

Ocean Visions Report

Seafields Introduction:

Seafields is a UK-based climate-tech company that's strongly focused on delivering innovative aquafarming solutions to tackle climate change. In particular the company is introducing a new methodology around catching, growing, harvesting, baling and storing Sargassum seaweed safely in the deep ocean for permanent carbon removal.

Seafields is the first company to successfully domesticate Sargassum, which means they can control it and leverage its amazing properties. They are now beginning work on their innovative "Catch and Grow" farms, which involves catching wild Sargassum and containing it in an aquafarm paddock, where it naturally grows and increases in volume. They will then harvest the seaweed to process and safely store the carbon-rich biomass in the deep-sea.

Their unique method involves separating the nutrients out of the biomass, before tightly compacting our seaweed to reduce the likelihood of the carbon returning to the biosphere. In the future they will look to subsidise these revenues by also selling Sargassum-derived nutrients to the agricultural industry. Essentially they aim to turn what is currently a waste product that costs money to remove into a valuable commodity. Once they have rolled out 100 farms in the Caribbean region they will start to move to the open ocean, where the scaling potential is almost limitless.

Advisor Report, Wim van Rees:

Wim van Rees' engagement, across year one of the Launchpad program, was instrumental in enabling Seafields to develop an improved version of their 'in-house' SODES computational tool, used for predicting the performance of our ocean upwelling pipes. Bringing to the table an extensive expertise in fluid dynamic modelling, Wim provided invaluable support to Seafields' fluid dynamics/engineering team as they worked in collaboration to remove a number of key simplifications and assumptions from an initial version of the tool. These refinements served to both improve the accuracy of the tool's predictions and expand the range of scenarios across which it can calculate predictions, increasing Seafields' capabilities and confidence as they move toward the design of a full-scale, ocean-going system. In addition to his support with developing this computational tool, Wim also provided advice to Seafields on the outline design of a model-scale (1/15 full-scale) upwelling pipe test facility. The findings from this test facility are intended to validate the performance predictions made by the SODES computational tool, with on-site work scheduled to begin in early 2024 following a successful funding application to the UK government. As they move forward into year two of the Launchpad program, Wim is supporting Seafields with the detailed design of this test facility. A key focus of the collaborative efforts, between him and Seafields' upwelling test facility project team, is now on identifying a testing plan which will produce outcomes of the greatest value in supporting Seafields' technological development roadmap.

Advisor Report, Tanya Rudolph:

Tanya Rudolph supported Seafields by exploring the potential impacts of the many international maritime treaties and regulations. This resulted in Tanya delivering a report entitled, *Dumping of baled sargassum in the High Seas: Overview of international law*. Tanya completed an initial research exercise where she fully explored Seafields' model, both in terms of nearshore operations and offshore activities in the High Seas, then made recommendations for how their model fits within the regulatory framework of both. The report has been incredibly useful to Seafields, mainly when speaking with investors who have expressed concerns about how international treaties and local regulations might prohibit either research or their intended business activity. Tanya is offering to continue providing her guidance around new legislature, in particular the new High Seas Treaty, that came into effect in June 2023.