



Dr. Hordur G. Kristinsson
Chief Science and Innovation Officer

The Role of Research Institutes in Supporting Marine Biotechnology Enabled Enterprises



Matis Ltd.

Independent R&D company with a leading role in food and biotechnology research in Iceland

- **Enhance innovation in the food and biotechnology industry**
- **Increase value of consumer products**
- **Food safety and quality**
- **From basic research to commercial applications**
- **Contract research**



Matís has 8 different locations in Iceland



A Matís brand



A Matís agent



Subsidiary firm



Bridge between industry and academia



KERÆCIS UNA



MARINOX ChemoBacter



Green in Blue



Prokazyme

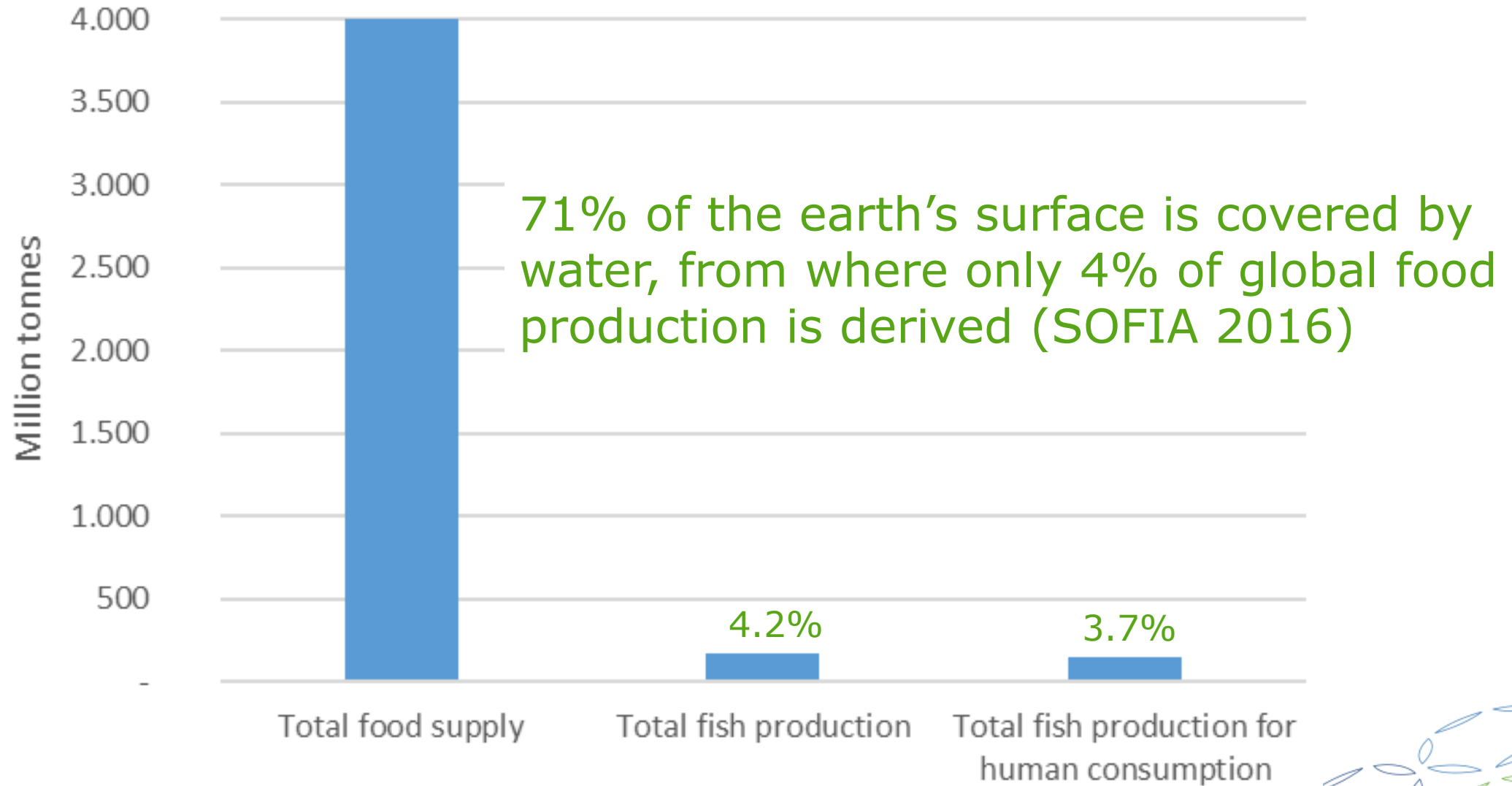


International graduate program in food science



THE BIOECONOMY

The facts...



