates for an eco-social agenda that emphasises green jobs and social justice, while the IMF prioritises economic growth and stability through carbon taxation. The EU, on the other hand, strikes a balance by integrating green growth with social protection (Cigna et al., 2023).

Despite its prominence, just transition rhetoric is criticised for justifying economic policies that lack real social justice. Concerns are rising that the just transition concept is being co-opted for privileged interests instead of systemic change. Scholars call for clear ecological and social boundaries to prevent greenwashing and uphold sustainability and equity (Kortetmäki et al., 2025). A distinction is emerging between “Just Transition,” which manages industry shifts while safeguarding workers, and “Just Transformation,” which calls for systemic change to address Global North-South inequities (de Ruyter & Bentley, 2024).

The coal industry's decline shows the risks of prioritising efficiency over social protection, causing unemployment and economic downturns. It highlights the need to balance economic, social, and environmental factors for fair transitions (Kaizuka, 2024). Both Wales and León (Spain) are post-mining areas and have developed regionally tailored frameworks for a just transition. This note critically contrasts these approaches by examining areas such as governance structures, stakeholder engagement, economic restructuring methodologies, and the challenges encountered during implementation.

2. METHODOLOGY

Wales and León are chosen as case studies because both share a history of coal mining and the socio-economic changes caused by mine closures. Beyond this, they are subnational regions within larger governance systems—Wales in the UK and León in Spain—allowing comparison of decentralised just transition efforts. Wales has a devolved government with legislative powers and some funding autonomy, though some resources are controlled by the UK government. León, within Castilla y León, has more limited administrative powers, requiring coordination across local, regional, and national levels.

Both regions face population decline and ageing typical of post-industrial areas, but differ in the scale and timing of these trends. This contrast offers insight into how policies adapt to different demographic challenges amid deindustrialisation, highlighting variations in institutional capacity and community involvement during just transitions.

This note explores the following research question: How do the regional Just Transition strategies of Wales and León differ, and what do these differences reveal about the practical application of just transition principles in post-coal regions? By framing the analysis around this question, the note aims to examine how varying political, economic, and social contexts influence the formulation and effectiveness of just transition frameworks. The goal is to examine how strategies are applied in practice—beyond theoretical models—using a framework grounded in the principles of justice.

The core principles of recognition, distributional, procedural, and restorative justice serve as a framework for assessing regional strategies, to the extent that their application is possible in a real-world context. While these principles are widely debated in academic literature, their translation into legal frameworks and political actions is often constrained by the complexity of the issues at hand and the limitations of real-world political dynamics.

Recognition justice is examined through governance structures and legislative frameworks, focusing on how they articulate claims for justice in post-mining areas (Section 3). Distributional justice is addressed by evaluating how strategies are geographically and sectorally localised, as well as through their approaches to transition planning (Section 4). Procedural justice is considered by analysing consultation processes, stakeholder participation, and inclusivity, with a focus on identifying existing shortcomings (Section 5). Restorative justice, however, cannot yet be fully assessed at the time of writing, as the outcomes of the strategies remain too nascent. Nonetheless, early indicators related to economic restructuring and job creation provide some basis for future evaluation (Section 6).

Finally, it is important to recognise that these principles are not isolated; they frequently intersect, creating cross-cutting challenges and limitations in their combined application—an issue further explored in Section 7. While the principles provide the primary analytical framework, environmental justice serves as the normative foundation underlying this approach. This perspective is particularly salient in post-coal regions such as Wales and León, where historical patterns of industrial extraction have left enduring environmental and socio-economic legacies.

The principal data sources comprise legislation and a range of documents delineating just transition strategies. These encompass not only official policy reports but also publications by workers' unions and consultations with academic experts. These sources were systematically cross-referenced with the established just transition framework found within the cited scholarly literature. Given that these strategies remain in developmental stages, it is premature to render definitive evaluations regarding their success or failure. Nevertheless, a relative measure of success may be discerned by identifying instances in which one strategy demonstrably progresses beyond another, as evidenced through comparison with the literature and the fundamental principles underpinning the just transition.

