



Charlie Bavington PhD, FRSC
CTO / Co-founder

Our Mission

DRIVE ECONOMIC, ENVIRONMENTAL &
SOCIETAL SUSTAINABILITY BY
DEVELOPING AND MARKETING
SEAWEED-BASED PRODUCTS FOR COMMERCIAL GAIN

United Nations Sustainable Development Goals

2 ZERO HUNGER



8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



14 LIFE BELOW WATER



Our Goals 2019 - 2025



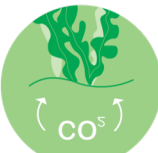
Process and market valuable nutraceuticals



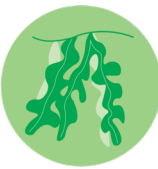
Develop, test and market compostable packaging materials



Create jobs and generate economic development



Mitigate climate change



Enable and support the nascent sustainable seaweed-farming industry

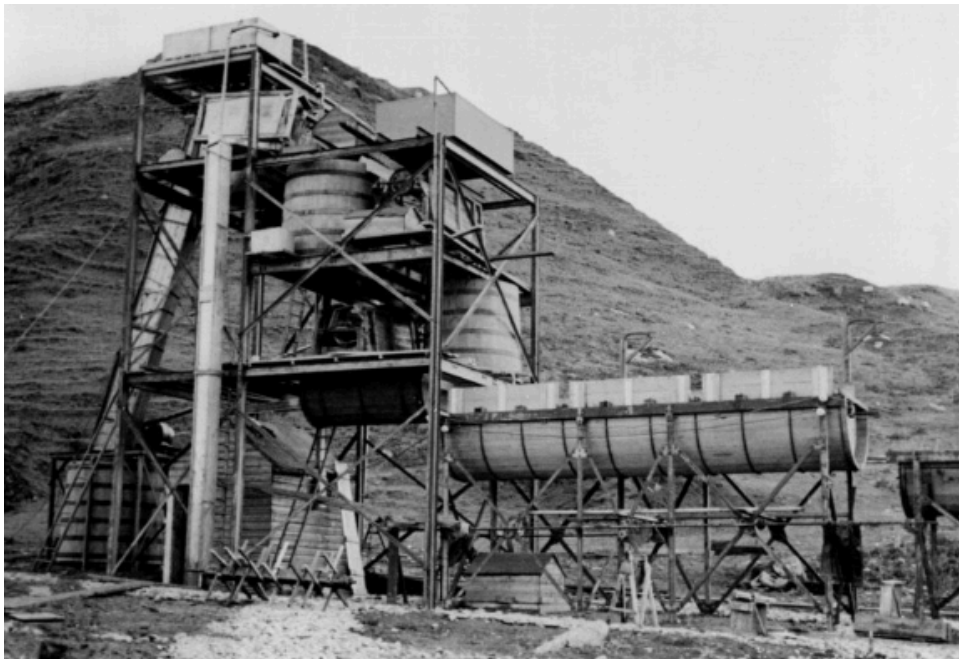
Long term goals



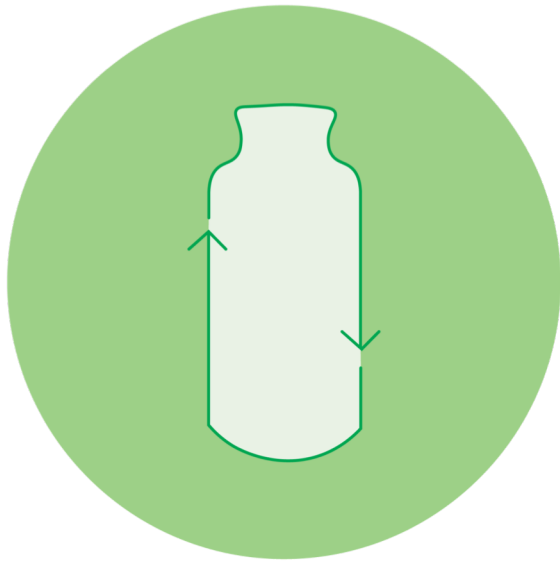
Scale Oceanium's business model globally to:

