

Blue Economy Sustainability Framework - validation of sustainability indicators

Fields marked with * are mandatory.

1 Blue Economy Framework - Sustainability Criteria for a Blue Economy

Background

The European Commission's Executive Agency for SME's (EASME) seeks to **support a shift towards the development of sustainable marine and maritime activities**. It is rooted in the evolving view that all blue economy sectors and activities need to move away from unsustainable or less sustainable practices and contribute to reaching the Paris Agreement targets. The European Green deal is one of the top priorities for the new European Commission and the blue economy is instrumental to reaching its goals. The Sustainable Blue Economy Framework will enable economic operators, investors and policy-makers at international level to integrate sustainability criteria in blue economy activities.

Ecorys and Deltares are commissioned by the European Commission to **develop (1) common, and (2) sector-specific indicators to measure the sustainability of blue economy activities**. The indicators capture the economic, environmental, social and governance dimensions of sustainability across different sectors. The framework of indicators supports informed decision making based on the sustainability of a blue economy activity.

Purpose of the questionnaire

The Sustainable Blue Economy Framework has a number of common indicators which apply to all sectors of a blue economy, and sector specific indicators that are specific to the analysed sector. **The research team is seeking the validation and review of the overall framework**. As an identified industry and sector expert, we are seeking your support in doing so.

The first step is to **validate the common indicators**. These are indicators that apply to all blue economic sectors. In the second section, you are asked to **validate sector specific indicators**, as identified by you hereafter. Finally, we ask you to provide an **overall validation of the framework**. For the common and sector-specific indicators, we provide you with the possibility to highlight any critical issues within the set of indicators.

* **Privacy notice:** By participating to this survey, you acknowledge and accept that Ecorys and Deltares may use and analyse your response for the duration of the study. Responses will not be published individually, your data will be analysed and presented in an anonymised and aggregated manner to avoid the identification of respondents. To this effect, you hereby grant your consent to this without any reservation or

restriction. You hereby declare that you were properly informed on your rights to have access, rectify, oppose, block, complete and delete personal data that relates to you as well as to object to the processing of such data and request an explanation about the processing, by contacting blue.economy@ecorys.com at any time.

I consent

2 About you

About you

Please tell us a bit about you.

* Name

Guillaume Carruel

* Organisation

European Association of fish Producers Organisations (EAPO)

* Position

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* Email

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* Blue economy sectors

Please identify the sectors which sector-specific indicators you will review.

- Extraction of minerals
- Extraction of oil and gas
- Desalination
- Fish and shellfish harvesting
- Fish and shellfish processing
- Marine plant and algae harvesting
- Aquaculture
- Renewable energy generation
- Transport infrastructure
- Transport shipping
- Tourism
- Cruise shipping
- Coastal defence and flood protection

3 Blue Economy Framework - Common indicators for a sustainable blue economy

The **Sustainable Blue Economy Framework** is composed of a set of criteria and indicators that measure the sustainability of a blue economy sector across four sustainability dimensions, namely environmental, economic, social and governance.

The research team distinguished between two sets of criteria: common and sector-specific. The selection of **common criteria** and indicators presented hereafter **form the core of the sustainable blue economy framework**. These may be complemented by sector-specific indicators across all four domains to provide a more in-depth picture of the sector.

The **environmental domain** uses a set common indicators to identify or measure the impact a blue economy sector could have on, e.g. air pollution, its impact on the ecosystem, or how much (renewable) energy it consumes or waste/marine litter it generates.