3. GOVERNANCE STRUCTURES AND LEGISLATIVE FRAMEWORKS

Wales is working to integrate the principles of a just transition within a prior legislative framework, focused on sustainability and long-term well-being (Well-Being of Future Generations (Wales) Act, 2015). This landmark legislation mandates the incorporation of sustainability across various governance sectors. The Welsh Government's Just Transition Framework aligns closely with this Act, emphasising the integration of procedural, distributive, restorative, and intergenerational justice. Central to this process is the creation of Public Services Boards, which facilitate collaboration between local authorities, health boards, and other stakeholders to design well-being plans that address the specific needs of local communities. Moreover, the role of the Future Generations Commissioner provides an additional layer of oversight, ensuring that policies remain consistent with the Act's long-term vision for well-being.

The annual reports required by the Act are a critical accountability tool. These reports, which must be submitted by both Welsh Ministers and other public bodies, offer a structured evaluation of the progress made in achieving the sustainable development goals outlined in the Act. Furthermore, they require public bodies to periodically review and, when necessary, revise their objectives to ensure their continued relevance and effectiveness. Any changes must be thoroughly explained and alternative courses of action justified when objectives are unmet. By fostering transparency and promoting continuous improvement, these reports ensure that policies and initiatives remain aligned with long-term well-being goals. They also provide vital information to the Future Generations Commissioner and the Auditor General for Wales, who assess public bodies' adherence to the Act (Welsh Government, 2025).

Conversely, Spain has formalised its transition at the national level through the Ministry for Ecological Transition and the Demographic Challenge (MITECO), elevating environmental issues to the level of a vice-presidency within the government. Within this structure, the Strategy for Just Transition is

carried out through the *Convenios de Transición Justa* (CTJs). These agreements are overseen by the Institute for Just Transition directly, and no mandatory periodic reports are required by regulations, in contrast to the requirements in Wales. Spain has established a new legislative framework in line with EU mandates. The Strategy for Just Transition is integrated into the broader Strategic Framework for Energy and Climate, alongside the Integrated National Plan for Climate and Energy and the Law for Climate Change and Energy Transition.

4. METHODOLOGIES OF TRANSITION PLANNING

The transition strategies in Wales and León, though both addressing post-mining regions, differ in focus and approach. León centres on quantifying and compensating the impacts on direct employment and labour income in affected areas, using 2020 data to outline a worst-case scenario at the point of closure (MITECO, 2020b). In contrast, Wales adopts a broader, more future-oriented approach, considering the entire economy and sectors with continuous monitoring towards ecological transitions in 2030 and 2050 (Welsh Government, 2022).

The Just Transition Relative Vulnerability Index (JTRVI) is a policy tool developed to map how different Welsh local authorities may be socio-economically impacted by climate change mitigation efforts (Oliver et al., 2025). Designed through a mixed-methods approach—incorporating expert interviews, community workshops, and systems mapping—it distils 47 initially identified factors into 10 weighted indicators such as job density in high-emission sectors, financial security, education, housing, and mobility. The index not only provides an aggregate vulnerability score for each area but also models potential impacts across specific net-zero policy scenarios, enhancing its practical value for targeted intervention.

However, the index also faces limitations. One major challenge is the uneven availability of detailed data at the local level, particularly for complex and context-sensitive indicators like social capital or transport connectivity. This data scarcity can lead to either over- or underrepresentation of certain areas, which risks distorting the vulnerability landscape it seeks to illuminate. Balancing methodological robustness with user-friendliness remains a critical tension, especially given the index's intended audience includes both policymakers and community stakeholders.

León, within Spain's CTJ framework, follows a process that begins with a SWOT analysis of affected municipalities, which allows local input but is limited in addressing long-term economic diversification and broader socio-economic impacts, especially those related to indirect job losses.

In León, the use of outdated socio-demographic data from the 2011 census limits the accuracy of assessments, particularly in light of post-industrial decline and the socio-economic effects of COVID-19. Wales avoids this issue by not relying on outdated census data, though both regions face challenges related to the availability of income data.

