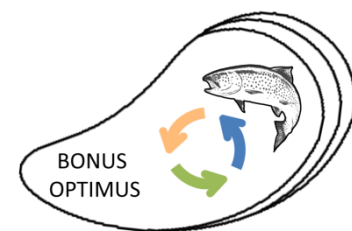


BONUS OPTIMUS

WP 2: Social acceptance of the mitigation concept – public outreach



D2.5 Guideline to mediate social acceptance of the mitigation concept

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Background

Mussel cultivation has undergone a significant development in recent years as a compensation measure for excess nutrients in coastal areas (Petersen et al. 2014), and cultivation facilities have increased in number in the Baltic Sea area, both for commercial purposes aimed at human consumption, for feed production and for tests of compensation measures and water quality improvement. These facilities are however not established in vacant territories. They are located in coastal and marine spaces, which are charged with many interests, including nature conservation, commercial fishing, food production in other aquaculture facilities, renewable energy production in offshore wind farms, and transportation, as well as a broad range of recreational activities and the interests of residents in permanent habitations and summerhouses.

Based on the potential conflicts between aquaculture facilities and other uses of the water and coastal landscape, the need for careful identification of marine aquaculture sites and the allocation of aquaculture zones has been explained in a number of studies. With regard to social impacts, aquaculture has been met with protests and opposition across the world. Some of these protests refer to environmental risks associated with aquaculture such as pollution with nutrients and antibiotics. Others refer to the visual and other sensory impacts of such farms, which are perceived to clutter the view of the waterscape and damage water quality (Barrington et al. 2010; Petersen & Stybel 2019). Moreover, distrust in the aquaculture industry is a significant factor in community acceptance (Kaiser & Stead 2002). Considering and addressing such interests and concerns, it is important for further mussel cultivation to achieve local acceptance and hence to be a viable nutrient compensation measure.

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Social acceptance of mussel cultivation – whether for commercial purposes or solely as a mitigation measure – relies on a number of factors and is context dependent. But there are also some general lessons that can be learned regarding the conditions for obtaining and maintaining social acceptance – or for not creating local disapproval and obstruction.

The guidelines for social acceptance presented here are based on an empirical study in two project case study areas in the West Baltic region (Horsens Fjord area, Denmark and Rügen area, Germany). The study consisted mainly of two questionnaire surveys, but also of stakeholder workshops and stakeholder interviews in Germany and Denmark and of analyses of local media content regarding mussel cultivation in Denmark and Sweden.

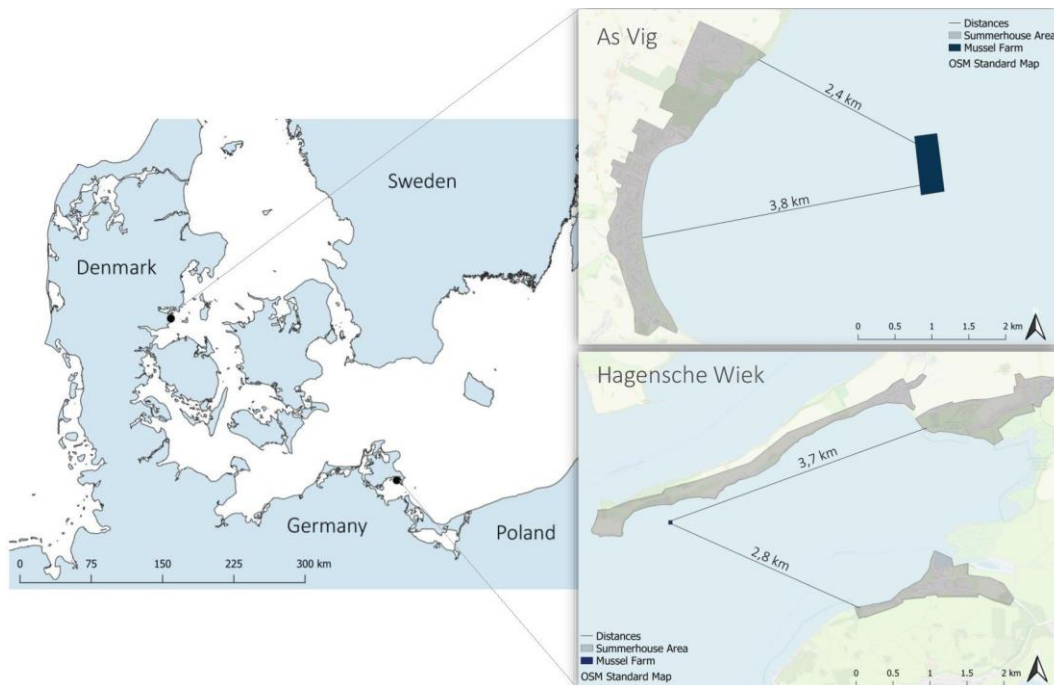


Figure 1: Case study areas in Denmark and Germany for analyzing the local perception and acceptance of mussel farming (Source: EUCC-D)

