Technical Study ‘Maritime Spatial Planning (MSP) for Blue Growth’

Annex III.1: ‘Handbook on MSP Indicators Development’

(short version)

INTRODUCTION

Indicators are usually defined as the measurement of an objective to be met, a resource mobilised, an effect obtained, or a context variable (EVALSED 2013[171]). They provide qualitative and quantitative information with a view to helping actors concerned with public interventions to communicate, negotiate, or make decisions. MSP indicators must fit the planning context, i.e. the needs addressed by MSP in a given country and national targets. This is the reason why indicators may vary across different countries and why one-size-fits-all solutions should be avoided.

Linking MSP and Blue Growth via indicators is not straightforward. MSP needs and processes are location-specific, so indicators should be tailored to the national or regional objectives. Furthermore, indicators are just one small part of complex MSP decision-making systems. They are only meant to support aspects of decision-making and should not become an end in themselves, or a policy "accessory" with limited added value.

The next sections describe the indicator development steps and provide examples and checklists that MSP authorities may apply. The indicators have an exemplary character and their main objective is to provide MSP authorities with a tool for 'self-reflection' on the extent to which their objectives are achieved. Indicators are not meant to provide comparisons between countries on their progress in implementing MSP.

INDICATOR DEVELOPMENT STEPS - OVERVIEW

The standard process of indicator development starts with the definition of objectives both for the planning process and for the outcomes of this process. The selected indicators should measure the progress in reaching these objectives. The indicator development process includes the definition of: baselines and related target values as well as the given sources of information, including the analysis of data coverage and gaps. Both during the preparation of maritime spatial plans, and once the maritime spatial plans are in place, progress in reaching the objectives is monitored with the help of the defined indicators. Depending on the progress of achievement of the targets and objectives, the objectives are likely to be redefined, which would trigger also a revision of the indicators. These steps are presented in the graph below and explained on the next pages:

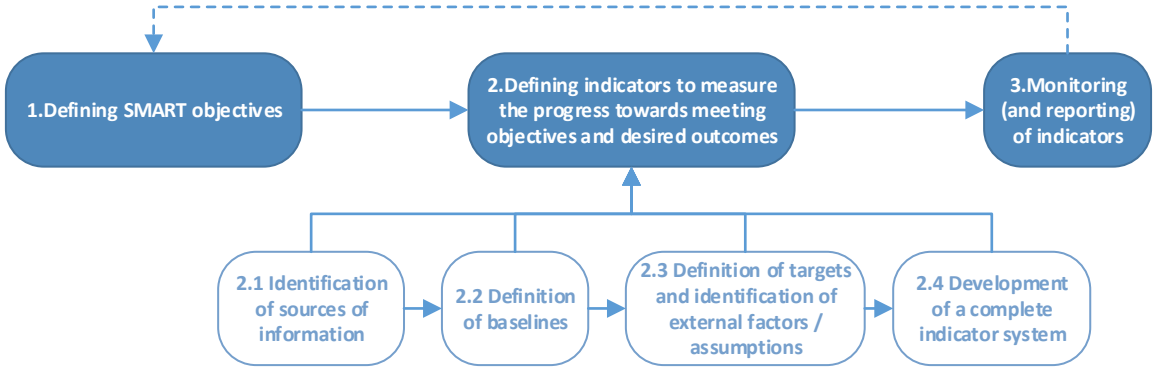

Figure 7 Indicator development process

[171] EVALSED (2013).

Step 1: Defining SMART[172] objectives

Defining clear objectives allows development of appropriate indicators, intended to measure their level of achievement. The table below presents possible types of objectives and examples. It also indicates when they should be developed.

