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EDITORIAL

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Transforming Coastal Governance: Challenges, Experiences, and Ways Forward

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Abstract

Transforming coastal governance is essential to ensure the sustainable development and use of coastal areas. Such transformation processes may involve changes in different governance dimensions. This thematic issue focusses on five of these dimensions and the way in which changes in these dimensions are interrelated: (1) the integration of planning and management of land and sea, (2) the use of scientific knowledge, (3) the involvement of stakeholders in planning and policy processes, (4) the development and use of strategic foresights, and (5) digitalization and the use of e-governance tools. Drawing on the experiences from the BlueGreen Governance project that covers different coastal regions in Europe as well as Reunion Island, the different contributions explore various attempts to transform coastal governance, the obstacles that actors face, and the solutions that are developed along the way.

Keywords

coastal governance; e-governance; land–sea management; participation; policy integration; science-policy interface; strategic foresight

1. Introduction

Coastal areas face various social and environmental issues, such as habitat loss, pollution, vulnerability to storm surges and extreme weather events, decline of natural resources, and poorly planned developments. Some of these issues have been on the agenda for decades, indicating that finding and realizing solutions is anything but easy. Addressing these challenges has become even more urgent due to climate change. Coastal areas are particularly vulnerable to the various impacts of climate change, such as sea level rise and

increased frequency and intensity of extreme weather events, that threaten livelihoods, natural resources, and protected ecosystems.

Various studies have shown that current governance systems are ill-equipped for dealing with these coastal conditions (e.g., Brown et al., 2017; Tocco et al., 2024; Van Assche et al., 2020) and that the functioning of coastal governance is hampered by territorial, administrative, and sectoral fragmentation. Integrated forms of planning and management have been called for, but these are difficult to realize and implement. This thematic issue explores the challenges of transforming coastal governance in more detail, focusing on the different efforts to integrate the planning and management of land and sea. It presents reflections on and insights from coastal governance in different regions throughout Europe, namely the Oslofjord in Norway (Trubbach et al., 2025), the Scheldt basis on the border between Belgium and the Netherlands (Vitale et al., 2025), Valencia (Luján Climent et al., 2025; Grassi et al., 2025a) and the Canary Islands (González et al., 2025) in Spain, and Slovenia (Marušić & Gulič, 2025), as well as from Réunion Island (Losen et al., 2025), a French overseas department. Furthermore, it includes contributions that put forward more general reflections on the challenges of transforming coastal governance (Evans et al., 2025; Kotta et al., 2025; Nijamdeen et al., 2025). The contributions are based on research conducted within the framework of the BlueGreen Governance project, funded by Horizon Europe and UK Research and Innovation. BlueGreen Governance is dedicated to advancing innovative approaches to land–sea governance, with the overarching goal of developing novel strategies that better integrate terrestrial and marine management. It aims to address complex challenges at the land–sea interface, enhance ecological and social outcomes, and inform policy at both national and international levels.

The thematic issue explores the complex challenges associated with integrating the management and governance of land and sea and transforming coastal governance. The different contributions specifically focus on five key dimensions of coastal governance:

1. Integrated land–sea management and planning;
2. The use of scientific knowledge;
3. Participatory practices and stakeholder involvement;
4. The development and use of strategic foresight;
5. The use of e-governance tools.

2. Integrated Land–Sea Management and Planning

Integrated land–sea management is the key challenge that is addressed in the BlueGreen Governance project. Coastal governance requires policies and practices that take into account the social and ecological connectivity between terrestrial and marine ecosystems and address the direct and indirect impacts of land-based activities on marine environments. Integration requires the alignment of goals, policy instruments, and strategies across various governance levels and policy sectors in order to balance competing interests and promote the sustainable development of coastal areas. Although such integrated practices are regularly called for, they prove to be challenging to change current governance systems, even with deliberate attempts. Trubbach et al. (2025), for example, explore how the development of coastal plans can facilitate policy integration. Their study of the Oslofjord shows that the development of an integrated

plan can indeed complement existing institutions and therewith trigger some changes in coastal governance. Their study also shows that the implementation of the plan proves to be difficult because sectoral interests still prevail over environmental objectives, local self-government limits the authoritative force of the plans, and the issue of financing has not been solved (Trubbach et al., 2025). Also, the contribution by Vitale et al. (2025) illustrates how current forms of governance can present barriers for change. Their study examines the adoption of nature-based solutions in the Scheldt basin, located at the border between the Netherlands and Flanders. It illustrates how longstanding traditions of engineering-oriented water management continue to shape flood-risk governance, resulting in a gradual and incremental transition towards more integrated approaches. The study demonstrates that forms of governance are influenced not only by institutional legacies but also by prevailing forms of knowledge and material conditions. The contribution stresses the contingent nature of change in governance and the need for a thorough understanding of the different dependencies that shape the process of change.