Local perception of mussel cultivation

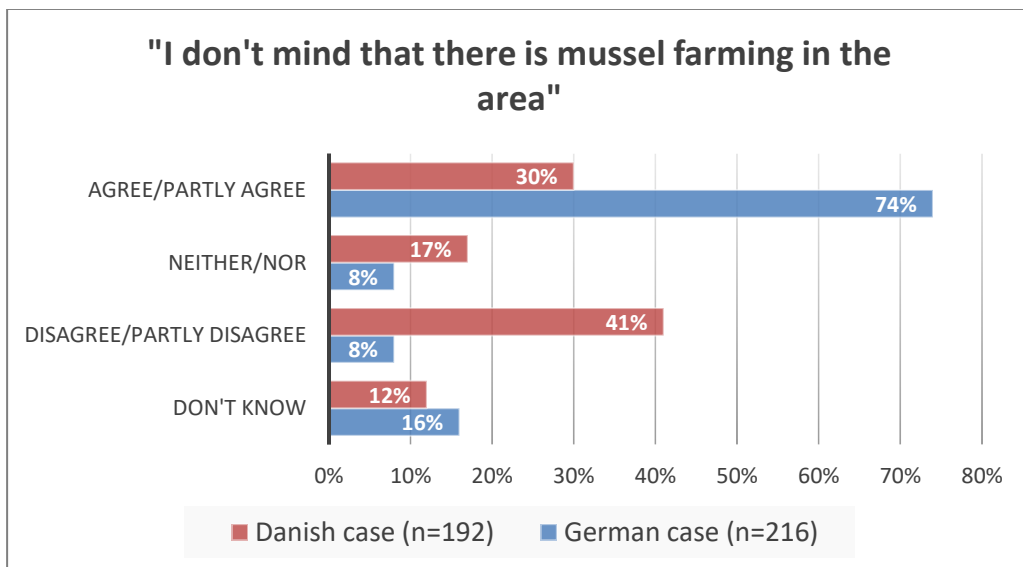
Local perception of mussel cultivation differs from region to region and from site to site, and the differences depend upon a number of key factors:

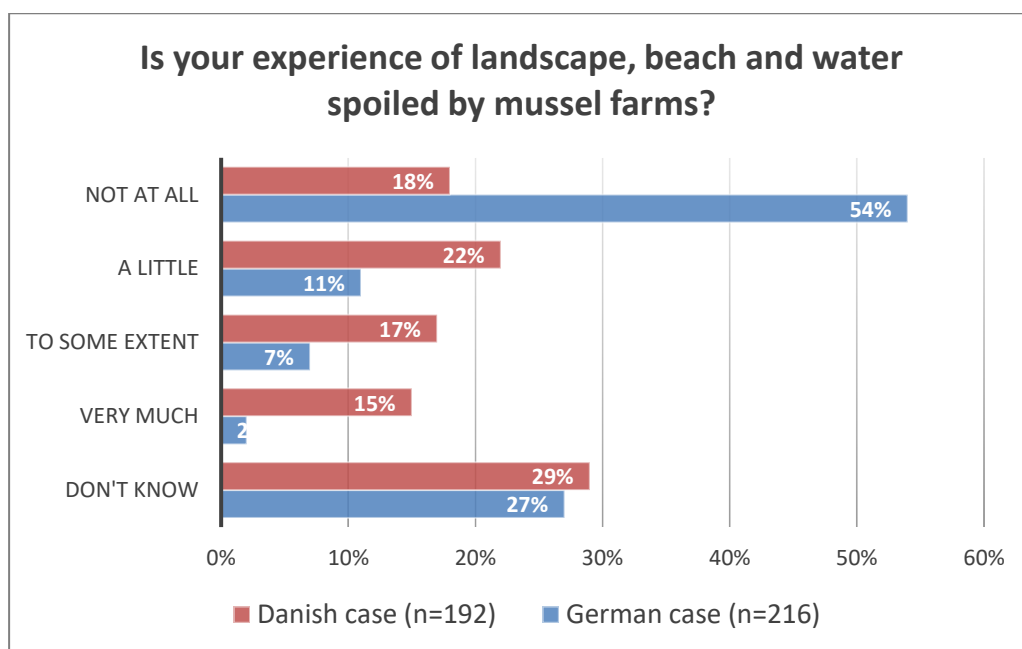
- Location and physical properties of the facility: size, type (lines with buoys or tubes), and distance to shore
- Presence of other marine and coastal activities, recreational and/or commercial
- Protection status of the affected coastal and marine area
- Previous experience with aquaculture (fish, mussel and seaweed farms)
- Residents' – permanent as well as seasonal residents' – perception of historical development in and current state of local water quality
- Place attachment of permanent and seasonal residents
- Knowledge about mussel farming and mitigation purpose
- Risk evaluation of mussel farm impacts by residents



Figure 2: Potential impacts of mussel cultivation relevant for permanent or seasonal residents (Source: EUCC-D)

Respondents in the Danish study were much more sceptical towards and conversely much less accepting of mussel cultivation facilities than the German respondents. Thus, 41% of Danish survey respondents *disagree* with the statement “I don’t mind that there is mussel farming in the area”, whereas 74 % of the German respondents *agree* with that statement. Similarly, more than half of the Danish respondents find that their experience of landscape, beach and water to some extent is spoiled by the occurrence of mussel farms, whereas more than half the German respondents are not bothered by the facility at all.