Highly inefficient value chain

Biomass lost as discards at sea 8% on average

- EU finfish discards 20-60%

Utilization in processing of finfish 30-75%

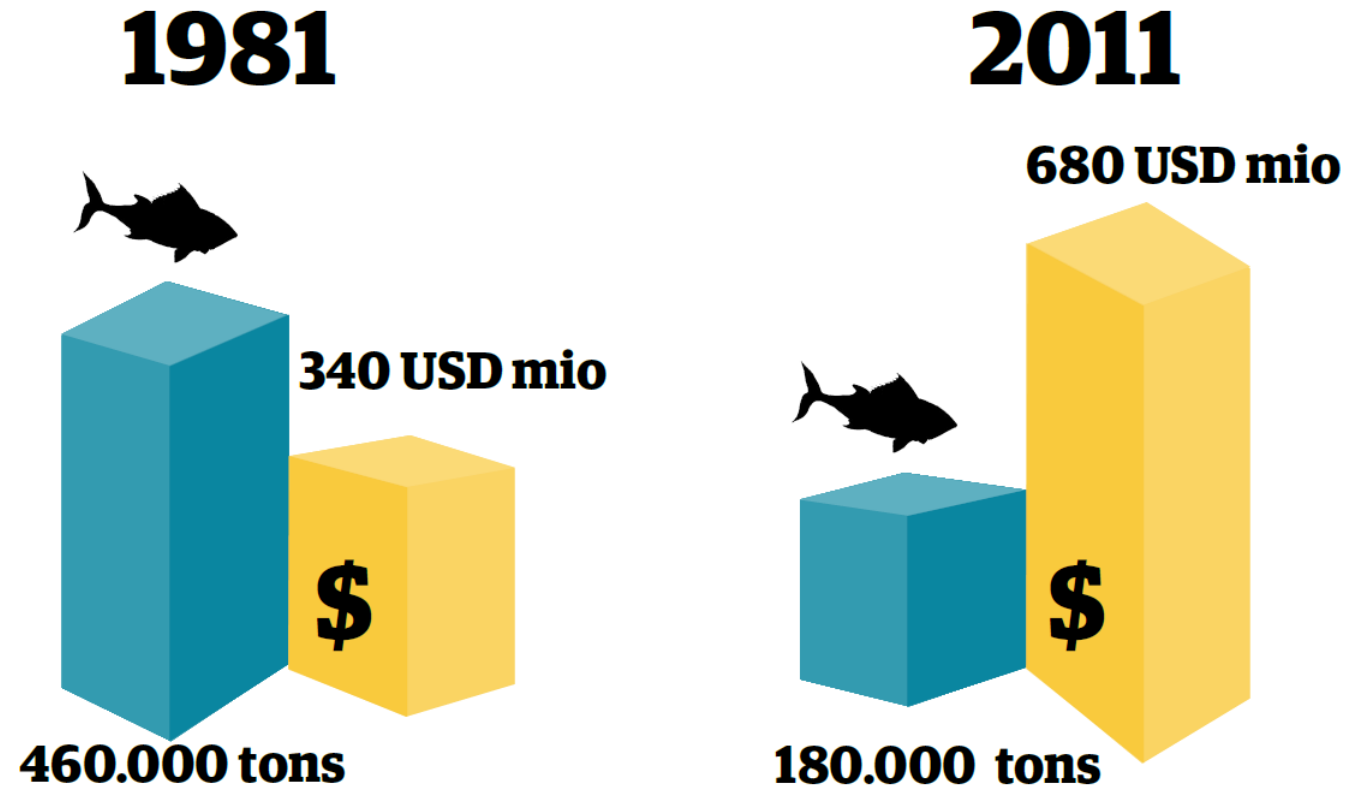
- Common to have 40% utilization for finfish