Environmental		
Criteria	Indicator	Unit
Air Quality	Exceedance of limit values for PM10/NOx/Sox	No. of days per year that limit values are exceeded for PM10/NOx/Sox / year
Emissions to air	GHG emissions	Tonnes CO2 equivalent / year
Impact on ecosystems	Extent of habitat impacted	Area of impacted habitat in hectares
Level of energy consumption	Energy consumption	Tonnes of oil equivalent (TOE) /year
Level of energy consumption	Energy demand met by renewable energy	% total primary energy supply
Level of waste generated	Waste / marine litter generated	Tonnes of non-hazardous and hazardous waste generated/year.
Waste management	Technology available for solid waste and wastewater treatment	Yes/ No. If yes: specify

The set of common **economic/financial indicators** looks into the economic / financial viability of the activity, through collaboration within the value-chain or between local stakeholders, for example, or its impact on employment numbers, investments, GVA or turnover.

Economic		
Criteria	Indicator	Unit
Concentration of businesses	Existence of clusters	Yes/No
Economic benefits	Total revenues generated by local enterprises	% total revenues generated by local enterprises
Economic benefits	Local public revenue generated through time (taxes, fees, etc.)	mEUR/year
Economic viability	Gross value added (Size of the national / regional sector)	mEUR/year
Economic viability	Sector specific investments in the region	mEUR/year
Economic viability	Turnover	mEUR/year
Employment	Direct and indirect jobs	No. of direct and indirect jobs x1000 persons/year
Financial viability	Additional streams of finance/investment attracted	mEUR/year
Financial viability	Financial returns reinvested in local activities	% financial returns reinvested in local activities
Financial viability	Financial self-sustainability of supported activities	Number of years required to achieve the full financial self-sustainability of supported activities (e.g. debt-to-equity ratio)
Public funding	Public funding	% total income

Looking at the **social sustainability** of activities within any of the blue economy sectors focuses on issues around poverty, quality employment, gender balance, or health and safety conditions at work.

Social		
Criteria	Indicator	Unit
Education	Employees with post-school leaving age	% of employees with post-school leaving age
Employment conditions	Employees living below the national poverty levels	% employees living below the national poverty level
Employment conditions	Existence of 'a labour union'	Yes/ No
Employment conditions	Informal employment	% informal employment
Health and safety management	Fatal accidents and accidents at work	Accidents/ year
Health and safety management	Frequency of health and safety exercises and trainings	No. of emergency or safety drills
Inclusiveness	Employment rate of vulnerable groups (i.e. disabled persons, ethnic minority, etc)	% vulnerable people of total employees
Inclusiveness	Gender balance	% female employees
Level of acceptance by local community	Acceptance of environmental, economic and social impact by local communities	No. of reported actions of local communities against environmental, economic or social impacts

Sustainable governance is an important aspect to consider, as long-term sustainable development requires appropriate governance structures and appropriate policies and strategies.

Governance		
Criteria	Indicator	Unit
Certification and labelling	Use of certification or labelling	Yes/ No. If yes: specify
Impact assessment	Environmental Impact Assessment conducted and enforced via monitoring and evaluation	Scores 1. no EIA conducted, 2. EIA conducted but not enforced 3. EIA conducted and enforced via monitoring and evaluation
Innovation	Attention for innovation (or investment in R&D)	% revenue invested in R&D
Level of stakeholder engagement	Mechanism for stakeholder engagement	Score 1. Specific mechanism for stakeholder's engagement besides public actors 2. Occasional consultation with stakeholders, focused on public actors 3. No stakeholders involvement
Nature Based Solutions	Application of Nature Based Solutions	Score 1. Not applied 2. Applied to some extent [example] 3. Frequently applied [example]
Risk management	Existence / implementation of risk management plans	Score 1: No risk management plan 2. Risk management plan exists 3. Risk management plan exists and implemented
Spatial planning	Existence of a governmental plan that integrally approaches sectors to stimulate synergies and avoid conflicts (e.g. multi-use)	Yes / No
Strategy and vision	Reference to SDG goals in national / regional / local / company strategies	Yes/No. If yes: specify

Please provide an **overall validation and review** of the reliability, applicability, credibility and easiness/robustness of the **common indicators** presented here.

Common indicators for the blue economy framework.