Additionally, León's SWOT method often relies on broader regional analyses, leading to redundancy and generic policy responses rather than tailored interventions (García-García, 2025). The application of the SWOT method suffers from a lack of specificity and a high degree of redundancy, which significantly undermine its effectiveness. The analyses were reused from a previous diagnostic process at the autonomous community level without adequate contextual adaptation, failing to reflect the unique socioeconomic, industrial, and environmental conditions of the region. This reuse results in a generic diagnosis that overlooks critical local nuances necessary for informing tailored policy interventions.

Furthermore, the analysis is marked by extensive redundancy, with repeated statements that differ only in wording but offer no new insight, thereby dispersing the conclusions and weakening the analytical precision. The unnecessary fragmentation of the analysis into multiple priority areas without substantive differentiation further complicates the policy-making process, creating inefficiencies without yielding additional value. These limitations compromise the ability of the SWOT method to guide the development of targeted, equitable, and effective policies. In the context of just energy transitions, where region-specific responses are essential to address vulnerabilities and leverage distinct strengths, such methodological flaws risk producing mismatched or ineffective strategies. To address this, it is recommended that stakeholders

adopt alternative diagnostic approaches that offer greater specificity, coherence, and alignment with local realities.

Wales, by contrast, focuses on creating region-specific tools like the JTRVI to ensure a more precise and localised just transition. Both regions emphasise the importance of a strong data strategy to maintain the statistical accuracy and relevance of their transition plans. However, in the case of León, data shortages and misconceptions present a much more pressing concern.

5. STAKEHOLDER PARTICIPATION AND INCLUSIVITY

The Welsh and Spanish models differ significantly in their approach to public consultation and inclusivity. Wales conducted a structured consultation process, involving online surveys and in-person events (Welsh Government, 2024). However, it faced criticism for lacking demographic diversity, overrepresenting institutional stakeholders, and limited engagement with younger populations.

In contrast, León's model focuses on technical conferences, workshops, direct engagement with municipalities affected by the phase-out of industries, and external evaluations by consulting firms. However, it lacks transparency in the final political outcomes and fails to address opposition movements against renewable energy installations. This opposition in León stems from conflicts such as the displacement of farmers by corporate renewable projects, management disputes over communal woodlands, and environmental impacts on biodiversity and ecotourism. Despite the socio-economic and environmental relevance of these concerns, the CTJs have not effectively engaged with affected stakeholders, revealing a gap in procedural inclusivity (García-García, 2025).

6. ECONOMIC RESTRUCTURING AND JOB CREATION

Both Wales and León aim to create new employment opportunities by leveraging existing resources and attracting investment, but their approaches differ. Wales focuses on green jobs across sectors like construction, renewable energy, waste management, and agroecology, with the Wales Trades Union Congress advocating for Fair Work Wales standards to ensure decent working conditions. However, financial constraints from the UK Government limit large-scale reskilling programmes (TUC, 2020; Wales TUC, 2020, 2021). In contrast, León adopts a territorialised approach under the CTJ framework, linking job creation directly to the cessation of mining and thermoelectric activities. The municipality-based impact metric targets investments in the hardest-hit areas (MITECO, 2020a, 2020b). However, the framework's focus on traditional fossil-based economies may overlook emerging sectors, and while it emphasises gender equality, particularly in promoting female participation in new economic activities, the mechanisms for this remain unclear. Moreover, there is no guarantee that the new jobs will be of higher quality or more secure than those lost.

Territorial disparities significantly shape the outcomes and feasibility of employment transitions in both Wales and León. In Wales, spatial inequalities are evident between post-industrial urban centres like the South Wales Valleys and more rural regions such as Mid and North Wales. While urban areas often benefit from closer proximity to infrastructure and a larger skill base conducive to green sector jobs, rural areas face challenges such as limited public transport, digital connectivity, and lower population densities, which can constrain access to training and employment opportunities. These challenges have been repeatedly documented by the Welsh Government.

