

Multi-Use of the Sea

Subjects: Oceanography

Contributor: Joanna Przedzrymirska

Conserving and sustainably using oceans, seas, and marine resources constitutes one of the key Sustainable Development Goals (SDGs) of the United Nations Agenda 2030. The key issue in this context is an amplification of human utilization of marine space and the latter's more extensive exploitation for economic purposes. As a result, marine sea space is becoming a scarce resource, requiring careful management, and can no longer be perceived as infinite and abundant. Maritime multi-use could be a territorial/SPATIAL governance instrument for the enhancement of sustainable development in five EU sea basins. Multi-use (MU) is expected to enhance the productivity of blue economy sectors, as well as deliver additional socio-economic benefits related to the environmental and social dimensions of sustainable development.

Keywords: multi-use ; blue growth ; marine space ; marine policy

1. Key Pillars of Maritime Sustainable Development

The sustainable development of seas and oceans rests on three traditional pillars that form the backbone of this concept (i.e., economic development, environmental responsibility, and social progress) ^[1]. In the EU marine context, economic development is attributed to the concept of blue growth ^[2] defined as 'smart, sustainable and inclusive economic and employment growth from the oceans, seas and coasts' ^[3]. Formulated at the Rio + 20 Earth Summit in 2012, the concept came as a response to the need to eradicate poverty ^[4]; nowadays, it represents one of the key EU economic strategies ^[5]. The *Marine Strategy Framework Directive* (MSFD), which aims to achieve a Good Environmental Status (GES) of the EU's seas and oceans ^[6], provides the crucial element of environmental responsibility. Several scholars underline mismatches, tensions, and discrepancies between these two approaches (i.e., MSFD and blue growth) ^{[7][8]}. The social sustainability of maritime spatial development has not been addressed directly and only partially indirectly through the EU MSP Directive ^[9], which encourages the participation of various stakeholders in the MSP process. This directive also underlines the importance of co-existence. Thus, while social sustainability at sea has not been conceptualised in formal documents of EU legislation, its essence was recently outlined by MSP researchers ^[5]. They have identified Recognition, Representation, and Distribution as interdependent and interwoven building blocks that, together, contribute towards conceiving social sustainability as a pillar of sustainability at sea. This first element means recognition of (respect in relation to) the diversity of group identity (and related socio-cultural rights, needs, livelihoods, lifestyles, and knowledge). The second one concerns inclusion in and exclusion from the decision-making process. The third one covers the distribution of goods and bads as a result of the governance process.

The situation outlined above makes clear that maritime sustainable development encapsulates multiple expectations and demands, such as GDP growth and employment, poverty alleviation, ecological sensitivity, as well as respect for spatial justice and diversity. Any trade-offs between those dimensions require deliberation through a process of public choice ^[10]. Multi-use may help juxtapose the aforesaid dimensions of sustainable maritime development. Thus, it should be considered in various marine governance processes, including the MSP, as the actions pursued in agreement with the aims of these dimensions will ultimately convert into various spatial demands and arrangements.

2. Multi-Use as at Sea

Multi-use (MU) is one of several terms describing the situation of at least two marine sectors or activities being together. Here, the term being together refers to either spatial proximity, overlap or concurrence, or economic interaction. Such a situation can be described also as multiple-use, co-use, coexistence, interdependencies and co-location. Several researchers use some of these terms interchangeably (e.g., ^{[11][12][13]}). However, in this paper MU is narrowed to multi-functional and symbiotic combinations with clear economic or social or environmental interplay ^[14]. The reason for this choice is to leave aside co-existence that will not contribute at least to one of the sustainable development pillars or has nothing to do with territorial governance because of its incidental character. Therefore, in this paper, MU is understood as the

intentional joint clustering of two or more uses for the purpose of using the same infrastructure and/or using resources in close geographic proximity. Thus, in terms of terminology, MU shares a locational element with co-location (proximity), the excess of revenues/benefits over costs with co-existence (mutual interactions between uses), and resource sharing with co-use (using the same resource). What makes it distinct is the intentionality behind MU and the idea of actively bringing elements together. An example of MU can be a wind farm designed in such a way that it also allows the harvesting of tidal energy (lower costs and extra revenues by using the same infrastructure) ^[15]. Similarly, the combination of a fishery with environmental protection or tourism can be considered MU if done intentionally and benefiting both activities. Thus, the condition sine qua non for the occurrence of MU is the intentional creation of lower costs and/or extra revenues/benefits from jointly using the same ocean resource (e.g., ocean space, water, fish, etc.) or cross-sectoral operational synergies (joint use or installations, vessels, human resources etc.) that trigger intentional decisions and interactions.

Lower coasts contribute to the economic pillar of sustainable development. However, in many cases, MUs offer various socio-environmental benefits (cf. ^{[16][17]}) that cannot be easily monetised within the market process. For instance, MUs may facilitate the survival of sectors with limited market power (driven out from the sea by stronger counterparts), such as an artisanal fishery. Furthermore, a number of environmental benefits can arise from shared use of infrastructure and resources (e.g., increase of popular support for conservation of marine ecosystem due to combination of protection with high quality tourism in order to show the hidden beauty of the marine protected areas to the visitors/divers). Thus, a feature specific to MU is its focus on a more efficient use of resources or the creation of other socio-economic benefits through intentional co-use.

According to Przedzimirska et al., ^{[18][19]} there are two main forces that may enhance MU development: market and policies, both of which are amplified by research and development (R&D). Market forces refer to the economic benefits gained from the combination of several sea uses in terms of lower costs or extra revenue streams for the business sector. This accounts for e.g., the spontaneous emergence of pescatourism where the same resource (fishing boat) is shared by the fishing and tourism sector. Policy drivers are primarily concerned with the goal of attaining/maintaining good environmental status or supporting the existence of sunset industries important for cultural reasons (identity, emotional bond—cf. ^[20]). Policy drivers can also aim to facilitate greater social acceptance of space-intensive sectors (e.g., aquaculture and renewable energy), e.g., by requiring such sectors to share sea space ^[13] and by promoting co-location as a way of using ocean space sparingly so space is left for future generations. If MU as a policy has the additional goal of providing extra socio-economic benefits for the parties not involved in MUs (external benefits), policies should provide incentives toward MU. An example may be the incentivised insurance costs for multi-use wind farm structures which produce energy and contribute to higher water quality (plant-based or crustacean aquaculture). Also, MSP can enhance MU in maritime spatial plans (e.g., by preferences to MU arrangements when allocating marine space).

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