

DEFINITIONS OF VOLUMES AND TIMELINE OF MACROALGAE BIOMASS SUPPLY

**Deliverable 2.1
September 2023**



Co-funded by
the European Union

ABOUT THIS DOCUMENT

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DELIVERABLE TYPE	- Report
DELIVERABLE NUMBER	- D2.1.
VERSION	- 1
DISSEMINATION LEVEL	- Public
WORK PACKAGE / TASK	- Work package 2 / Task 2.1
DOCUMENT STATUS	Final
DUE DATE (M)	30.09.2023
SUBMISSION DATE	29.09.2023
TOTAL NUMBER OF PAGES	6
KEYWORDS	-

LIST OF ABBREVIATIONS

Abbreviation	Description
<u>CDE</u>	Communication, Dissemination and Exploitation
<u>CO</u>	Confidential
<u>D</u>	Deliverable
<u>DEM</u>	Demonstrator
<u>DoA</u>	Description of the Action
<u>DoW</u>	Description of Work
<u>EAB</u>	External Advisory Board
<u>EB</u>	Executive Board
<u>EC</u>	European Commission
<u>EU</u>	European Union
<u>GA</u>	Grant Agreement
<u>GD</u>	Graphic Designer
<u>IPR</u>	Intellectual Property Rights
<u>KER</u>	Key Exploitable Result
<u>M</u>	Month
<u>PC</u>	Project Coordinator
<u>PM</u>	Project Manager
<u>PMG</u>	Project Management Group
<u>PO</u>	Project Officer
<u>PP</u>	Project Partner
<u>PU</u>	Public
<u>QC</u>	Quality Control
<u>SCA</u>	Strategic Communication Action
<u>SEN</u>	Sensitive
<u>SME</u>	Small and Medium Enterprises
<u>WP</u>	Work Package
<u>WPL</u>	Work Package Leader
<u>SCA</u>	Strategic Communication Action

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1. MACROALGAE BIOMASS

Within the framework of AlgaeProBanos, several partners will provide macroalgae biomass to companies for research and product development. Herewith we report on the volumes and timeline of macroalgae biomass supply. Next to the current volumes of biomass supply we also provide estimated volumes expected by 2028. The combination of both current and estimated volumes should inform on the sustainability of the supply chain either through wild harvest or cultivation.

1.1. Provisioning of macroalgae biomass

Three companies, Vetik (VET), Origin by Ocean (OBO) and oceanBASIS (OCE) rely on seaweed biomass for further research and product development. Specifically, VET will harvest wild *Furcellaria* from Estonia between (M1-M24) for downstream processing in WP3. UGent (UGE) will develop a cultivation strategy for (T2.3) to supplement the wild harvested *Furcellaria* biomass from M24 onwards. *Fucus* biomass will be provided to OBO and OCE from a sea-based farm in Estonia (UTA, from M24 onward), and this will be complemented with collecting beach cast in Finland (OBO). *Saccharina* biomass will be provided to OBO by UGE (UNITED) and Ocean Rainforest (SEAMARK) from North Sea farms and pilots. *Saccharina* will be provided by OCE from their own farm in Germany. OBO will also wild harvest the invasive *Sargassum* species from the Caribbean (Dominican Republic) and Europe (Portugal).

1.2. Current volumes of biomass supply

Table 1 specifies the current volumes of seaweed biomass used by the various partners, with an indication of the source of the material. *Saccharina* biomass is derived from aquaculture. For *Fucus vesiculosus* and *Furcellaria lumbricalis*, cultivation still needs development and the material is currently at least partially sourced from natural populations.

Table1: current volumes and seaweed

Partner name	Species	Volume	Unit	Origin	Source
Origin by Ocean	<i>Fucus vesiculosus</i>	30	kg FW	Aquaculture	Estonia by UTA
Origin by Ocean	<i>Saccharina latissima</i>	60	kg FW	Aquaculture	Germany and Norway
oceanBASIS	<i>Saccharina latissima</i>	1	Kg FW	Aquaculture	Germany by OCE
oceanBASIS	<i>Saccharina latissima</i>	20	Kg FW	Aquaculture	Norway (commercial supplier)
oceanBASIS	<i>Fucus vesiculosus</i>	20	Kg FW	Natural population	Denmark
Vetik	<i>Furcellaria lumbricalis</i>	200	kg FW	Natural population	Kassary Bay, Estonia

1.3. Estimated future volumes of biomass supply

Estimated volumes of seaweed biomass by 2028 for the focal species are presented in Table 2. The predicted increase in seaweed biomass by 2028 ranges from 2.5 to 16 times the current biomass for biomass derived from aquaculture. The predicted increase for *Fucus vesiculosus* harvested in Denmark in natural populations will be 2.5 to 5 times the current biomass. Vetik will harvest 200 kg FW of *Furcellaria lumbricalis* in Estonia in 2023 while the company has a permit to harvest 640 tons FW. By 2028, Vetik foresees harvesting between 300- and 1000-tons FW of *Furcellaria*. The latter volumes would exceed the current harvesting limitation and would necessitate a supply of *Furcellaria* through aquaculture.

Table 2: estimated volumes of seaweed by 2028

Partner name	Species	Volume	Unit	Increase by 2028
Origin by Ocean	<i>Fucus vesiculosus</i>	100	kg FW	3x
Origin by Ocean	<i>Saccharina latissima</i>	1000	kg FW	16x
oceanBASIS	<i>Saccharina latissima</i>	2-5	Kg FW	2-5x
oceanBASIS	<i>Saccharina latissima</i>	50-100	Kg FW	2.5-5x
oceanBASIS	<i>Fucus vesiculosus</i>	50-100	Kg FW	2.5-5x
Vetik	<i>Furcellaria lumbricalis</i>	300-1000	ton FW	1000-1500x

2. Conclusion

The provisioning of macroalgae biomass to Origin by Ocean, oceanBASIS and Vetik within the scope of AlgaeProBanos is well within the limits of the current production of seaweed through aquaculture (e.g. *Saccharina latissima*) or sustainable harvesting of natural populations (*Fucus vesiculosus* and *Furcellaria lumbricalis*). Increased demand for macroalgae biomass by 2028 should still be within the limit of the current aquaculture production capacity or through harvesting of natural populations.