Type of objective	Examples of Objectives	When to define?
Overarching Blue Growth objectives	• Create jobs • Increase growth • Safeguard biodiversity and protect the marine environment • Reduce greenhouse emissions	Already defined by the EC and national/regional strategies, to be considered from the start of maritime spatial planning
Global objectives	• Increase wind power generation at sea • Exploit stocks at maximum sustainable yield rate • Increase aquaculture production	Usually defined in national/ regional strategies, to be considered when developing the MSP vision
Immediate objectives	• Increase wind power generation capacity at sea • Increase / maintain oil and gas production capacity at sea • Decrease shipping accidents	This is an intermediate level between the global and operational objectives. Some of these objectives may already be defined in national/regional strategies. Others may be defined as a part of the development of MSP vision. Either way, they should already be clear before developing solutions to MSP issues.
Operational objectives	• Ensure maritime space for wind energy at sea • Ensure maritime space for the offshore oil and gas industry • Designate marine protected areas (MPAs)	When developing solutions to the identified spatial conflicts.
MSP process objectives	• Ensure coherence with plans of neighbouring countries • Ensure stakeholder input/involvement • Disseminate information	At the start of the maritime spatial plan development

Table 4 Possible types of objectives

As mentioned, the above levels of objectives are illustrative and could be simplified, e.g. by merging the levels of immediate and global objectives, or the levels of global and Blue Growth objectives. The choice of a structure that links the objectives depends on the hierarchy of the identified problems. For example, if a country has plenty of installed capacity for gas extraction, but it is not fully used, the immediate level objectives would be redundant.

It is noteworthy that only the MSP process objectives and the operational objectives are within the control of MSP authorities. All other levels show objectives that may be influenced by MSP, but are also affected by external factors. In the planning process, it is nevertheless worth considering these higher-level objectives as they are usually linked to regional, national and EU strategies and policies, which set the MSP context.

[172] Specific, Measurable, Achievable, Relevant, Time-bound

Step 1 checklist:

Question	
Have you considered the **Blue growth** (jobs, growth, safeguarding biodiversity and protecting the marine environment) objectives in your planning?	☐
Have you identified relevant objectives in **national** strategies/policies/action plans? Are the relevant objectives SMART and if not, have you transformed them into SMART objectives for the purposes of your maritime spatial plan?	☐
Have you identified relevant objectives in **regional and local** strategies/policies/action plans? Are the relevant objectives SMART and if not, have you transformed them into SMART objectives for the purposes of your maritime spatial plan?	☐
Have you defined **sectoral** objectives (in the different Blue Economy sectors)?	☐
Have you defined **environmental/biodiversity** objectives (e.g. on the designation of marine protected areas)?	☐
Have you defined objectives related to the **MSP process** (e.g. on stakeholder involvement)?	☐
Have you defined objectives **at different levels** (linked to the identified problems to be solved) and have you arranged them in a logical **structure**?	☐
Are your objectives specific? (Objectives should not be too broad, e.g. 'Ensure a proper MSP process' is a very broad objective, which could be split in more specific objectives like the ones presented in the above table)	☐
Are your objectives measurable? (Objectives should be defined in a way that allows their quantification. For example, decreasing shipping accidents is an objective that can be quantified)	☐
Are your objectives achievable? (Objectives should be attainable within the relevant time and maritime contexts, i.e. the economic and environmental conditions in the specific sea-basin. For example, the targets for increasing MW of tidal energy should consider the installed and planned capacity, otherwise they would not be realistic)	☐
Are your objectives relevant? (Maritime spatial planning should have influence on the defined objectives and they should be relevant to the identified needs)	☐
Are your objectives time-bound? (The achievement of objectives should be set in a specific timeframe)	☐
Are your objectives discussed and agreed with stakeholders, as appropriate? The type of stakeholders depends on the type of objectives. For example, the objectives within the control of MSP authorities should be discussed with all relevant stakeholders. The high-level objectives are usually set and discussions with all stakeholders do not bring high value, but it would be useful to discuss them with the authority that set them on national/regional level)	☐

Step 2: Defining indicators

Step 2.1 Definition of the links to objectives and the indicator structure

The second step after defining the MSP objectives is the identification of indicators, which can measure the progress in their achievement. The different levels of objectives require different levels of indicators. It is important to note that MSP can create spatial preconditions for Blue Growth, but other policies are also necessary to complement MSP efforts. Thus, MSP authorities should pay particular attention to the extent to which they can influence different socio-economic and/or ecological benefits, i.e. **their control area**. It is logical that MSP authorities focus on objectives and indicators, which are within their control area.

Another important notion that MSP authorities should consider in the design of their indicator systems are the different **MSP dimensions** that indicators have: MSP process, socio-economic (reflecting socio-economic benefits of human activities), and ecological indicators (monitoring key characteristics of the marine environment). The table below provides possible indicator levels, their MSP dimension, rationale, and examples.

