

1 **SUPPLEMENTARY MATERIALS**

2 **Supplementary Table 1:** List of codes, criteria and criteria description. Observation: To  
 3 enhance the clarity of graphical and tabular presentations in the subsequent sections, it  
 4 should be noted that the term 'CODE' refers to the unique identifiers corresponding to  
 5 each socio-economic. Source: Pegorelli et al. [1]

6

| Code  | SOCIO-ECONOMIC CRITERIA                                                                           | CRITERIA DESCRIPTION                                                                                                                                                                                                                                                                            |
|-------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SEC_1 | Area is important for the generation of employment and income linked to no traditional activities | The area is (or can be) an important source of income and industrial jobs at industrial scale.                                                                                                                                                                                                  |
| SEC_2 | Area is important for fishery activity                                                            | The area is important for fishing, which occurs in that place or has the potential for it to occur. The area could also be important to the sector because it presents characteristics and conditions that sustain the fishery in another area. Eg: because it is a breeding and spawning zone. |
| SEC_3 | Area is important for the development of blue economy activities                                  | The area has relevant characteristics that facilitate or support specific activities related to the blue economy (Aquaculture, offshore wind farm, biotechnology, tourism, ...)                                                                                                                 |
| SEC_4 | Area is important for shipping                                                                    | It is a place of great interest for the navigation, for example, because the area has relevant characteristics that facilitate or support it (sufficient depth, legal reserves), or in an indirect way because the area can support and regulate pressures like noise, discharges, etc          |
| SEC_5 | Area is important for dredging.                                                                   | It is a place of interest (current or future) for activities related to dredging, both the extraction of sand (to increase the depth, for example) or the deposition of dredged material.                                                                                                       |
| SEC_6 | Area is important for locally-caught seafood                                                      | The specific activity of shell fishing occurs in that place or has great potential for it to take place there.                                                                                                                                                                                  |
| SEC_7 | Area has high scenic and/or aesthetic value.                                                      | It is a place where its landscape or aesthetic attractions stand out, or where the values associated with the area are culturally relevant (includes                                                                                                                                            |

|            |                                                                                                                                                           |                                                                                                                                                                                                                                                                  |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |                                                                                                                                                           | land-sea landscape, sea-land and submerged landscapes)                                                                                                                                                                                                           |
| SEC_<br>8  | The area is important due to the socio-cultural dependence of the coastal community with its environmental quality.                                       | The use of living coastal and marine resources and their relationship with environmental quality is of particular importance regarding social, cultural, or local economic issues like fishing, recreation, tourism, and people's way of life and subsistence.   |
| SEC_<br>9  | Area is important for traditional human settlement, land-use, or sea-use which is representative of a culture, or human interaction with the environment. | Areas that preserve ancestral ways of life (in the use of resources, the activities they carry out, etc.), or settlements that are a sample of ancient cultures that inhabited the area.                                                                         |
| SEC_<br>10 | Area is important because of the presence of cultural and traditional activities that support local food security and sovereignty.                        | The area is important due to the presence of activities (usually traditional or low intensity), such as fishing production or shell fishing, it is essential for the community to have a safe flow of food supply for own consumption and access to quality food |
| SEC_<br>11 | Area important for recreation and leisure.                                                                                                                | The area is important for developing activities related to maritime and/or coastal activities associated with free time, such as sailing, diving, etc.                                                                                                           |
| SEC_<br>12 | Area is important because of the presence of cultural symbolic value.                                                                                     | The area has a high value with respect to intangible cultural heritage, due to the existence of traditional activities or a culture that gives an ethnological value to the area.                                                                                |
| SEC_<br>13 | Area is important because of the presence of structure with significant historical and cultural (monuments, etc)                                          | The area is of relevance for its tangible cultural heritage. There are relevant historical or archaeological sites, as well as coastal and marine constructions or notable monuments for the local culture.                                                      |
| SEC_<br>14 | Area is important for health of coastal residents and/or resource users (mental health, physical health, etc)                                             | It is an important area for the well-being of the population that has an impact on their own health (mental health, physical health, etc...), either for the enjoyment of the area or its natural resources.                                                     |
| SEC_<br>15 | Area is important for the occurrence of iconic                                                                                                            | It is an area with iconic coastal or marine species (seals, whales, an                                                                                                                                                                                           |

|        |                                                                                                                                      |                                                                                                                                                                                                                                                                                                   |
|--------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | species/habitats for the local community.                                                                                            | emblematic shorebird, etc.), or habitats highlighted by the local population (for example, a natural monument).                                                                                                                                                                                   |
| SEC_16 | Area is important because it allows access to relevant areas for the marine users.                                                   | The marine area is a space to access another relevant area. For example, a maritime space that gives access to a fishing ground.                                                                                                                                                                  |
| SEC_17 | Area is important to be managed due to spatial conflicts among users.                                                                | It is an area in which there are several current or potential uses and economic activities among which there may be conflicts of use for the same space or resources.                                                                                                                             |
| SEC_18 | Area with current/potential importance to explore and demonstrate approaches and management solutions, and/or to scientific purposes | The area has outstanding natural and/or socio-economic characteristics to be used as pilot area for restoration actions, sustainable development of different activities, compensation mechanisms, green infrastructures, nature-based solutions, etc. And/or the area has a scientific interest. |
| SEC_19 | Area is important for educational interest                                                                                           | It is an area in which environmental education activities are developed or can be developed, due to its natural characteristics.                                                                                                                                                                  |
| SEC_20 | An area that has high scientific interest.                                                                                           | Area considered of interest to the scientific community, because research is carried out or can be carried out.                                                                                                                                                                                   |

9 **ACTIVITIES - PRESSURES - IMPACTS**

10 **Supplementary Table 2:** Fishery: Activities, pressures and impacts on ecosystems and  
 11 information source for the fisheries sector.

| Activitie<br>s          | Pressures                        | Impacts on ecosystems                                                                                                                            | Information<br>source |
|-------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Trawling                | Physical<br>damage               | Modification of the sediment texture (grain size)                                                                                                | [2],[3],[4]           |
|                         |                                  | Modification of presence and nature of bedforms                                                                                                  |                       |
|                         |                                  | Reduction in light levels on sediment and smothered benthos caused by sediment resuspension                                                      |                       |
|                         |                                  | Habitat destruction by scraping and ploughing                                                                                                    |                       |
|                         |                                  | Mortality of benthic invertebrates                                                                                                               |                       |
|                         |                                  | Creation of anaerobic turbid conditions that can lead to the death of organisms due to vertical redistribution of sediment layers                |                       |
|                         | Biological<br>disturbance        | Changes in the species composition                                                                                                               | [2],[3],[4]           |
|                         |                                  | Reduction in habitat complexity                                                                                                                  |                       |
|                         |                                  | Habitat destruction by scraping and ploughing                                                                                                    |                       |
|                         |                                  | Significant reductions in abundance, biomass, species diversity, body size and productivity caused by overfishing                                |                       |
|                         | Other<br>physical<br>disturbance | Underwater noise from both the dredger and the ship                                                                                              | Expert input          |
| Gillnetting             | Biological<br>disturbance        | Overfishing. Fishing down the food web                                                                                                           | [5], [6], [7]         |
|                         |                                  | Biodiversity loss caused by by-catch of juvenile commercial fish or endangered species of megafauna (cetaceans, turtles, seals)                  |                       |
|                         |                                  | Increase the conflict and negative interactions between fishers and aquatic predators (sea lions and dolphins) due to small mesh size of gillnet |                       |
|                         |                                  | Entanglement of cetaceans, turtles, seals. Injuries and death to non-targeted species                                                            |                       |
|                         | Other<br>physical<br>disturbance | Deterioration of the marine environment through ALDFG                                                                                            | Expert input          |
|                         | Physical<br>damage               | Bottom-set gillnets, which have weights dragging the bottom                                                                                      |                       |
|                         |                                  |                                                                                                                                                  |                       |
| Purse<br>seine<br>(with | Biological<br>disturbance        | Population loss due to bycatch (turtles, marine mammals and sharks)                                                                              | [8]                   |
|                         | Physical                         | Coral reef habitat destruction                                                                                                                   |                       |

|                |                                       |                                                                                                                                                |                  |
|----------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| FADs or not)   | damage                                |                                                                                                                                                |                  |
|                | Other physical disturbance            | Contribution to ocean plastic by derelict FADs                                                                                                 |                  |
|                |                                       | Noise from vessels                                                                                                                             | Expert input     |
| Longline       | Biological disturbance                | Population loss due to bycatch (marine mammals, turtles and seabirds)                                                                          | [9]              |
|                | Physical damage                       | Include here bottom longlines, which go with weights and hooks that drag the bottom.                                                           | Expert input     |
|                | Other physical disturbance            | Contribution to ocean plastic by derelict FADs                                                                                                 | Expert input     |
|                |                                       | Noise from vessels                                                                                                                             | Expert input     |
| Pots and traps | Biological disturbance                | Bycatch by ghost fishing                                                                                                                       | [7], [10]        |
|                | Other physical disturbance            | Contribution to ocean plastic by derelict FADs                                                                                                 | Expert input     |
|                |                                       | Noise from vessels                                                                                                                             | Expert input     |
|                | Physical damage                       | The pots are placed on the bottom and when set and retrieved can disturb the surface, break corals or reefs, etc.                              | Expert input     |
| Trammel net    | Biological disturbance                | Gradual reduction of the sex ratio over time due to higher contribution of males to trammel net catches at the beginning of the fishing season | [11], [12]       |
|                |                                       | Population loss due to low selectivity (high by-catch)                                                                                         |                  |
|                | Physical damage                       | Include here bottom-set trammel nets, which have weights that drag the bottom.                                                                 | Expert input     |
|                | Other physical disturbance            | Contribution to ocean plastic by derelict FADs                                                                                                 | Expert input     |
|                |                                       | Noise from vessels                                                                                                                             | Expert input     |
|                | Contamination by hazardous substances | Anti-fouling substances for boats/ships                                                                                                        | Expert input     |
|                |                                       | Possible spills of fuel or motor oil                                                                                                           | Expert input     |
| Drift netting  | Biological disturbance                | Population loss due to heavy bycatch ("Walls of death" - Banned in the Mediterranean)                                                          | [13], [14], [15] |
|                | Other physical disturbance            | Contribution to ocean plastic by derelict FADs                                                                                                 | Expert input     |
|                |                                       | Noise from vessels                                                                                                                             | Expert input     |
| Dredges        | Physical damage                       | Habitat destruction by scraping and plunging                                                                                                   | [16]. [17], [18] |
|                | Biological disturbance                | Risk of population loss of loggerhead, Kemp's ridley, and green sea turtles due to capture or                                                  |                  |

|                   |                                       |                                                                                        |              |
|-------------------|---------------------------------------|----------------------------------------------------------------------------------------|--------------|
|                   |                                       | entanglement                                                                           |              |
|                   |                                       | Risk of population loss of pilot whales and common dolphins due to capture or injuries |              |
|                   |                                       | Risk of population loss (dolphin and porpoises) due to entanglement in the tow lines   |              |
|                   | Other physical disturbance            | Underwater noise from both the dredger and the ship                                    | Expert input |
|                   | Contamination by hazardous substances | Anti-fouling substances for boats/ships                                                | Expert input |
|                   |                                       | Possible spills of fuel or motor oil                                                   | Expert input |
| Push and stow net | Biological disturbance                | Biodiversity loss and effect nursery production due to bycatch and low selectivity     | [19]         |
|                   |                                       | Injuries and death to non-targeted species caused by speed and tow conditions          |              |