Similarly, in León, the CTJ framework's municipality-based targeting does not always account for intra-regional variations; for instance, mining-dependent rural municipalities often lack the institutional capacity and physical infrastructure to attract and retain investment compared to more urbanised areas within the province. The mountainous geography and sparse settlement patterns of some parts of León further complicate efforts to diversify economically, particularly in sectors requiring high connectivity or logistics capacity. Although the Spanish Government has made some general remarks about the so-called "emptied Spain" — referring to rural, depopulated areas — the specific peculiarities of the Leonese regions have not been adequately acknowledged or addressed with the level of detail they deserve. These urban-

rural divides underscore the need for spatially sensitive policy design that considers not only sectoral shifts but also the geographic conditions that enable or hinder equitable development.

7. CHALLENGES AND LIMITATIONS

Both models face significant limitations that could hinder their effectiveness.

In Wales, the public consultation process revealed challenges in ensuring broad community representation, as feedback was disproportionately gathered from urban centres, sidelining rural voices. This limited input could contribute to investment decisions that inadequately address the needs of peripheral communities. Additionally, Wales' lack of fiscal autonomy constrains its ability to tailor green transition funding, as seen in the slow rollout of renewable energy projects dependent on UK-wide budget allocations.

In León, the CTJ framework's rigid criteria excluded municipalities in low-income areas facing acute environmental degradation, thereby limiting the scope of justice-oriented interventions. The framework's reliance on legacy industrial zones neglected emerging economic realities, resulting in missed opportunities to integrate renewable energy initiatives or sustainable agriculture programs. Moreover, abandoned industrial sites remain underutilised, with little progress in converting them into community parks or eco-tourism sites, further exacerbating local economic decline. The exclusion of land use conflicts from participatory processes has left displaced rural farmers without formal channels for redress.

These examples highlight the gap between policy frameworks and on-the-ground outcomes, underscoring the need for more inclusive consultation mechanisms, flexible governance instruments, and integrative land-use planning to effectively address transition challenges.

8. CONCLUSION

Wales and León offer two distinct models for regional just transitions. Wales emphasises long-term sustainability governance, focusing on intergenerational well-being, but faces challenges in terms of participatory representativeness and financial autonomy. In contrast, León's model focuses in delivering localised, targeted economic interventions, though it risks overlooking broader economic shifts. The rigid selection criteria in León have resulted in inconsistencies in municipal inclusion, while Wales struggles with financial constraints that limit a fully participatory, data-driven approach. By synthesising these approaches—combining Wales' focus on intergenerational well-being and novel quantitative techniques with Spain's economic restructuring strategy—a more comprehensive and adaptable framework for just transitions could be created, offering a balanced approach for other regions to follow.

Notwithstanding the warnings in the literature regarding the disparity between just transition and transformation, it is evident that none of the cases under examination fully realises a just transformation as conceptualised therein. However, upon reviewing relevant policies and frameworks, it becomes apparent that Wales aligns more closely with the transformation paradigm than with a mere transitional approach, particularly when compared to León. This distinction primarily stems from Wales' adoption of a long-term, systemic perspective, underpinned by prior legislative developments aimed at promoting collective well-being, such as the Well-Being of Future Generations Act. Moreover, mandatory reporting for public bodies fosters greater commitment and transparency.

Conversely, León appears to be constrained by a temporal framework that remains anchored in the socio-economic context of the 1980s, following the abrupt decline of its mining sector. Political developments in León—and more broadly within Spain—are primarily localised and sector-specific, characterised by the absence of a foundational legislative framework like the Welsh Act and a coherent systemic strategy to effectively guide implementation.

The comparative analysis of these cases is valuable insofar as it elucidates how governance structures and inclusivity mechanisms intersect and diverge in practice, thereby exposing critical tensions between managing immediate change and pursuing systemic transformation. This comparison reveals the

limitations inherent in both approaches; nevertheless, the Welsh experience offers instructive insights that could inform the evolution of more robust, albeit still emerging and circumscribed, transformation frameworks in León and other similar contexts. Concurrently, this study advocates for a more precise conceptualisation of how regional strategies might effectively reconcile the exigencies of immediate just transition objectives with the aspirations of longer-term transformative change.