Objective level	Indicator level	MSP dimension	Rationale and examples	Within the control of MSP authorities
Overarching Blue Growth objectives	Overarching Blue Growth indicators (long-term impacts)	Socio-economic / Ecological	Indicators linked to overall Blue Growth objectives such as sustainable job creation, economic growth (gross added value), and greenhouse gases (GHG) reduction. These indicators are affected by a host of factors, which are external to the MSP processes, which is why they are mostly useful as an element of the context. As explained above, the definition of these objectives and their corresponding indicators is usually a responsibility of higher-level government bodies.	Outside MSP processes control area
Global objectives	Impact	Socio-economic / Ecological	Usually these are longer-term results, which are linked to global objectives. For example: • MW of wind power generated at sea • Tonnes of live weight of aquaculture production • Yield per NM^2 (square nautical miles) • Million cubic meters of aggregates extracted per year	Outside MSP processes control area
Immediate objectives	Outcome	Socio-economic / Ecological	Results sought by authorities, which are directly or indirectly linked to output indicators. For example: • MW of wind power generation capacity installed at sea • Capacity of oil / gas installations at sea • Length and/or capacity of pipelines operated • (decrease in the) Volume of accidental oil spills due to shipping accidents • (decrease in the) Time required to take decisions on maritime construction permits • (decrease in the) Maritime area with intense spatial conflicts out of the overall maritime space	(partially) outside MSP processes control area
Operational objectives	Output	Socio-economic / Ecological	Output indicators should be a direct product of the MSP processes, which can have effects in different socio-economic and ecological dimensions. For example: • NM^2 (square nautical miles) assigned to specific sectors (e.g. wind energy)	Yes

			• Maritime space assigned for tidal energy installations out of the suitable (in economic and ecological sense) space • Space assigned for marine protected areas (MPAs) • Maritime space assigned for multi-use out of the overall maritime space (and/or out of the assigned maritime space) • Policies / statements developed intended to ensure cross-sectoral integration – qualitative • Extent to which development criteria are set out - qualitative	
MSP process objectives	MSP process	MSP process	These are indicators, which capture the main MSP processes. They can be both quantitative and qualitative, for example: • Consultations with key stakeholders held during all MSP stages (planning, development, implementation, Monitoring and Evaluation) – qualitative (yes/no), or quantitative (number of) • Consultations held with neighbouring countries, which are relevant to Blue Economy sectors – qualitative (yes/no), or quantitative (number of) • Consultation across government departments intended to integrate policy concerns – qualitative (yes/no), or quantitative (number of) • Consultations across different sectors held – qualitative (yes/no), or quantitative (number of) • Stakeholder satisfaction level - quantitative • Outreach of stakeholder communication activities - quantitative • Maritime space covered by a regional planning register (inventory) of coastal and maritime uses and pressures - quantitative • Maritime space mapped and showing coastal and maritime uses (and pressures) - quantitative • (various) Sectors/uses covered by MSP – qualitative (yes/no), or quantitative (number of) • Financial resources assigned for MSP processes – qualitative (yes/no), or quantitative (Euro) • Availability of sufficient staff assigned to MSP processes – qualitative	Yes

Table 5 Overview of the indicator structure

The examples above show that indicators can be defined for specific sectors and across specific sectors. At the level of the MSP process and overarching Blue Growth, indicators are cross-sectoral, while at the level of impact, indicators are sectoral. The other two categories (output and outcome) are a mix of both sectoral and cross-sectoral indicators. The logic in this presentation is that MSP processes affect all sectors and Blue Growth is a combined effect of all Blue economy sectors.

There may be particular ecological objectives identified in the MSP processes (for example, designate marine protected areas and decrease oil spillages), but typically they are broader and can be considered as horizontal objectives, which are linked to other Blue Economy sector objectives. Such broad ecological objectives are defined in the framework for community action in the field of marine environmental policy included in the Marine Strategy Framework Directive (MSFD). It establishes a framework within which Member States shall take the necessary measures to achieve or maintain good environmental status (GES) in the marine environment by the year 2020. The descriptors, referred to in the MSFD can be used as indicators, which provide summary information on relevant ecological parameters that are usually affected by Blue Economy sectors.

