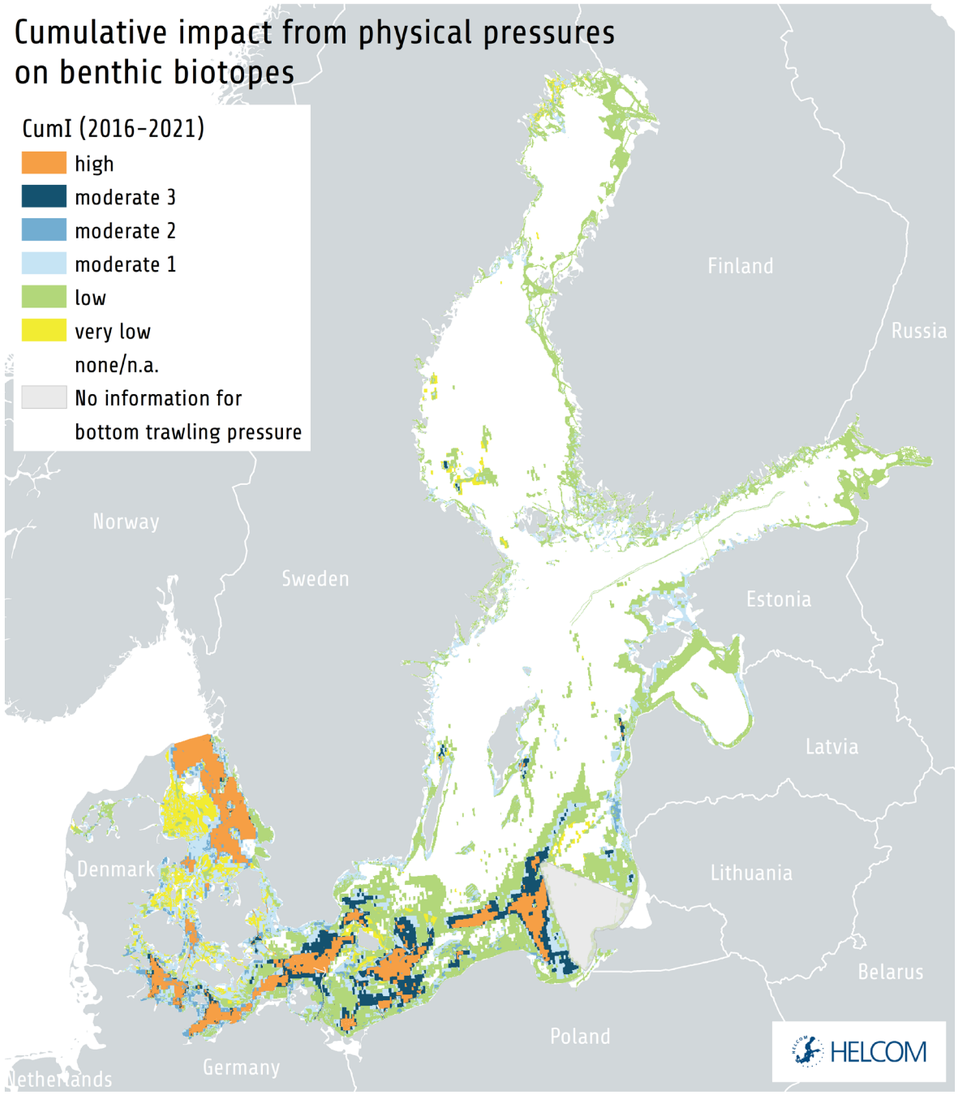

Figure 4.29. Evaluation result of the indicator for cumulative impacts of physical pressures on benthic biotopes in the Baltic Sea, based on reported data for 2016–2021. The map indicates the combined potential impact of physical disturbance (see Box 15). Information on physical pressures from bottom trawling fishery is missing for the area off the coast of Oblast Kaliningrad, marked with a semi-transparent grey triangle. White areas within the Baltic Sea area represent regions with no impact . Source: HELCOM 2023a.

State of the Baltic Sea
Third HELCOM holistic assessment 2016–2021

4.4. Protection and restoration

While reducing or preventing harmful inputs and minimizing pressures from human activities at sea are of key importance to ensure the broad recovery of species and habitats in the Baltic Sea, spatial protection supports biodiversity by ensuring sustainable limits to human exploitation or activities in defined areas.

