

OCEANIUM

OCEANIUM is a Scottish-based company established in 2018 that uses sustainably sourced seaweed to create natural and innovative products. Their mission is to help the world, as they aim to integrate seaweed into our daily lives to benefit our health and the planet. With decades of experience in marine science, they can extract the maximum value from the seaweed using innovative refinery technology. This allows them to produce high-demand products, such as high-purity bioactives for nutrition and cosmeceuticals, plant-based food ingredients, and innovative materials. The company is involved in several EU-funded projects that support the development of a sustainable seaweed industry in Europe.



Regional Context

OCEANIUM is located in Dunbeg, a small town on the west coast of Scotland, within the Argyll and Bute Council. The company shares its R&D centres with the Scottish Association for Marine Science (SAMS), one of Europe's leading marine science research organisations and Scotland's largest and oldest independent marine science organisation, which has specialist expertise in the Scottish blue economy, including aquaculture, marine biotechnology, marine renewable energy, oil and gas, industrial impacts and social-ecological

systems.¹

The region is characterised by a diverse range of sectors, including aquaculture, fisheries, seafood processing, marine energy and renewables, marine biotechnology, and marine environmental services, which play a critical role in Scotland's economy and in the livelihood of many local communities. A strong focus on leveraging the region's natural marine resources, such as seaweed, for sustainable development in fields like marine biotechnology and bioprocessing has grown

¹ Scottish Association for Marine Science, [Research to enable a sustainable blue economy](#). Accessed 29 January 2024.

in significance in recent years.² Moreover, many marine biotechnology networks have come into play. In particular, with the growing role that the seaweed sector is coming to play, the Scottish Seaweed Industrial Association³ has become a critical network striving to connect industry actors to support the growth and innovation of the seaweed Blue economy sector in Scotland.

Value Chain

OCEANIUM operates in the macroalgae value chain and has specialised in the processing of sugar kelp (*Saccharina latissima*). However, they have also tested other species, such as winged kelp (*Alaria esculenta*) and sea lettuce (*Ulva lactuca*). In 2023, OCEANIUM reached a significant milestone, successfully processing 79 tonnes of seaweed in a new facility while preparing to scale up its operations to process a target of 5000 tonnes of seaweed in 2025. They operate in the middle of the value chain, working alongside farmers and downstream partners, such as B2B businesses, to develop the industry further.

² Highlands & Islands Enterprise, [The Blue Economy in the Highlands and Islands - Towards a regional delivery plan, Executive Summary](#). Accessed 29 January 2024.

³ See <https://www.ssia.scot/about>. Accessed 29 January 2024.



OCEANIUM contributes to valorising products and by-products from the macroalgae value chain.

They have established good relationships with around one hundred seaweed farmers, and their suppliers are mainly located in Norway, France, the Faroe Islands, Portugal, and Scotland. They are also currently working on establishing relations with suppliers located in Alaska and on the East Coast in Maine. The company is committed to supporting sustainable practices and prioritising the cultivation of seaweed, notably supporting the emerging seaweed farming industry in the Western hemisphere. This decision is based on scientific evidence that seaweed farming can help diversify aquaculture, meet demand, and provide environmental, social, and economic benefits when responsibly scaled.⁴

⁴ OCEANIUM, [Our Impact](#). Accessed 29 January 2024.



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As part of its operations, OCEANIUM uses biorefinery technology to convert farmed seaweed into different products that are sold in large-volume markets. Their product portfolio predominantly includes bioactive nutraceuticals and cosmeceuticals that offer a range of health and personal care benefits, but they have also developed a sustainable and fully biodegradable water-based ink and are developing other innovative seaweed-based materials. Currently, OCEANIUM has two products available in the United States: [OCEAN ACTIVES® Fucoidan](#), which is a high-purity marine bioactive ingredient that has nutritional and cosmeceutical applications due to its fucose-rich sulphated polysaccharide content,⁵ and [OCEAN HEALTH® Fiber](#), a sustainable dietary fibre derived from seaweed. Its Ocean Health Fiber product has gained regulatory approval in the United Kingdom and the European Union, and it is gaining popularity among global food companies that want to include sustainable ingredients in their products.⁶

5 Cosmetic&Toiletires, [Oceanium Develops Ocean Actives Fucoidan. Marine Skin Care Bioactive](#). Accessed 30 January 2024.