12

13 **Supplementary Table 3:** Marine non-living resources: Activities, pressures and impacts  
14 on ecosystems and information source for the Marine non-living resources sector.

| Activities      | Pressures              | Impacts on ecosystems                                                                                                                                                                                                                                                                   | Information source |
|-----------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Deep-sea mining | Physical damage        | Removal of nodules, complete disturbance of seabed and its compaction causing destruction of habitat and associated organisms                                                                                                                                                           | [20], [21], [22]   |
|                 |                        | Clogging of filter feeding apparatus of benthic organisms due to sediment resuspension                                                                                                                                                                                                  |                    |
|                 |                        | Mortality of organisms on the seafloor                                                                                                                                                                                                                                                  |                    |
|                 |                        | Plumes released in the photic zone (down to 200 m) may reduce light penetration and reduce plankton growth or release deep-water nutrients increasing productivity with food chain effects. Plumes released below 200 m depth must be negatively buoyant. Effects on pelagic ecosystems |                    |
|                 |                        | Depletion of oxygen by bacterial growth on suspended particles                                                                                                                                                                                                                          |                    |
|                 | Biological disturbance | Smothering of seabed animals. Effects on benthopelagic organisms due to sediment laden plumes near seabed containing particle load                                                                                                                                                      |                    |
|                 |                        | Changes on the habitat in terms of the sizes of life that will either be benefited or be impacted negatively - Size and ecosystem function fractionated impact on life                                                                                                                  |                    |
|                 |                        | Mortality of zooplankton species                                                                                                                                                                                                                                                        |                    |

|                 |                                       |                                                                                                                                                                         |                              |
|-----------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|                 |                                       | Effects on meso and bathypelagic fishes and other nekton                                                                                                                |                              |
|                 |                                       | Impacts on deep-diving marine mammals                                                                                                                                   |                              |
|                 |                                       | Effects on fish behaviour                                                                                                                                               |                              |
|                 | Contamination by hazardous substances | Mortality caused by the sediments or trace metals                                                                                                                       |                              |
|                 |                                       | Dissolution of heavy metals within the oxygen-minimum zone                                                                                                              |                              |
|                 |                                       | Smothering of seabed animals by particulates, especially proximal to the mined area. Toxicity to animals in areas affected by the plume. Effects on benthopelagic fauna |                              |
|                 | Other physical disturbance            | Masking effects on marine mammals due to high levels of noise                                                                                                           |                              |
| <b>Dredging</b> | Physical loss                         | Destruction of seabed habitats                                                                                                                                          | Expert input                 |
|                 |                                       | Construction of structures or sealing by disposal of dredged material                                                                                                   |                              |
|                 | Biological disturbance                | Temporary decrease in water transparency affects phytoplankton, algae and seagrass                                                                                      | [16], [17], [18], [23], [24] |
|                 |                                       | Algal blooms and biofouling in turbines caused by turbidity                                                                                                             |                              |
|                 |                                       | Changes in faunal density, number of species and composition at the macrobenthic infaunal level                                                                         |                              |
|                 |                                       | Habitat degradation                                                                                                                                                     |                              |
|                 | Physical damage                       | Increased oxygenation of bottom sediment changes biodiversity of infauna                                                                                                |                              |
|                 |                                       | Burial due to subsequent deposition of material                                                                                                                         |                              |
|                 |                                       | Loss of coral reef habitats due to sediment disturbance                                                                                                                 |                              |
|                 |                                       | Changes in bathymetry - introduction of new habitats                                                                                                                    |                              |
|                 |                                       | Clog membranes of filter-feeding fauna like shellfish due to high level of sediment disturbance                                                                         |                              |
|                 |                                       | Recolonization by opportunistic taxa within disturbed seafloor                                                                                                          |                              |
|                 | Other physical disturbance            | Noise                                                                                                                                                                   |                              |
|                 | Contamination by hazardous substances | Sediment toxicity: P, Pb, Zn and Hg increase                                                                                                                            |                              |
|                 |                                       | Resuspension of contaminated sediments increase of nutrient concentration and reduction of dissolved oxygen in the water column affect pelagic fauna                    |                              |
|                 |                                       | Food chain affected by the exposure of contaminants due to sediment resuspension                                                                                        |                              |

|                                        |                                          |                                                                                                                               |                  |
|----------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------|
|                                        | Interference with hydrological processes | Alteration of current velocities and wave conditions affecting the sedimentary regime and causing erosion under seagrass beds |                  |
| <b>Offshore oil and gas extraction</b> | Physical loss                            | Smothering of benthic habitats. Habitat loss                                                                                  | [25], [26], [27] |
|                                        |                                          | Clogging of feeding and gas exchange structures                                                                               |                  |
|                                        | Physical damage                          | Direct physical impact at emplacement                                                                                         |                  |
|                                        |                                          | Provision of hard substratum for colonization by sessile epifauna and associates                                              |                  |
|                                        |                                          | Increased sedimentation altering natural habitats                                                                             |                  |
|                                        |                                          | Mortality and burial of benthic fauna                                                                                         |                  |
|                                        |                                          | Fragmentation of corals                                                                                                       |                  |
|                                        | Interference with hydrological processes | Direct physical impact at emplacement potentially continuing impact through tidally induced motions                           |                  |
|                                        | Contamination by hazardous substances    | Direct toxicity                                                                                                               |                  |
|                                        |                                          | Altered electrochemical environment                                                                                           |                  |
|                                        |                                          | Changes in nutrient availability                                                                                              |                  |
|                                        |                                          | Food-web contamination                                                                                                        |                  |
|                                        |                                          | Potential food-chain                                                                                                          |                  |
|                                        |                                          | Trophic amplification                                                                                                         |                  |
|                                        |                                          | Pipelines can corrode and increase toxicity                                                                                   |                  |
|                                        |                                          | Altered benthic, pelagic and infaunal communities                                                                             |                  |
|                                        |                                          | Mortality of corals                                                                                                           |                  |
|                                        | Other physical disturbance               | Potentially continuing impact through tidally induced motions                                                                 |                  |
|                                        |                                          | Surface light attract some mobile species and repels others                                                                   |                  |
|                                        |                                          | Affect vertical migration of plankton (due to surface light)                                                                  |                  |
|                                        |                                          | Localized auditory damage (acoustic energy)                                                                                   |                  |
|                                        |                                          | Disruption of marine mammal behavior (acoustic energy)                                                                        |                  |
|                                        |                                          | Physiological stress to marine mammals (acoustic energy)                                                                      |                  |
|                                        |                                          | Invertebrate larval loss (acoustic energy)                                                                                    |                  |
|                                        |                                          | Disturbance of key bioturbating species in sediments (acoustic energy)                                                        |                  |
|                                        | Biological disturbance                   | Altered community structure                                                                                                   |                  |
|                                        |                                          | Decreased species abundance                                                                                                   |                  |
|                                        |                                          | Altered distribution of species due to new artificial habitat                                                                 |                  |
|                                        |                                          | May increase species connectivity (including invasive species) due to new artificial habitat                                  |                  |

|  |               |                        |              |
|--|---------------|------------------------|--------------|
|  | Physical loss | Structure construction | Expert input |
|--|---------------|------------------------|--------------|

15

16 **Supplementary Table 4:** Renewable energy: Activities, pressures and impacts on  
17 ecosystems and information source for the renewable energy sector.

|            |                            |                                                                                                                                                                                                                                                                                                                                                                           |                              |
|------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| Wind farms | Biological disturbance     | Collisions: migration barrier for birds and marine mammals                                                                                                                                                                                                                                                                                                                | [28], [29], [30], [31], [32] |
|            |                            | Behavioral changes: displacement from foraging or reproductive areas for fish, birds and marine mammals                                                                                                                                                                                                                                                                   |                              |
|            |                            | Disruption on communication abilities                                                                                                                                                                                                                                                                                                                                     |                              |
|            |                            | Decreased fish stock from a loss of food sources and alteration in their productivity and composition                                                                                                                                                                                                                                                                     |                              |
|            |                            | Fishery cessation and displacement                                                                                                                                                                                                                                                                                                                                        |                              |
|            |                            | Decreased biological diversity                                                                                                                                                                                                                                                                                                                                            |                              |
|            |                            | Changes on species composition: effect on the functional traits as productivity, resistance to disturbance and susceptibility to biological invasions                                                                                                                                                                                                                     |                              |
|            | Physical loss              | Loss of fragile benthic marine and coastal habitats                                                                                                                                                                                                                                                                                                                       |                              |
|            |                            | Loss of natural seabed areas                                                                                                                                                                                                                                                                                                                                              |                              |
|            | Physical damage            | Disturbance to sensitive and threatened species (birds, mammals, sea turtles and fish) due to piles, anchors and cables, causing injury or death and changes in habitat                                                                                                                                                                                                   |                              |
|            |                            | Localized erosion: affect larval recruitment, alter sedimentation rates, alter food and oxygen availability, waste removal                                                                                                                                                                                                                                                |                              |
|            |                            | Decrease or even disappearance of stratification due to local turbulences                                                                                                                                                                                                                                                                                                 |                              |
|            | Other physical disturbance | Sound (noise): There are two different noises: i. during the construction of the wind farm and ii. the noise of the wind turbine working. (i)Temporary hearing loss, tissue damage and imminent death for fish and marine mammals. (ii)Species may abandon areas ranging up to several km from the construction site: affect spawning and juvenile stages of many species |                              |
|            |                            | Avoidance or attraction to magnetic fields from fish, marine mammals and crustaceans                                                                                                                                                                                                                                                                                      |                              |
| Ocean      | Physical loss              | Benthic organisms can be affected through                                                                                                                                                                                                                                                                                                                                 | [33], [34],                  |

