



SEAMARK DELIVERABLE 8.2: VALUE CHAIN ANALYSIS OF SELECTED SEAMARK PRODUCTS

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Public summary of
confidential report

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Due Date: 31.12.2023

Submission Date: 06.12.2023

Accepted Date: 30.12.2023

Deliverable Reference: D8.2

Work Package / Task:

WP8 / Task 8.2

Keywords:

algae, macroalgae, seaweed, biorefinery, commercialisation, producer organisation, blue bioeconomy, phycology, food tech, feed additives, nutraceuticals, fermentation, prebiotics, probiotics

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Summary:

SeaMark aims to demonstrate how to scale up innovative seaweed cultivation and processing into price competitive product applications making the entire supply chain attractive for commercial investments. This deliverable presents the preliminary value chain analysis for the SeaMark flagship products. These are product 1: Bioactive beta-glucans, product 5: Pig feed supplement and product 7: Green alginates. The objective of the preliminary value chain analysis in SeaMark is to get an understanding of the cost of producing and processing seaweed into the flagship products.

The analysis of the Ocean Rainforest (ORF) value chain showed that the biggest cost reduction comes from increasing processing capacity. This would allow for upscaling the harvesting and taking advantage of the full capacity of the boat and transport container in seaweed cultivation. Additionally, several costs can be reduced by upscaling production and producing to full capacity. This would decrease the costs associated with materials and depreciations of equipment as the throughput increases. The cost of energy is quite significant in the dried seaweed value chain at ORF as drying macroalgae is an energy-intensive process. The high cost of drying can be seen in both pig feed supplement (P5) and bioactive beta-glucans (P1). Alternative energy sources and investments in newer drying technology should be explored.

For the biorefinery process of bioactive beta-glucans (P1), a cost model was presented. It showed that the largest cost is associated with drying of the final product. The costs and benefits also depend on the co-extraction strategy (the set of products made from the raw material). The key factor defining profitability is the content of beta-glucan in seaweed, which was found to be too low in farmed *Saccharina latissima*. This issue was discussed in the preliminary TEA (D8.3) and led to the change of the flagship product to fibre as food ingredient.

The analysis showed that two-thirds of the production costs of the pig feed supplement (P5) are from the acquisition of the materials, which are rapeseed, seaweed and inoculum. The producers of the pig feed supplement, FermentationExperts (FEXP), have only limited influence on these cost groups highlighting the importance of reducing cultivation costs which will eventually benefit downstream producers.

The two analyses relating to the value chain of green alginates (P7) produced by Algaia (ALG) have focused respectively on the cost of producing *Saccharina latissima* at Algolesko (ALO) and the expected change in the cost of producing alginates when shifting from current processing to a



Co-funded by
the European Union

This project has received funding from the European Union's Horizon Europe research and innovation programme under Grant Agreement No 101060379. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union nor the European Research Executive Agency (REA). Neither the European Union nor REA can be held responsible for them.



more environmentally friendly processing, resulting in 'green alginates'. For reasons of confidentiality, no absolute numbers could be presented.