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EDITED AND REVIEWED BY  
Martin Drechsler,  
Helmholtz Association of German Research  
Centres (HZ), Germany

\*CORRESPONDENCE  
Massimiliano Mazzanti  
✉ mzzmsm@unife.it

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# Editorial: Insights in ecological economics: 2022

Massimiliano Mazzanti\*

Department of Economics and Management & SEEDS – Sustainability, Environmental Economics and Dynamics Studies, University of Ferrara, Ferrara, Italy

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innovation and entrepreneurship, policy, circularity, decarbonisation, transitions, knowledge

## Editorial on the Research Topic

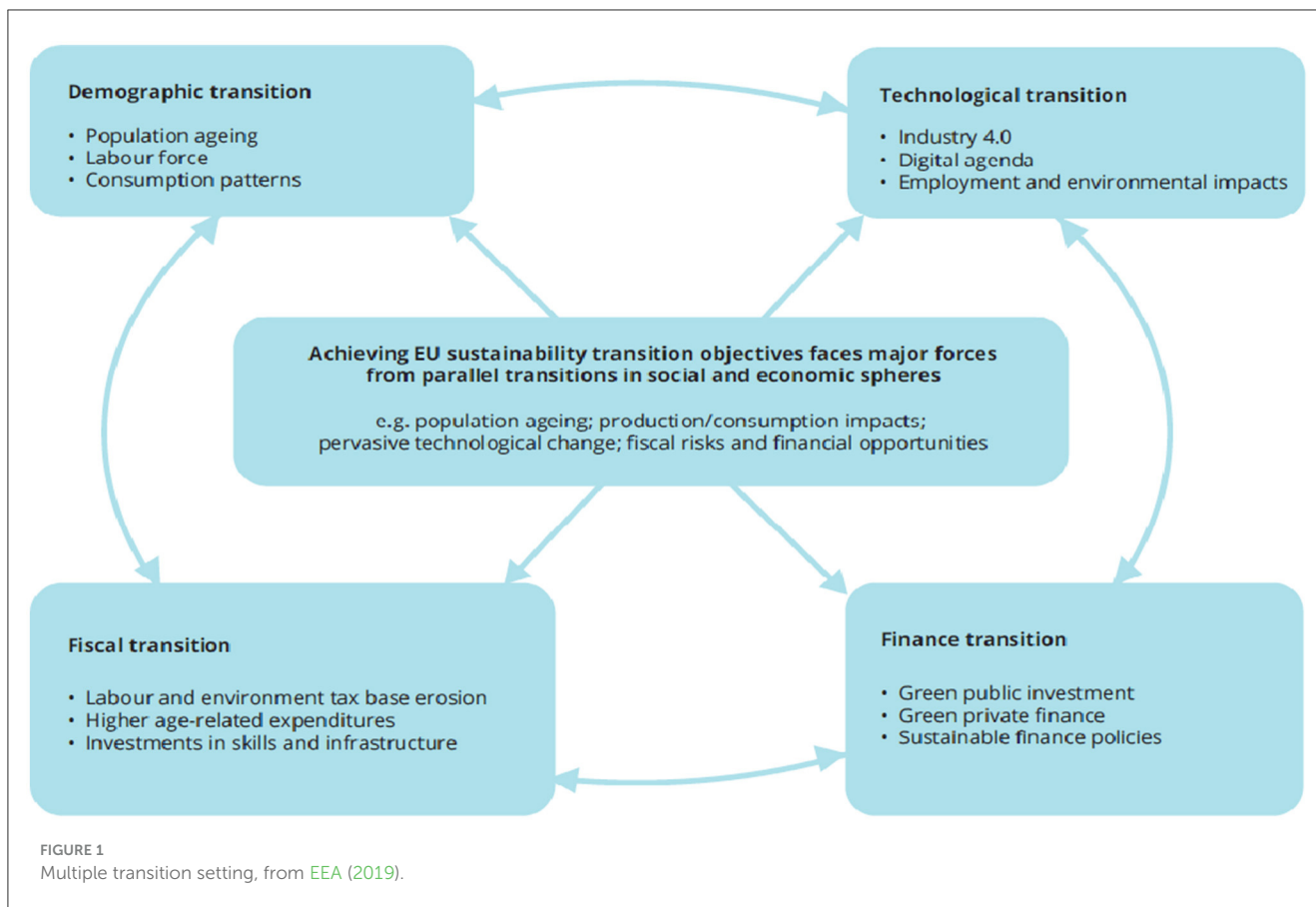
### Insights in ecological economics: 2022

