

Bridging Divides in The Twin Transition: Governance for Equity and Inclusion

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Abstract

This thematic issue critically engages with the complexities and challenges of the governance of the twin transition through the lens of inclusion and social justice. Scholars and practitioners from Belgium, Ireland, Portugal, Spain, Sweden, and Taiwan examine the origins, determinants, and dynamics of inequalities associated with the twin transition process across different contexts and policy domains. The contributions highlight key governance challenges, identify emerging forms of vulnerability, and bring into focus opportunities to ensure that no one is left behind in the ongoing technological and sustainable transformation.

Keywords

climate change; digitalization; governance; inclusion; social justice; sustainability; twin transition; vulnerability

1. Introduction

The transition towards more sustainable, efficient, and resilient societies is a shared priority of the European Union and the United Nations Sustainable Development Goals (European Commission, 2022; United Nations, n.d.a). By reducing greenhouse gas emissions, transitioning to clean and renewable energy sources, and progressively digitizing services, the overall ambition is to make global economic systems more resource-efficient, mitigate climate change and environmental degradation, and protect the planet and its people (European Commission, n.d.; European Environment Agency, 2026).

While the ambitious targets of green and digital convergence are expected to foster economic growth and promote new sustainable mindsets (Barbero et al., 2025; Blüm, 2022), they also require systemic changes in

public governance approaches to the use of natural and energy resources, relationships among national actors, the private sector and civil society, the transformation of economic structures, and the development of social innovation (UNDP, 2023). As this disruptive transition unfolds globally through the deployment of electric vehicles, solar panels, and platform economies, among other examples of twin transformation, it is increasingly important to address the unexpected social paradoxes associated with this process. Technology-led innovative processes are complex and multidisciplinary social phenomena that entail changes to the status quo and trigger transformations in economic, institutional, and behavioural patterns (Kochetkov, 2023). Although many of these changes generate positive economic impacts and contribute to social progress (Koç et al., 2026), the spillover effects of innovative transformation can also produce social inequalities and marginalization (Aghion & Griffith, 2024).

As some people significantly benefit from the synergies between new digital dynamics and enhanced sustainability standards, others face increasing challenges in adapting to the new status quo. This raises important scholarly debates about the need to prioritize principles of distributive and procedural justice, digital rights, and sustainability equity (Anttiroiko & De Jong, 2021; Haque et al., 2026; Seifi & Crowther, 2024). A lack of skills, the unaffordability of resources, and/or limited access to digital technologies can de facto exclude people from the benefits of digital and green innovation (United Nations, n.d.b; van Deursen & van Dijk, 2019). At the same time, scholars increasingly highlight the compounded effects of the transition process on structural vulnerability, identifying older people, people with disabilities, people experiencing economic distress, migrants, and people living in rural areas among the cohorts most negatively affected by the twin transition (Kolotouchkina et al., 2023, 2024; McDowall et al., 2023; Timmermans et al., 2023). Job losses associated with the phasing out of fossil fuel-intensive industries, regional disparities, the cost burden of accessing innovation, the digital divide, and energy and transport poverty are among the negative outcomes of the twin transition experienced by vulnerable populations (Al Kez et al., 2024; Mejía Dorantes & Murauskaite-Bull, 2023). Furthermore, gender is an important dimension of these inequalities, shaping both exposure to the risks of the twin transition and access to its benefits, through differences in employment, income, digital skills and access to technology, as well as the unequal distribution of unpaid care and household responsibilities. It intersects with other inequalities such as socioeconomic status, age, disability, ethnicity, migration status, and territorial location, thus compounding existing disadvantages (Anjum & Aziz, 2025; Johnson et al., 2020; Walk, 2024).

Ultimately, the negative impacts of the twin transition on social inequalities and vulnerabilities can further widen the rift between citizens and public institutions, undermining levels of trust and engagement in this transformative process (Piqueiras & Canel, 2021; Piqueiras & Luoma-aho, 2025). Therefore, the governance of the twin transition needs to incorporate a thorough understanding of the potential risks and critical hazards associated with this process, as well as the profiles and intersecting dimensions of structural and compounded vulnerabilities. It should also be guided by universal principles of social justice throughout policymaking and implementation.

2. Overview of Authors' Contributions

The contributions to this thematic issue critically engage with the complexities and challenges of governing the twin transition through the lens of inclusion and social justice. Scholars and practitioners from Belgium, Ireland, Portugal, Spain, Sweden, and Taiwan examine the origins, determinants, and dynamics of inequalities

associated with the green and digital convergence, highlighting key governance challenges, emerging forms of vulnerability, and opportunities to ensure that no one is left behind in the technological and sustainable transformation.