Marine protected areas are the most common form of spatial protection in the Baltic Sea. Other measures that contribute to effective area-based conservation can also be included in the concept of spatial protection.

However, in cases where the natural ecosystem has been degraded, damaged or destroyed, restoration measures may be needed to assist recovery, and these are increasingly being used in HELCOM countries (Box 4.11).

Figure 4.30. Marine protected areas are spatially defined areas that are selected for protection because they can be particularly useful to safeguard marine ecosystems, processes, functions, habitats and species.
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BOX 4.11.

Spatial protection and restoration as tools in conservation

Marine protected areas
Marine protected areas are spatially defined areas that are selected for protection because they can be particularly useful to safeguard marine ecosystems, processes, functions, habitats and species, and that are managed to support this purpose. By providing protection from adverse human activities, marine protected areas can support both ecological values and the social, economic, and cultural values depending on these (e.g. Reuchlin-Hugenholtz & McKenzie 2015). The main purpose of the HELCOM marine protected areas (HELCOM MPAs) is to protect valuable marine and coastal habitats in the Baltic Sea. This is achieved by designating suitable areas which have particular natural values as protected areas and by effectively managing human activities within those areas (HELCOM 2021, HELCOM ACTION 2021b). These sites should form an ecologically coherent network – that is, a network of protected sites which together deliver more benefits than individual protected areas.

Other effective area-based conservation measures
While the network of marine protected areas is the backbone and primary focus of area-based protection efforts in HELCOM, other effective area-based conservation measures (OECM) can complement this network to support biodiversity. For example, other effective area-based conservation measures can be designed to improve the status of key biodiversity attributes or to support key ecosystem aspects in cases where the designation of fully protected areas is not an option. The identification and recognition of other effective area-based conservation measures can also provide an opportunity to engage with and support a range of new partners and sectors in conservation efforts.

Restoration
Different types of restoration exist with differing aims and levels of interference. Passive restoration refers to removing or significantly reducing the source of a disturbance (the pressure), allowing the disturbed habitat to recover naturally through ecological succession. In other cases, the disturbed site may have become so degraded that it is not able to recover on its own within a reasonable time frame. In these cases, the removal of the pressure is only the first step, and recovery must be actively assisted through restoration measures. Active restoration may involve, for example, the removal of artificial objects from the marine environment, the reconstruction of habitats or the reintroduction of species. Active restoration is considered an effective supplement to conservation and management actions when the natural recovery of ecosystems is precluded, but it is often possible only at a comparatively small scale and can be resource intensive (HELCOM ACTION 2021c).

State of the Baltic Sea
Third HELCOM holistic assessment 2016–2021

4.4.1 Marine protected areas in the Baltic Sea

Today, the Baltic network of marine protected areas (MPAs) covers approximately 16.5% of the Baltic Sea, including just above 13% that are HELCOM marine protected areas (Figure 4.31). The coverage of the MPA network is expected to increase substantially in the near future as a result of efforts to reach the spatial protection targets agreed upon by HELCOM countries in the BSAP, the EU Biodiversity Strategy and the Global Biodiversity Targets of the UN Convention on Biological Diversity (CBD).

The first HELCOM MPA was designated in 1994. After the adoption of the 2007 Baltic Sea Action Plan, the Baltic Sea became the first marine region in the world to reach the target of conserving at least 10% of its coastal and marine areas, a goal set by the CBD in 2010. Current targets for spatial protection agreed in HELCOM stem from the 2021 BSAP and state that, by 2030 at the latest, countries are to establish a resilient, regionally coherent, effectively and equitably managed, ecologically representative and well-connected system of marine protected areas, supported by other spatial conservation measures (under alternative regimes for marine protection) that can contribute to the coherence of the network. Where scientifically justified, special attention should be given to offshore areas beyond territorial waters.

The network of marine protected areas will:

- cover at least 30% of the marine area of the Baltic Sea, of which at least one third will be strictly protected. Other Effective Area-based Conservation Measures (OECMs) can be counted towards the 30% target only if they, as a minimum, comply with the OECM criteria agreed by the Convention on Biological Diversity (CBD).
- where scientifically justified, consider including no-use zones within marine protected areas, which can also serve as scientific reference areas.
- expand conservation efforts to include areas of particular importance for biodiversity and ecosystem resilience, including important ecosystem elements such as species or areas recognized to be ecologically significant based on their function for the ecosystem or the provisioning of ecosystem services, and broad habitat types which may not necessarily be rare or threatened.