	I overall agree	I neither agree nor disagree	I overall disagree
* The indicators are suitable and complete for assessing the sustainability of the blue economy sector.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* The indicators are applicable to the blue economy sector.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

* The indicators are transparent, easy to interpret or understandable.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* The indicators have reliable data that is (publicly) available.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

You may include any further input here:

Under social sustainability:

- (4) Employment conditions: rates by different categories such as by age group, part-time, temporary and self-employment. Unit: total numbers as provided by Eurofound, Eurostat and other specialised EU agencies (STECF in the case of fisheries).

Under sustainable governance:

- Environmental Impact assessment: should also include an indicator for "socio-economic" impact assessment and consequences of the policy.
- Spatial planning: should include "socio-economic impact assessments" and cost/benefit analysis of the inclusion/exclusion of a given sector in a certain marine area.
- New criterion "international governance". Indicator: Yes/No. To assess whether the activity is being regulated by an international body such as Regional Fisheries Management Organisations in the case of fisheries of International Seabed Authority in the case of mining.

4 Blue Economy Framework - Sector-specific indicators for a sustainable blue economy

Due to the different nature of blue economy sectors, the common criteria and indicators are complemented with **sector specific criteria and indicators of a more detailed nature to capture sector-specific sustainability aspects across the four dimensions.**

Based on the list of sectors you have identified on the introduction page, you are now presented with the sector specific indicators. Depending on the sector, they **provide complementary indicators across the four dimensions** (i.e. environmental, economic, social and governance).

Please provide an **overall validation and review** of the reliability, applicability, credibility and easiness/robustness of the sector-specific indicators presented here. Any critical issues may be raised in the free text box.

Extraction of minerals

Environmental			
Criteria	Indicator	Unit	Justification for the indicator
Impact on environment	Technologies applied to reduce dredging plume / turbidity	No. and type of technologies	To assess the degree in which the sub-sector has introduced technologies to reduce turbidity as a pressure having potential effects on habitats and species

Economic			
Criteria	Indicator	Unit	Justification for the indicator
Economic viability	Production of marine aggregates (weight)	Million tons/year	To assess the volume of marine aggregate production
Economic viability	Value of marine aggregates (monetary)	mEUR/year	To assess the value of marine aggregate production

Sector-specific indicators for the **extraction of minerals** in the blue economy.

	I overall agree	I neither agree nor disagree	I overall disagree
* The indicators are suitable and complete for assessing the sustainability of the blue economy sector.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
* The indicators are applicable to the blue economy sector.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* The indicators are transparent, easy to interpret or understandable.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* The indicators have reliable data that is (publicly) available.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

You may include any further input here:

If you disagree, please specify what should be changed. If a particular indicator should be modified, please name the indicator(s) and explain specifically what should be changed.

The scope of indicators are very limited. It should also be included:

Environmental:

- Impact on ecosystems: Km2 covered by extraction of minerals. Justification: to measure the impact on sea-floor integrity, hydrographical conditions and the introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment and ecosystems (in accordance with MSFD descriptors 6, 7 and 11)

- Stock status: impact of extraction of minerals on fisheries and biodiversity. Justification: need for a serious analysis and indicators on fish populations variations, including vulnerable species and mammals (positive or negative).

Governance:

- Maritime spatial management: Km2 covered by extraction of minerals overlapping with preexisting marine space users. Justification: To measure the impact on other sea users and better measure the costs of effort displacement to other areas. For fisheries this can lead to displacement costs, fishing effort reduction, loss of licenses, reconversion/decommissioning of boats, loss of access to traditional grounds, particularly small-scale fishermen, loss of employment.

- Spatial planning: should include "socio-economic impact assessments" and cost/benefit analysis of the inclusion/exclusion of a given sector in a certain marine area.