|                        |                            |                                                                                                                                               |                        |
|------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| energy -<br>Tidal      |                            | installing a barrage by changes of sedimentation                                                                                              | [35], [36], [37]       |
|                        | Physical damage            | Change of sediment deposition rates affect benthic habitat and it can modify the local water depth if prolonged                               |                        |
|                        |                            | Changes to tidal regime and sedimentation are predicted to directly and indirectly impact benthopelagic species                               |                        |
|                        |                            | Physical barriers can interrupt connectivity to small organisms and migratory species                                                         |                        |
|                        |                            | Entanglement in mooring lines                                                                                                                 |                        |
|                        | Other physical disturbance | Altered behaviour in marine mammals (communication and breeding) due to noise                                                                 |                        |
|                        |                            | Altered behaviour in fish (spawning, distribution) due to noise                                                                               |                        |
|                        |                            | Exposure to magnetic fields can alter behaviour in fish and crustacea                                                                         |                        |
|                        | Biological disturbance     | Physical injury to seabirds                                                                                                                   |                        |
|                        |                            | Changes in megafauna occupation patterns, distribution and behaviour                                                                          |                        |
|                        |                            | Change reproductive and migratory habitats of coastal birds as well as risk of collision                                                      |                        |
|                        |                            | Altered reproductive and migratory habits, food availability and nutrient distribution and collision risk in the marine habitat               |                        |
|                        |                            | Collision risk: cetaceans, fish and seabirds                                                                                                  |                        |
| Ocean energy -<br>Wave | Physical damage            | Benthic organisms can be affected through installing a barrage by changes of sedimentation                                                    | [38], [39], [40], [41] |
|                        | Physical loss              | Physical loss (due to permanent change of seabed substrate or morphology and to extraction of seabed substrate) - alteration of benthic fauna |                        |
|                        | Other physical disturbance | Alter behaviour in marine mammals (communication and breeding) due to noise                                                                   |                        |
|                        |                            | Alter behaviour in fish (spawning, distribution) due to noise                                                                                 |                        |
|                        |                            | Exposure to magnetic fields can alter communication systems of species (taxa Chondrostei, Agnathans and Chandrichthyes)                       |                        |
|                        | Biological disturbance     | Migratory birds affected (device creates a barrier in the path the species)                                                                   |                        |
|                        |                            | Physical injury to seabirds (due to blade                                                                                                     |                        |

|  |  |                                                                                   |  |
|--|--|-----------------------------------------------------------------------------------|--|
|  |  | strike, collision and entanglement)                                               |  |
|  |  | Changes of species; introduction of new species due to changes in hydromorphology |  |

18

19 **Supplementary Table 5:** Aquaculture: Activities, pressures and impacts on ecosystems  
20 and information sources for the aquaculture sector.

| Activities                                 | Pressures                                           | Impacts on ecosystems                                                                                                       | Information source           |
|--------------------------------------------|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------------|
| Aquaculture in coastal or intertidal zones | Physical loss                                       | Sealing - due to the replacement of an ecosystem with an aquaculture facility                                               | Expert input                 |
|                                            | Physical damage                                     | Exploitation of living resources of the seabed and subsoil                                                                  | Expert input                 |
|                                            | Interference with hydrological processes            | Hydrological modification for water intake/redirection                                                                      | Expert input                 |
|                                            | Biological disturbance                              | Selective extraction - much of the feed for aquaculture comes from wild species, thus extracting biomass                    | Expert input                 |
|                                            |                                                     | Alteration of wild fish stock (competition for food resources in poor ocean productivity times) due to releases on the wild | [42], [43], [44], [45], [46] |
|                                            |                                                     | Genetic interactions between escaped farmed fish and wild fish                                                              |                              |
|                                            |                                                     | Disease transfer by escaped fish or through ingestion of contaminated waste by wild fish                                    |                              |
|                                            |                                                     | Effects on the wider ecosystem                                                                                              |                              |
|                                            |                                                     | Impacts on benthic communities near cage sites                                                                              |                              |
|                                            |                                                     | Degradation of local biodiversity                                                                                           |                              |
|                                            | Contamination by hazardous substances               | Resource depletion caused by the release of anti-bacterial and other chemical used                                          |                              |
|                                            | Systematic and/or intentional release of substances | Lower light penetration affecting phytoplankton production                                                                  |                              |
|                                            |                                                     | Affect photosynthesis of benthic aquatic vegetation (seagrasses)                                                            |                              |
|                                            |                                                     | Microlayer of released lipids from fish oil increase the toxicity of some ichthyotoxic algal species                        |                              |
|                                            | Nutrient and organic matter enrichment              | Decrease on the quality of water                                                                                            |                              |
|                                            |                                                     | Hypernutrification                                                                                                          |                              |
|                                            |                                                     | Accelerate algal growth                                                                                                     |                              |

|                                                           |                                                     |                                                                                                                             |              |
|-----------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------|
|                                                           |                                                     | Produce an undesirable disturbance to the balance of organisms                                                              |              |
|                                                           |                                                     | Increased oxygen consumption in deep water                                                                                  |              |
|                                                           |                                                     | Increased production of toxins by certain algae                                                                             |              |
|                                                           |                                                     | Increased dissolved nitrogen discharge (algae blooms, eutrophication, nutrient enrichment)                                  |              |
| Aquaculture at sea (hatcheries, floating cages and rafts) | Contamination by hazardous substances               | Resource depletion caused by the release of anti-bacterial and other chemical used                                          |              |
|                                                           | Systematic and/or intentional release of substances | Lower light penetration affecting phytoplankton production                                                                  |              |
|                                                           |                                                     | Affect photosynthesis of benthic aquatic vegetation (seagrasses)                                                            |              |
|                                                           |                                                     | Microlayer of released lipids from fish oil increase the toxicity of some ichthyotoxic algal species                        |              |
|                                                           | Nutrient and organic matter enrichment              | Increased dissolved nitrogen discharge (algae blooms, eutrophication, nutrient enrichment)                                  |              |
|                                                           |                                                     | Decreased water quality                                                                                                     |              |
|                                                           |                                                     | Hypernutrification                                                                                                          |              |
|                                                           |                                                     | Accelerate algal growth                                                                                                     |              |
|                                                           |                                                     | Produce an undesirable disturbance to the balance of organisms                                                              |              |
|                                                           |                                                     | Increased oxygen consumption in deep water                                                                                  |              |
|                                                           |                                                     | Increased production of toxins by certain algae                                                                             |              |
|                                                           | Biological disturbance                              | Alteration of wild fish stock (competition for food resources in poor ocean productivity times) due to releases on the wild |              |
|                                                           |                                                     | Genetic interactions between escaped farmed fish and wild fish                                                              |              |
|                                                           |                                                     | Disease transfer by escaped fish or through ingestion of contaminated waste by wild fish                                    |              |
|                                                           |                                                     | Effects on the wider ecosystem                                                                                              |              |
|                                                           |                                                     | Impacts on benthic communities near cage sites                                                                              |              |
|                                                           |                                                     | Degradation of local biodiversity                                                                                           |              |
|                                                           | Physical damage                                     | Habitat damage due to reef installations, bottom anchorages and mollusk facilities                                          | Expert input |
|                                                           | Interference with hydrological processes            | Obstacle, disturbing currents, swell (although very slightly)                                                               | Expert input |
| Seaweed farming                                           | Biological disturbance                              | Altered genetic composition of local species resulting in loss of natural fitness or altered                                | [47]         |

|  |                                        |                                                                                                                                                                                |  |
|--|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  |                                        | community composition                                                                                                                                                          |  |
|  |                                        | Potential widespread of consequences (disease, parasites and non-native species) for marine communities and ecosystem functioning                                              |  |
|  |                                        | Large scale changes in local hydrodynamics: reduction in tidal flows at the surface where kelp is suspended could have implications for the benthic and pelagic habitats below |  |
|  | Contamination by hazardous substances  | Discarded or lost components may contribute to marine pollution such as increasing levels of plastic in marine food webs                                                       |  |
|  |                                        | Discarded or lost components may contribute to marine pollution and cause social concerns as the reduction in coastal amenities due drifting debris                            |  |
|  | Biological disturbance                 | Loss of infrastructure can result in the mortality of marine megafauna (marine mammals, marine turtles, sharks, rays and large bony fish) due to entanglement                  |  |
|  |                                        | Local nitrogen absorption resulting in phytoplankton community compositional changes                                                                                           |  |
|  |                                        | Release of reproductive material: 'Crops to wild' gene flow. Potential effects: direct competition with wild populations and hybridization with natural stands                 |  |
|  |                                        | Artificial habitat creation                                                                                                                                                    |  |
|  | Other physical disturbance             | Creation of noise due to an increase of vessel traffic could create behavioral alterations to affected megafauna                                                               |  |
|  | Nutrient and organic matter enrichment | Positive remedial effects when the quantity and proportion of nutrients removed are equal to those added by anthropogenic activities                                           |  |

21

22 **Supplementary Table 6:** Tourism: Activities, pressures and impacts on ecosystems and  
23 information source for the tourism sector.

| Activities | Pressures       | Impacts on ecosystems                                                                                                                         | Information source |
|------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Diving     | Physical damage | Physical damage to coral reef by clambering over them, by kicking them accidentally with the fins or by stirring up silt that suffocates them | [48]               |

|                                     |                            |                                                                                                                                                                                   |                  |
|-------------------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
|                                     |                            | Damage to benthic organisms like sponges due to air bubble formation during cave diving                                                                                           |                  |
|                                     |                            | Physical damage to coral (abrasion and tissue loss) facilitates disease transmission                                                                                              |                  |
|                                     | Biological disturbance     | Dominance by branching corals that grow faster than massive non-branching corals                                                                                                  |                  |
|                                     |                            | Algal overgrowth                                                                                                                                                                  |                  |
|                                     |                            | Feeding of large fish by scuba divers reduces local biodiversity (probably reversible over short periods).                                                                        |                  |
| Sailing vessels                     | Physical damage            | Benthic animals, corals and seagrass beds are often damaged by anchoring.                                                                                                         | [49]             |
|                                     | Biological disturbance     | Introduction of non-indigenous species                                                                                                                                            |                  |
|                                     |                            | Transmission of non-indigenous species                                                                                                                                            |                  |
| Yacht and motor boats/motor vessels | Physical damage            | Benthic animals, corals and seagrass beds are often damaged by anchoring.                                                                                                         | [50]             |
|                                     | Other physical disturbance | Acoustic disturbance of cetaceans particularly during breeding                                                                                                                    |                  |
|                                     | Biological disturbance     | Injury or death of cetaceans, seals and turtles as a result of collisions                                                                                                         |                  |
|                                     |                            | Wake formation altering pelagic and benthic habitats                                                                                                                              |                  |
|                                     |                            | Spread of fouling macroalgae and animals                                                                                                                                          |                  |
| Sport fishing                       | Physical damage            | Discarded snagged monofilament fishing lines cause intense damage to rocky habitats and coral reef                                                                                | [51], [52]       |
|                                     | Other physical disturbance | Discarded snagged monofilament fishing lines cause intense damage to rocky habitats and coral reef                                                                                |                  |
|                                     |                            | Entanglement in discarded lines                                                                                                                                                   |                  |
|                                     |                            | Engine noise and litter                                                                                                                                                           | Expert input     |
| Cruise                              | Physical damage            | Cruise ship anchoring is associated with severe long-term damage to coral reef and seagrass meadows                                                                               | [53], [54], [55] |
|                                     |                            | Modifications to the natural and built environment to enable destinations to serve as cruise line destination involve loss of natural habitat, exploitation of local construction |                  |
|                                     |                            | Dredging channels for larger vessels causes increased turbidity that is damaging to both corals and seagrass. Dredging can also cause injury and death of filter-feeding animals. |                  |