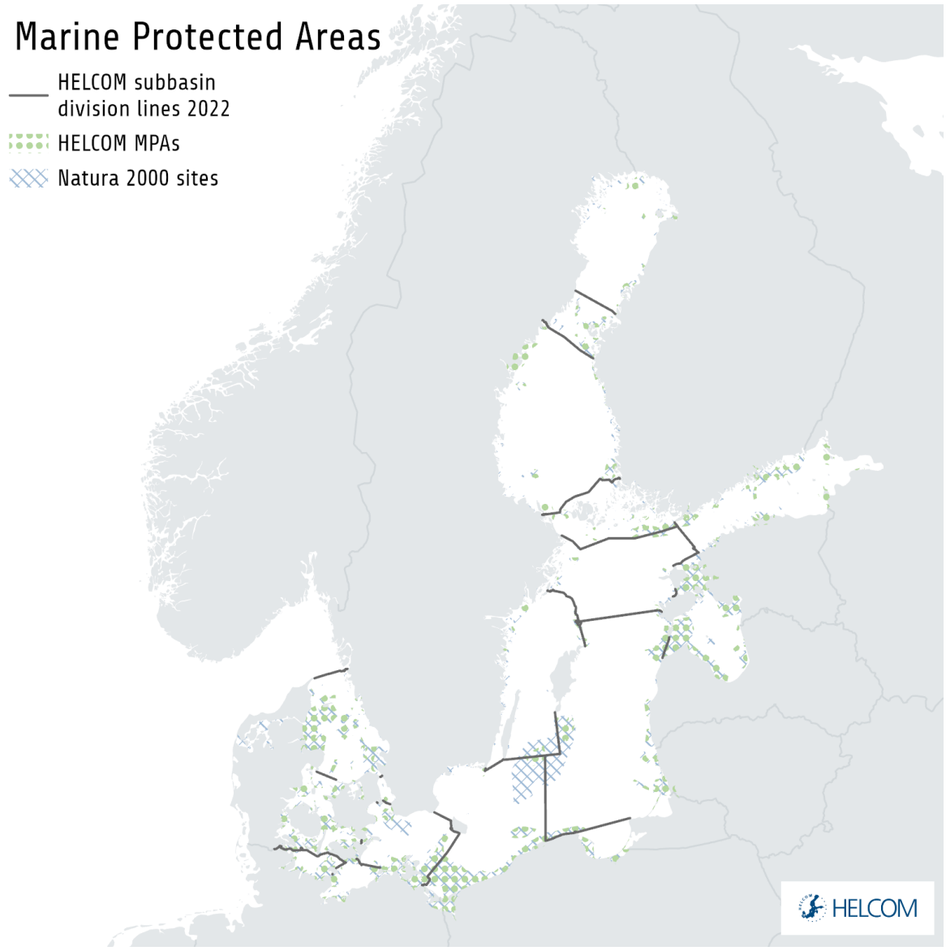

Figure 4.31. Current HELCOM marine protected areas 2016–2021.

Effects of marine protected areas on Baltic Sea ecosystems

Improving the spatial coverage and connectivity of the network of marine protected areas while taking into account natural biodiversity and conditions is expected to strengthen the overall resilience of the Baltic Sea ecosystem and enhance its general capacity to maintain functional ecosystem processes under environmental pressures and, importantly, under future climate-related changes. By enhancing the capacity of the natural system to provide ecosystem functions and services, biodiversity conservation can also support the resilience of the ecosystem, which would ensure economic benefits for many sectors that benefit from improved environmental conditions in both the short- and long-term. Marine protected areas are expected to support and enhance material and non-material ecosystem services, consumptive and non-consumptive goods, and benefits for humans (Marcos *et al.* 2021). Studies on marine systems have estimated that each euro invested in marine protected areas would generate a return of at least three euros (Brander *et al.* 2015). IPBES (2019) recognises that expanding and effectively managing the current global network of marine protected areas is important for safeguarding biodiversity, particularly in the context of climate change. Properly designed and managed MPAs have been shown to have a positive impact on a far broader scale than the protected areas alone, and such zones are thus vital for the overall health of the ecosystem.

Regulations and needs

The target of achieving a spatial coverage of 30% protected areas by 2030, including 10% that will be strictly protected, will require that countries come together and protect roughly another 15% of the Baltic Sea area. Effective management plans also need to be developed and implemented for all designated MPAs.

