

Towards inclusive regional green industry path development: Exploring the complexities in future onshore and offshore wind industry development in Norway

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The literature on green industry path development (i.e. *referring to industrial development around new technologies, products, services, business models that promote new industry development, create new jobs and economic growth, help reduce GHG emissions and reduce biodiversity loss*) within the Evolutionary Economic Geography (EEG) Literature has provided considerable insights regarding different typologies of green industry path development in different types of regions (Steen & Hansen, 2018; Grillitsch & Hansen, 2019; Nilsen et al., 2022). However, limited studies have highlighted the need for examining the economic, social, and ecological impacts of the green industry path development process (Breul et al., 2021; Vela-Almeida & Karlsen, 2023).

Furthermore, recent studies have also advocated the need for identifying how the vulnerable social actors (e.g. industrial workers, citizen groups, youth, migrant workers, women groups, environmental groups, civil society, coastal and indigenous communities, etc.) face critical barriers in making their interests, voices and inputs taken into consideration during policy deliberation and the policy implementation process (Rodríguez-Pose & Bartalucci, 2023). As a result, there is a need to advance our conceptual and empirical understanding of future-oriented (Gong, 2024) inclusive green industry path development (Benner, 2023) and green and just regional industry path development process (Eadson & van Veelen, 2023).

Drawing on these insights, the paper provides an overview of the critical building blocks of conceptualizing the inclusive green industry path development process by focusing on three crucial interrelated dimensions, namely (1) Different forms of change and maintenance agency exhibited through transformation work and the multiple legitimation narratives propagated by different actors; (2) the underlying politics of inclusion and exclusion of vulnerable actors and the zones of negotiation between powerful and vulnerable actors and (3) the role of the multi-scalar institutional environment and the national state in mediating conflicts and contestations between the actors. The three integrative dimensions help examine how the different vulnerable and powerful actors negotiate different interests and engage in power plays to emphasize or deemphasize the economic, environmental, and social benefits of a future-oriented green industry path

development process. In this respect, the role of the national state is crucial in mediating the different interests and conflicts between the different actors in a multi-scalar context to develop coordination and setting strategic direction for stimulating transformative green regional industry path development process (Chlebna et al., 2023)

The analytical framework helps to explain the underlying tradeoffs between the economic, social, and ecological dimensions of the inclusive green industry path development process and the different regional outcomes (positive and negative) in different regions. The framework is empirically illustrated with the ongoing complexities associated with just onshore and offshore wind industry development in Norway by building upon empirical insights from prior case studies on the onshore wind energy industry (Nilsen & Njøs, 2022; Korsnes et al., 2023) and offshore wind industry (Steen & Hansen, 2018; MacKinnon et al., 2019; Nygaard et al., 2024).

In terms of the research method, the paper utilizes a qualitative case study approach (Gehman et al., 2018). It utilizes existing archival data sources (e.g. existing scientific articles on offshore and onshore wind energy, doctoral and master thesis examining offshore and onshore wind industry development in Norway, government reports, regulatory and policy documents, Environmental Impact Assessment (EIA) reports, annual reports by offshore and onshore wind energy firms, offshore and onshore wind industry roadmaps, records of public and court hearings, discussion reports by civil society and environmental organizations, newspaper articles illustrating societal controversies, and blogs).

The paper explores the complexities involved by discussing future offshore and onshore wind industry development in Norway. It contributes to the existing literature by developing a nuanced multi-level and multi-scalar conceptualization of the inclusive green industry path development process, focusing on the tradeoffs between the different economic, social, and ecological outcomes. Regarding the policy implications, the paper provides relevant inputs for regional and national-level policy models required to address the tradeoffs between the different outcomes of the green industry path development process and crucial future challenges related to increasing social inequality, increasing GHG emissions and ecological degradation. Finally, the paper provides inputs for an emerging research agenda on the future-oriented, inclusive green industry path development process and future theoretical and empirical research challenges.

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