|                |                                        |                                                                                                                                                                                           |                        |
|----------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
|                | Other physical disturbance             | Disturbance of wildlife and pressure on endangered species by noise                                                                                                                       |                        |
|                | Contamination by hazardous substances  | Eco-toxic metal emissions from antifouling coating triggers bioaccumulation of Cu and Zn in mussels and fish                                                                              |                        |
|                |                                        | Illegal discharge of substances mainly oil and other hydrocarbons - Pollution                                                                                                             |                        |
|                |                                        | Discharge of garbage and solid waste (plastic, steel cans, paper, cardboard, aluminium) contribute to pollution and habitat loss                                                          |                        |
|                | Nutrient and organic matter enrichment | Discharge of wastewater, graywater and sewage contribute to pollution, eutrophication, and habitat loss                                                                                   |                        |
|                | Biological disturbance                 | Introduction of non-indigenous species by ballast water                                                                                                                                   |                        |
| Whale-watching | Biological disturbance                 | Decrease of abundance of marine mammals                                                                                                                                                   | [56], [57], [58], [59] |
|                |                                        | Long-term shift in habitat use from an area of high to low vessel traffic (Habitat abandonment)                                                                                           |                        |
|                |                                        | Reduced population fitness due to repeated disturbance: decrease in the amount of time they could spend near their basal metabolic rate (resting) and decrease their basal metabolic rate |                        |
|                |                                        | Decline in size population due to a reduction in calf survival (cetaceans, long-lived and slow to reproduce, prioritize survival over calving)                                            |                        |
|                |                                        | Behavioral changes: surfacing/diving, "active" behaviour (tail slapping and beaching), acoustic, group size or cohesion, swimming speed, swimming direction, altered feeding or resting   |                        |
|                |                                        | Chronic levels of stress                                                                                                                                                                  |                        |
|                |                                        | Cessation of essential behaviours like feeding or resting                                                                                                                                 |                        |
|                | Other physical disturbance             | Boat-related sound can be drowned out or "mask" cetacean vocalizations resulting in animals being unable to communicate                                                                   |                        |
|                |                                        | Engine size and consequent underwater noise disturb cetaceans (communication, orientation, and predator/prey detection)                                                                   |                        |



26 **Supplementary Table 7:** Impacts of Blue Economy activities and pressures on Cultural ecosystem services.

| Sector  | Activities                         | Pressures                  | Cultural                                                                            |                                                                                                    |                                                                     |                                                        |
|---------|------------------------------------|----------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------|
|         |                                    |                            | Intellectual and representative interactions with environment (abiotic and natural) | Physical and experiential interactions with the environment (abiotic e.g., caves. natural: whales) | Spiritual, symbolic and other interactions with natural environment | Other biotic characteristics that have a non-use value |
| Tourism | Diving                             | Physical damage            | 0                                                                                   | 0                                                                                                  | 0                                                                   | 0                                                      |
| Tourism | Diving                             | Biological disturbance     | 0                                                                                   | 0                                                                                                  | 0                                                                   | 1                                                      |
| Tourism | Sailing vessels                    | Physical damage            | 0                                                                                   | 0                                                                                                  | 0                                                                   | 0                                                      |
| Tourism | Sailing vessels                    | Biological disturbance     | 0                                                                                   | 0                                                                                                  | 0                                                                   | 0                                                      |
| Tourism | Yacht and motorboats/motor vessels | Physical damage            | 0                                                                                   | 0                                                                                                  | 0                                                                   | 0                                                      |
| Tourism | Yacht and motorboats/motor vessels | Other physical disturbance | 0                                                                                   | 0                                                                                                  | 0                                                                   | 0                                                      |
| Tourism | Yacht and motorboats/motor vessels | Biological disturbance     | 0                                                                                   | 0                                                                                                  | 0                                                                   | 0                                                      |
| Tourism | Sport fishing                      | Physical damage            | 0                                                                                   | 0                                                                                                  | 0                                                                   | 0                                                      |
| Tourism | Sport fishing                      | Other physical disturbance | 0                                                                                   | 0                                                                                                  | 0                                                                   | 0                                                      |
| Tourism | Sport fishing                      | Biological disturbance     | 0                                                                                   | 0                                                                                                  | 0                                                                   | 1                                                      |
| Tourism | Cruise                             | Physical damage            | 0                                                                                   | -1                                                                                                 | 0                                                                   | 0                                                      |
| Tourism | Cruise                             | Other physical disturbance | 0                                                                                   | 0                                                                                                  | 0                                                                   | 0                                                      |

|            |                      |                                        |    |   |   |   |
|------------|----------------------|----------------------------------------|----|---|---|---|
| Tourism    | Cruise               | Biological disturbance                 | 0  | 0 | 0 | 1 |
| Tourism    | Cruise               | Contamination by hazardous substances  | 0  | 0 | 0 | 0 |
| Tourism    | Cruise               | Nutrient and organic matter enrichment | 0  | 0 | 0 | 0 |
| Tourism    | Whale-watching       | Other physical disturbance             | 0  | 0 | 0 | 0 |
| Tourism    | Whale-watching       | Biological disturbance                 | 1  | 1 | 0 | 1 |
| Renewables | Wind farms           | Physical loss                          | -1 | 0 | 0 | 0 |
| Renewables | Wind farms           | Physical damage                        | 0  | 0 | 0 | 0 |
| Renewables | Wind farms           | Other physical disturbance             | 0  | 0 | 0 | 0 |
| Renewables | Wind farms           | Biological disturbance                 | 0  | 0 | 0 | 1 |
| Renewables | Ocean energy - Tidal | Physical loss                          | 0  | 0 | 0 | 0 |
| Renewables | Ocean energy - Tidal | Physical damage                        | 0  | 0 | 0 | 0 |
| Renewables | Ocean energy - Tidal | Other physical disturbance             | 0  | 0 | 0 | 0 |
| Renewables | Ocean energy - Tidal | Biological disturbance                 | 0  | 0 | 0 | 0 |
| Renewables | Ocean energy - Wave  | Physical loss                          | -1 | 0 | 0 | 0 |
| Renewables | Ocean energy - Wave  | Physical damage                        | 0  | 0 | 0 | 0 |
| Renewables | Ocean energy - Wave  | Other physical disturbance             | 0  | 0 | 0 | 0 |
| Renewables | Ocean energy - Wave  | Biological disturbance                 | 0  | 0 | 0 | 0 |

|             |                                                           |                                                     |    |    |    |    |
|-------------|-----------------------------------------------------------|-----------------------------------------------------|----|----|----|----|
| Aquaculture | Aquaculture in coastal or intertidal zones                | Physical loss                                       | -1 | -1 | -1 | -1 |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Physical damage                                     | -1 | -1 | 0  | -1 |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Interference with hydrological processes            | 0  | 0  | 0  | -1 |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Contamination by hazardous substances               | 0  | -1 | 0  | -1 |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Systematic and/or intentional release of substances | -1 | -1 | -1 | -1 |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Nutrient and organic matter enrichment              | -1 | -1 | -1 | -1 |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Biological disturbance                              | 1  | 1  | 1  | -1 |
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Physical damage                                     | 0  | -1 | 0  | 0  |
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Interference with hydrological processes            | 0  | 0  | 0  | 0  |

|             |                                                           |                                                     |    |    |    |    |
|-------------|-----------------------------------------------------------|-----------------------------------------------------|----|----|----|----|
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Contamination by hazardous substances               | -1 | -1 | 0  | -1 |
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Systematic and/or intentional release of substances | 0  | 0  | 0  | -1 |
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Nutrient and organic matter enrichment              | -1 | -1 | -1 | -1 |
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Biological disturbance                              | 0  | 1  | 0  | -1 |
| Fisheries   | Trawling                                                  | Physical damage                                     | -1 | -1 |    | -1 |
| Fisheries   | Trawling                                                  | Other physical disturbance                          | -1 | -1 |    | -1 |
| Fisheries   | Trawling                                                  | Biological disturbance                              | -1 | -1 | 0  | -1 |
| Fisheries   | Gillnetting                                               | Physical damage                                     | 0  | 0  | 0  | 0  |
| Fisheries   | Gillnetting                                               | Other physical disturbance                          | -1 | -1 | 0  | 0  |
| Fisheries   | Gillnetting                                               | Biological disturbance                              | -1 | -1 | 0  | -1 |
| Fisheries   | Purse seine (with FADs or not)                            | Physical damage                                     | -1 | -1 | -1 | -1 |
| Fisheries   | Purse seine (with FADs or not)                            | Other physical disturbance                          | -1 | -1 | 0  | 0  |
| Fisheries   | Purse seine (with FADs or not)                            | Biological disturbance                              | -1 | -1 | -1 | -1 |
| Fisheries   | Longline                                                  | Physical damage                                     | 0  | 0  | 0  | 0  |

