BLUE CLUSTER

WHITE PAPER

“Adopting the ecosystem approach in the blue economy”

Preface

How does the Ecosystem Approach look like at sea? This white paper discusses how an ecosystem approach can be integrated in future developments of offshore activities in a practical and pragmatical manner and therefore contribute to sustainable blue growth. Such a tool is of vital importance considering the increasing pressure from society and governments, but also because companies are looking for a sustainable modus operandi. Central to this document is the concept of an ecosystem approach performance wheel (hereinafter referred to as the EA wheel), which is put forward as a tool and framework to implement this ecosystem approach. In a later stage, this EA wheel can be tailored to specific marine contexts.

For a very long time, this ecosystem approach focused on traditional nature conservation, which implies minimising the impact of human activities on the environment. Over the last few years, there has been a move towards a more integrated approach that focuses on regenerative practices that restore nature, which is intrinsically dynamic. This is based on the assumption that economic activities do not have an exclusively negative impact on nature. The relevant challenges are: (i) finding a balance between positive and negative impacts; (ii) taking into account services that do not directly provide economic value for the company when validating impacts; and (iii) learning how to deal with the complexity of cumulative impacts.

Major challenges such as biodiversity loss and climate change can to a significant extent be linked to ecosystems and the impact of human activities on these ecosystems. In Flanders we have noted that companies in the blue economy want to assume responsibility but do not integrate the ecosystem approach as several unanswered questions remain, including: 'How can an ecosystem approach be integrated into economic models?'; 'What tools are already available?'; 'What additional support is required to enable implementation of an ecosystem approach?'; and 'What role do policymakers, companies and knowledge institutions have to play?' Importantly, citizens should also be involved, as an ecosystem approach can enhance public support and thus give the different players a licence to operate. In addition, businesses are increasingly urged not to fall back on business as usual. This is also true at an international level with for example the European Green Deal and the Sustainable Development Goals.

This white paper is a first step to offer support within the transition towards a blue economy that keeps on growing based on ecosystem approach principles. The white paper was written within a Flemish context, but has a much broader and more generic scope. Using input from local knowledge institutions and companies, we aimed to develop a practical tool that presents policymakers with a clear picture of our ambitions, assists companies in actually implementing an ecosystem approach and highlights the need for implementation-oriented ecosystem research. Incorporating an ecosystem approach into business processes is a very complex issue and requires an approach that benefits the preservation of ecosystem services and fits in with (current and new) business models. Even though the ecosystem approach is still in its infancy, we need to strive for it if we want to accomplish blue growth in harmony with marine habitats and ecosystems.

This white paper puts forward a wheel concept to get to work with the ecosystem approach. The EA wheel needs to provide companies with high-quality insights into what goes well and what goes wrong as far as the ecosystem approach is concerned. This should result in a more nuanced picture of the performance and in improvement actions linked to several partial aspects of the marine ecosystem. The tool starts from scientifically based knowledge on the actual (overall) impact on the marine ecosystem

Framework & background

As the Blue Economy is in full development, we strive to incorporate all ecosystem aspects into the development of new activities at sea. This is driven by a desire to sustain delivery of ecosystem services (food production, pharmaceutical raw materials, climate buffering, source of employment, biodegradation of pollutants etc.) and to preserve the intrinsic value of ecosystems and their components. This takes us into the direction of activities that work together with the natural environment instead of having an irreversible impact on it.

Several tools are available in this regard, but it is not always easy to implement an ecosystem approach in practice. While there is a high demand for marine space for economic activities, the government draws up legal frameworks that are often aimed at minimising (or compensating) damage or achieving good environmental status. This creates a field of tension that raises the question of responsibility if ecosystem damage occurs. The relevant challenge at hand is to integrate human activities as part of the ecosystem.

In a European context, governments have developed several useful frameworks over the last couple of years, including the Marine Strategy Framework Directive (MSFD). This directive mainly aims at achieving good environmental status, but insufficiently takes into account the possibilities of human activities to contribute to achieving this good environmental status. Strategies and visions on the environment on the one hand and the blue economy on the other have been developed at various policy levels, but these strategies and visions are not always coherent in terms of objectives and execution.

There are two large tendencies: (i) policies that promote preservation of natural resources and sustainability in addition to social equality (Beaumont et al.); and (ii) policies that combine social and environmental goals into one dynamic whole and take into account ecosystem services. This implies that terminologies, definitions and decisions are often fragmented within the scope of their marine strategy.

Policies on marine research, fisheries, the maritime industry and the environment have developed on separate tracks, which has led to conflicts and inefficiencies. It is undesirable to divide the marine environment into different compartments or to disconnect marine and coastal industries from the operating environment of watersheds and ecosystems. International instruments (e.g. carbon credit method), standards and certifications (ASC, MSC) that can contribute to the implementation of an ecosystem approach are insufficiently geared to a common view on the development of the blue economy.