- ❖ **Eliminate plastic waste**
- ❖ **Create jobs**
- ❖ **Ensure food security**

Historical seaweed processing in the UK



Oceanium's Seaweed-Based Products



**Resource for
Compostable Bio-
packaging**



**Bioactive for nutrition
and cosmetics**



**Protein & Fibre food
ingredients**

The Need



- ❖ 18 billion pounds of plastic into our oceans each year
- ❖ 40 percent of plastic produced is packaging, used just once and then discarded
- ❖ Less than a fifth of all plastic is recycled globally
- ❖ Approx. 8% of the world's oil production is used to make plastic and power the manufacturing of it. Projected to rise to 20% by 2050.

Source: National Geographic

The Demand

- ❖ Over 90 Companies (below) have signed the [UK Plastic Pact](#) committing to 100% compostable, recyclable or re-usable by 2025
- ❖ New Plastics Economy Global Commitment to eliminate plastic waste and pollution at source has been signed by 250+ organisations, representing 20% of all plastic packaging produced globally.



The Demand

Current

10,000 tonnes
Current production of bioplastics
in UK

1.7 million tons
2014 global bioplastic production

\$3.6 Billion
2016 global bioplastics market

Future

250,000 tonnes
Bioplastic UK demand estimate
over 5-10 years

7.8 million tonnes
2019 global demand

\$34.23 Billion
2024 Global Bioplastics Market

Source: BBIA

OceanWare™ BioFilm

- ❖ Oceanium has cast film and rigid materials from seaweed source
- ❖ Tests have identified the best formula/processes to take forward into continuous casting trials and water vapour permeability trials
- ❖ Preliminary results - OceanWare bio-film viable to 220 degrees C
- ❖ R&D in progress – tested and analysed prototypes for pots, tubs, trays, film complete by mid-2020



Nutrition & Personal Care Products

Nutraceuticals & supplements:

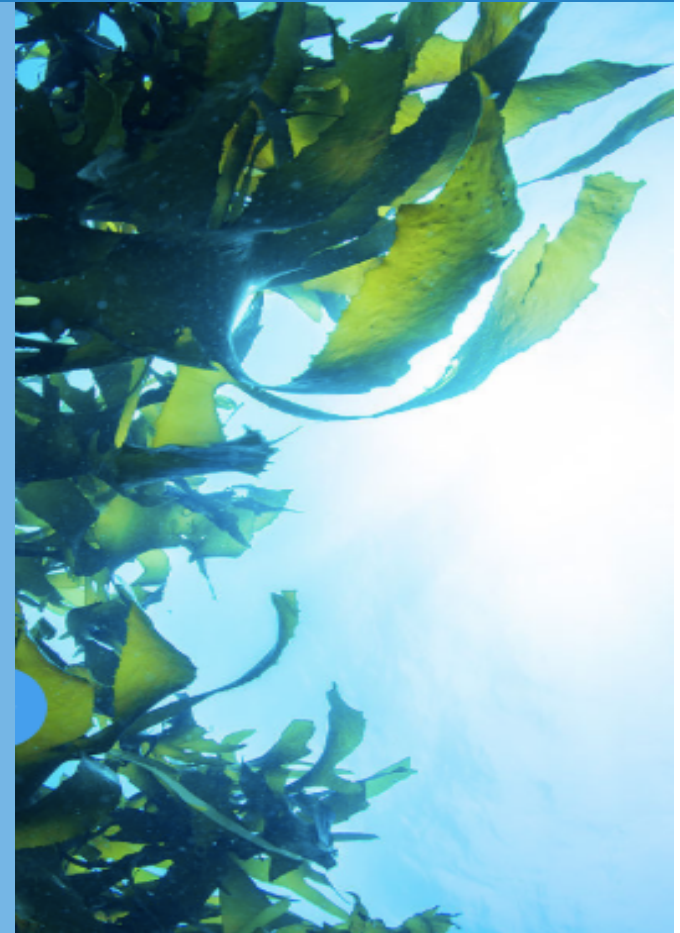
- ❖ **Fucoidan – bioactive polysaccharide**
- ❖ **Laminarin – immune stimulant beta-glucan**
- ❖ **Kelp Protein – vegan protein supplement**