|                    |                   |                                       |    |    |    |    |
|--------------------|-------------------|---------------------------------------|----|----|----|----|
| Fisheries          | Longline          | Other physical disturbance            | -1 | -1 | 0  | 0  |
| Fisheries          | Longline          | Biological disturbance                | -1 | -1 | 0  | -1 |
| Fisheries          | Pots and traps    | Physical damage                       | 0  | 0  | 0  | 0  |
| Fisheries          | Pots and traps    | Other physical disturbance            | -1 | -1 | 0  | 0  |
| Fisheries          | Pots and traps    | Biological disturbance                | -1 | -1 | 0  | -1 |
| Fisheries          | Trammel net       | Physical damage                       | 0  | 0  | 0  | 0  |
| Fisheries          | Trammel net       | Other physical disturbance            | -1 | -1 | 0  | 0  |
| Fisheries          | Trammel net       | Biological disturbance                | -1 | -1 | 0  | -1 |
| Fisheries          | Driftnetting      | Other physical disturbance            | -1 | -1 | -1 | -1 |
| Fisheries          | Driftnetting      | Biological disturbance                | -1 | -1 | 0  | -1 |
| Fisheries          | Dredges           | Physical damage                       | -1 | -1 | 0  | -1 |
| Fisheries          | Dredges           | Other physical disturbance            | -1 | -1 | 0  | -1 |
| Fisheries          | Dredges           | Biological disturbance                | -1 | -1 | 0  | -1 |
| Fisheries          | Push and stow net | Physical damage                       | 0  | 0  | 0  | 0  |
| Fisheries          | Push and stow net | Other physical disturbance            | -1 | -1 | 0  | 0  |
| Fisheries          | Push and stow net | Biological disturbance                | -1 | -1 | 0  | -1 |
| Mineral Extraction | Deep-sea mining   | Physical loss                         | 0  | 0  | 0  | -1 |
| Mineral Extraction | Deep-sea mining   | Physical damage                       | 0  | 0  | 0  | -1 |
| Mineral Extraction | Deep-sea mining   | Other physical disturbance            | 0  | 0  | 0  | 0  |
| Mineral Extraction | Deep-sea mining   | Contamination by hazardous substances | 0  | 0  | 0  | 0  |
| Mineral Extraction | Deep-sea mining   | Biological disturbance                | 0  | 0  | 0  | -1 |
| Mineral Extraction | Dredging          | Physical loss                         | -1 | 0  | 0  | -1 |

|                    |                                 |                                       |    |   |   |    |
|--------------------|---------------------------------|---------------------------------------|----|---|---|----|
| Mineral Extraction | Dredging                        | Physical damage                       | 0  | 0 | 0 | -1 |
| Mineral Extraction | Dredging                        | Other physical disturbance            | -1 | 0 | 0 | -1 |
| Mineral Extraction | Dredging                        | Contamination by hazardous substances | 0  | 0 | 0 | 0  |
| Mineral Extraction | Dredging                        | Biological disturbance                | 0  | 0 | 0 | -1 |
| Mineral Extraction | Offshore oil and gas extraction | Physical loss                         | -1 | 0 | 0 | -1 |
| Mineral Extraction | Offshore oil and gas extraction | Physical damage                       | -1 | 0 | 0 | -1 |
| Mineral Extraction | Offshore oil and gas extraction | Other physical disturbance            | -1 | 0 | 0 | -1 |
| Mineral Extraction | Offshore oil and gas extraction | Contamination by hazardous substances | 0  | 0 | 0 | 0  |
| Mineral Extraction | Offshore oil and gas extraction | Biological disturbance                | 0  | 0 | 0 | -1 |

**Supplementary Table 8:** Impacts of Blue Economy activities and pressures on provisioning ecosystem services.

| Sector  | Activities                         | Pressures                  | Provisioning                                                 |                                                                          |                                                                             |                                                           |                                                                           |                                                            |                                               |
|---------|------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------------|
|         |                                    |                            | Cultivated aquatic plants for nutrition, materials or energy | Wild plants (terrestrial and aquatic) for nutrition, materials or energy | Genetic material (from plants, algae or fungi, animals and other organisms) | Reared aquatic animals for nutrition, materials or energy | Wild animals (terrestrial and aquatic) for nutrition, materials or energy | Mineral substances used for nutrition, materials or energy | Water used for nutrition, materials or energy |
| Tourism | Diving                             | Physical damage            | 0                                                            | 0                                                                        | 0                                                                           | 0                                                         | 0                                                                         | 0                                                          | 0                                             |
| Tourism | Diving                             | Biological disturbance     | 0                                                            | 0                                                                        | 0                                                                           | 0                                                         | 0                                                                         | 0                                                          | 0                                             |
| Tourism | Sailing vessels                    | Physical damage            | 0                                                            | -1                                                                       | -1                                                                          | 0                                                         | 0                                                                         | 0                                                          | 0                                             |
| Tourism | Sailing vessels                    | Biological disturbance     | 0                                                            | 0                                                                        | 0                                                                           | 0                                                         | 0                                                                         | 0                                                          | 0                                             |
| Tourism | Yacht and motorboats/motor vessels | Physical damage            | 0                                                            | -1                                                                       | -1                                                                          | 0                                                         | 0                                                                         | 0                                                          | 0                                             |
| Tourism | Yacht and motorboats/motor vessels | Other physical disturbance | 0                                                            | 0                                                                        | 0                                                                           | 0                                                         | -1                                                                        | 0                                                          | 0                                             |
| Tourism | Yacht and motorboats/motor vessels | Biological disturbance     | 0                                                            | 0                                                                        | -1                                                                          | 0                                                         | 0                                                                         | 0                                                          | 0                                             |
| Tourism | Sport fishing                      | Physical damage            | 0                                                            | -1                                                                       | 0                                                                           | 0                                                         | 0                                                                         | 0                                                          | 0                                             |
| Tourism | Sport fishing                      | Other physical disturbance | 0                                                            | 0                                                                        | 0                                                                           | 0                                                         | -1                                                                        | 0                                                          | 0                                             |
| Tourism | Sport fishing                      | Biological disturbance     | 0                                                            | 0                                                                        | 0                                                                           | 0                                                         | -1                                                                        | 0                                                          | 0                                             |
| Tourism | Cruise                             | Physical damage            | 0                                                            | -1                                                                       | -1                                                                          | 0                                                         | 0                                                                         | 0                                                          | 0                                             |

|            |                      |                                        |   |    |    |    |    |    |   |
|------------|----------------------|----------------------------------------|---|----|----|----|----|----|---|
| Tourism    | Cruise               | Other physical disturbance             | 0 | -1 | -1 | -1 | -1 | 0  | 0 |
| Tourism    | Cruise               | Biological disturbance                 | 0 | 0  | 0  | -1 | -1 | 0  | 0 |
| Tourism    | Cruise               | Contamination by hazardous substances  | 0 | 0  | 0  | -1 | -1 | 0  | 0 |
| Tourism    | Cruise               | Nutrient and organic matter enrichment | 0 | -1 | -1 | -1 | -1 | 0  | 0 |
| Tourism    | Whale-watching       | Other physical disturbance             | 0 | 0  | 0  | -1 | -1 | 0  | 0 |
| Tourism    | Whale-watching       | Biological disturbance                 | 0 | 0  | 0  | 0  | -1 | 0  | 0 |
| Renewables | Wind farms           | Physical loss                          | 0 | -1 | -1 | -1 | -1 | -1 | 0 |
| Renewables | Wind farms           | Physical damage                        | 0 | -1 | -1 | 0  | -1 | -1 | 0 |
| Renewables | Wind farms           | Other physical disturbance             | 0 | 0  | 0  | -1 | -1 | 0  | 0 |
| Renewables | Wind farms           | Biological disturbance                 | 0 | -1 | -1 | 0  | 1  | 0  | 0 |
| Renewables | Ocean energy - Tidal | Physical loss                          | 0 | -1 | -1 | -1 | 0  | 0  | 0 |
| Renewables | Ocean energy - Tidal | Physical damage                        | 0 | -1 | -1 | -1 | 0  | 0  | 0 |
| Renewables | Ocean energy - Tidal | Other physical disturbance             | 0 | 0  | 0  | 0  | -1 | 0  | 0 |
| Renewables | Ocean energy - Tidal | Biological disturbance                 | 0 | 0  | 0  | 0  | 0  | 0  | 0 |
| Renewables | Ocean energy - Wave  | Physical loss                          | 0 | -1 | -1 | -1 | 0  | 0  | 0 |
| Renewables | Ocean energy - Wave  | Physical damage                        | 0 | -1 | -1 | -1 | 0  | 0  | 0 |
| Renewables | Ocean energy - Wave  | Other physical disturbance             | 0 | 0  | 0  | 0  | -1 | 0  | 0 |
| Renewables | Ocean energy - Wave  | Biological disturbance                 | 0 | 0  | 0  | 0  | 0  | 0  | 0 |

|             |                                                           |                                                     |    |    |    |    |    |    |    |
|-------------|-----------------------------------------------------------|-----------------------------------------------------|----|----|----|----|----|----|----|
| Aquaculture | Aquaculture in coastal or intertidal zones                | Physical loss                                       | 1  | -1 | -1 | 1  | -1 | -1 | 1  |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Physical damage                                     | 1  | -1 | -1 | 1  | -1 | -1 | 0  |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Interference with hydrological processes            | -1 | -1 | -1 | 1  | -1 | 0  | -1 |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Contamination by hazardous substances               | -1 | -1 | -1 | 1  | -1 | -1 | -1 |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Systematic and/or intentional release of substances | -1 | -1 | -1 | 1  | -1 | -1 | 0  |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Nutrient and organic matter enrichment              | 1  | 1  | -1 | -1 | -1 | -1 | -1 |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Biological disturbance                              | 1  | -1 | -1 | 1  | -1 | 0  | 0  |
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Physical damage                                     | 0  | -1 | -1 | 0  | 1  | -1 | 0  |
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Interference with hydrological processes            | 0  | -1 | -1 | 0  | -1 | 0  | 0  |

|             |                                                           |                                                     |   |    |    |    |    |    |    |
|-------------|-----------------------------------------------------------|-----------------------------------------------------|---|----|----|----|----|----|----|
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Contamination by hazardous substances               | 0 | -1 | -1 | 1  | -1 | 0  | -1 |
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Systematic and/or intentional release of substances | 0 | -1 | -1 | 0  | 0  | 0  | 0  |
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Nutrient and organic matter enrichment              | 0 | 1  | -1 | -1 | -1 | 0  | -1 |
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Biological disturbance                              | 0 | -1 | -1 | 1  | -1 | 0  | 0  |
| Fisheries   | Trawling                                                  | Physical damage                                     | 0 | -1 | -1 | 0  | 0  | -1 | 0  |
| Fisheries   | Trawling                                                  | Other physical disturbance                          | 0 | -1 | 0  | -1 | -1 | 0  | 0  |
| Fisheries   | Trawling                                                  | Biological disturbance                              | 0 | -1 | -1 | 0  | -1 | 0  | 0  |
| Fisheries   | Gillnetting                                               | Physical damage                                     | 0 | -1 | -1 | 0  | 0  | 0  | 0  |
| Fisheries   | Gillnetting                                               | Other physical disturbance                          | 0 | 0  | 0  | -1 | -1 | 0  | 0  |
| Fisheries   | Gillnetting                                               | Biological disturbance                              | 0 | 0  | -1 | 0  | -1 | 0  | 0  |
| Fisheries   | Purse seine (with FADs or not)                            | Physical damage                                     | 0 | -1 | -1 | 0  | 0  | 0  | 0  |
| Fisheries   | Purse seine (with FADs or not)                            | Other physical disturbance                          | 0 | 0  | 0  | -1 | -1 | 0  | 0  |
| Fisheries   | Purse seine (with FADs or not)                            | Biological disturbance                              | 0 | 0  | -1 | 0  | -1 | 0  | 0  |
| Fisheries   | Longline                                                  | Physical damage                                     | 0 | -1 | -1 | 0  | 0  | 0  | 0  |