The EU Green Deal offers new possibilities to provide tools to companies who want to make a positive contribution to the ecosystem and want to prevent negative impacts but also to governments to achieve good environmental status more quickly (since the MSFD was drawn up, only limited progress has been made in European marine waters and good environmental status has not been achieved everywhere). This makes it possible to establish a positive interaction between industrial and policy goals.

EA performance wheel

The guidelines for integrating available ecosystem knowledge in innovative processes can be implemented by means of an Ecosystem Approach performance wheel (EA wheel). It needs to incentivize companies to adopt the ecosystem approach. The EA wheel is a high-quality tool that provides insight into what goes well and what goes wrong in terms of ecosystem approach.

All this should result in a nuanced picture of the performance and in improvement actions. Assessment of the performance for different partial ecosystem aspects (e.g. climate and soil biodiversity) makes it possible to pursue a higher level of ambition without expressing an opinion on which aspects are more important than others. A schematic representation of the EA wheel can be found on the next page.

The EA wheel is made of different building blocks: (1) a classification of the marine ecosystem in different domains or partial aspects that can be impacted (positively or negatively) by economic activities; (2) a ladder with 5 performance levels that reflects ecosystem approach engagement; and (3) an a posteriori estimate of the impact on society and policy. This allows to determine in a high-quality manner whether the ecosystem efforts also have a positive socioeconomic impact. In addition, it is possible to assess the contribution to policy objectives at different levels (e.g. SDGs). The combination of the 3 building blocks ensures that it is not required to take into account all ecosystem aspects for each performance level. It is possible to take a limited number of actions for each level and for each aspect.

The ladder component consists of 5 levels, the first 3 of which are situated in the field of (ad hoc) project-based initiatives. As from level 4, the ecosystem approach becomes a structural element of business operations and is included in strategic thinking processes. At level 1 and 2, the focus is on mitigating measures that are mainly aimed at countering or minimising undesirable effects of human activities. As from level 3, the goal is active recovery of a loss or the creation of added value for at least one ecosystem service. The company inherently has to strive for the highest level of ambition, and the lower levels are intermediary steps that need to be taken in order to achieve the ambition.

Importantly, the EA wheel focuses not on the output, but rather on its interpretation. The possibility to integrate benchmarks and points for improvements needs to be examined further. Even though the proposed tool is primarily geared to the growth sectors within the blue economy (e.g. offshore energy and mariculture), it also has to be possible to integrate the traditional sectors (such as fisheries and shipping) in the long term.

STRATEGIC BUSINESS PROCESSES

PROJECT-ORIENTED INITIATIVES

Level 5
Integrating the ecosystem approach in blue strategy

Level 4
Valuating the ecosystem approach in blue business

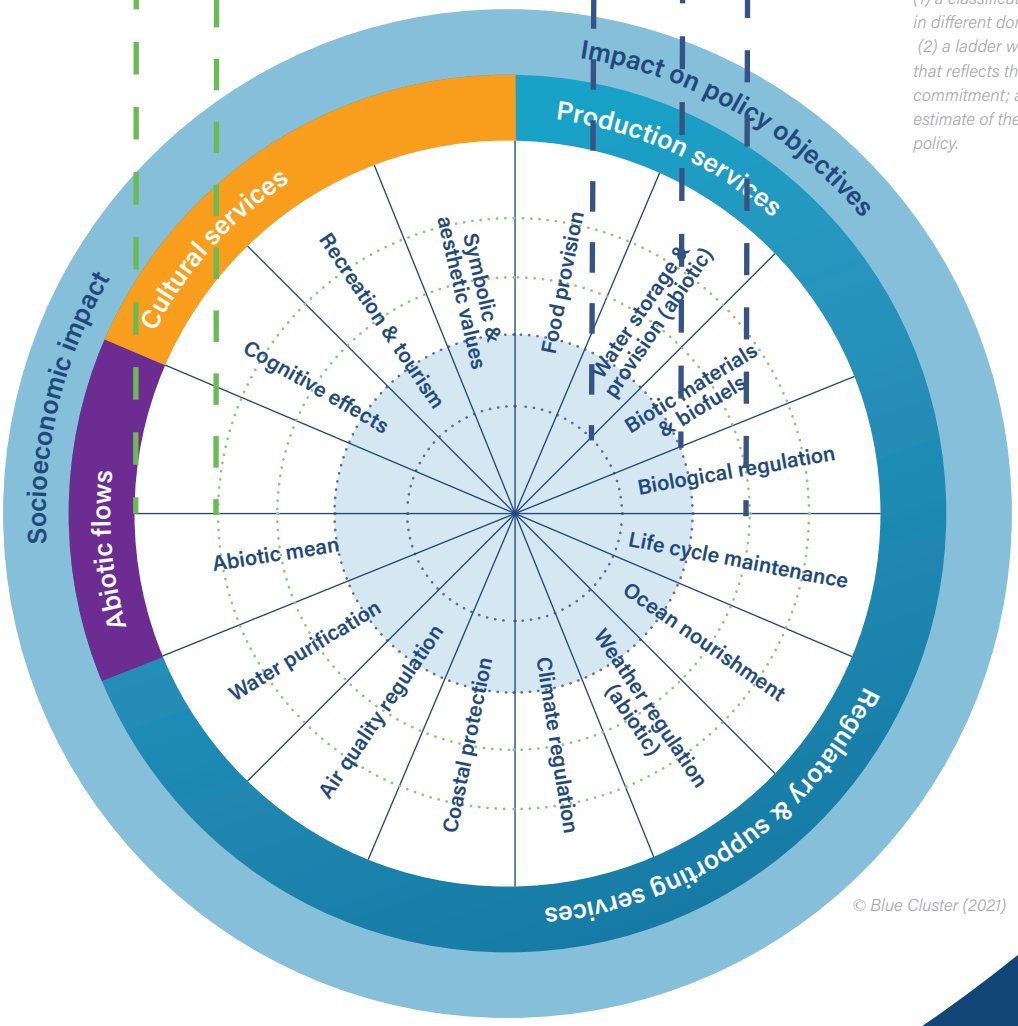
Level 3
Designing nature-inclusive blue infrastructure

