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Investment Assessment of Multi-Use Offshore Platforms Methodology and Applications: Conclusions and Recommendations

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Conclusions and Recommendations

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Abstract This chapter summarizes the concluding remarks and recommendations based on the analysis presented in the previous chapters. The socio-economic assessment of the investment in multi-use off-shore platforms (MUOPs) in different EU sites indicates that the obstacles that impede their development are associated to policy, institutional and social considerations. Geopolitical features of the sites also play part in determining acceptability and feasibility of the projects. Financial considerations are also important to their acceptance and development. MUOPs may need financial support that can create incentives for developers to explore possibilities of these type of investment and make them more attractive. For the initial state of MUOPs development, subsidies and other economic instruments could be used to create investment incentives. At the same time MUOPs should be able to compete with conventional producers. Research outcomes on the feasibility of the MUOPs have to be made available and communicated to relevant stakeholders and policy makers. Given the data limitations and the significant research potential in this area pilot MUOPs projects can be proposed that could close the knowledge gaps and be used as examples to explore the possible benefits and challenges.

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A rapid development of marine infrastructure is expected to take place in the European oceans the next few decades. Massive offshore wind farms have already been constructed and new prototypes for marine renewable energy extraction from tides and waves have been tested to meet the objectives of renewable energy set by the EU Energy Strategy. However, the increasing development of marine infrastructure unavoidably exerts significant pressures on the marine ecosystems. Off-shore platforms that combine multiple functions within the same infrastructure offer significant economic and environmental benefits and could contribute to the optimization of the marine spatial planning.

Investing in offshore platforms implies that the economic costs of marine space use and the environmental impacts of the human activities should remain within acceptable limits. Providing there is little information on the economic viability of these platforms, this book examined the economic and environmental feasibility of such multi-use off-shore platforms (MUOPs). Inevitably, forecasts based on current knowledge and future expectations created uncertainty related to future cash flows of such projects. The uncertainty of the offshore wind/wave energy and aquaculture values (eg. output, costs, prices) is further increased due to the spatial differentiation of the economic, environmental and technological aspects among the different MUOP projects (North Sea, Atlantic, Mediterranean, Baltic). Based on the risk analysis results, the output and operation costs represent the most vulnerable to changes parameters for the projects. However, we should note that the results are based on limited information and time horizon (20–25 years) that do not allow for the inclusion of long-run effects (e.g., environmental effects that take place after more than 40 years of platform operation). Hence the results of the undertaken analysis could be uncertain. Nevertheless, that was a first step to identify challenges and opportunities with regards to offshore marine infrastructures, as well as to consider important knowledge gaps for the future design development and research.

The most important obstacles that impede the development of the MUOPs can be grouped in three categories:

(a) policy obstacles related to international agreements, regional or local constraints on the coordination of the actions
(b) institutional obstacles related to legal barriers and bureaucracy
(c) social constraints related to lack of social consensus of the groups affected by the projects, public unfamiliarity and distrust towards MUOPs

Policy and governance frameworks for the implementation of MUOPs need to be adjusted to reduce uncertainties with regards to licensing and operation that usually contribute to complexity of decision making and implementation process. Clear and agile licensing procedures that are open to accept innovative solutions and co-existence of uses in offshore environment are advisable. The licensing procedure

should be based on site-specific environmental studies that guarantee the implementation of an environmental monitoring system in the designated marine areas for multi-use platforms development. For example, an environmental monitoring program that considers environmental issues such as the spreading of invasive species, biodiversity, underwater noise and electromagnetic radiation and water pollution. Minimizing the environmental impact and the continued monitoring should not be seen as burdens, instead, they contribute to the social license to operate for MUOPs.

Apart from these common obstacles applied to all case studies, the geopolitical features of each site further affect the nature of the site-specific perceived obstacles. For example, it is worth mentioning that off-shore wind development has been excluded from the recent renewable energy subsidy program launched in the North Sea areas contrary to what is applicable in the Mediterranean case study. In addition, in the Atlantic Sea and Baltic Sea, several licenses are required to start off-shore aquaculture or wind energy projects. These examples portray the importance of the location factor on the final design of the MUOPs.

In addition, the engagement of different case specific actors and stakeholders is essential for the maritime spatial planning and the design of efficient policy instruments. Within the MERMAID project, a wide range of stakeholders, including, policy makers, business partners and future end-users, local and regional authorities, local NGOs, relevant professional associations etc., was engaged to identify different views on economic, social and environmental objectives of MUOPs, as well as challenges and constraints faced (Rasenberg et al. 2013). The participatory process of the project revealed the importance of having a representative sample of stakeholders, since participants may have different perceptions of risks, costs and benefits involved, while a balance should be kept between the economic benefits and ecological impacts. Diverse knowledge and competences, as well as different responsibilities are spread out by several stakeholders capable of affecting the policy making process that is required for planning and developing future MUOPs.