|                    |                   |                                       |   |    |    |    |    |    |   |
|--------------------|-------------------|---------------------------------------|---|----|----|----|----|----|---|
| Fisheries          | Longline          | Other physical disturbance            | 0 | 0  | 0  | -1 | -1 | 0  | 0 |
| Fisheries          | Longline          | Biological disturbance                | 0 | 0  | -1 | 0  | -1 | 0  | 0 |
| Fisheries          | Pots and traps    | Physical damage                       | 0 | -1 | -1 | 0  | 0  | 0  | 0 |
| Fisheries          | Pots and traps    | Other physical disturbance            | 0 | 0  | 0  | -1 | -1 | 0  | 0 |
| Fisheries          | Pots and traps    | Biological disturbance                | 0 | 0  | -1 | 0  | -1 | 0  | 0 |
| Fisheries          | Trammel net       | Physical damage                       | 0 | -1 | -1 | 0  | 0  | 0  | 0 |
| Fisheries          | Trammel net       | Other physical disturbance            | 0 | 0  | 0  | -1 | -1 | 0  | 0 |
| Fisheries          | Trammel net       | Biological disturbance                | 0 | 0  | -1 | 0  | -1 | 0  | 0 |
| Fisheries          | Driftnetting      | Other physical disturbance            | 0 | -1 | -1 | 0  | -1 | 0  | 0 |
| Fisheries          | Driftnetting      | Biological disturbance                | 0 | 0  | -1 | 0  | -1 | 0  | 0 |
| Fisheries          | Dredges           | Physical damage                       | 0 | -1 | -1 | 0  | 0  | -1 | 0 |
| Fisheries          | Dredges           | Other physical disturbance            | 0 | -1 | 0  | -1 | -1 | 0  | 0 |
| Fisheries          | Dredges           | Biological disturbance                | 0 | -1 | -1 | 0  | -1 | 0  | 0 |
| Fisheries          | Push and stow net | Physical damage                       | 0 | -1 | -1 | 0  | 0  | 0  |   |
| Fisheries          | Push and stow net | Other physical disturbance            | 0 | 0  | 0  | 0  | 0  | 0  | 0 |
| Fisheries          | Push and stow net | Biological disturbance                | 0 |    | -1 | 0  | -1 | 0  | 0 |
| Mineral Extraction | Deep-sea mining   | Physical loss                         | 0 | 0  | -1 | 0  | -1 | 0  | 0 |
| Mineral Extraction | Deep-sea mining   | Physical damage                       | 0 | 0  | -1 | 0  | -1 | 0  | 0 |
| Mineral Extraction | Deep-sea mining   | Other physical disturbance            | 0 | 0  | 0  | 0  | -1 | 0  | 0 |
| Mineral Extraction | Deep-sea mining   | Contamination by hazardous substances | 0 | -1 | 0  | 0  | -1 | -1 | 0 |
| Mineral Extraction | Deep-sea mining   | Biological disturbance                | 0 | 0  | -1 | 0  | -1 | 0  | 0 |
| Mineral Extraction | Dredging          | Physical loss                         | 0 | -1 | -1 | 0  | -1 | -1 | 0 |

|                    |                                 |                                       |   |    |    |    |    |    |   |
|--------------------|---------------------------------|---------------------------------------|---|----|----|----|----|----|---|
| Mineral Extraction | Dredging                        | Physical damage                       | 0 | -1 | -1 | 0  | -1 | -1 | 0 |
| Mineral Extraction | Dredging                        | Other physical disturbance            | 0 | -1 | 0  | -1 | -1 | 0  | 0 |
| Mineral Extraction | Dredging                        | Contamination by hazardous substances | 0 | -1 | -1 | 0  | -1 | 0  | 0 |
| Mineral Extraction | Dredging                        | Biological disturbance                | 0 | -1 | -1 | 0  | -1 | 0  | 0 |
| Mineral Extraction | Offshore oil and gas extraction | Physical loss                         | 0 | -1 | -1 | 0  | -1 | -1 | 0 |
| Mineral Extraction | Offshore oil and gas extraction | Physical damage                       | 0 | -1 | -1 | 0  | -1 | -1 | 0 |
| Mineral Extraction | Offshore oil and gas extraction | Other physical disturbance            | 0 | -1 | 0  | -1 | -1 | 0  | 0 |
| Mineral Extraction | Offshore oil and gas extraction | Contamination by hazardous substances | 0 | -1 | -1 | 0  | -1 | -1 | 0 |
| Mineral Extraction | Offshore oil and gas extraction | Biological disturbance                | 0 | -1 | -1 | 0  | -1 | 0  | 0 |

**Supplementary Table 9:** Impacts of Blue Economy activities and pressures on Regulation & Maintenance ecosystem services.

| Sector  | Activities                         | Pressures                  | Regulation & Maintenance                              |                                                         |                                                |                                                                                     |                          |                                                 |                            |                  |                                        |                                                                              |
|---------|------------------------------------|----------------------------|-------------------------------------------------------|---------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------|-------------------------------------------------|----------------------------|------------------|----------------------------------------|------------------------------------------------------------------------------|
|         |                                    |                            | Maintenance of physical, chemical, abiotic conditions | Lifecycle maintenance, habitat and gene pool protection | Mediation of nuisances of anthropogenic origin | Mediation of wastes or toxic substances of anthropogenic origin by living processes | Pest and disease control | Regulation of baseline flows and extreme events | Regulation of soil quality | Water conditions | Atmospheric composition and conditions | Other type of regulation and maintenance service by abiotic/biotic processes |
| Tourism | Diving                             | Physical damage            | -1                                                    | -1                                                      | 0                                              | 0                                                                                   | 0                        | 0                                               | 0                          | 0                | 0                                      |                                                                              |
| Tourism | Diving                             | Biological disturbance     | 0                                                     | -1                                                      | 0                                              | 0                                                                                   | 0                        | 0                                               | 0                          | 0                | 0                                      |                                                                              |
| Tourism | Sailing vessels                    | Physical damage            | -1                                                    | -1                                                      | 0                                              | 0                                                                                   | 0                        | 0                                               | 0                          | 0                | 0                                      |                                                                              |
| Tourism | Sailing vessels                    | Biological disturbance     | 0                                                     | -1                                                      | 0                                              | 0                                                                                   | 0                        | 0                                               | 0                          | 0                | 0                                      |                                                                              |
| Tourism | Yacht and motorboats/motor vessels | Physical damage            | -1                                                    | -1                                                      | 0                                              | 0                                                                                   | 0                        | 0                                               | 0                          | 0                | 0                                      |                                                                              |
| Tourism | Yacht and motorboats/motor vessels | Other physical disturbance | 0                                                     | 0                                                       | 0                                              | 0                                                                                   | 0                        | 0                                               | 0                          | 0                | 0                                      |                                                                              |
| Tourism | Yacht and motorboats/motor vessels | Biological disturbance     | 0                                                     | -1                                                      | 0                                              | 0                                                                                   | 0                        | 0                                               | 0                          | 0                | 0                                      |                                                                              |
| Tourism | Sport fishing                      | Physical damage            | -1                                                    | 0                                                       | -1                                             | 0                                                                                   | 0                        | 0                                               | 0                          | 0                | 0                                      |                                                                              |
| Tourism | Sport fishing                      | Other physical disturbance | 0                                                     | 0                                                       | 0                                              | 0                                                                                   | 0                        | 0                                               | 0                          | 0                | 0                                      |                                                                              |
| Tourism | Sport fishing                      | Biological disturbance     | 0                                                     | -1                                                      | -1                                             | 0                                                                                   | -1                       | 0                                               | 0                          | 0                | 0                                      |                                                                              |
| Tourism | Cruise                             | Physical damage            | -1                                                    | 0                                                       | 0                                              | 0                                                                                   | 0                        | 0                                               | 0                          | 0                | 0                                      |                                                                              |
| Tourism | Cruise                             | Other physical disturbance | -1                                                    | -1                                                      | 0                                              | 0                                                                                   | 0                        | 0                                               | 0                          | 0                | 0                                      |                                                                              |

|            |                      |                                        |    |    |    |    |    |   |    |    |    |  |
|------------|----------------------|----------------------------------------|----|----|----|----|----|---|----|----|----|--|
| Tourism    | Cruise               | Biological disturbance                 | 0  | -1 | -1 | 0  | -1 | 0 | 0  | 0  | 0  |  |
| Tourism    | Cruise               | Contamination by hazardous substances  | -1 | -1 | -1 | -1 | 0  | 0 | 0  | -1 | -1 |  |
| Tourism    | Cruise               | Nutrient and organic matter enrichment | -1 | -1 | -1 | -1 | 0  | 0 | 0  | -1 | 0  |  |
| Tourism    | Whale-watching       | Other physical disturbance             | 0  | -1 | 0  | 0  | 0  | 0 | 0  | 0  | 0  |  |
| Tourism    | Whale-watching       | Biological disturbance                 | 0  | -1 | 0  | 0  | 0  | 0 | 0  | 0  | 0  |  |
| Renewables | Wind farms           | Physical loss                          | -1 | -1 | -1 | -1 | 0  | 0 | -1 | 0  | 0  |  |
| Renewables | Wind farms           | Physical damage                        | -1 | -1 | -1 | -1 | 0  | 0 | -1 | 0  | 0  |  |
| Renewables | Wind farms           | Other physical disturbance             | 0  | -1 | 0  | 0  | 0  | 0 | 0  | 0  | 0  |  |
| Renewables | Wind farms           | Biological disturbance                 | 0  | 1  | 0  | 0  | 0  | 0 | 0  | 0  | 0  |  |
| Renewables | Ocean energy - Tidal | Physical loss                          | -1 | 0  | -1 | 0  | 0  | 0 | -1 | 0  | 0  |  |
| Renewables | Ocean energy - Tidal | Physical damage                        | -1 | 0  | 0  | 0  | 0  | 0 | -1 | 0  | 0  |  |
| Renewables | Ocean energy - Tidal | Other physical disturbance             | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0  |  |
| Renewables | Ocean energy - Tidal | Biological disturbance                 | 0  | -1 | 0  | 0  | 0  | 0 | 0  | 0  | 0  |  |
| Renewables | Ocean energy - Wave  | Physical loss                          | -1 | 0  | -1 | 0  | 0  | 0 | -1 | 0  | 0  |  |
| Renewables | Ocean energy - Wave  | Physical damage                        | -1 | 0  | 0  | 0  | 0  | 0 | -1 | 0  | 0  |  |
| Renewables | Ocean energy - Wave  | Other physical disturbance             | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0  |  |
| Renewables | Ocean energy - Wave  | Biological disturbance                 | 0  | -1 | 0  | 0  | 0  | 0 | 0  | 0  | 0  |  |