Food ingredients

- ❖ **Kelp Fibre – vegan approved, texturizing product**

Cosmeceutical

- **Fucoidan – bioactive ingredients proven to protect skin, help healing, reduce irritation**



The Need – Plant Based Food

The Future is Seaweed

The world will need to produce 50–70% more food by 2050*, increasingly under drought conditions and on poor soils. World Bank



ALGAE



Algae are nutrient-rich and critical to our existence on the planet. They are responsible for half of all oxygen production on Earth and all aquatic ecosystems depend on them. They contain essential fatty acids and are an excellent source of antioxidants. Algae can be rich in protein and have a meat-like umami flavour, making them a potential replacement for meat^{8, 9}.

The New York Times

The Climate-Friendly Vegetable You Ought to Eat

Kelp is delicious and versatile, and farming it is actively good for the ocean. Melissa Clark wants you to just try a bite.



Kelp, a variety of edible seaweed farmed near Portland, Me., is harvested in spring. It's delectable and nutritious, it's easy to cook with, and it actively benefits the ocean's health. Matt Cosby for The New York Times

Forbes

Plant Based Food Products Started With Milk, Now Taking On Meat, What's Next?



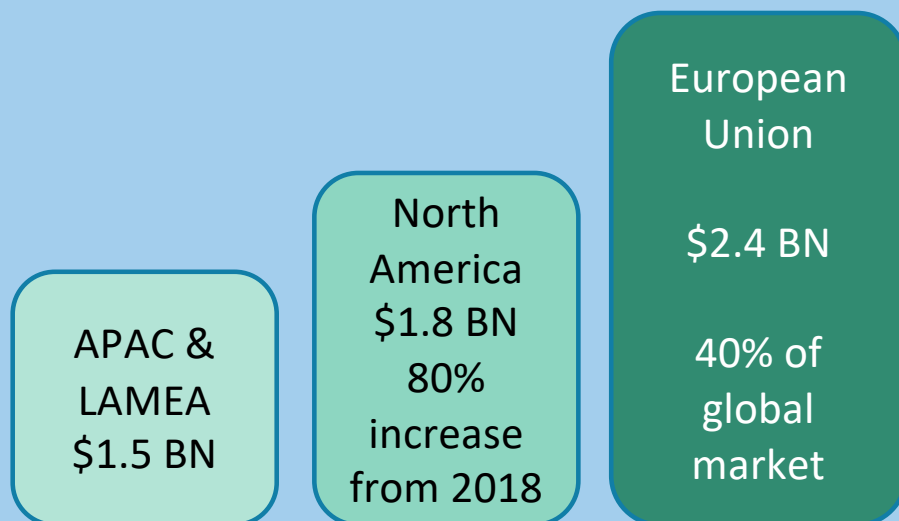
Bernhard Schroeder Contributor

Small Business

I write about branding, trends, culture, disruptive business.

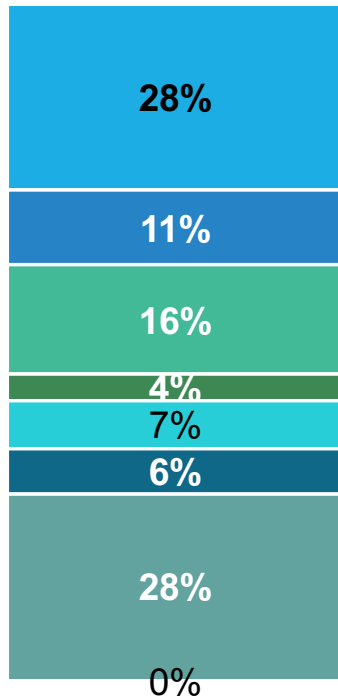
The Demand – Plant-Based Food & Additives