The prospect of hybridising these models invites critical reflection on normative considerations and trade-offs that warrant deeper exploration in future research. Integrating Wales' emphasis on long-term, participatory governance with León's targeted economic interventions entails balancing the tension between inclusivity and efficiency, as well as between systemic ambition and pragmatic responsiveness. Achieving financial autonomy, for example, remains a significant challenge within national and supranational frameworks that often constrain regional budgets and policy discretion. Similarly, while granular participatory methods are desirable for legitimacy and responsiveness, they can be resource-intensive and may not be feasible in contexts where institutional capacities or civic engagement are limited.

To address the distinction between conceptual intentions and actual outcomes, it is important to recognise that both Wales and León articulate ambitious visions for just transitions, yet their real-world implementation reveals significant divergences. While Wales' legislative frameworks and long-term governance model embody a systemic, transformative intent, the practical constraints—such as limited financial autonomy and challenges in ensuring broad-based participatory representation—temper the extent to which these aspirations translate into fully realised outcomes. Similarly, León's targeted economic interventions reflect a pragmatic response to socio-economic pressures but fall short of encompassing a holistic or systemic transformation, constrained by historical legacies and fragmented governance.

Grounding the recommendation for a hybrid model in more robust comparative criteria requires an appraisal of measurable governance attributes, such as fiscal decentralisation, inclusivity of decision-making processes, policy coherence across sectors, and the adaptability of frameworks to evolving socio-economic contexts. For example, Wales' mandatory reporting and legislated accountability mechanisms provide tangible benchmarks for evaluating governance effectiveness, whereas León's selection criteria and sector-specific interventions offer insight into how economic restructuring strategies perform under resource constraints.

Therefore, future research and policy development should prioritise establishing clear evaluative metrics that differentiate between intended policy objectives and their actual impacts. This will enable the ongoing refinement of just transition strategies that are both context-sensitive and focused on measurable outcomes.

REFERENCES

- Abram, S., Atkins, E., Dietzel, A., Jenkins, K., Kiamba, L., Kirshner, J., Kreienkamp, J., Parkhill, K., Pegram, T., & Santos Ayllón, L. M. (2022). Just Transition: A whole-systems approach to decarbonisation. *Climate Policy*, 22(8), 1033-1049. <https://doi.org/10.1080/14693062.2022.2108365>
- Cigna, L., Fischer, T., Hasanagic Abuannab, E., Heins, E., & Rathgeb, P. (2023). Varieties of Just Transition? Eco-Social Policy Approaches at the International Level. *Social Policy and Society*, 22(4), 730-746. <https://doi.org/10.1017/S1474746423000192>
- de Ruyter, A., & Bentley, G. (2024). Enabling a just transition. In *Contemporary Social Science* (Vol. 19, Issues 1–3, pp. 1–20). Routledge. <https://doi.org/10.1080/21582041.2024.2360953>
- Evans, G., & Phelan, L. (2016). Transition to a post-carbon society: Linking environmental justice and just transition discourses. *Energy Policy*, 99, 329-339. <https://doi.org/10.1016/j.enpol.2016.05.003>
- Galgóczi, B. (2022a). From a 'just transition for us' to a 'just transition for all.' *Transfer: European Review of Labour and Research*, 28(3), 349-366. <https://doi.org/10.1177/10242589221125066>