Extraction of oil and gas

Environmental			
Criteria	Indicator	Unit	Justification for the indicator
Emissions to water	Produced water subject to treatment	% produced water subject to treatment	To assess the amount of produced water vs. the amount of treated produced water. Produced water is a pressure with a potential effect on habitats and species
Oil spills response	Frequency of Oil Spill Response exercises and trainings	No. of exercise and trainings/year	To assess how often Oil Spill Response exercises and trainings occur. This indicates how prepared the sub-sector is in case of Oil Spills
Waste management	Existence of drilling waste management plan	Yes/No	To assess whether the sub-sector has a waste management plan

Economic			
Criteria	Indicator	Unit	Justification for the indicator
Economic viability	Levelized cost of energy production	Euro/Tons of oil equivalent	To assess what the costs are to produce one ton of oil equivalent
Economic viability	Production 'oil and gas' (monetary)	mEUR/year	To assess the value of oil and gas production
Economic viability	Production 'oil and gas' (tons)	Tons of oil equivalent/year	To assess the volume of oil and gas production

Sector-specific indicators for the **extraction of oil and gas** in the blue economy.

	I overall agree	I neither agree nor disagree	I overall disagree
* The indicators are suitable and complete for assessing the sustainability of the blue economy sector.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
* The indicators are applicable to the blue economy sector.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

* The indicators are transparent, easy to interpret or understandable.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* The indicators have reliable data that is (publicly) available.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

You may include any further input here:

If you disagree, please specify what should be changed. If a particular indicator should be modified, please name the indicator(s) and explain specifically what should be changed.

The scope of indicators are very limited. It should also be included:

Environmental:

- Impact on ecosystems: Km2 covered by extraction of oil and gas. Justification: to measure the impact on sea-floor integrity, hydrographical conditions and the introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment and ecosystems (in accordance with MSFD descriptors 6, 7 and 11)

- Stock status: impact of extraction of oil and gas on fisheries and biodiversity. Justification: need for a serious analysis and indicators on fish populations variations, including vulnerable species and mammals (positive or negative).

Governance:

- Maritime spatial management: Km2 covered by extraction of oil and gas overlapping with preexisting marine space users. Justification: To measure the impact on other sea users and better measure the costs of effort displacement to other areas. For fisheries this can lead to displacement costs, fishing effort reduction, loss of licenses, reversion/decommissioning of boats, loss of access to traditional grounds, particularly small-scale fishermen, loss of employment.

- Spatial planning: should include "socio-economic impact assessments" and cost/benefit analysis of the inclusion/exclusion of a given sector in a certain marine area.

Fish and shellfish harvesting

Environmental			
Criteria	Indicator	Unit	Justification for the indicator
Status of stock	Exploitation of stock at Maximum Sustainable Yield	% stock exploited at Maximum Sustainable Yield (per species)	To assess the degree in which a stock is exploited at Maximum Sustainable Yield
Economic			
Criteria	Indicator	Unit	Justification for the indicator
Economic viability	Production 'harvested fish and shellfish' (monetary)	mEUR/year	To measure the value of the landings
Economic viability	Production 'harvested fish and shellfish' (weight)	Landings weight in tons/year	To measure the production of the landings
Governance			
Criteria	Indicator	Unit	Justification for the indicator
Fishery management	Discard regulations in place and enforced	Yes/ No	To assess whether discard regulations are in place and enforced
Fishery management	National Plan of Action for Illegal, Unregulated, Unreported Landings	Yes/ No	To assess whether a National Plan of Action for Illegal, Unregulated, Unreported Landings exists
Fishery management	Quota system in place, implemented and enforced	Yes/ No	To assess whether a quota system is in place, implemented and enforced

Sector-specific indicators for the **fish and shellfish harvesting** in the blue economy.

	I overall agree	I neither agree nor disagree	I overall disagree
* The indicators are suitable and complete for assessing the sustainability of the blue economy sector.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
* The indicators are applicable to the blue economy sector.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* The indicators are transparent, easy to interpret or understandable.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* The indicators have reliable data that is (publicly) available.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

You may include any further input here:

If you disagree, please specify what should be changed. If a particular indicator should be modified, please name the indicator(s) and explain specifically what should be changed.