Step 2.1 checklist:

Question	
Have you identified indicators that are corresponding to the objectives defined in Step 1, which you would like to monitor, i.e. are they **relevant**?	☐
Are your indicators **specific**? (e.g. Improved conditions for fishing is an abstract indicator)	☐
Are your indicators **measurable**? (Even though measurability is desired, it is not always possible. However, even if qualitative indicators are used, e.g. Consultations with key stakeholders held during all MSP stages, authorities should be able to define their level of achievement through a specific scale, or through a simple binary yes/no answer, or via a questionnaire)	☐
Are your indicators **simple**? (Indicators should be as simple and easy to understand as possible. Having indicators, which are too complex is usually counterproductive. For example, an indicator like ecological valorisation of sea space includes many variables and must rely on a number of assumptions)	☐
Is the **number of indicators** reasonable? (The general objective is to have a limited number of indicators, ideally stemming from a limited number of objectives.)	☐

Step 2.2 Identification of sources of information

The availability of information is a key factor to be considered by the MSP authorities in the process of selecting indicators. Even in the case of specific and relevant indicators, if there is no information to support the definition and monitoring, they would not be measurable. The table below provides typical sources available for the different types of indicators:

Indicator level	Usual sources of information
Overarching Blue Growth indicators (long-term impacts)	National statistics institutes and Eurostat provide information on: - Employment in coastal regions - Gross Added Value in coastal regions Another source of information on indicators related to growth and employment could be macroeconomic models (e.g. HERMIN-based models) to the extent that their inputs and outputs can be customised to the MSP needs. Since MSP authorities are not expected to gather such information themselves, they could use reports with results of such modelling exercises produced by other institutions. Reports on GES and the MSFD descriptors can provide insight into the ecological dimension of Blue Growth.
Impact	Impact indicators should rely as much as possible on **official statistics**:

	- National statistics institutes, e.g. on 'MWh of wind power generated at sea' - Eurostat, e.g. on 'Nights spent at tourist accommodation establishments in coastal areas' In case official statistics are not identified, some **studies** may also provide information for impact indicators. In addition, Strategic Environmental Assessments (SEA), Territorial Impact Assessments (TIAs)[173] as well as Environmental Impact Assessments (EIAs) may also provide information on specific impacts. Ideally, TIAs should link output, outcome, and impact indicators in a systematic way, which is why planners are encouraged to use this tool.
Outcome	Typical sources of information for this type of indicators are **a mix of official statistics and information from authorities/other stakeholders**: - Official statistics – e.g. 'Number of establishments, bedrooms and bed-places in coastal areas' (Eurostat), or 'Gross tonnage of fishing fleet' (Eurostat) - Stakeholders – the input of stakeholders is rather important with respect to the identifying the number, area, and intensity of spatial conflicts - Information from other authorities, e.g. on the number of 'Legal claims related to conflicting permits', or on the number of 'Shipping incidents' - Units within the MSP authorities and/or other authorities, e.g. on the 'Time required to take decisions on maritime construction permits' - EIAs; SEA; TIAs where available - Studies – e.g. a study on the million cubic meters of aggregates extracted per year
Output	The sources of information for this type of indicators are expected to be **mostly the MSP authorities**: - MSP plans – on indicators showing the assigned areas, e.g. 'Maritime space assigned for wind farms' - MSP inventories, maps, registers – on indicators, which also take into account the available space, e.g. 'Maritime space assigned for wind farms out of all the available maritime space' - Information from other authorities – on indicators that consider land-sea interactions, e.g. 'Level of availability of grid connections' - Information/studies from stakeholders – this could be, for example, a study on the space needed for wind farms, which will inform the development of an indicator on 'Maritime space assigned for wind farms out of the needed space for X number of wind farm installations'.
MSP process	The source for these indicators are the **MSP authorities themselves**, as they have information on the stakeholder consultations, involvement of national/regional institutions, neighbouring countries, and communication activities. This information is usually contained in: - Minutes of meetings and participant lists - Website statistics (e.g. on number of visits) - Brochures, newsletters, flyers - HR statistics Stakeholder satisfaction surveys (if performed by MSP authorities) during and/or after the consultations also provide information for the MSP process indicators.