Level 2
Action plan for preserving or reinforcing the marine ecosystem

Level 1
Monitoring the impact on the marine ecosystem

Creation of natural capital

Mitigation measures



Schematic representation of the possible appearance of the EA wheel. The wheel consists of 3 building blocks: (1) a classification of the marine ecosystem in different domains or partial aspects; (2) a ladder with 5 performance levels that reflects the ecosystem approach commitment; and (3) an a posteriori estimate of the impact on society and policy.

Instruments & needs

Over the past decade, plenty of efforts have been made to develop guidelines for an ecosystem approach in the Blue Economy. This has resulted in the publication of several reports both at a European and at a Flemish level. Taking into account the range of instruments currently available, the following findings and trends can be observed:

- **Active nature creation**: The instruments currently available to implement the European and Flemish ecosystem approach guidelines in practice mainly focus on protecting species, creating habitats for increased biodiversity, thwarting the spread of exotic species, preventing pollution and counteracting overexploitation.

- **Blue growth**: Most instruments currently available were developed to cater to the needs of the fishing or shipping industry as these sea-based economic activities have been in existence since time immemoral. In the meantime, the blue economy has also embraced fast-growing sectors such as blue tourism, health, mariculture and offshore energy.

- **Big data**: Even though major steps have been taken in ecosystem modelling, more in particular in terms of complexity and linking physical and biological models, data availability remains a sore point. This is especially true for biological data and to a lesser degree for chemical data. In spite of the tendency towards big data in oceanography, data is often still collected from a vessel that spends a few weeks at sea or from a buoy equipped with measurement instruments.

The rapid growth of the blue economy combined with diversification of economic activities and the increasing integration of multiple functions at sea (multi-use) makes that the supporting instruments required to implement the EA performance wheel in the current context are inadequate. As the historical focus of economic growth is linked to land-based activities or fisheries, the ecosystem approach was primarily viewed from this perspective. The resulting datasets and tools have to be expanded, modified or integrated if they are intended to provide a response to the needs of the blue economy in an internatonal context.

The major needs include:
- Broadening the scope of the ecosystem approach;
- Broadening the target group for the ecosystem approach;
- Developing measurement and sensor techniques to monitor impact on the marine ecosystem;
- Developing models to quantify interactions & tradeoffs between economic activities and the marine ecosystem;
- Facilitating companies to build up knowledge and expertise on marine ecosystems;
- Quantifying the value of the ecosystem to strengthen blue business model and social support;
- Developing a showcase that illustrates application of the ecosystem approach.

Conclusions

If the blue economy wants to anchor the ecosystem approach in a sustainable growth strategy, clear guidelines will need to be developed that take into account the complex interactions between (multiple) use of the sea and the marine environment. An EA wheel can translate these guidelines into specific instruments to implement the ecosystem approach in practice in line with a company's level of ambition. The EA wheel can thus boost integration of the different policy frameworks and have a steering effect towards policymakers.

Possible knowledge gaps are no valid reason to postpone the implementation, but still have to be addressed. Additional scientific research into the resilience of the marine ecosystem (including the processes that have an impact on this) and insights into the tipping points of ecosystems can further support the implementation of the tool. Close collaboration between knowledge institutions and the industry needs to result in improved models, data platforms and indicators to quantify the impact of economic activities on the environment and its ecosystem services. This requires all parties involved to find a common language, and this can only be achieved with good communication skills, decent expertise and a clear set of arrangements. Although these tools are of a generic nature and approach the ecosystem as a whole, this is not the case for the decisions to be made by companies to implement the EA wheel.

Annex: Methodology & contributions

The search for a suitable EA tool started in Flanders in Spring 2020 and was inspired by the need of companies to valorise the effects of human activities on ecosystems. The entire process has resulted in the preparation of a white paper written by Blue Cluster (Flanders, Belgium) based on input from various experts and companies (provided at various workshops).

The representation of the EA wheel is primarily illustrative so as to make the tool tangible and can be approached differently in a future development phase.

Blue Cluster is the author of this white paper and worked closely together with different companies and knowledge institutes within its network in this context.

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