Global Demand for plant-based foods by 2025



- ❖ Growth of plant-based alternatives across all geographies driven by flexitarians/millennials
- ❖ UK is global leader for vegan food launches
- ❖ Huge opportunities for disruptor companies to innovate and gain market share
- ❖ Growth in plant based food sales is 10X growth in total foods sales (Nielsen)

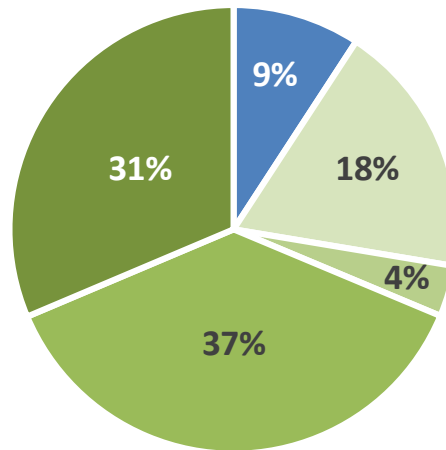
Kelp composition (median)



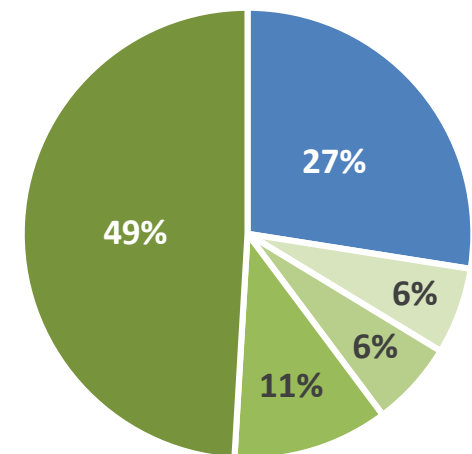
- Algininate ■ Cellulose
- Manitol ■ Fucoidan
- Laminarin ■ Protein
- Ash (minerals) ■ oil