The scope of indicators are very limited. It should also be included:

Environmental:

- Number of tonnes from stocks at Maximum Sustainable Yield (indicator used by the European Commission and FAO).

Instead of Economic, it should read "Socio-Economic", otherwise the policy would not be in line with the TFEU. From our point of view, there are some indicators missing:

- Evolution of GDP in maritime NUTS 3 regions (indicator used in the new EMFF)
- Evolution in the number of jobs (in FTE) in the catching industry (from the STECF annual economic report)

Governance:

- "Discard regulations" do not exist in legislative terms. It should read instead: "discard plans". However, the plans have a maximum duration of 3 years and the provisions of the landing obligation were gradually incorporated into Multi Annual Plans. Therefore, this indicator should be replaced by "Multiannual management plans in place".

How is "enforced" measured? This concept should be deleted. This concept is not applied to other sectors and difficult to assess in practise. It should be replaced by "implemented".

- "Quota system" does not cover important sea basins such as the Mediterranean which is mainly regulated through "fishing effort". The latter should be included as an indicator.

Renewable Energy Generation

Environmental			
Criteria	Indicator	Unit	Justification for the indicator
Impact on ecosystems	Bird fatalities due to collisions	No. of bird fatalities/year	To measure the impact of energy infrastructure on the ecosystem (birds)
Economic			
Criteria	Indicator	Unit	Justification for the indicator
Economic viability	Distance from shore	Km	To measure the distance required for maintenance
Economic viability	Levelized cost of energy production	Euro/MWh	To measure the cost of the energy production
Infrastructure capacity	Electrical capacity	MW	To measure the production capacity of renewable energy
Infrastructure capacity	Installed capacity relative to surface used	MWh/Km2	To measure the efficiency in terms of space use
Infrastructure capacity	Total gross electricity generation	MWh/year	To measure the production of renewable energy

Sector-specific indicators for the **renewable energy** in the blue economy.

	I overall agree	I neither agree not disagree	I overall disagree
* The indicators are suitable and complete for assessing the sustainability of the blue economy sector.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
* The indicators are applicable to the blue economy sector.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* The indicators are transparent, easy to interpret or understandable.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

* The indicators have reliable data that is (publicly) available.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
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You may include any further input here:

If you disagree, please specify what should be changed. If a particular indicator should be modified, please name the indicator(s) and explain specifically what should be changed.

The scope of indicators are very limited. It should also be included:

Environmental:

- Impact on ecosystems: Km2 covered by renewable energy. Justification: to measure the impact on sea-floor integrity, hydrographical conditions and the introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment (in accordance with MSFD descriptors 6, 7 and 11)
- Stock status: impact of renewable energy installations on fisheries and biodiversity. Justification: need for a serious analysis and indicators on fish populations variations, including vulnerable species and mammals (positive or negative) for example around areas where renewable energy installations are built.

Governance:

- Maritime spatial management: Km2 covered by renewable energy overlapping with preexisting marine space users. To measure the impact on other sea users and better measure the costs of effort displacement to other areas. For fisheries this can lead to displacement costs, fishing effort reduction, loss of licenses, reconversion/decommissioning of boats, loss of access to traditional grounds, particularly small-scale fishermen, loss of employment.

5 Overall framework assessment (common and sector specific indicators)

Overall assessment of the Sustainable Blue Economy Framework

Having reviewed and validated the common and sector specific indicators, please provide an overall assessment of the Sustainable Blue Economy Framework.

Common indicators for the blue economy framework.

	I overall agree	I neither agree nor disagree	I overall disagree
* The indicators are suitable for assessing the sustainability of the sector.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
* The set of indicators is complete and enables the assessment of sustainability of the sector.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

If you disagree, please specify what should be changed. If a particular indicator should be modified, please name the indicator(s) and explain specifically what should be changed.

Contact

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