Biomass wasted in retail, distribution and at consumer level 35%

21% of what comes aboard the vessel is in the end consumed by humans

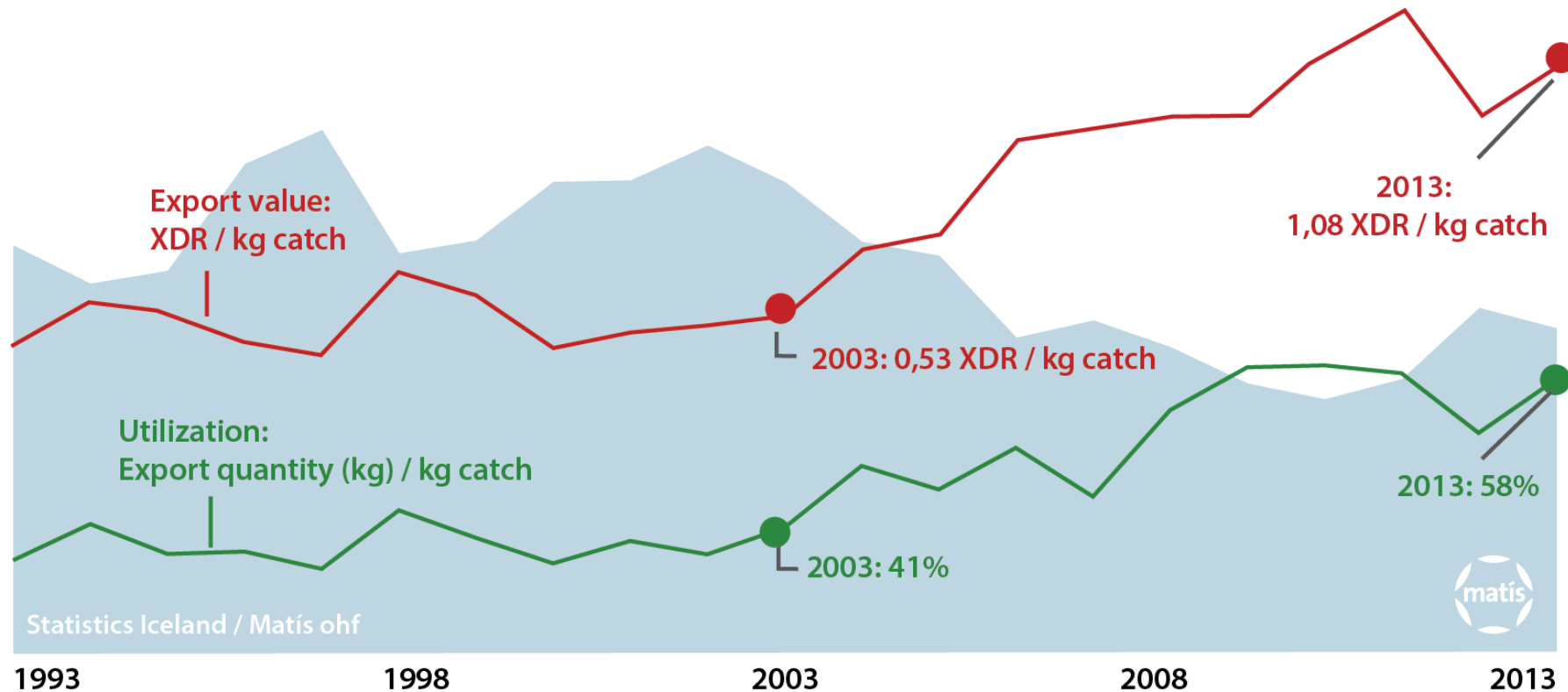


Research and Innovation: Return On Investment



Research and Innovation: Return On Investment

Export value/kg catch and utilization



Statistics Iceland / Matis ohf



An example how projects are built

EnRichMar (National to Nordic to European)