Value by Product

2024 Product Value/Tonne

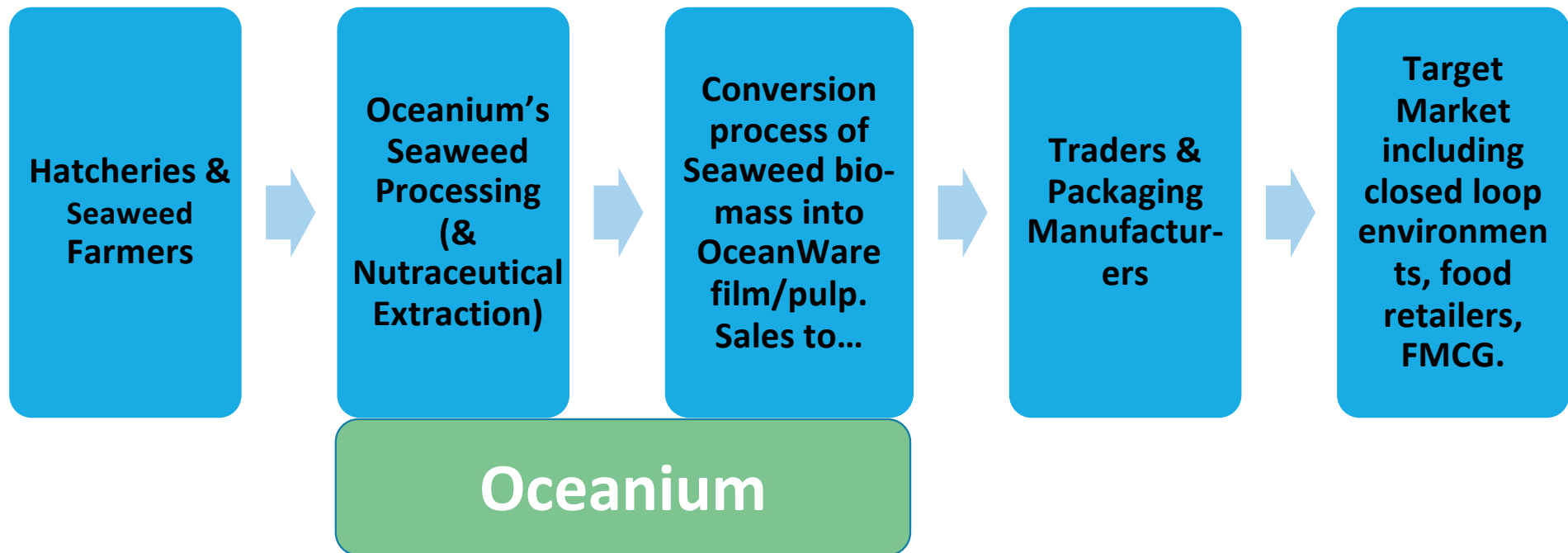


2030 Product Value/Tonne



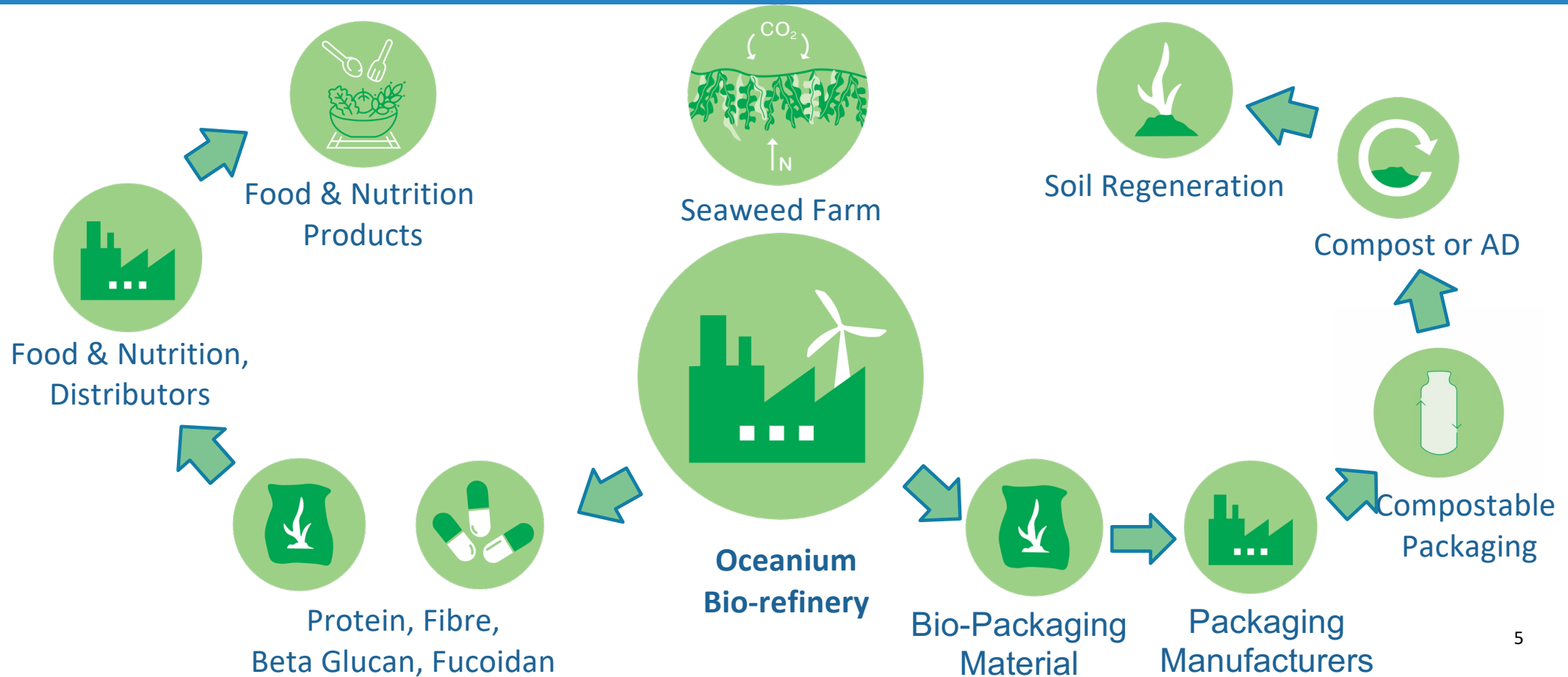
- Bio Packaging ■ F&N-Fibre ■ F&N-Protein ■ F&N-Fucoiden ■ F&N-Beta Glucan