With respect to socio-economics, MUOPs provide significant future opportunities for efficient marine space, which can generate new jobs, both direct and indirect, strengthen the cooperation between the different countries involved in the implementation of the MUOP and contribute to the overall regional and local development. In particular, MUOPs can promote R&D, which will create new jobs for high skilled workers. In addition technological synergies could correspond to energy efficiency and less environmental effects i.e., less CO_2 emissions that could be expressed in monetary values and included in the socio-economic assessment of MUOPs.

The assessment and implementation of the MUOPs is constrained by the lack of data (financial, socio-economic environmental, and technological) that make the monetization of externalities difficult. Based on the current results, the final designs for the Atlantic and North Sea site seem to be economically sustainable. However, stand alone functions of wave energy production for the Atlantic site and seaweed production for the North Sea site seem not economically sustainable. We have to note here that a considerable uncertainty relates to the existence of potential synergies when combining different functions due to economies of scale and efficiency

gains. For example, in the Atlantic Sea site, synergies between wind and wave energy could lead to technical progress that may produce further economic benefits apart from the reduction of CO_2 emissions. For the Mediterranean and the Baltic site, since financial data with regards to the multi-use scenario were not available, experts' opinions and initial financial analysis have been used in the assessment. The results showed that the Baltic site can be economically sustainable. The Mediterranean MUOP scenario could be economically sustainable in the long run when the ocean space will get limited.

The assessment results presented here are associated to the adoption of specific assumptions and scenarios as discussed in the previous chapters. Thus the outcomes could potentially differ in magnitude and significance if additional information could become available and incorporated in the analysis (regarding for instance monetization of externalities). In addition the analysis would potentially differ if we would allow for a longer time horizon in the SCBA, or if a more precise investigation of synergy opportunities would be adopted, or if the comparison of implementing MUOPs has been conducted between off-shore and on-shore or near-shore activities.

Subsidies included in the SCBA can alleviate for negative profitability with respect to stand alone functions. One way to motivate subsidies for the MUOPs development is to point out that these subsidies are used to cover the installation cost of the MUOPs' different functions with the purpose of capturing the positive externalities not only in terms of environmental benefits such as CO_2 reductions, but also in terms of more general positive network externalities that promote technical change, support the transition to low carbon, support an energy independent economy, and improve food security due to more controlled aquaculture. Economic theory suggests that activities which generate positive externalities should be subsidized, because market equilibrium without subsidies will not provide the correct amount of the externality generating activity. This is the opposite of imposing taxes to restrict activities that generate negative externalities. In the absence of subsidies market economy might not install MUOPs and the wider social and economic benefits would be lost. In this sense subsidies should not be regarded as a form of supporting the income of a pressure group but as means to secure the benefits accruing from positive externalities (although it is advised to be avoided in the long-run).

MUOPs should be able to compete with "conventional" producers if site conditions are good enough. Other mechanisms for financial support that create incentives for developers to explore possibilities of these type of investment and make them more attractive need to be further examined. Apart from subsidies, taxes to conventional energy production uses could be applied or make sure that insurance to reduce risks is effectively addressed. Furthermore, the advantage of first mover and the benefit of pioneer with regards to investors should not be disregarded.

Given the knowledge gaps, future decision making needs to take advantage of research undertaken for other related projects. In formal procedures such as impact assessment of plans, programs (Strategic Environmental Assessment) and projects (Environmental Impact Assessment), consultation is already a given. This helps taking into account a variety of institutional, technical, environmental, financial and

socio-economic aspects in maritime spatial planning and for developing policy instruments that can support the development, implementation and running of MUOPs. Research outcomes on the feasibility of the MUOPs have to diffuse and be visible to all relevant stakeholders and policy makers. It is clear that private funding is required in order MUOPs to be able to generate public benefits. For the initial state of MUOPs development, subsidies and other possible economic instruments are advised to be used to create incentives of investment. Awareness campaigns on the multiple functions of these platforms will improve the understanding of the multi-disciplinary benefits and may improve their acceptability from the local societies. Given the lack of data and the high research potential in this area, it is suggested to have pilot MUOPs projects that could close the knowledge gaps and be used as examples to exhibit the possible benefits to policy makers and potential investors.

Reference

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