

17% growth in biotechnology and advanced marine processing

Advanced marine processing and biotechnology are the sub-sectors of the Icelandic fishing industry that are growing fastest according to a new study by the Iceland Ocean Cluster. Iceland is home to just over 30 companies that fall under this category. These sectors had a turnover of 134 million Euros in 2012 and grew by 17% between 2011 and 2012. If the sectors continue to grow at this rate, they will surpass the base industry in the next 15-20 years. It is important that opportunities in ocean-biotechnology and advanced marine processing are utilized. Closer cooperation of fisheries, biotech firms, and other marine processing companies can open new possibilities, support new product development and better utilization of raw material.

The fishing industry is subject to natural resource limitations. Therefore, a key opportunity for growth in the ocean cluster is better utilization of raw material and advanced marine processing. Examples of rest raw material are heads, bones, guts, skin, shell and other materials derived from the traditional manufacturing of seafood. These materials can often be transformed into valuable, marketable products such as pharmaceuticals and medical products, cosmetics, flavor enhancers, supplements, animal feed and fertilizer. The value of these products varies greatly and can be depicted in the so called value pyramid. For the future development of the Icelandic fishing industry, it is of great importance that production of valuable by-products is increased.

Biotechnology and research play a key role in improving the yield of raw material and maximizing the value of fish catches. In the past decades, awareness of the opportunities

increased substantially where a number of new biotech companies have seen the light of day. These companies use their specialities to isolate bioactive compounds from marine organisms and produce valuable products.

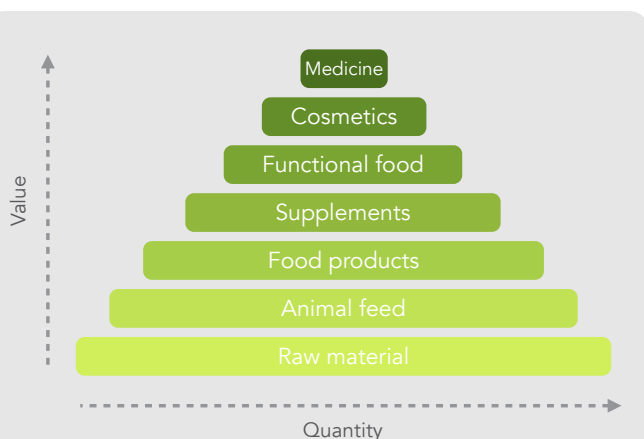
Today, there are just under 20 biotech firms within the ocean cluster in Iceland. These companies produce medical products, cosmetics and supplements. An analysis shows that the total annual turnover of these firms was just over 3 bn. ISK (EUR 18 million) and increased by 4% between 2011 and 2012. Table 1 shows the 5 largest ocean-biotech firms in Iceland.

Tafla 1:
5 largest biotech firms

1. Lýsi
2. Stofnfiskur
3. Primex
4. BioPol
5. Zymetech

Because the biotechnology field is inherently complex a fully developed product has usually been in development for years, if not decades. Therefore, many biotech companies in the marine cluster in Iceland are small and have not yet started mass production. Others have become more established and market products domestically as well as internationally.

In addition to biotechnology, Iceland is home to various progressive companies that use rest raw material in their products. These companies produce and export dried heads and bones, liver goods, roe, leather and other products. Around 20 companies fall under this category and an analysis shows that their combined turnover in 2012 was 19 bn. ISK (EUR 116 million). Furthermore, this sector grew 19% between 2011 and 2012. The turnover of this sector is proof that by-products and rest



The value pyramid is a visual representation of key markets for the possible end products in the ocean cluster. The higher up the pyramid a product is placed, the more value it has. At the same time, time and capital needed for product development goes up.

raw material can carry substantial value. Table 2 shows Iceland's largest companies in this category.

Even though fish catches are generally well utilized in Iceland, compared to many other fishing nations, there are massive opportunities in doing better. Cluster cooperation of firms can play a large role in innovation and development in the fishing industry. *Codland* is an example of such cooperation bearing fruit. *Codland* was founded in 2012 by 7 fisheries and ocean-related firms with the aim of creating maximum value from every part of the fish. Partners in the *Codland*-cooperation include *ZymeTech* which uses cod enzymes to produce healing and moisturizing skin care products, *North Taste* which produces natural flavor enhancers, *Aegir Seafood* which produces canned liver goods (popular in many Eastern-European countries). Furthermore, *Codland* is now working on a new health product plant in south-western Iceland.

There is no doubt that the fields of ocean-biotech and advanced fish processing carry substantial opportunities. These opportunities need work, patient capital, research and development. This is a potential growth machine that will need capital in the coming years. The importance of better utilization of catches is greater now than ever before.

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Table 2:
10 largest advanced marine processing firms

1. Lýsi	<i>Products form fish oil, supplements and vitamins</i>
2. Haustak	<i>Dried products</i>
3. Vignir G. Jónsson	<i>Roe products</i>
4. Frostfiskur (Klumba)	<i>Dried fish products</i>
5. Klofningur	<i>Dried fish products</i>
6. Langa	<i>Dried fish products</i>
7. Akraborg	<i>Canned liver</i>
8. Royal Iceland	<i>Roe products</i>
9. Félagsbúið Miðhrauni	<i>Dried fish products</i>
10. Aegir Seafood	<i>Canned liver</i>