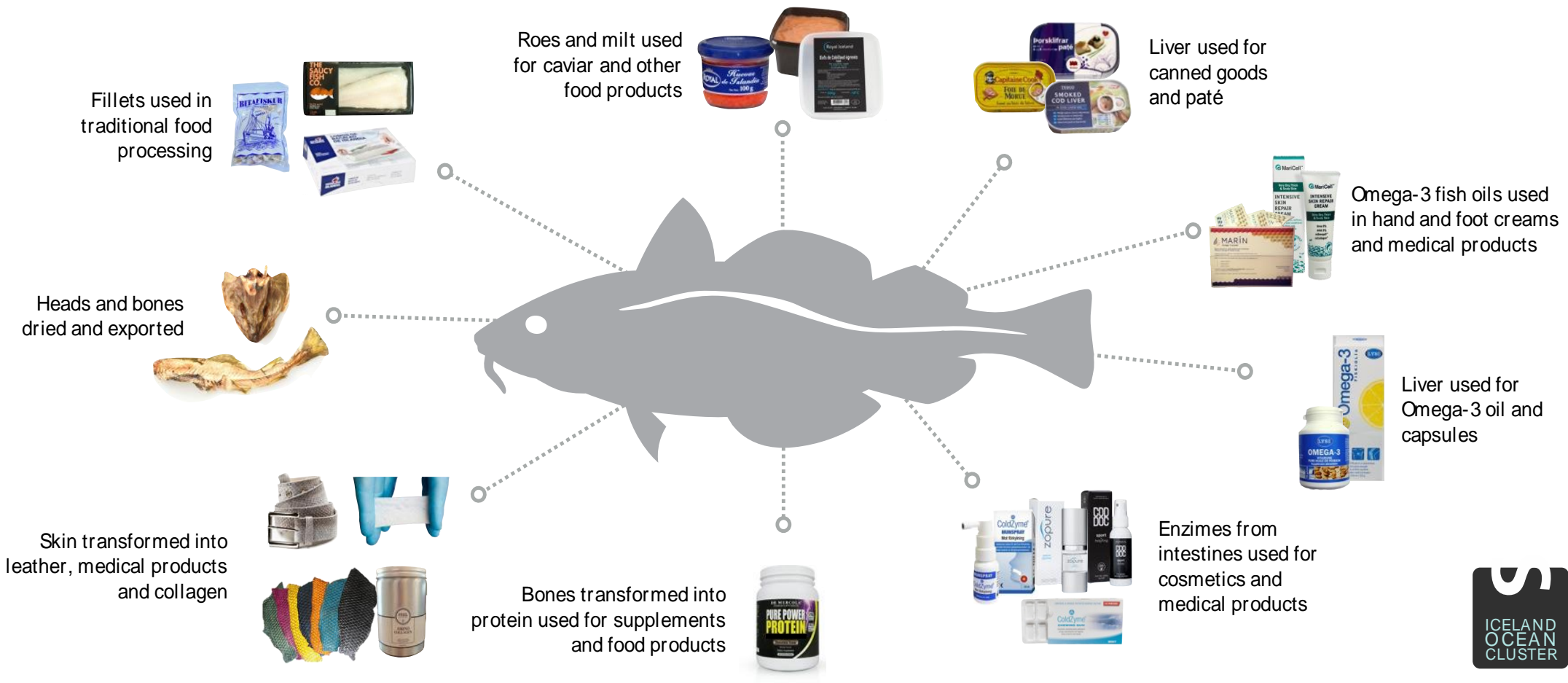
Matís (R&D)
Marinox (Seaweed)
Grímur kokkur (Seafood)



2015: Private investment into Marinox

The aim is to increase the value of convenience food by adding functional ingredients, produced from underutilised marine based raw materials and by-products from fish processing, with confirmed bioavailability