Table 6 Indicator sources

[173] TIAs are an assessment tool, which is usually applied at the planning stage of large-infrastructure projects (e.g. pipelines, offshore wind farms) and includes an assessment of alternative locations.

For the higher level indicators (outcome, impact, Blue Growth) the information should be largely available from official statistics. For the indicators, which are within the control of MSP authorities (process and outputs), the sources of information are expected to be input from stakeholders, existing studies, and the authorities themselves.

Step 2.2 checklist:

Question	
Are the indicators **cost-effective**? (The cost of retrieving data should be justified and commensurate to the available resources for monitoring)	☐
Have you considered **all available sources** of information for the selected indicators? Are you mostly relying on official (validated) data and information?	☐
Do the sources provide data/information that is at the right geographical level, up-to-date, and available at the desired frequency?	☐

Step 2.3 Definition of baseline values

After linking potential indicators with objectives and having identified sources of information for the indicators, MSP authorities need to define the baseline values of these indicators. A baseline is the initial value against which indicators are subsequently measured. The objective of baselines is to put the objectives and targets into perspective, thus facilitating the interpretation of the achievements. For example, if a maritime spatial plan aims at decreasing the number of shipping accidents, identifying the baseline value would provide information on the severity of the problem and the positive effect that MSP is expected to bring. It is not always possible or necessary to have a baseline for each indicator. This table explains for which types of indicators they are needed.

Indicator level	Baselines
Overarching Blue Growth indicators (long-term impacts)	Baseline values for these indicators are recommended and should be based on the latest available information.
Impact	
Outcome	
Output	Baselines can be taken from a preceding generation of MSPs. It is possible that for some countries there is no preceding MSP and/or there are no similar indicators in previous plans. In such cases, the baseline could either correspond to the current use of the sea, or it could be set at '0', if such information is not available.
MSP process	Some baselines can be taken from a preceding generation of MSPs, but only after careful due consideration. For example, an indicator like 'Consultations held with representatives of specific Blue Economy sectors', might have been used during a previous planning process. However, previous MSP processes may not be relevant for an indicator like 'Different ministries attending consultations with neighbouring countries' in case there has been an institutional reshuffling. Setting a baseline of '0' is also possible for MSP process indicators, but this depends on the choice of indicators. For example, a baseline for 'Stakeholder satisfaction level' set at '0' does not provide meaningful information. Thus, it is better not to include a baseline for this indicator, or to use a value from a previous maritime planning process.

Table 7 Indicators – baselines

Step 2.3 checklist:

Question	
Have you identified **baselines** for all indicators? If not, is it justified to set a baseline of '0', or not to have a baseline?	☐
Is the **baseline year** as close as possible to the year in which the MSP is adopted?	☐

Step 2.4 Definition of target values and identification of external factors and assumptions

The definition of targets is one of the most challenging tasks in establishing an indicator system. Ideally, it should be aligned with the defined objectives and it needs to be performed on the grounds of well-defined baseline values (where applicable). Target values may have:

- Interim targets – e.g. midway to the end date of the validity of the specific MSP and/or midway to a specific timing of an indicator
- Final targets – targets at the end of the period of validity of the MSP and/or a specific year defined for an indicator

Suggestions on what to consider when defining targets are included in the table below.

Indicator level	Target values
Overarching Blue Growth indicators (long-term impacts)	For these three levels of indicators, time series combined with a clear understanding of external factors can become the basis of an extrapolation, which takes into account the outputs of the MSP processes. Targets could also be predetermined by other strategies (e.g. an overall strategy on renewable energy may set the target for energy produced by offshore wind, ocean, and tidal installations). **NB**. If no objectives are defined at this level of indicators, there is no point in including them in maritime spatial plans. If such indicators are included in plans, it should be noted that singling out the effects of MSP on them is extremely challenging. Thus, ex ante quantification is a process that will include a great number of **assumptions**, which take into account the interplay of external factors.
Impact	
Outcome	
Output	Defining target values would depend on factors like: - Priorities defined in the plan - Availability of suitable maritime space - Needs of Blue Economy sectors
MSP process	Target values should take into account the specific MSP context in the countries / sea-basins, e.g.: - Number and interest of stakeholders representing specific Blue Economy sectors - Number and interest of bodies, which have responsibilities with regards to MSP and Blue Growth - Number and interest of neighbouring countries - Available budget for communication activities - Quality of available maritime / coastal data