The authors place particular emphasis on vulnerability and inequalities in the context of systemic green and digital transformation, focusing on their underlying determinants and structural conditions. Erridge et al. (2026) explore the meaning of vulnerability in the context of the green transition in the European Union and identify emerging vulnerabilities arising from the reproduction of intersectional socio-environmental inequalities. Drawing on six case studies, the authors analyse the socio-environmental and economic impacts of the green transition across different policy areas and multiple countries in Southern and Eastern Europe. Their findings reveal that green policies aimed at addressing climate change can generate green sacrifice zones, (re)vulnerabilize marginalized populations, and reinforce persistent inequalities.

In parallel, Svenberg et al. (2026) argue that the twin transition brings profound transformations in socio-economic and socio-technical relations that can simultaneously mitigate and intensify existing inequalities. From this perspective, vulnerability cannot be understood as an attribute of predefined groups but rather as a relational and processual condition emerging through the political, infrastructural, territorial, and network effects of twin transition implementation. Through an analysis of the conceptual barriers that limit how vulnerability is understood in twin transition governance, the authors reveal how vulnerability is experienced, negotiated, and reconfigured in everyday life.

The focus on potential determinants and drivers of exclusion as a key principle of a just and fair twin transition is addressed by Arias Astray et al. (2026), who develop six prototypical profiles of structural inequalities across the sectors of urban mobility, the platform economy, digital administration, energy, agriculture, and housing. Through a comparative analysis of sectoral inequalities, the authors identify the upfront cost barrier, the digital divide, the geographic penalty, and knowledge disqualification as recurring structural mechanisms of exclusion in the twin transition process, potentially leading to institutional disaffection and political radicalization.

Specific vulnerable groups, including people with disabilities, older people, and migrants and refugees who face discrimination and/or marginalization in the context of the twin transition, are also prominent in this thematic issue. Tsai (2026) examines the determinants of the digital divide and digital exclusion in the context of higher education and disability status, drawing on Taiwan's Digital Access Survey. While education emerges as a strong driver of digital inclusion, the author highlights how inaccessible environments and structural inequalities embedded within social systems hinder the distributive justice of digital benefits for people with disabilities and emphasizes the need to pay greater attention to the structural conditions underlying inequalities.

The intersection of climate change, migration, and social justice is examined by Parra Ferreras and Hänninen (2026) in the context of the climate emergency and human migration flows at the Southern border of Europe. Their study focuses on Spanish media narratives surrounding environmental crises, climate refugees, and the marginal coverage of human trafficking networks. The findings reveal that the press fails to provide structural accounts of these issues by decontextualizing migration flows into remote scenarios, systematically evading corporate responsibility, trivializing climate mobility in non-hard news sections, and prioritizing institutional voices over migrants' lived experiences. Consequently, the authors raise concerns about prevailing media and

bureaucratic ethics that sidestep debates surrounding historical reparations, financial justice, and the reform of international protection frameworks.

Campillo-Alhama and Mateo-Perez (2026) examine communicative exclusion as a specific form of institutional inequality affecting older people in the context of digital transition. Emphasizing the importance of citizen engagement and participatory governance for ensuring effective inclusion and procedural justice, the authors develop a model of inclusive communication observatories as participatory and evaluative infrastructures for municipal communication processes and inclusive governance.

The critical importance of anticipatory governance, scenario planning, and evidence-based decision-making is addressed in two final contributions to this thematic issue. Armayones Carranza and Viñé Rius (2026) examine the governance of Europe's twin transition. Focusing on the FITTER-EU project across four key sectors in six EU countries, the authors highlight the necessity of integrating vulnerability and social inclusion directly into foresight processes rather than relying on reactive ex-post compensation. By embedding just transition considerations as structural design criteria, their approach generates different 2050 exploratory scenario configurations. Ultimately, this provides policymakers with mechanisms to support anticipatory and evidence-informed decision-making.

Finally, Nguyen (2026) examines the dimension of justice in the context of Vietnam's governance of the green and digital transition. Through an analysis of key policy documents, leadership speeches, and expert interviews, the study finds that, while governance of the green transition is slightly more vulnerability-sensitive than that of the digital transition, both ultimately follow similar structural patterns: diluting the recognition of specific vulnerabilities, distributing benefits to already advantaged actors, and limiting participation to passive or symbolic forms. Building on these findings, the author proposes the concept of parallel transformation, an alternative to the twin transition model, showing that shared structural constraints, rather than coordination, drive both transformations toward similarly limited justice outcomes.

We hope that this thematic issue will make a meaningful academic contribution to advancing research on the complexities and governance challenges of the twin transition and encourage further scholarly debate on how to ensure that this process is genuinely fair, inclusive, and just for all.

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Conflict of Interests

The authors declare no conflict of interests.

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