Oceanium in Packaging Value Chain

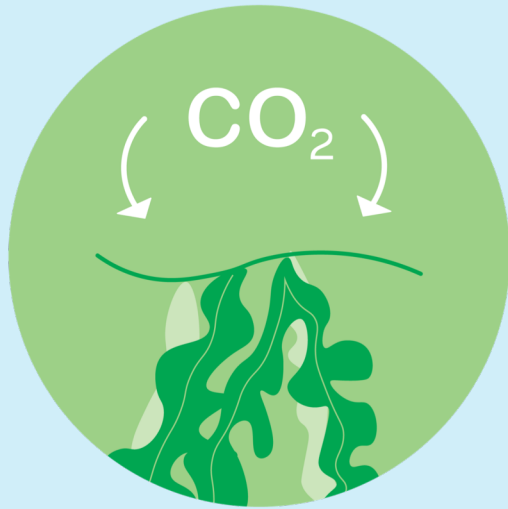


Bio-refinery Value Chain – We are Seaweed Processors

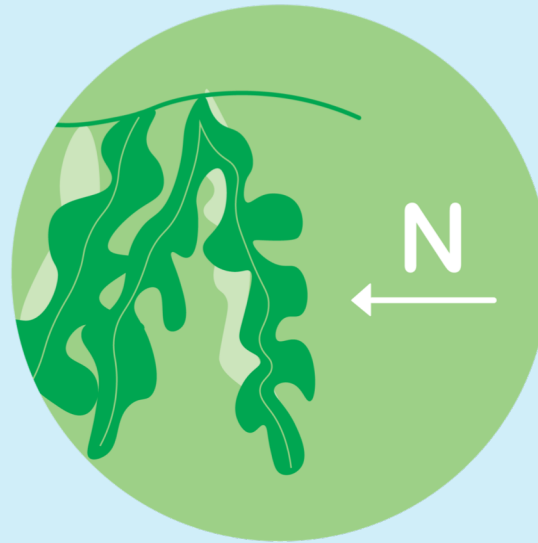
Starting with the seaweed and extracting maximum value



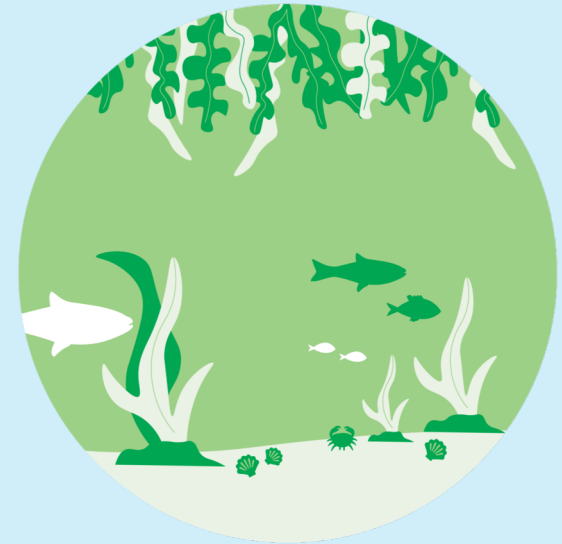
Why Seaweed? Mitigate Climate Change!



