

Socioeconomic impacts of mussel farming in the Coastal Areas of the Baltic Sea

Introduction

Mussel farming has the potential to develop into a profitable industry in the coastal areas around the Baltic Sea, thereby creating new jobs and increasing the income of coastal residents. The general economy of the Baltic Sea region is also expanding: the real GDP growth rate was 2.3 per cent per year in the last five years. Agriculture, forestry and the fisheries sectors all provide a lower gross value added, if compared to other activities. However, when analysing the revenue from the fisheries sector and comparing it to other sectors in the small Latvian municipality of Pāvilosta, it is in fact the fisheries sector that is responsible for 18 per cent of the total turnover of all companies in the municipality. The fisheries sector employs more than six per cent of the working age population: a very significant number for a single coastal municipality.

Current long-term interest rates are low and therefore it might seem attractive for potential stakeholders to make investments and to develop existing or new industries. Due to the current fishing fleet quotas, fishing could require major restructuring processes to transform the way the existing products are sold and allow other forms of development to be introduced. However, the conversion process would require both political and supportive mechanisms. Targeted funding shifts have helped promote shellfish farming, for instance in Denmark and Sweden.

Socio-economic factors

In 2015, the fisheries sector provided employment for 7359 people. In the Baltic Sea region, a total of 1033 people were employed in the marine aquaculture sector, while wages in the fisheries sector are lower than the national average. The wage gap is considerable, which can be understood as a contributing factor to the development of mussel farming in the eastern Baltic Sea countries, where the average wages are significantly lower. It should be noted, however, that wages have increased significantly in these countries over the last three years, e.g., the average wage in Latvia increased by 8 per cent in 2017 and 9 per cent in 2018. This increase has also affected the fisheries industry. The rapid growth of wages is also influenced by the general growth of the economy, which is reflected in the GDP growth rate. Changes

in remuneration can be analysed together with changes in working, as well as the wider population. In order to understand the potential importance of shellfish farming in coastal areas, financial indicators were analysed in the Latvian municipality of Pāvilosta, where an experimental mussel farm had been established in 2017.



Figure 1: Pāvilosta municipality

In the fisheries sector, tax payments total between 3 and 15 per cent of sales and the main part of tax payments are deducted from wages. The income tax paid by fisheries enterprises is 2 to 3 per cent of their turnover, which goes to Pāvilosta municipality and is included in the local government budget. Considering that various sectors affect each other, the creation of additional workplaces and paid taxes may facilitate additional workplaces in other areas.

A survey that was distributed among experts showed that governmental support, financing and the end-use market are the most important factors for developing mussel farming in the Baltic Sea region. The results revealed that mussel farming would reach the growth stage in 6 to 10 years and that the industry might develop faster in countries where the development of the industry has already started.

Based on the analysis of economic and social factors, several scenarios for the potential development for mussel farming were created (see Table 1).

