



Sea-ing Potential in Alternative Seafood

Does it make sense to take the plunge?

At present, awareness for the need to build a more sustainable, secure, and just food system is on a fast track worldwide, as are investments in alternative protein sources. Industry challenges to fill the protein gap with alternative sources ready for human consumption are real. Leveraging on the suite of learnings from plant-based proteins and cellular agriculture for meat applications, industry innovators are considering alternative seafood as a solid market opportunity that may accelerate quickly.

In this article, ECBF focuses on the potential for seafood applications in this arena: In our search for alternative protein sources, does it make sense to seek opportunities under water?

Alternative Seafood Drivers and Challenges

Fishing is notoriously unsustainable, especially as the industry is incentivized to overfish highly sought-after species at the expense of the ocean's ecological balance. There's ample motivation to drive the restoration of sea life. Nevertheless, our appetite and demand are increasing every year. Currently, fewer than 7% of fisheries are being fished at levels below the sustainable limits. Seafood analogues produce a staggering 75% less CO2 emissions compared to, for example, Norwegian Salmon, and 50% less food waste due to longer shelf life.

The advantages of producing alternative seafood are considerable. The production is not limited to coastal regions, leading to reduced transportation costs and less spoilage. Also, it is demand driven and can better withstand supply and demand shocks. Interestingly, seafood is sold at a higher price point than most terrestrial meat and therefore has the potential to reach price parity more quickly and with relative ease.

The price consumers are willing to pay for alternative seafood is more forgiving than for meat. However, as seafood is sold at premium prices around the globe, and higher prices for alternatives can easily be attained, one would expect more movement, whereas alternative seafood can still be classified as an emerging space. One thing worth remembering in this regard is that the seafood market space overall is much smaller than the market for meat products.

Challenges for startups to grow in this arena may seem few, but there are still regulatory hurdles to overcome (e.g. 'fish' labelling, approvals), underdeveloped consumer acceptance, and the need for scalable and competitive technological solutions. Beyond investment, strategic partnerships will potentially help companies scale-up production and distribution.

Selling the Sea

If you want to attract consumers, there is a lot to nail down correctly in terms of taste, texture, and aesthetics (looks). Signaling impressive environmental, health, and functional benefits is key to drawing in more consumers. The question we ask ourselves is gradually moving away from What do I want and what am I used to? to the conscience factor of What am I willing to give up for a better world?

Key value propositions of startups in this space underline that alternative seafood should not be hard to sell. In many cases, alternative seafood aims to position itself not as an alternative or analogue but the same as conventional food. Some startup narratives move towards reconfiguring customer perceptions of what counts as food and advancing responsible consumption as it relates to public concerns, such as animal welfare, climate change, microplastics, and sustainability. Over the years, consumers have developed Next-Gen views on the sustainability agenda, fragmented into people that choose to eat fish and people that choose to move away from fish consumption.

“For a better world, will I give up on taste and texture to consume sufficient nutrients and protein?”

To appeal to health-conscious consumers, alternative seafood products are normally produced with similar omega-3 fatty acids levels compared to conventional seafood. If alternative seafood would replace 1% of total global seafood production, the quantity needed for those products to reach omega-3 parity with conventional seafood are estimated at ~3,500 tons EPA and ~6,500 tons DHA (long-chain omega-3 fatty acids) per year. In 2018, the global market size for algal oil (the main natural source for EPA and DHA) was ~2,000 tons. Thus, scaling up animal-free omega-3 production is critical to the success of the global alternative seafood market in reaching nutrition and price parity. From another perspective, the omega-3 market is expected to receive an uplift, coupled to the success of the alternative seafood market taking off.

Nutritional benefits of fish compared to processed analogues aside, replicating the overall look and feel, the cooking and eating experience of conventional seafood may well be the top of mind for many industry leaders. The most significant barriers to consuming alternative seafood are taste, texture, and accessibility of the products. A less obvious barrier to overcome is consumer trust (e.g. transparency and traceability).

Policy in the Making

In the European Union, novel plant proteins and fermentation-derived ingredients might need approval from regulators before they can be sold on the market. This is assessed on a case-by-case basis. Plant-based products derived from soy or pea (and other crops with a long history of use in the EU) can be sold without pre-market authorization. On labelling, the EU has rejected attempts to severely restrict denominations of plant-based meat products in 2020. No such restrictions have been proposed for plant-based seafood products yet. In the United States, there has been a slowdown in the introduction of new laws trying to restrict the use of meat and dairy terms for alternative products, likely in part because such laws have faced opposition in legislative chambers, and legal challenges in courts.

Among the supporters of the transition to plant-based and cultivated meat is the Good Food Institute (GFI), which is an international non-profit organization engaged in building a better worldwide food system, accelerating the production of alternative proteins that are equally delicious, affordable, and available. Instead of asking consumers to give up the foods they love, GFI is accelerating the transition to sustainable proteins by helping companies make products that are delicious, affordable, and accessible.

Creating Sustainable Seafood Applications

At present, there are a relatively small number of specialized alternative seafood companies, despite alternative proteins being the 3rd most popular investment category within the FoodTech vertical (the first two being Food Delivery and Innovative Brands, respectively). Yet, they are on the rise, triggered by the need for sustainable and healthy replacement products (e.g. omega 3 oils, microplastic-free).