3. The Use of Scientific Knowledge

The complexity that characterizes coastal governance is also reflected in the development and use of scientific knowledge. One main challenge is developing in-depth scientific insights about the functioning of the coastal system, the interconnectivity of land and sea, and the many ways in which human activities impact that system (Trubbach et al., 2025). Leveraging scientific knowledge enables the creation of tools for monitoring and forecasting changes in interconnected systems, generates evidence that supports sound decision-making, and empowers policymakers and practitioners to respond to both immediate and long-term social-environmental challenges. It underpins the development of evidence-based policies capable of addressing the complex challenges inherent in coastal governance. Scientific studies can furthermore be useful for the evaluation of current policies and policy processes, as the contribution by Marušić & Gulič (2025) and González et al. (2025) clearly shows. The contribution by Kotta et al. (2025) explores how digital tools can be used to make scientific information available to people working on the formulation of policies and plans, while Grassi et al. (2025a) illustrates how scientific knowledge about the impact of climate change can be used in the development of scenarios and stakeholder dialogues. Also the other contributions reflect on the role of scientific knowledge in coastal governance, highlighting the relevance of scientific knowledge, but also how scientific knowledge is often marginalized to protect vested interest, how the contextualisation of scientific knowledge to specific practices is challenging due to a lack of resources and expertise, or how the dominance of technical expertise can actually hamper the transformation of coastal governance towards more integrative approaches (Vitale et al., 2025). Also, the interplay between scientific expertise and stakeholder views is a topic that deserves more attention (Nijamdeen et al., 2025).

4. Participatory Practices and Stakeholder Involvement

Participation implies the active inclusion of diverse stakeholders in planning and decision-making processes, ensuring that a broad spectrum of views, interests, and expertise is considered. Participation in the context of coastal governance might be particularly challenging, as different contributions show (e.g., Lujan et al., 2025; Grassi et al., 2025a; Losen et al., 2025; Vitale et al., 2025). The influence of participatory processes on decision-making and spatial development is often limited, as important issues are regularly discussed and decided on in different arenas. Planning and decision-making on coastal areas takes place in multiple jurisdictions, and the relationship between these jurisdictions can have a significant impact on the role and

influence of participation. The impact of participatory processes is limited, if more important decisions on the future of coastal areas are made elsewhere, in sectoral domains, or on higher levels. The fragmented nature of coastal governance can make it difficult to grasp power relations, increase stakeholder involvement, and ensure fair and just forms of participation.

5. The Development and Use of Strategic Foresight

Strategic foresight refers to the capacity to explore and navigate different futures and to anticipate particular developments and the opportunities and risks these might create (Grassi et al., 2025b). One key example is the capacity to gain better insights into the potential impact of climate change as a basis for developing appropriate responses. By bridging scientific evidence and experiential knowledge, foresight provides a holistic framework for visioning and decision-making. It equips policymakers with the tools to circumvent uncertainties, anticipate challenges, and seize opportunities, making it a crucial component in designing adaptive, inclusive, and sustainable long-term policies. The issue of strategic foresight has a central role in the contribution by Grassi et al. (2025a) that presents the findings of a stakeholder workshop that used different strategic foresight tools to engage stakeholders in a dialogue about the possible consequences of climate change and ways to anticipate these consequences. It shows how strategic foresight tools can be used to engage stakeholders, explore possible futures, and initiate dialogues about future pathways. It also reflects on important challenges such as inclusiveness, inequalities in adaptive capacity, and the need to enhance coordination within coastal governance. Strategic foresight also plays an important role in the implementation of EU policies, as the contributions on the Canary Islands (González et al., 2025) and Slovenia (Marušić & Gulič, 2025) show. It can help to gain a better understanding of the impact of climate change and to develop an integrated approach.

6. The Use of E-Governance Tools

Finally, the digital revolution offers ample opportunities to enhance policy formulation and implementation. Digital tools can be used to explore possible futures, to assess policies and plans, to monitor progress, or to involve stakeholders at various stages of the policy process. The contribution by Kotta et al. (2025) specifically focuses on this dimension and elaborates on the use of the web-based PlanWise4Blue tool for analysing cumulative effects of human activities on coastal ecosystems using a data-driven approach. This key example of a digital tool allows actors to compare different management scenarios and the potential impact of plans, policies, and specific measures. The contributions by Grassi et al. (2025a) and Losen et al. (2025), however, show that although such digital tools are widely used, their integration in decision-making is still limited.

7. Transforming Coastal Governance

The different contributions all reflect on the challenges of transforming coastal governance and present practical experiences as well as specific approaches and tools that can be used to work towards more integrated and sustainable forms of coastal governance. The different studies not only illustrate some of the shortcomings of current policies and practices, but also explore the challenges of transforming coastal governance systems. The studies focused on five dimensions in which governance systems can be improved. Each of these dimensions comes with different challenges, but the different contributions also show that

and how these dimensions are strongly interrelated and should be addressed in a coherent way (Nijamdeen et al., 2025).

In order to grasp the processes of change in coastal governance, different contributions have applied the conceptual framework of the evolutionary governance theory (Beunen et al., 2022; Van Assche et al., 2013). This framework is particularly useful for analysing the gradual evolution of coastal governance and the various dependencies that influence the process of transformation (Nijamdeen et al., 2025; Partelow et al., 2020). It offers a powerful lens to understand both the possibilities and limits of achieving transformations in coastal governance. It views governance as an ongoing process of co-evolution between actors, formal and informal institutions, power-knowledge dynamics, and the physical environment. This co-evolution means that intended and unintended changes occur simultaneously and that attempts to change governance can have consequences that are difficult to predict or control. Learning, adaptive management, participatory approaches, and policy experimentation are all useful in addressing these challenges of transforming coastal governance, but the problems and shortcomings of current governance systems will not be overcome easily because of path dependencies and current power relations. Together, the different contributions of this thematic issue show that while transformation of coastal governance is both possible and necessary, the processes of change are inherently constrained by the way current governance systems are organised and functioning, as well as by the ongoing strategizing of a diversity of actors, whose visions, interests, and ideas are not always aligned. Altogether, the contributions present insights and experiences that hopefully prove useful to those studying coastal governance and to the many practitioners working on putting coastal governance on pathways that are both more sustainable and just.

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Conflict of Interests

The authors declare no conflict of interests.

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