Scenario and timeline/Prognosed Development		Economic Benefits	Social Benefits
Slow growth – pessimistic scenario	0-5 years	<ul style="list-style-type: none"> ➤ 80-300 t per year harvested mussel amount in the Baltic Sea ➤ compensation to mussel farmers for removed P and N, if available 	<ul style="list-style-type: none"> ➤ 0.4-2 full time employees per year ➤ 3900-15000 EUR tax payments per year
	6-10 years	<ul style="list-style-type: none"> ➤ 90-340 t per year harvested mussel amount in the Baltic Sea ➤ compensation to mussel farmers for removed P and N, if available 	<ul style="list-style-type: none"> ➤ 0.5-2.3 full time employees per year ➤ 4200-17000 EUR tax payments per year
	11-15 years	<ul style="list-style-type: none"> ➤ 97-365 t per year harvested mussel amount in the Baltic Sea ➤ compensation to mussel farmers for removed P and N, if available 	<ul style="list-style-type: none"> ➤ 0.4-2.5 full time employees per year ➤ 4600-18000 EUR tax payments per year
Average growth – realistic scenario	0-5 years	<ul style="list-style-type: none"> ➤ 800-3000 t per year harvested mussel amount in the Baltic Sea ➤ compensation to mussel farmers for removed P and N, if available 	<ul style="list-style-type: none"> ➤ 4-20 full time employees per year ➤ 40-150 T EUR tax payments per year
	6-10 years	<ul style="list-style-type: none"> ➤ 2200-8000 t per year harvested mussel amount in the Baltic Sea ➤ compensation to mussel farmers for removed P and N, if available 	<ul style="list-style-type: none"> ➤ 15-53 full time employees per year ➤ 106-400 T EUR tax payments per year
	11-15 years	<ul style="list-style-type: none"> ➤ 3500-13000 t per year harvested mussel amount in the Baltic Sea ➤ compensation to mussel farmers for removed P and N, if available 	<ul style="list-style-type: none"> ➤ 23-87 full time employees per year ➤ 172-642 T EUR tax payments per year
Rapid growth – optimistic scenario	0-5 years	<ul style="list-style-type: none"> ➤ 1500-5600 per year harvested mussel amount in the Baltic Sea ➤ compensation to mussel farmers for removed P and N, if available 	<ul style="list-style-type: none"> ➤ 14-65 full time employees per year ➤ 65-245 T EUR tax payments per year
	6-10 years	<ul style="list-style-type: none"> ➤ 5400-20000 t per year harvested mussel amount in the Baltic Sea ➤ compensation to mussel farmers for removed P and N, if available 	<ul style="list-style-type: none"> ➤ 225-1000 full time employees per year ➤ 237-900 T EUR tax payments per year
	11-15 years	<ul style="list-style-type: none"> ➤ 8700-33000 t per year harvested mussel amount in the Baltic Sea ➤ compensation to mussel farmers for removed P and N, if available 	<ul style="list-style-type: none"> ➤ 360-1800 full time employees per year ➤ 382-1400 382-1400 T EUR tax payments per year

Table 1: Economic and social benefits of mussel farming – different scenarios and timelines

Scenario Analysis

Although the numbers for the developed scenarios are different, analysis of historical information has shown that harvested shellfish volumes can vary from year to year. According to the pessimistic scenario, the amount of harvested mussels in 6–10 years varies from 90 up to 340 tonnes per year, whereas if developing mussel farming up to a commercially viable amount, the shellfish amount should reach from 2200 up to 8000 tonnes, which would require the employment of 15–53 people. Shellfish farming can contribute up to 5 per cent of the total number of employed people in marine aquaculture in the Baltic Sea region.

The scenario analysis has helped to shape the concept of a new industry development and economic contribution to the Baltic Sea region: mussel farming. Through the scenario analysis, it was shown that a seemingly insignificant and possibly underestimated sector may in fact contribute to a significant increase of the quality of the marine environment, by reducing water pollution, as well as making a substantial contribution to the economy of coastal municipalities across the Baltic Sea region. Mussel farming has the potential to create new jobs, increase the turnover of local businesses and to contribute to government budgets through taxation.

Taking into consideration that certain mussel farming sites have been established during the last three years (2016–2019), it is not possible to assess the indirect effects of socioeconomic factors on related industries. Further research could therefore enable the assessment of the impact of mussel farming in coastal areas.

The assessment is based on information obtained over the period from 2016 to 2018. Considering that marketing aspects in this field are changing rapidly and social factors are strongly influenced by marketing, a more in-depth research could provide more extensive information on this field. More information regarding the research as presented in this factsheet can be found in the report 'Assessment of Mussel Farming Impact in Coastal Areas', which can be found on the page 'Publications' at www.balticbluegrowth.eu.

THE
PROJECT

This factsheet has been elaborated by the Baltic Blue Growth project. The aim of Baltic Blue Growth is to advance mussel farming in the Baltic Sea from experimental to full scale to improve the water quality and to create blue growth in the feed industry. 18 partners from 7 countries are participating, with representatives from regional and national authorities, research institutions, private companies. The project is coordinated by Region Östergötland (Sweden) and has a total budget of € 4.7 million. It is a flagship project under the Policy Area "Nutri" of the European Union Strategy for the Baltic Sea Region (EUSBSR).



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