Figures 3 and 4: Results of the questionnaire surveys in summer 2018 (192 respondents in Denmark and 216 respondents in Germany)

These differences rely to a considerable extent on the specific context, as outlined in table 1. Where half the Danish respondents had experienced a decline in water quality over the past decades, 45 % of the German respondents had no opinion thereof. Where there were decades of experience with aquaculture in the shape of fish farming in the Danish case area, the 1.5 years of test site was the only experience in the German case area. And where the Danish respondents had a long-standing connection to the area and a strong attachment to it, the German respondents' connection was not quite as strong. This is caused by the high number of (day) tourists in the German case study (75%) compared to the high number of permanent residents with strong place attachment in the Danish case. Furthermore, the German test site was much smaller and therefore less visible than the Danish site.

	Danish site	German site
Experience with aquaculture	Decades of experience with fish and mussel farms	None until the test site
Assessment of water quality	50 % of respondents + stakeholders: <i>It has deteriorated</i>	45 % of respondents: <i>Don't know</i> + Stakeholders: <i>No need for improvement</i>
Had not noticed facilities	2 % had not noticed any aquaculture facilities	83 % had not noticed the test facility
Have visited the area for more than 20 years	72 % of respondents	37 %
Accommodated in their own summerhouse	98 %	13 %
First time visitors	None	36 %

Table 1: General differences of respondents in Denmark and Germany

The experience that people in the Danish test area had had with aquaculture was predominantly with commercial fish farming, but this experience had rubbed off on their attitude towards mussel cultivation. Stakeholders and survey respondents alike blamed fish farms for the declining water quality. Stakeholders also expressed concern that the scenery would be cluttered and the waterscape would be packed with production facilities, if mussel farms are added to the already existing fish farms, and it was criticized when facilities are located in protected areas. On the other hand, mussel farms appeared as un-problematic if they were not used as compensation for fish farms and were cautiously welcomed in as far as they would contribute notably to improved water quality.

In contrast to representatives of authorities, local stakeholders of the German case reported initial knowledge about mussel farming, but with little knowledge about ecosystem services like nutrient removal or water transparency improvement. In the beginning of the stakeholder process the respondents expressed doubts about the meaningfulness of mussel cultivation. They were sceptical about any changes related to mussel farming and stressed the importance of the prevention of negative effects, e.g. prevention of marine litter. They expressed acceptance of the cultivation site as no other usage would be affected. At the final public event local stakeholders surprisingly regretted the dismantling of the test facility. They expressed their interest in future mussel cultivation to stimulate regional development and local tourism, especially because they felt mussel farming as in line with the idea of sustainable development and supporting the local identity. They also liked the potential of being a forerunner as just one little mussel farm exists in Germany. The use of environmentally friendly substrate, instead of artificial, plastic-based material, would be supporting as well. A knowledge gap was identified: Residents observed the settlement of cormorants in the German case study area starting with the installation of the test facility.

In areas with established mussel farms, stakeholders and media reports mentioned various problems including (a) litter from the farms in the shape of loose buoys and lines on beaches and in fairways for sea traffic, (b) the use of recreational areas on shore or in the water can be disturbed. It appeared to be important for residents and stakeholders that such problems are addressed.

Recommendations to mediate social acceptance of mussel cultivation

Overall, it is recommendable that any project to establish mitigation mussel farming considers local acceptance of such facilities and observe certain guidelines in order to meet social acceptance. These guidelines comprise the following:

- Conduct stakeholder analysis and mapping: Key stakeholders, opinion leaders and multipliers should be identified, informed and involved in the planning and implementation process, thereby also including local knowledge and recognizing prejudices
- Inform the public actively and regularly, e.g. at public events, direct mails, local information channels or newspapers based on own press releases
- Clarify differences between fish farms and mussel farms
- Clarify the potential for water quality improvement in a clear and easily understandable manner, but do *not* overstate it.
- Investigate and consider all local uses and attractions in the area selected for a potential facility siting, including recreational uses, commercial uses, scenic values, protection status and the overall level of waterscape usage.

- Investigate, consider and address previous local experiences with aquaculture.
- Built up synergies between mussel cultivation and the surrounding area (local jobs, local products, attraction for residents and tourists, advertisement for the region, teaching location)
- Support the direct experience of mussel cultivation by organizing open house days, public harvest events or by implementing public mussel gardens
- Make sure that facilities are managed properly: Minimize ecological impacts, e.g. by using environmental-friendly material; optimize economic effects for the local community; remove litter rapidly. All activities pertaining to the facility (including but not limited to deterrence of birds) must be conducted with respect for neighbours and for the surrounding nature.

The specific ways in which these guidelines are observed can vary. Various forms of stakeholder and/or citizen involvement and information can be applied.

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