|             |                                                           |                                                     |    |    |    |    |    |   |    |    |    |   |
|-------------|-----------------------------------------------------------|-----------------------------------------------------|----|----|----|----|----|---|----|----|----|---|
| Aquaculture | Aquaculture in coastal or intertidal zones                | Physical loss                                       | -1 | -1 | -1 | -1 | -1 | 1 | -1 | -1 | -1 | 0 |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Physical damage                                     |    | -1 | 0  | -1 | -1 | 1 | -1 | -1 | 0  |   |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Interference with hydrological processes            |    | -1 | 0  | -1 | -1 | 1 | 0  | -1 | 0  |   |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Contamination by hazardous substances               |    | -1 | 0  | -1 | -1 | 0 | -1 | -1 | 0  |   |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Systematic and/or intentional release of substances |    | -1 | 0  | -1 | -1 | 0 | -1 | -1 | 0  |   |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Nutrient and organic matter enrichment              |    | -1 | 0  | -1 | -1 | 0 | -1 | -1 | 0  |   |
| Aquaculture | Aquaculture in coastal or intertidal zones                | Biological disturbance                              |    | -1 | -1 | -1 | -1 | 0 | 0  | 0  | 0  |   |
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Physical damage                                     |    | -1 | 0  | 0  | 0  | 0 | 0  | -1 | 0  |   |
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Interference with hydrological processes            |    | 0  | 0  | 0  | 0  | 1 | 0  | -1 | 0  |   |

|             |                                                           |                                                     |    |    |    |    |    |    |    |    |   |   |
|-------------|-----------------------------------------------------------|-----------------------------------------------------|----|----|----|----|----|----|----|----|---|---|
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Contamination by hazardous substances               |    | -1 | 0  | 0  | -1 | 0  | -1 | -1 | 0 |   |
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Systematic and/or intentional release of substances |    | 0  | 0  | 0  | 0  | 0  | -1 | -1 | 0 |   |
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Nutrient and organic matter enrichment              |    | -1 | 0  | 0  | -1 | 0  | -1 | -1 | 0 |   |
| Aquaculture | Aquaculture at sea (hatcheries, floating cages and rafts) | Biological disturbance                              |    | -1 | 0  | -1 | -1 | 0  | 0  | -1 | 0 |   |
| Fisheries   | Trawling                                                  | Physical damage                                     | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | 0 | 0 |
| Fisheries   | Trawling                                                  | Other physical disturbance                          | 0  | -1 | -1 | 0  | 0  | 0  | 0  | 0  | 0 | 0 |
| Fisheries   | Trawling                                                  | Biological disturbance                              | 0  | -1 | 0  | -1 | -1 | 0  | 0  | 0  | 0 | 0 |
| Fisheries   | Gillnetting                                               | Physical damage                                     | 0  | -1 | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0 |
| Fisheries   | Gillnetting                                               | Other physical disturbance                          | 0  | -1 | 0  | 0  | 0  | 0  | -1 | 0  | 0 | 0 |
| Fisheries   | Gillnetting                                               | Biological disturbance                              | 0  | -1 | 0  | -1 | -1 | 0  | 0  | 0  | 0 | 0 |
| Fisheries   | Purse seine (with FADs or not)                            | Physical damage                                     | 0  | -1 | -1 | -1 | 0  | 0  | 0  | 0  | 0 | 0 |
| Fisheries   | Purse seine (with FADs or not)                            | Other physical disturbance                          | 0  | -1 | 0  | 0  | 0  | 0  | -1 | 0  | 0 | 0 |
| Fisheries   | Purse seine (with FADs or not)                            | Biological disturbance                              | 0  | -1 | 0  | -1 | -1 | 0  | 0  | 0  | 0 | 0 |
| Fisheries   | Longline                                                  | Physical damage                                     | 0  | -1 | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0 |

|                    |                   |                                       |    |    |    |    |    |    |    |    |   |   |
|--------------------|-------------------|---------------------------------------|----|----|----|----|----|----|----|----|---|---|
| Fisheries          | Longline          | Other physical disturbance            | 0  | -1 | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0 |
| Fisheries          | Longline          | Biological disturbance                | 0  | -1 | 0  | -1 | -1 | 0  | 0  | 0  | 0 | 0 |
| Fisheries          | Pots and traps    | Physical damage                       | 0  | -1 | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0 |
| Fisheries          | Pots and traps    | Other physical disturbance            | 0  | -1 | -1 | -1 | 0  | 0  | -1 | 0  | 0 | 0 |
| Fisheries          | Pots and traps    | Biological disturbance                | 0  | -1 | 0  | -1 | -1 | 0  | 0  | 0  | 0 | 0 |
| Fisheries          | Trammel net       | Physical damage                       | 0  | -1 | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0 |
| Fisheries          | Trammel net       | Other physical disturbance            | 0  | -1 | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0 |
| Fisheries          | Trammel net       | Biological disturbance                | 0  | -1 | 0  | -1 | -1 | 0  | 0  | 0  | 0 | 0 |
| Fisheries          | Driftnetting      | Other physical disturbance            | 0  | -1 | -1 | -1 | 0  | 0  | -1 | 0  | 0 | 0 |
| Fisheries          | Driftnetting      | Biological disturbance                | 0  | -1 | 0  | -1 | -1 | 0  | 0  | 0  | 0 | 0 |
| Fisheries          | Dredges           | Physical damage                       | 0  | -1 | -1 | -1 | -1 | 0  | -1 | -1 | 0 | 0 |
| Fisheries          | Dredges           | Other physical disturbance            | 0  | -1 | -1 | 0  | 0  | 0  | 0  | 0  | 0 | 0 |
| Fisheries          | Dredges           | Biological disturbance                | 0  | -1 | 0  | -1 | -1 | 0  | 0  | 0  | 0 | 0 |
| Fisheries          | Push and stow net | Physical damage                       | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0 |
| Fisheries          | Push and stow net | Other physical disturbance            | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0 |
| Fisheries          | Push and stow net | Biological disturbance                | 0  | -1 | 0  | -1 | -1 | 0  | 0  | 0  | 0 | 0 |
| Mineral Extraction | Deep-sea mining   | Physical loss                         | -1 | -1 | -1 | 0  | 0  | 0  | -1 | 0  | 0 | 0 |
| Mineral Extraction | Deep-sea mining   | Physical damage                       | -1 | -1 | -1 | 0  | 0  | 0  | -1 | 0  | 0 | 0 |
| Mineral Extraction | Deep-sea mining   | Other physical disturbance            | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0 |
| Mineral Extraction | Deep-sea mining   | Contamination by hazardous substances | -1 | -1 | -1 | 0  | 0  | 0  | 0  | -1 | 0 | 0 |
| Mineral Extraction | Deep-sea mining   | Biological disturbance                | 0  | -1 | -1 | 0  | 0  | 0  | 0  | 0  | 0 | 0 |
| Mineral Extraction | Dredging          | Physical loss                         | -1 | -1 | -1 | 0  | 0  | -1 | -1 | 0  | 0 | 0 |

|                    |                                 |                                       |    |    |    |    |    |    |    |    |    |   |
|--------------------|---------------------------------|---------------------------------------|----|----|----|----|----|----|----|----|----|---|
| Mineral Extraction | Dredging                        | Physical damage                       | -1 | -1 | -1 | 0  | 0  | 0  | -1 | 0  | 0  | 0 |
| Mineral Extraction | Dredging                        | Other physical disturbance            | 0  | -1 | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 |
| Mineral Extraction | Dredging                        | Contamination by hazardous substances | -1 | -1 | 0  | -1 | 0  | 0  | 0  | -1 | -1 | 0 |
| Mineral Extraction | Dredging                        | Biological disturbance                | 0  | -1 | 0  | 0  | 0  | 0  |    | -1 | 0  | 0 |
| Mineral Extraction | Offshore oil and gas extraction | Physical loss                         | -1 | -1 | -1 | 0  | 0  | 0  | -1 | 0  | 0  | 0 |
| Mineral Extraction | Offshore oil and gas extraction | Physical damage                       | -1 | -1 | -1 | 0  | 0  | 0  | -1 | 0  | 0  | 0 |
| Mineral Extraction | Offshore oil and gas extraction | Other physical disturbance            | 0  | -1 | 0  | 0  | 0  | -1 | 0  | 0  | 0  | 0 |
| Mineral Extraction | Offshore oil and gas extraction | Contamination by hazardous substances | -1 | -1 | -1 | 0  | -1 | -1 | 0  | -1 | 0  | 0 |
| Mineral Extraction | Offshore oil and gas extraction | Biological disturbance                | -1 | -1 | -1 | 0  | 0  | 0  | 0  | 0  | 0  | 0 |