Carbon sequestration



Nitrogen absorption



Protects seabed

Why Seaweed? Zero resource crop



No cleared land



No fresh water



**No pesticides
No fertiliser**

Supply Chain - Seaweed Farmers

- ❖ New Wave Foods – Scotland
- ❖ Caledonian Seaweed – Scotland
- ❖ North Fish - Shetlands
- ❖ Greenseas Resources – Wales
- ❖ Seagrown - England
- ❖ Dorset Seaweeds – England
- ❖ Cornish Seaweeds – England
- ❖ Sustainable Seaweeds –England
- ❖ Seaweed Harvest Holland– Netherlands
- ❖ Seaweed Harvest Nordsea
- ❖ Islander Kelp - Ireland
- ❖ Ocean Rainforest – Faroe Islands
- ❖ Seaweed Energy Solutions – Norway

UK & Ireland:

Seaweed cultivation
projected

2020	300t
2025	30,000t
2030	250,000t

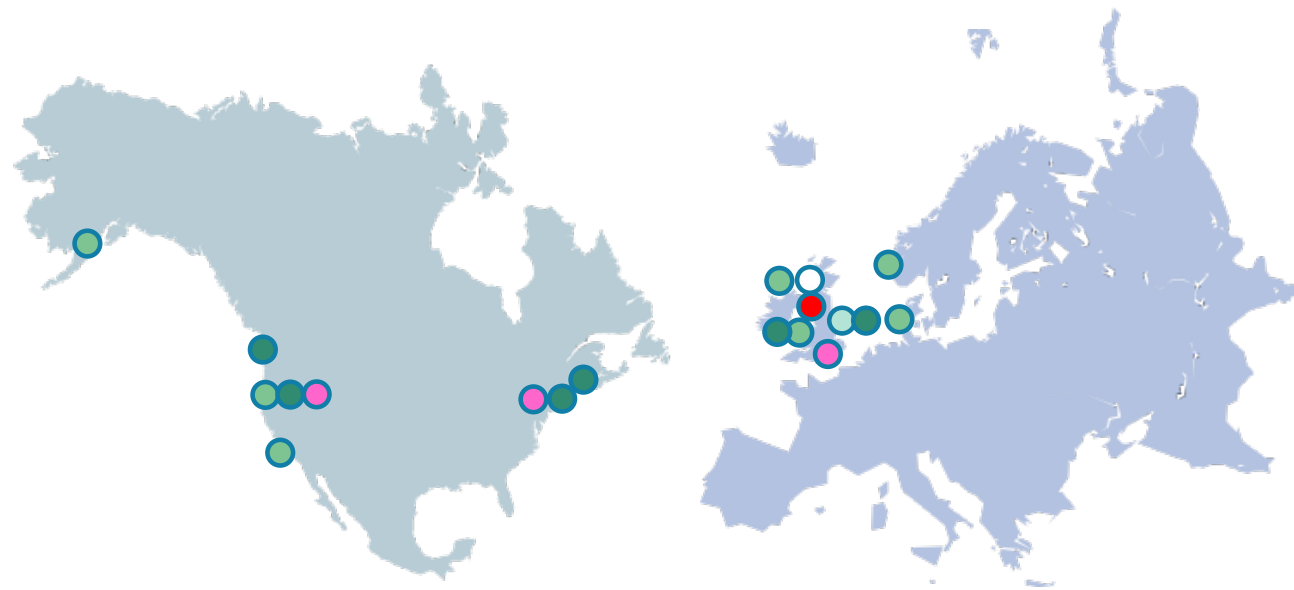


Oceanium Vision

- Oceanium will be the world's largest pure-play seaweed bio-refinery processor operating globally
- Oceanium can scale modularly by building 50K tonne plants – provides flexible roll-out
- Once plants are proven, execution risks are only to end-user demand and seaweed supply
- Capital needs are mostly for hard assets where inexpensive debt/grant financing is plentiful

50k tn Plants by:

- 2023 1
- 2026 2
- 2030 9
- 2035 15
- HQ
- Sales Offices



 Thank You!



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