

D2 Deliverable – Descriptions of the socio-economic indicators

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Description of the socio-economic indicators

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Shortlist of socio-economic indicators: data and justification

The socio-economic impacts of the project measures as well as the socio-economic impacts of marine protection and restoration in general are assessed by investigating the impacts as chains of resource use, human activities and outputs, as well as subsequent impacts on the marine environment, ecosystem services and society. In order to do this, such chains have been identified for each of the project measures. This document provides a shortlist of candidate socio-economic indicators, which will be used to monitor the socio-economic effects of the project. The main criteria for the indicators to be included in the list are a) potential of the indicator to project the socio-economic impacts of the project, b) potential of the indicator to project the socio-economic impacts of marine protection and restoration measures in general, and c) the availability of data for monitoring the project activities and projecting the subsequent impacts. The shortlist of indicators and their justification based on their potential and data availability are presented in Table 1. The final monitored indicators will be chosen mainly from this list. The outputs of project measures and some of their impacts on the marine ecosystems as well as related Key Project Impact (KPI) indicators are monitored in Action D1. The socio-economic indicators listed in Table 1 concentrate on societal effects. These include: i) the resources required for implementing the project actions and how the utilization of these resources affects society, ii) the impacts of the changes in the marine ecosystems and institutional settings on the supply and use of ecosystem services and their value, and iii) the citizens' perceptions of marine ecosystems and their protection. The related KPI indicator types are listed in Table 1 for each socio-economic indicator.

Table 1. Shortlist of socio-economic indicators

Indicator	Data	Potential to project socio-economic impacts	Related KPIs
Employment and jobs created by the project	From the project plan and by monitoring the employment of the project, and complementary projects (if data available)	Employment and jobs created by the project measure the employment effects of the project actions. The indicator allows upscaling to assess the broader economic impacts of protection and restoration.	Employment, Funding/realized costs
Funding/realized costs of the project	From the project plan and by monitoring the employment effects of the project, and complementary projects (if data available)	Funding/realized costs of the project can be used to measure the direct and indirect (multiplier) effects of the project. The indicator allows upscaling to assess the broader economic impacts of protection and restoration.	Employment, Funding/realized costs
Cultural ecosystem services (e.g. recreational) and their value	The projection of the effects on cultural ecosystem services and their value requires data on the changes in the marine ecosystems,(changes in the) supply/use of cultural services and their value, and how	The indicator measures how changes in the ecosystems and in the institutional settings affect the use and value of cultural ecosystem	Restored and improved habitats, improved conservation of habitats, and other Improved

	<p>changes in the marine ecosystems affect the supply/use of these services. Such data has been collected and modelled in previous projects (e.g.MAREA, MERIAVAIN, MERITV) and will be further developed in ECOPLASMA project in 2024-2025. In this project action (D2), citizen surveys are conducted to elicit information about the non-use and non-market values of cultural ecosystem services, as well as the opportunity costs associated with marine protection (institutional settings). Work of action D2 involves collaboration with action C3, focusing on nature tourism and visitor counts, and with action A7, which deals with aspects such as social media data and the recreational use of marine areas.</p>	<p>services. Owing to certain institutional settings, such as the 'freedom to roam' rights, the value of cultural services is only partially reflected in the national accounting system and GDP.</p>	<p>nature, species and biodiversity indicators.</p> <p>Social media data, changes in recreational use, and other communication, dissemination and awareness rising indicators.</p> <p>Funding/realized costs.</p>
Social media data	<p>There are many potential social media sources/platforms. The process of identifying these sources and assessing their data availability has commenced in collaboration with Action A7.</p>	<p>Data from social media provides insights into how people utilize and perceive the marine environment, as well as their views on marine protection and restoration. Monitoring social media data holds potential for understanding shifts in usage patterns and public perceptions. This indicator is closely linked to the indicator on cultural ecosystem services</p>	<p>Social media data</p>
<p>Provisional ecosystem services and their value:</p> <p>The focus will likely be on improved fish stocks, resulting from measures implemented for coastal fish restoration.</p>	<p>The impacts of changes in the ecosystems on the supply and use of ecosystem services will be estimated based on previous projects and data.</p> <p>Based on the KPI indicators following outputs and changes in the ecosystems are anticipated as a result of the project measures:</p> <p>% change or numbers of pike / perch eggs / juvenile fish in restored locations (20-40 sites) (a direct indicator of improvement). Temperature difference of water in restored lagoons and the surrounding sea in spring (an indirect proxy of improved conditions for fish reproduction). Grayling status change from 0 natural reproduction to at least some stocked juveniles to recover the population (5-10 sites).</p>	<p>Pike and perch accounted for 56% of recreational fish catch in the Baltic Sea in 2022 (3139 tons). Commercial perch catch was 976 tons (valued at EUR 2.4 million), Pike was 182 tons. Many local pike or perch populations have been lost or diminished due to degraded environmental condition of lagoons. Due to weak status, sea-spawning grayling has no economic impact, but it used to have an important role as part of coastal ecosystem and biodiversity + cultural value to locals. Fishing permits are a source of income for the Finnish state and the government of Åland.</p>	<p>Restored and improved habitats, improved conservation of habitats, and other Improved nature, species and biodiversity indicators.</p> <p>Funding/realized costs.</p>

<p>Regulating ecosystem services and their value: The emphasis is expected to be on the increased storage of carbon and greenhouse gases (GHGs)</p>	<p>CO2 and / or methane emissions % change or tons / year (a direct indicator of reduction in GHG emissions). Such data has been collected and modelled in previous projects (e.g.MAREA, MERIAVAIN).</p>	<p>This indicator is designed to measure the estimated changes in carbon and greenhouse gas (GHG) stocks, as well as their value, resulting from protective and restorative measures impacting the marine ecosystems and their usage.</p>	<p>Restored and improved habitats, improved conservation of habitats, and other Improved nature, species and biodiversity indicators.</p> <p>Funding/realized costs.</p>
<p>Public perceptions regarding marine environment</p>	<p>Mainly from citizen surveys conducted in the project (years 2024 & 2028)</p>	<p>Indicators designed to gauge public perceptions of the marine environment.</p>	<p>Social media data, changes in recreational use, and other communication, dissemination and awareness rising indicators.</p>
<p>Public perceptions regarding marine protection and restoration</p>	<p>Mainly from citizen surveys conducted in the project (years 2024 & 2028)</p>	<p>Indicators designed to gauge public perceptions of the protection and restoration of marine environment.</p>	<p>Social media data, changes in recreational use, and other communication, dissemination and awareness rising indicators.</p>