## SUPPLEMENTARY REFERENCES

1. **Pegorelli, C., De Andres, M., García-Onetti, J., Rayo, S. & García-Sanabria, J.** Marine protected areas as socio-economic systems: a method for defining socio-economic criteria in marine planning. *Front. Mar. Sci.* **11**, 1358950 (2024).  
<https://doi.org/10.3389/fmars.2024.1358950>
2. Eigaard, O. R. et al. Estimating seabed pressure from demersal trawls, seines, and dredges based on gear design and dimensions. *ICES J. Mar. Sci.* **73**, i27–i43 (2016).
3. McConnaughey, R. A. et al. Choosing best practices for managing impacts of trawl fishing on seabed habitats and biota. *Fish Fish.* **21**, 319–337 (2020).
4. Jones, J. B. Environmental impact of trawling on the seabed: a review. *N. Z. J. Mar. Freshw. Res.* **26**, 59–67 (1992).
5. Silvano, R. A., Hallwass, G., Juras, A. A. & Lopes, P. F. Assessment of efficiency and impacts of gillnets on fish conservation in a tropical freshwater fishery. *Aquat. Conserv. Mar. Freshw. Ecosyst.* **27**, 521–533 (2017).
6. Lyle, J. M. & Tracey, S. R. Catch, effort and fishing practices in a recreational gillnet fishery: assessing the impacts and response to management change. *Fish. Res.* **177**, 50–58 (2016).
7. Shester, G. G. & Micheli, F. Conservation challenges for small-scale fisheries: bycatch and habitat impacts of traps and gillnets. *Biol. Conserv.* **144**, 1673–1681 (2011).
8. Leroy, B. et al. A critique of the ecosystem impacts of drifting and anchored FADs use by purse-seine tuna fisheries in the Western and Central Pacific Ocean. *Aquat. Living Resour.* **26**, 49–61 (2013).
9. Baker, G. B. & Wise, B. S. The impact of pelagic longline fishing on the flesh-footed shearwater *Puffinus carneipes* in Eastern Australia. *Biol. Conserv.* **126**, 306–316 (2005).
10. Lively, J. A. & Good, T. P. Ghost fishing. In *World Seas: An Environmental Evaluation* (eds Sheppard, C.) 183–196 (Academic Press, 2019).
11. Ganiyas, K. et al. Fishing for cuttlefish with traps and trammel nets: a comparative study in Thermaikos Gulf, Aegean Sea. *Fish. Res.* **234**, 105783 (2021).
12. Baeta, F., Costa, M. J. & Cabral, H. Trammel nets' ghost fishing off the Portuguese central coast. *Fish. Res.* **98**, 33–39 (2009).
13. Telesetsky, A. & Bratspies, R. Global plastic pollution: curbing single-use plastic production. In *Routledge Handbook of International Environmental Law* (eds. [Editor Names if available]) 457–473 (Routledge, 2020).
14. **Danalache, T., Holban, E., Deák, G., Parlog, C., Matache, R., Cudalbeanu, M. & Nicolae, C. G.** Findings of the fish inventory within lower Danube River from 2008 to 2020. *Curr. Trends Nat. Sci.* **9**, 117–127 (2020).
15. **Johnston, D. M.** The driftnetting problem in the Pacific Ocean: legal considerations and diplomatic options. *Ocean Dev. Int. Law* **21**, 5–39 (1990).
16. Todd, V. L. et al. A review of impacts of marine dredging activities on marine mammals. *ICES J. Mar. Sci.* **72**, 328–340 (2015).
17. Erftemeijer, P. L. et al. Environmental impacts of dredging and other sediment disturbances on corals: a review. *Mar. Pollut. Bull.* **64**, 1737–1765 (2012).

18. Erftemeijer, P. L. & Lewis III, R. R. R. Environmental impacts of dredging on seagrasses: a review. *Mar. Pollut. Bull.* **52**, 1553–1572 (2006).
19. Briand, C., Sauvaget, B., Girard, P., Fatin, D. & Beaulaton, L. Push net fishing seems to be responsible for injuries and post fishing mortality in glass eel in the Vilaine estuary (France) in 2007. *Knowl. Manag. Aquat. Ecosyst.* **404**, 02 (2012).
20. Drazen, J. C. et al. Midwater ecosystems must be considered when evaluating environmental risks of deep-sea mining. *Proc. Natl Acad. Sci. USA* **117**, 17455–17460 (2020).
21. Weaver, P. P., Billett, D. S. & Van Dover, C. L. Environmental risks of deep-sea mining. In *Handbook on Marine Environment Protection: Science, Impacts and Sustainable Management*, 215–245 (Academic Press, 2018).
22. Sharma, R. Environmental issues of deep-sea mining. *Procedia Earth Planet. Sci.* **11**, 204–211 (2015).
23. Svensson, N. et al. Integrated cost and environmental impact assessment of management options for dredged sediment. *Waste Manage.* **138**, 30–40 (2022).
24. Manap, N., & Voulvoulis, N. Data analysis for environmental impact of dredging. *J. Clean. Prod.* **137**, 394–404 (2016).
25. Sommer, B., Fowler, A. M., Macreadie, P. I., Palandro, D. A., Aziz, A. C. & Booth, D. J. Decommissioning of offshore oil and gas structures—environmental opportunities and challenges. *Sci. Total Environ.* **658**, 973–981 (2019).
26. Vad, J., Kazanidis, G., Henry, L. A., Jones, D. O., Tendal, O. S. et al. Potential impacts of offshore oil and gas activities on deep-sea sponges and the habitats they form. *Adv. Mar. Biol.* **79**, 33–60 (2018).
27. Cordes, E. E. et al. Environmental impacts of the deep-water oil and gas industry: a review to guide management strategies. *Front. Environ. Sci.* **4**, 58 (2016).
28. Galparsoro, I. et al. Reviewing the ecological impacts of offshore wind farms. *npj Ocean Sustain.* **1**, 1 (2022).
29. Lloret, J. et al. Unravelling the ecological impacts of large-scale offshore wind farms in the Mediterranean Sea. *Sci. Total Environ.* **824**, 153803 (2022).
30. Dannheim, J. et al. Benthic effects of offshore renewables: identification of knowledge gaps and urgently needed research. *ICES J. Mar. Sci.* **77**, 1092–1108 (2020).
31. Nazir, M. S. et al. Potential environmental impacts of wind energy development: a global perspective. *Curr. Opin. Environ. Sci. Health* **13**, 85–90 (2020).
32. Draget, E. *Environmental impacts of offshore wind power production in the North Sea*. Report WWF (2014).
33. Baker, A. L. et al. Modelling the impact of tidal range energy on species communities. *Ocean Coast. Manag.* **193**, 105221 (2020).
34. Mendoza, E. et al. A framework to evaluate the environmental impact of OCEAN energy devices. *Renew. Sustain. Energy Rev.* **112**, 440–449 (2019).
35. Fox, C. J., Benjamins, S., Masden, E. A. & Miller, R. Challenges and opportunities in monitoring the impacts of tidal-stream energy devices on marine vertebrates. *Renew. Sustain. Energy Rev.* **81**, 1926–1938 (2018).

36. Furness, R. W., Wade, H. M., Robbins, A. M. & Masden, E. A. Assessing the sensitivity of seabird populations to adverse effects from tidal stream turbines and wave energy devices. *ICES J. Mar. Sci.* **69**, 1466–1479 (2012).
37. El-Geziry, T. M., Bryden, I. G. & Couch, S. J. Environmental impact assessment for tidal energy schemes: an exemplar case study of the Strait of Messina. *J. Mar. Eng. Technol.* **8**, 39–48 (2009).
38. Rahman, A., Farrok, O. & Haque, M. M. Environmental impact of renewable energy source based electrical power plants: Solar, wind, hydroelectric, biomass, geothermal, tidal, ocean, and osmotic. *Renew. Sustain. Energy Rev.* **161**, 112279 (2022).
39. Galparsoro, I. et al. A new framework and tool for ecological risk assessment of wave energy converters projects. *Renew. Sustain. Energy Rev.* **151**, 111539 (2021).
40. Copping, A. E. & Hemery, L. G. OES-environmental 2020 state of the science report: Environmental effects of marine renewable energy development around the world. Report for Ocean Energy Systems (OES), United States.  
<https://doi.org/10.2172/1632878> (2020).
41. Langhamer, O., Haikonen, K. & Sundberg, J. Wave power—sustainable energy or environmentally costly? A review with special emphasis on linear wave energy converters. *Renew. Sustain. Energy Rev.* **14**, 1329–1335 (2010).
42. Bohnes, F. A. & Laurent, A. Environmental impacts of existing and future aquaculture production: comparison of technologies and feed options in Singapore. *Aquaculture* **532**, 736001 (2021).
43. He, P., Chopin, F., Suuronen, P., Ferro, R. S. T. & Lansley, J. Classification and illustrated definition of fishing gears. FAO Fish. Aquac. Tech. Pap. **672** (FAO, Rome, 2021).
44. Price, C. et al. Marine cage culture and the environment: effects on water quality and primary production. *Aquac. Environ. Interact.* **6**, 151–174 (2015).
45. Read, P. & Fernandes, T. Management of environmental impacts of marine aquaculture in Europe. *Aquaculture* **226**, 139–163 (2003).
46. Levin, P. S., Zabel, R. W. & Williams, J. G. The road to extinction is paved with good intentions: negative association of fish hatcheries with threatened salmon. *Proc. R. Soc. B* **268**, 1153–1158 (2001).
47. Campbell, I. et al. The environmental risks associated with the development of seaweed farming in Europe—prioritizing key knowledge gaps. *Front. Mar. Sci.* **6**, 107 (2019).
48. Santander-Botello, L. C., & Frejomil, E. P. Impacto ambiental del turismo de buceo en arrecifes de coral. *Cuad. Tur.* **24**, 207–227 (2009)
49. Davenport, J., & Davenport, J. L. The impact of tourism and personal leisure transport on coastal environments: a review. *Estuar. Coast. Shelf Sci.* **67**, 280–292 (2006).
50. Carreño, A., & Lloret, J. Environmental impacts of increasing leisure boating activity in Mediterranean coastal waters. *Ocean Coast. Manag.* **209**, 105693 (2021).
51. Shollenberger, H., Dressler, E., & Mallinson, D. J. Invasive Snakehead and introduced sport fish illustrate an environmental health paradox of invasive species and angler demand. *Case Stud. Environ.* (2019).

52. Britton, J. R., & Orsi, M. L. Non-native fish in aquaculture and sport fishing in Brazil: economic benefits versus risks to fish diversity in the upper River Paraná Basin. *Rev. Fish Biol. Fish.* **22**, 555–565 (2012).
53. MacNeill, T., & Wozniak, D. The economic, social, and environmental impacts of cruise tourism. *Tour. Manag.* **66**, 387–404 (2018).
54. Carić, H. Cruising tourism environmental impacts: case study of Dubrovnik, Croatia. *J. Coast. Res.* **61**, 104–113 (2011).
55. Brida, J. G. & Zapata, S. Cruise tourism: economic, socio-cultural and environmental impacts. *Int. J. Leisure Tour. Mark.* **1**, 205–226 (2010).
56. Finkler, W. & Higham, J. E. Stakeholder perspectives on sustainable whale watching: a science communication approach. *J. Sustain. Tour.* **28**, 535–549 (2020).
57. Higham, J. E., Bejder, L., Allen, S. J., Corkeron, P. J. & Lusseau, D. Managing whale-watching as a non-lethal consumptive activity. *J. Sustain. Tour.* **24**, 73–90 (2016).
58. Parsons, E. C. M. The negative impacts of whale-watching. *J. Mar. Sci.* **2012**, 807294 (2012).
59. Bejder, L., Samuels, A. M. Y., Whitehead, H., Gales, N., Mann, J., Connor, R., et al. Decline in relative abundance of bottlenose dolphins exposed to long-term disturbance. *Conserv. Biol.* **20**, 1791–1798 (2006)