- Galgóczy, B. (2022b). From 'just transition' to the 'eco-social state.' In *The Palgrave handbook of environmental labour studies* (pp. 539-562). Palgrave.
- García-García, P. (2025). The Spanish Experience with National Government-Led Plans for a Just Energy Transition. *Revista de Ciencia Política (Santiago)*, 45(1), 1-26. <https://doi.org/10.4067/s0718-090x2025005000103>
- Gerrard, E., & Westoby, P. (2021). What is a Just Transition. In *Coal and Energy in South Africa: Considering a Just Transition* (pp. 22-33).
- Harrahill, K., & Douglas, O. (2019). Framework development for 'just transition' in coal producing jurisdictions. *Energy Policy*, 134. <https://doi.org/10.1016/j.enpol.2019.110990>
- Heffron, R. J. (2021). What is the "just transition"? In *Achieving a just transition to a low-carbon economy* (pp. 9-19). Springer.
- Johansson, V. (2023). Just Transition as an Evolving Concept in International Climate Law. *Journal of Environmental Law*, 35(2), 229-249. <https://doi.org/10.1093/jel/eqad017>
- Kaizuka, S. (2024). Politics of a Just Transition: lessons from the UK coal mines. *Contemporary Social Science*, 19(1-3), 154-177. <https://doi.org/10.1080/21582041.2024.2337672>
- Kortetmäki, T., Timmermann, C., & Tribaldos, T. (2025). Just transition boundaries: Clarifying the meaning of just transition. *Environmental Innovation and Societal Transitions*, 55. <https://doi.org/10.1016/j.eist.2024.100957>
- McCauley, D., & Heffron, R. (2018). Just transition: Integrating climate, energy and environmental justice. *Energy Policy*, 119, 1-7. <https://doi.org/10.1016/j.enpol.2018.04.014>
- MITECO. (2020a). *Convenios de Transición Justa*. Actualización noviembre 2020. https://www.miteco.gob.es/images/es/folletoconveniostransicionjustanov2020003_tcm30-517232.pdf
- MITECO. (2020b). *Delimitación de los Convenios de Transición Justa*. https://www.miteco.gob.es/images/es/200929_itj_resumenejecutivo_delimitacionctj_tcm30-517280.pdf
- Oliver, D., Solis, E., Lloyd, K., Heron, S., & Lynn, S. (2025). Exploring a potential approach to understand and map the local level impacts and opportunities of a Just Transition to Net Zero. <https://www.gov.wales/understanding-just-transition-approach>
- Reay, D. (2024). The uneven foundations of a just transition for workers: a UK perspective. *Frontiers in Climate*, 6. <https://doi.org/10.3389/fclim.2024.1498156>
- Ternes, V., Marsden, G., & Harrison, G. (2024). A just transition or just a transition? The understanding and relevance of fairness in planning for a decarbonised transport system. *Energy Research and Social Science*, 113. <https://doi.org/10.1016/j.erss.2024.103549>
- TUC. (2020). Voice and Place: How to plan fair and successful paths to net zero emissions. <https://www.tuc.org.uk/research-analysis/reports/voice-and-place-how-plan-fair-and-successful-paths-net-zero-emissions>
- Ullman, A. N., & Kittner, N. (2024). Are global efforts coordinated for a Just Transition? A review of civil society, financial, government, and academic Just Transition frameworks. *Energy Research and Social Science*, 108. <https://doi.org/10.1016/j.erss.2023.103371>
- Wales TUC. (2020). A green recovery and a just transition. <https://www.tuc.org.uk/sites/default/files/2020-06/A%20green%20recovery%20and%20a%20just%20transition%20Wales%20TUC%20May%202020.pdf>

- Wales TUC. (2021). Greener workplaces for a just transition: A Wales TUC toolkit for trade unionists. https://www.tuc.org.uk/sites/default/files/2021-06/greenerworkplaces_may21_2.pdf
- Wang, X., & Lo, K. (2021). Just transition: A conceptual review. In *Energy Research and Social Science* (Vol. 82). Elsevier Ltd. <https://doi.org/10.1016/j.erss.2021.102291>
- Well-Being of Future Generations (Wales) Act* (2015). <https://www.legislation.gov.uk/anaw/2015/2/contents>
- Welsh Government. (2022). Just Transition to Net Zero Wales: Call for Evidence. https://www.gov.wales/sites/default/files/consultations/2022-12/call-for-evidence-just-transition-to-net-zero_0.pdf
- Welsh Government. (2024). Consultation - summary of responses: Just Transition Framework. <https://www.gov.wales/sites/default/files/consultations/2024-06/just-transition-consultation-analysis-final-report.pdf>
- Welsh Government. (2025). Wellbeing in Wales. <https://www.gov.wales/wellbeing-wales>

ORCID

Pablo García-García <https://orcid.org/0000-0003-2572-1966>