However, the ultimate aim of all the conservation initiatives is not to reach the percentage coverage target but to strengthen biodiversity. In order for spatial protection measures to be effective, planning should account for what happens both within and outside of the protected area, considering ecological as well as societal aspects. The connectivity of the network, as well as the activities and pressures in its vicinity, are also key to evaluate. To fully benefit from increased spatial protection, the protected areas should be designated in a strategic way, taking into consideration what is protected, for what purpose and in what way. Collaboration between providers of ecosystem knowledge and spatial planners is key, as the implementation should be done at ecologically relevant and meaningful scales.

Furthermore, the implementation must be supported by functional governance, effective and efficient management plans and the capacity for monitoring and adaptive management.

There is currently neither a sufficient framework nor the necessary prerequisites to ensure ecosystem-based strategic decision-making for the conservation of biodiversity and ecosystem services across local, regional and national management levels. Effective policy and management on a broad scale are needed to prevent MPAs from becoming isolated islands of protection in a larger sea of degradation. Such isolated systems offer marginal benefits to overall status and are, by nature, more susceptible to small changes or increases in pressure. While governance bodies and institutions with the necessary mandates and aspirations to protect the marine environment exist, there is a challenge in ensuring sufficient integration across them, including improved interaction between actors across the marine biogeographical region.

4.4.2 Restoration as a measure in HELCOM

Restoration of the marine environment is still an emerging topic in the Baltic Sea. Spatially restricted development work is ongoing in some areas, such as the restoration of eel-grass meadows in the Kattegat and the restoration of coastal lagoons in the Bothnian Bay (SwAM 2021, HELCOM ACTION 2021b, Saarinen 2019). Activities have consisted of transplanting flora and fauna, creating artificial habitats to promote range expansion and recolonization, and inducing changes in hydrological and physical settings, for example (Fraschetti *et al.* 2021). As yet, there is no consistent source of information on efforts, success rates or trends in restoration in the Baltic Sea region. The importance of restoration is likely to increase in response to ecological, management and policy-related needs.

Impacts of restoration in the Baltic Sea ecosystem

The primary goals of restoration are often to re-establish ecological functions and ecosystem services and to revert the system to a previous condition that is self-sustaining and resilient against disturbance. The ultimate aim is to bring diverse and resilient nature back to marine ecosystems (HELCOM ACTION 2021b). This means reducing pressures on habitats and species, and ensuring that all uses of the ecosystem are sustainable. It also means supporting the recovery of ecosystems and tackling inputs of pollution and invasive alien species (EC 2020b).

Restoration can be an effective way to accelerate the recovery of biological communities at the local scale. It can also be used in protected areas to enable the quicker realization of biodiversity benefits. For example, recruitment areas for fish, biogenic reefs and vegetated seabeds are threatened in the Baltic Sea by many human activities and could benefit from restoration measures (Kraufvelin *et al.* 2018, 2020). When successful, restoration of coastal and marine systems can signifcantly enhance benefits relating to mitigation of climate change effects, biodiversity values, economic growth and physical and mental well-being (Aronson and Alexander 2013). Across Europe, increased restoration efforts are expected to create jobs, reconcile economic activity with natural growth, and help ensure the long-term productivity and value of the natural capital of European seas, including the Baltic Sea (EC 2020b).

Regulations and needs

Coastal and marine restoration is still in its infancy in the Baltic Sea, and there is a clear need to build a knowledge base and the capacity to ensure the successful implementation of restoration through knowledge-sharing and following up on existing and planned restoration initiatives.

In addition to the choice of method, successful restoration depends on the focal species/ecosystem (Montero-Serra *et al.* 2018), the duration of the restoration activity (Bayraktarov *et al.* 2016), the geographical location (Darwiche-Criado *et al.* 2017) and local factors, such as pressures present and conservation levels (Keenleyside *et al.* 2012).

A fundamental prerequisite for successful restoration is that the factors initially causing the pressure or damage to the habitat or ecosystem have disappeared or can be kept at a level which is known not to cause detrimental impacts.

Restoration should be undertaken with an awareness of climate change, taking into consideration whether the restored systems will be sufficiently resilient to changing conditions and potentially whether they could be adapted to facilitate mitigation and dampen the negative effects of climate change.

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