6 Aquaculture Magazine, [The Scottish company Oceanium secures USD 2.6 million to scale and commercialize following investment round led by Builders Vision](#). Accessed 30 January 2024.

OCEANIUM works closely with its customers and user companies to develop and strengthen the seaweed value chain. They recognise the importance of market demand for the seaweed industry's success and growth, which motivates the company to actively collaborate with businesses interested in incorporating seaweed into their products. This, in turn, ensures a robust demand and a substantial market for seaweed growers to sell their produce.

Besides product development, OCEANIUM is also involved in fostering the seaweed industry through various EU and local projects. The company has joined the [SeaMark Project Consortium](#), which has been awarded a €9 million Horizon Europe grant and sets out to upscale seaweed production and market applications across Europe. The project specifically looks at how to cater to the increasing demand for seaweed-based products and attract investments from multiple sectors by also analysing the entire value chain. Moreover, the company has recently applied for funding for another Scottish project that aims to accelerate the growth of the Scottish seaweed value chain. If funded, this project will not only boost the Scottish industry but could also catalyse the entire UK seaweed sector. OCEANIUM's commitment to these partnerships and initiatives demonstrates its dedication to the sustainable growth and development of the seaweed value chain as a whole.

Regional and Local Enabling Conditions

OCEANIUM's co-founder, Dr. Charlie Bavington, has been involved in the Scottish Seaweed Industry Association and has connected the company closely to critical stakeholders in the region since its foundation.

Insights into the challenges and potential of seaweed farming in Scotland, combined with regulatory hurdles in wild harvest, have shaped OCEANIUM's operational and strategic decisions. Their close association with SAMS offers invaluable support, particularly in areas like seaweed disease and genetics research. However, bureaucratic challenges in obtaining seaweed farming licenses have impacted the pace of industry development in Scotland, prompting the company to rely on more established European suppliers while supporting Scottish farmers wherever possible.

Impact on Regional Development

The potential impact of OCEANIUM's growth on regional development is multifaceted. While the company currently employs 20 individuals, with 18 in full-time positions, its success has significant potential to spur job creation in adjacent sectors of the seaweed value chain, especially in logistics and primary processing. A scaled-up European seaweed industry could create up to 115,000 new jobs by 2030, including alternative jobs at all skill levels in coastal communities. In this context, OCEANIUM's achievements and committed participation in EU and national projects can significantly contribute to expanding economic and employment opportunities in Scotland and beyond.



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In its work and operations, OCEANIUM also sets out to measure its impact against six of the United Nations Sustainable Development Goals (SDGs). Amongst their targets stands SDG 5, Gender Equality, as the company is dedicated to promoting equality in women's employment in their industry. In recognition of their efforts and potential for shaping the future, co-founder and CEO Karen Scofield Seal was awarded the prestigious Veuve Clicquot Bold Future Award in 2023, designed to recognise women who have brought a new and innovative offering to the market.⁷

OCEANIUM's alignment with the SDGs underscores its commitment to local and global sustainability and its ambition to make a meaningful impact. Moving forward, OCEANIUM's pioneering work in sustainable seaweed processing and utilisation is set to catalyse broader industry advancements, aligning with global environmental objectives and driving on a new model for responsible and innovative marine resource use on a world-wide scale.

⁷ OCEANIUM, Karen Scofield Seal, [OCEANIUM Co-founder and CEO selected as winner for prestigious Veuve Clicquot, Bold Future Award 2023](#). Accessed 29 January 2024.