There are multiple ways to look at the market, though we clearly see a trend of either new players popping up with alternative seafood as the primary or sole product focus, or alt-meat companies adding alt-seafood products to their portfolio, leveraging their know-how in production, as well as already established distribution channels and access to consumers. In terms of production methods/technological segmentation, we see plant-based proteins, cellular agriculture, and fermentation as the main categories to date (source: GFI).

Similar to plant-based meat applications, the three most common proteins for plant-based seafood are soy (a gold standard legume/oilseed), wheat (a popular cereal), and pea (a fast-growing legume/pulse). Whole vegetables can be used to successfully mimic textural properties in sushi/sashimi alternatives, while algae, seaweed, and aquatic plants offer opportunities to mimic seafood taste. Species variation in seafood make for endless opportunities to develop novel products and cater to local markets and consumer preferences.

Although there are many methods, such as cell cultivation, fermentation, 3D printing, and extrusion, the reality is that the market knows no distinctive technological leader yet. Further understanding of real seafood could be the way to winning in this field. The bottom line is that the alternative-seafood industry needs more innovative products and processes – not just “hand-me-down know-how” adapted from the alt-meat market – if they want to produce the “real deal” for which consumers would gladly pay a premium typically associated with real seafood.

As for challenges, beyond getting texture and taste right, scalability and getting the “cost of goods” down to profitable levels is still expected to be similar to what we have seen the alt-meat industry face so far.

Production technology landscape

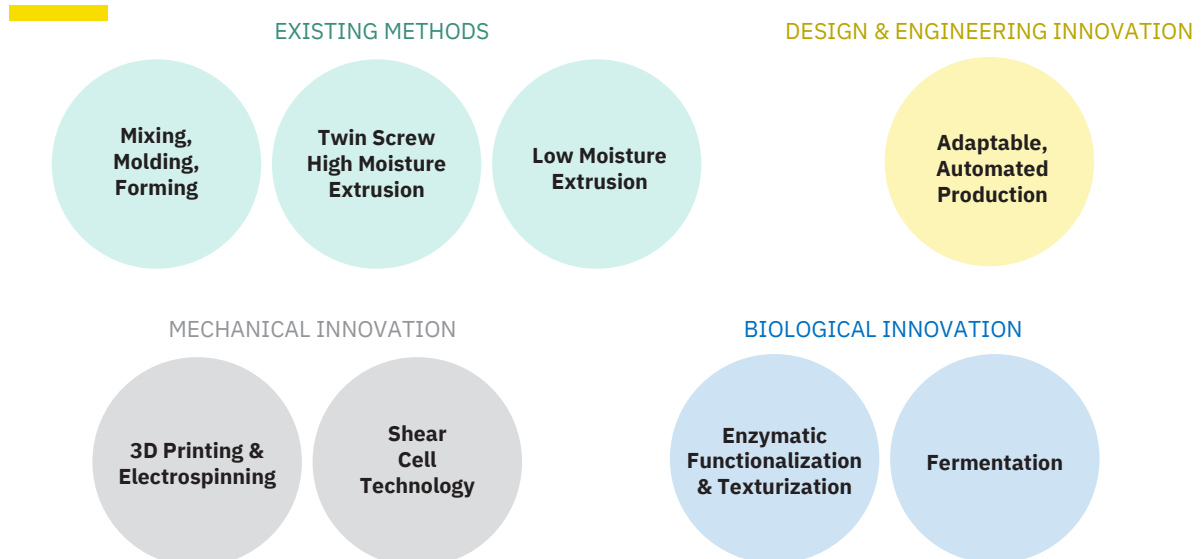


Image source: The Good Food Institute (GFI), Current Production Methods

Industry and Investment Interest

We have identified four key attention points for investors and entrepreneurs alike. Firstly, seafood analogues are a category that is swiftly emerging and investment activities are taking off, i.e. 60% of all capital invested in this category was invested in 2021 alone, with US-based startups attracting a significant amount of attention – the largest round was by BlueNalu, a cell-based seafood startup, with \$60m of funding in January 2021.

We have observed a two-year lag in the peak number of alternative seafood startups founded between US and EU (2017 vs 2019). Therefore, we hypothesize that looking at the number of companies founded versus valuation traction, the big wave of alternative seafood investments is expected two years from now for the EU. Cell- and plant-based seafood companies are expected to follow a similar trajectory as alternative meat companies, both in valuation and challenges faced.

Investor attention points include sustainability, cost of goods, sensory properties (taste and texture), competition (especially in comparison to aquaculture), technology, valuation, and industrial scale-up. The valuation is primarily based on market positioning, the business model, first-mover advantage, long-term upside, and is also often benchmarked with companies active in biotechnology, nutrition, and other companies from the alternative meat space.

As the first venture fund exclusively focused on circular and bio-based industries in Europe, ECBF believes in the potential of the alternative seafood industry and the value of novel protein sources that will facilitate reductions in carbon emissions while generating favorable financial returns. We seek to be a significant financial instrument and partner for entrepreneurs looking to unlock and accelerate the economic potential of the Circular Bioeconomy in Europe, and help create a better and healthier future for everyone.

For questions and comments, please refer to:

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