

# Global Maritime Flows and Local Implications: Conceptualising a Worldwide Taxonomy and Glossary of Port-City-Regions

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## Abstract

The dynamic interplay between global maritime flows and the spatial, economic, and social development of port-city-regions lies at the heart of this thematic issue. As globalisation accelerates, the relationships between ports, cities, and their surrounding regions become increasingly complex, requiring innovative conceptual frameworks, methodologies, and interdisciplinary collaborations to address both challenges and opportunities. Flows of goods and people shape infrastructural networks and create nodes of logistics and administration in and around nearby cities. They establish specific networks that primarily facilitate transport. Multiple approaches and definitions exist to describe and map these unique spaces. This thematic issue of *Ocean and Society* aims to advance our understanding of these phenomena by exploring a range of terminologies, typologies, spatial transformations, and examples of sustainable practices across diverse geographic contexts.

## Keywords

data; global maritime activities; mapping; port-city interface; port-city planning; sustainability; transition

## 1. Navigating Port-City-Regions in Transition

Many port cities across the globe have long thrived on maritime flows and trade connections, leveraging their strategic locations to drive socio-spatial and economic growth. Ports functioning as gateways and hubs have historically been of key importance for local economies and spatial development (Akhavan, 2020; Hein, 2011). However, with the advent of the Industrial Revolution and technological advancements, such as containerisation and innovation in the shipping industry, the dynamic between ports and cities has been undergoing significant changes. Port regions have become central hubs for shipping, cargo handling and

related industries, playing a pivotal role in regional and global economies and trade networks (Akhavan, 2023). While they are often governed by separate entities—port authorities and municipalities or city councils as well as other governmental and corporate entities—ports and cities remain closely intertwined in terms of spatial connectivity and shared interests in the port-city interface spaces (Hein et al., 2023). Yet, as ports continue to influence and shape urban landscapes, there is a pressing need to introduce new tools and perspectives to understand how global flows through maritime infrastructures reshape the built environment.

As port regionalization progresses—shaping the influence of ports on their surrounding territories—the reach of port-related activities grows increasingly complex and expansive (Hesse, 2018). The spatial impact of the flows of goods and people on nearby cities and territories creates a unique spatial imprint, a port-city territory that is not congruent with administrative borders (Hein, 2011). Multiple patterns of port-city territory interaction emerge that merit classification and analysis as they result in different challenges related to spatial planning, governance, or sustainable development (Hein et al., 2023). Small ports adjacent to large cities or large ports without urban neighbours and open hinterlands create different spatial patterns, each with their respective requirements and challenges regarding hinterland infrastructures, logistics centres, or land use. Therefore, fostering dialogue and collaboration among stakeholders in ports, cities, and adjacent regions becomes imperative. Many researchers aim to capture these patterns, creating a broad range of terminologies and applying multiple methodologies. These frameworks also provide fundamental insights for the sustainable design of these territories.

Maritime transport is a catalyst for urban and regional development. Still, it also brings negative externalities to urban and rural or sparsely populated environments, such as pollution, congestion, and noise (Acciaro et al., 2014). Addressing these challenges is vital for sustainable port, city, and regional development. Growing environmental awareness has encouraged efforts toward sustainable port operations and increased marine traffic, resulting in increased projects for green ports, blue growth, and green corridors. With these discussions come a proliferation of new concepts, terminologies, and tools to bridge the gap among research, planning, policy, and practice.

This thematic issue seeks to advance the conceptual, theoretical, and empirical discussion around the spatiality of port(s) and their hosting cities in different regions of the world. The aim is to contribute to the large body of literature by identifying the territorial typology of port cities and their regions, starting from the global flows from the sea (commodity, passengers, and knowledge) that run through maritime and inland ports and create a complex ecosystem.

## 2. Key Themes and Contributions

The five articles in this thematic issue address critical dimensions of global maritime flows and their local impact in port-city-regions from various disciplinary perspectives and explore how this complex interaction between land and sea shapes the spatial, economic, social, and environmental aspects of these regions, addressing several sub-themes:

1. The evolution of the relationship between ports, cities, and the region, as well as the new hierarchies of spaces shaped by maritime flows at the port-city interface and within the wider region.

The two articles “Waterfront Redevelopment Five Decades Later: An Updated Typology and Research Agenda” by Enrico Tommarchi and “Investigating Port Spatiality: Tools for a Spatial Approach” by Beatrice Moretti demonstrate the evolution of ports and cities from highly interdependent entities to separate systems and offer perspectives on reshaping this relationship. Both articles introduce new terminologies and taxonomies of spatial impacts of ports on the surrounding landscape affected by the port or port-related activities, and vice versa. Tommarchi’s article revisits the typologies of waterfront redevelopment in port cities and reflects on how contemporary approaches differ from the “port out, city in” rationale of past decades. He mentions the concept of “demaritimisation,” where port activities are pushed out of the city centre, and the opposite, “remaritimisation,” where the connection with the sea is strengthened. Tommarchi’s contribution highlights the shift towards more sustainable and integrated planning strategies that balance economic, social, and environmental considerations. Drawing on examples from Europe and beyond, the study underlines the nuanced and evolving nature of port-city relations in the 21st century. Moretti’s contribution focuses on “port regionalisation,” where the impact of ports extends beyond their immediate surroundings and the need for more integrated spatial planning to manage these relationships. Using Italian case studies, a new terminology for spatial indicators is introduced to detect the presence, recurrence, and location of spatial impacts and address the complexities of clustered port governance and spatial optimisation.