Table 8 Indicators – definition of target values

External factors grow in significance from outputs to impacts (and overarching Blue Growth indicators), which is why the control of planners over the achievement of target values also decreases. Planners need to clearly state the **assumptions**, which need to hold true in order for the expected values to be reached. In other words, in addition to monitoring the reaching of target values, planners should also take into account, if the assumptions are still valid after the adoption of the plan.

Overall, for **MSP process indicators** and **outputs** the influence of external factors is expected to be much smaller when compared to the other levels of indicators, marginal unless they are affected by political events and institutional changes (e.g. merging of ministries or agencies or low interest of stakeholders). **Outcomes** are only partially within the control of planners. For example, the intensity of spatial conflicts may change over time, due to factors like the increase in trade or the increase in investor interest in renewable energy due to new legislation. This would consequently affect the achievement of target values of indicators measuring expected decreasing of the number of conflicts, or conflicted areas. Expected increases in capacity in a certain Blue Economy sector depend on the maritime space assigned, but mostly on the willingness of public/private companies to invest in infrastructure, which is influenced by factors like technological advances and overall economic and legislative frameworks. This is also the case for **impact indicators**, because they depend on the actual demand for a specific yield/production of a certain Blue Economy (e.g. the demand for gas or fish). The overarching **Blue Growth indicators** (gross added value and employment) are affected mostly by the economic cycles of countries.

Step 2.4 checklist:

Question	
Are your indicators **achievable**? (Same as the objectives, the target values should be attainable within the relevant time and maritime contexts)	☐
Are your indicators **time-bound**? (Are the targets linked to a specific intermediate and/or final year of achievement)	☐
Have you considered the main **external factors** that could affect the reaching of the target values?	☐
Have you described the **assumptions** that need to hold true in order to reach the expected targets?	☐
Are the baseline values and target values in the same **measurement unit** (e.g. NM^2)? Do they have the same calculation methodologies/sources?	☐

Step 2.5 Development of a complete indicator system

Selecting indicators, defining their sources of information and the values does not yet mean that the indicator system is established. A complete indicator system should also: determine the bodies responsible for data collection and reporting; provide a methodological description of the selected indicators; specify the links between different indicators; determine the frequency of collection and reporting of data; and identify the typical users of indicators.

Step 2.5 checklist:

Question	
Have you assigned **responsibilities** about collecting data/information and reporting on indicators?	☐
Have you identified a reasonable (aligned to data availability and reporting needs) **frequency** of data collection and reporting on indicators?	☐
Have you clearly defined the **methodology** for calculation of baselines, targets, and actual values?	☐
Have you specified **the links between the different indicators**?	☐
Have you identified **all users of the indicators**, i.e. bodies and stakeholders that will produce and use the information on indicators?	☐

Are your indicators discussed and agreed with **stakeholders**? (The criterion has three dimensions: quality, ownership, and provision of information. Stakeholders should be involved in the design of indicator systems from the outset of the MSP process in order to ensure an additional quality check from their side. Furthermore, involving stakeholders ensures their recognition of the selected indicators and guarantees the involvement of stakeholders in their monitoring. A third argument for involving stakeholders in the definition of indicators is to address the likely need that some of them would need to provide information to feed in the definition of baselines, targets, and their monitoring throughout the MSP processes.)	☐

Step 3: Monitoring and reporting of indicators

Monitoring means observing whether the intended processes, outputs, results, and impacts are delivered. The indicators included in the plans should be monitored throughout their implementation and information on their changes should be communicated to the relevant multilevel stakeholders. The monitoring and reporting arrangements should be defined in Step 2.5 described above. The results of monitoring should be communicated to the indicator users and they could lead to changes in the indicator systems and to redefining the objectives. Furthermore, the information on indicators should feed into evaluations on MSPs.