The objective of economic and human development (UNIDO, 2016; EEA, 2021) must guide the governance of the multiple transitions, with the ecological transition at the core of the framework of connections (Figure 1). The diffusion of wellbeing must be pursued through technological, organisational, and social innovations and knowledge creation that can avoid further inequalities and the emergence of “forgotten territories”, both along the historical North–South divide and beyond, especially with regard to the uneven effects of urbanisation. Policy drivers have been and continue to be particularly relevant in triggering and guiding these transitions, through the combination of the universal endorsement of the UN’s 2030 Agenda for Sustainable Development (SDGs) and the EU’s high-level policy priority of the European Green Deal (EGD). States, macro-regions, socio-economic and innovation systems, and enterprises are the socio-economic and technological spaces in which new business models and innovative development trajectories emerge and develop in response to key policy strategies. The sustainability transition is a structural change factor that connects the transitions of old sectors with those of new techno-organisational systems.

In the present historical phase, both the various transition processes and high-level policy actions are influenced by major exogenous shocks, with geographically uneven and non-linear effects over time.

To move towards an overall sustainability path, decarbonisation, resource efficiency, and circular economy are the key pillars of integrated multiple transitions.<sup>1</sup> New business and policy strategies should set and raise the ambitions of societies to redesign production and consumption through pervasive technological and behavioural change. Innovation, understood here as the creation and diffusion of knowledge across territories and value chains (Diaz Lopez et al., 2023), is among the relevant factors behind resource productivity. Conceptually, the IPAT (Impact = Population – Affluence – Technology) identity shows how sustainable-oriented technological development (resource/emission efficiency of production) can compensate for scale economy-driven effects. Given the heterogeneity of technological and environmental performance across sectors, an understanding of the underlying forces requires in-depth meso- and micro-level analyses that reveal the macroeconomic determinants. Environmental innovation is crucial for creating synergies between sustainability and competitiveness towards a green economy.

<sup>1</sup> Zoboli et al. (2020) outline the connections between circularity, decarbonisation, and the bioeconomy, with the important role of innovation and policy (Supplementary Figure 1).



Although research and policy have made progress in integrating the social and environmental pillars of sustainable development, the interaction between social, economic, and environmental issues still remains uncharted territory, with many interesting interdisciplinary avenues for research and policy-oriented assessments. Far from being a “natural” evolution, the relationship between growth, inequality, and the environment is dependent on factors such as policy and institutional quality.

The Research Topic offers four papers that address different aspects of this broad research agenda in a complementary manner. First, a conceptual analysis is presented in the work “*Regulation of externalities: rights, options, and procedure*”, which summarises theories of externalities and property rights in a legal and economic context (Schläpfer and Vatn). The paper “*Cost-benefit analysis of mitigating subsidence damage in Semarang and Demak, Indonesia*”, presents an applied case study to analyse the usual trade-offs societies face in managing sustainable development, which may be different in their features and somewhat more complex in developing countries (Pratiwi et al.). Two other papers offer an empirical analysis of waste/circular economy and climate/energy policy. “*The mixed blessing of responsibility relief: An application to household recycling and curbside waste collection*” focuses on microeconomic aspects of the transition towards waste prevention and reduction, away from landfill and incineration disposal options (Andersson et al.). “*A note on carbon taxes and trade*

*spillovers within Europe*” uses flexible quantitative methods to explore the effects of carbon taxation on economic performance, including macroeconomic international spillovers in the picture (Chakraborty et al.). Overall, the four papers present specific research on different angles of the big picture, with diversified methodological and thematic insights to inspire new, necessary research at the theoretical and empirical levels.

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## Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/frevc.2024.1301686/full#supplementary-material>

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