2. Sustainable development of port regions and the role of institutions and multiplicity of stakeholders in shaping port-city-regions.

Sustainable development is a key focus of the contribution “Decarbonising Maritime Transport: The Role of Green Shipping Corridors in Making Sustainable Port-City Ecosystems” by Mina Akhavan, in which she discusses concepts such as “green ports,” “blue growth,” and “green corridors.” Akhavan’s article specifically discusses the implementation and challenges of green shipping corridors (GSCs), emphasising the importance of a holistic approach that includes both environmental and socio-economic aspects. By reviewing the state-of-the-art GSCs worldwide, she discusses the integration of renewable energy, alternative fuels, and electrification technologies, emphasising the transformative role of such corridors in achieving climate goals and redefining port-city ecosystem interactions.

3. Cultural heritage and identity: revisiting the concept of port-city relationship through the lens of new urban waterfront and urban regeneration.

Another theme explored is the role of “museumisation” and “performativity” in port-city regions in the article “Between Containers and Warehouses: Rehabilitating Port Proximities in UAE Coastal Cities” by Hiba Farhat and Ayman Kassem. Such approaches, aimed at preserving historical heritage and cultural identity, are seen as ways of countering the negative effects of globalisation. They can also contribute to the regeneration of urban areas around ports and the involvement of local communities. Using case studies from the United Arab Emirates, this article examines the socio-spatial impacts of rapid port modernisation and maritime capitalism. The study highlights the importance of sustainable urban recovery efforts that preserve heritage while promoting public access and active engagement in port-adjacent areas.

4. Data-driven research methods.

The article “A Data-Driven History of Gloucester’s Fisheries Architecture” by Rafael Sousa Santos and André Tavares uses data-driven historical analyses to examine the development of fisheries and associated changes in the built environment. These analyses highlight the potential to complement existing knowledge and gain new insights by integrating statistical, geospatial, and historical data. With a mixed-method approach, the study provides a framework for analysing the environmental impacts of industrialised fisheries and their reflections in the built environment. It demonstrates the potential of data-driven methodologies to enhance our understanding of historical and contemporary port ecosystems.

In summary, the overarching theme of these articles is the complex interaction between global maritime activities and their local impacts, examining the port-city-regions as a dynamic and changing system. The articles highlight the need for an integrated and multidisciplinary approach to address the challenges and opportunities in these regions, focusing on sustainability, cultural heritage, spatial planning, and the involvement of local communities.

### 3. Looking Ahead

The contributions in this thematic issue not only provide a multidisciplinary understanding of the port-city-region nexus and its spatial impact but also highlight critical areas for future research. The evolution of port spatiality, the governance of clustered ports, the socio-cultural rehabilitation of port proximities, the integration of historical and environmental data, and the pursuit of maritime decarbonisation are all pivotal themes that demand further exploration. Together, these studies provide a foundation for developing sustainable, inclusive, and resilient port-city-regions in an era of transition and rapid global change.

We hope this collection inspires scholars, practitioners, and policymakers to engage with the complexities of port-city-region dynamics and contribute to shaping their sustainable futures.

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#### Conflict of Interests

The authors declare no conflict of interests.

#### References

- Acciaro, M., Vanelslander, T., Sys, C., Ferrari, C., Rouboutsos, A., Giulliano, G., Lam, J. S. L., & Kapros, C. (2014). Environmental sustainability in seaports: A framework for successful innovation. *Maritime Policy & Management*, 41(5), 480–500.
- Akhavan, M. (2020). *Port infrastructure developments and port-city interface dynamics*. Springer. 7
- Akhavan, M. (2023, August 28–September 1). *Global flows and local implications: A systematic literature review of land-sea interactions in European port cities* [Paper presentation]. 62nd ERSAs Congress, Alicante, Spain.
- Hein, C. (2011). *Port cities: Dynamic landscape and global networks*. Routledge.
- Hein, C., Mil, Y. v., & Ažman Momirski, L. (2023). *Port city atlas: Mapping European port city territories: From understanding to design*. nai010 publishers.

Hesse, M. (2018). Approaching the relational nature of the port-city interface in Europe: Ties and tensions between seaports and the urban. *Tijdschrift Voor Economische En Sociale Geografie*, 109(2), 210–223. <https://doi.org/10.1111/tesg.12282>

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