For illustration purposes, the graph on the next page provides an example of an indicator framework in a specific Blue Economy sector (Wind energy). As seen on the graph some of the indicators are sector-specific, but most of them are cross-sectoral.

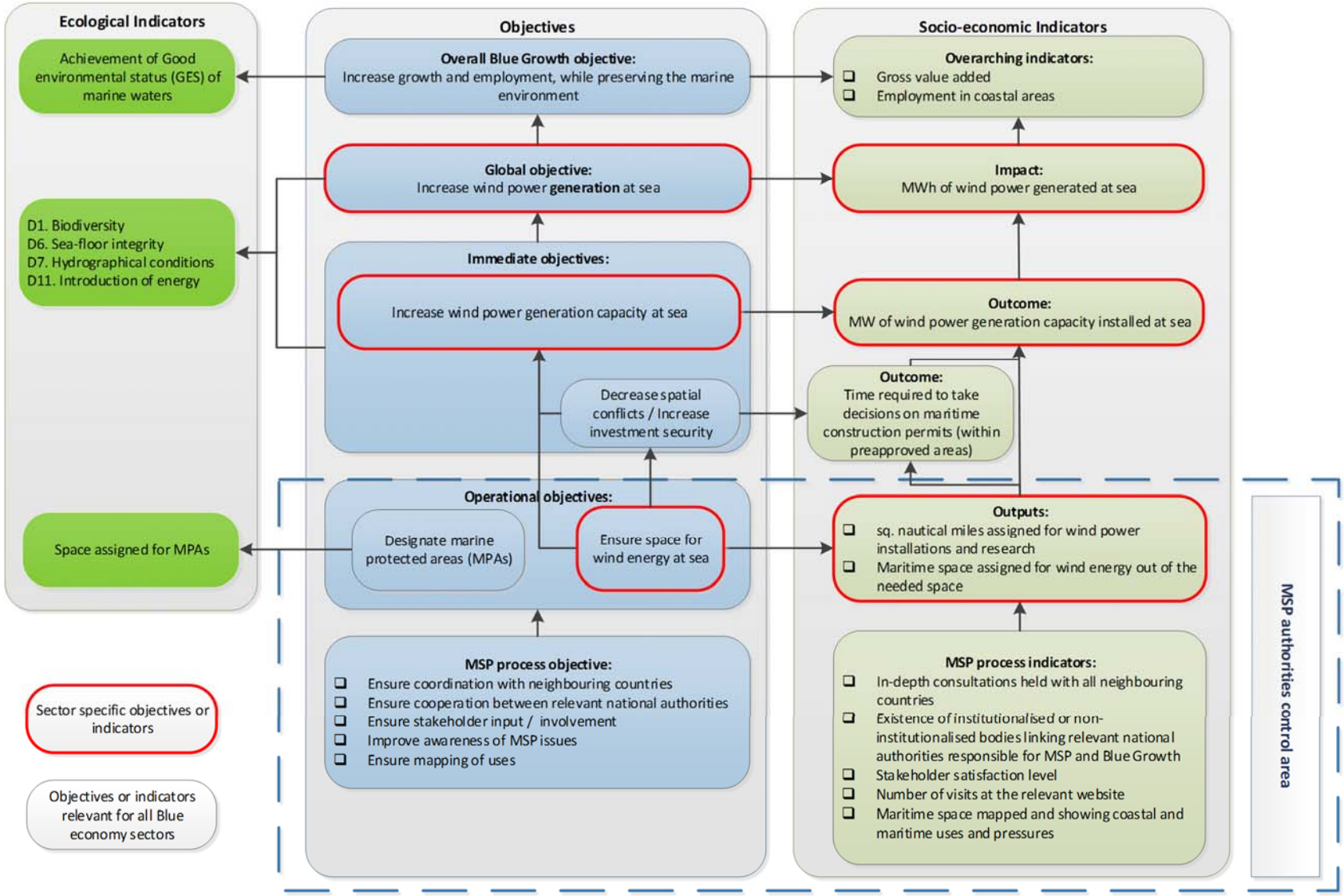

Figure 8 An example of an indicator framework in the Offshore wind energy sector

REFERENCE LIST

EVALSED (2013). *The resource for the evaluation of Socio-Economic Development.* Version: September 2013.