KERACIS

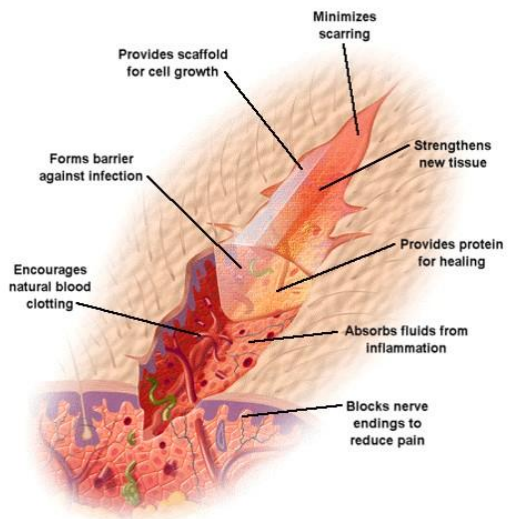




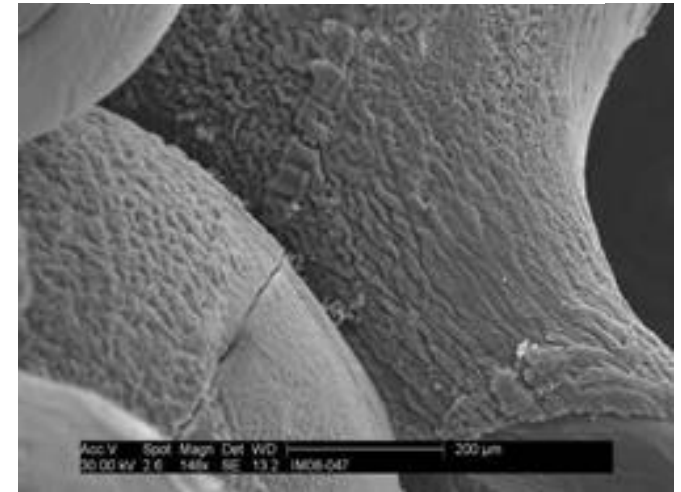
ATLANTIC LEATHER
-We put FRESHNESS into fashion-







BONEREG-INJECT™

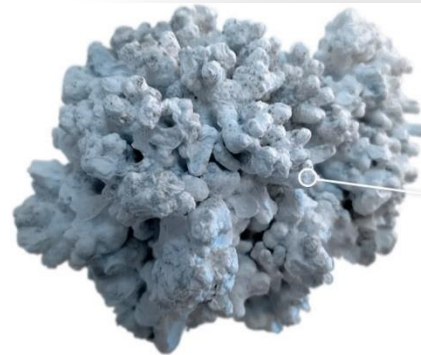




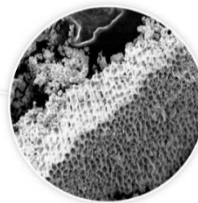
MARINOX



UNA

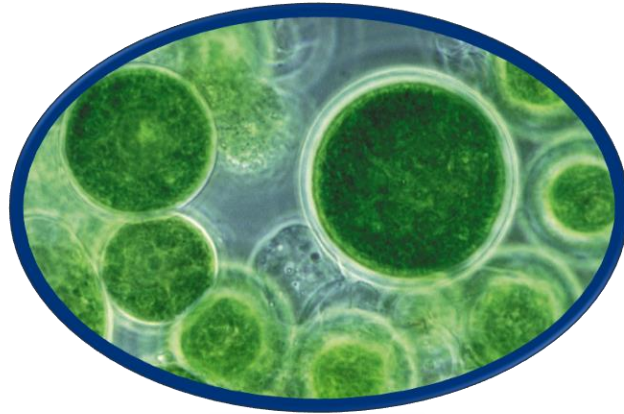


"Aquamin differs elementally and structurally from mined minerals"



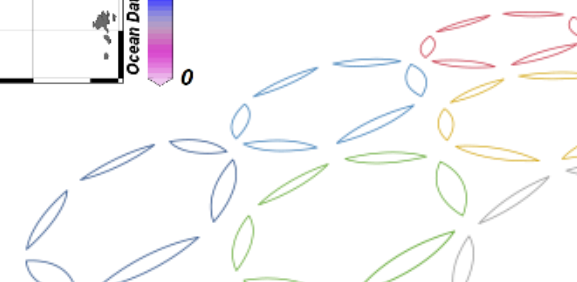
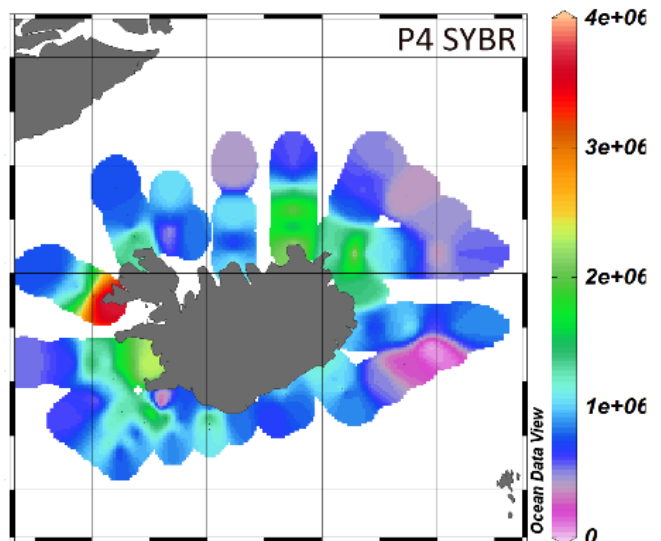
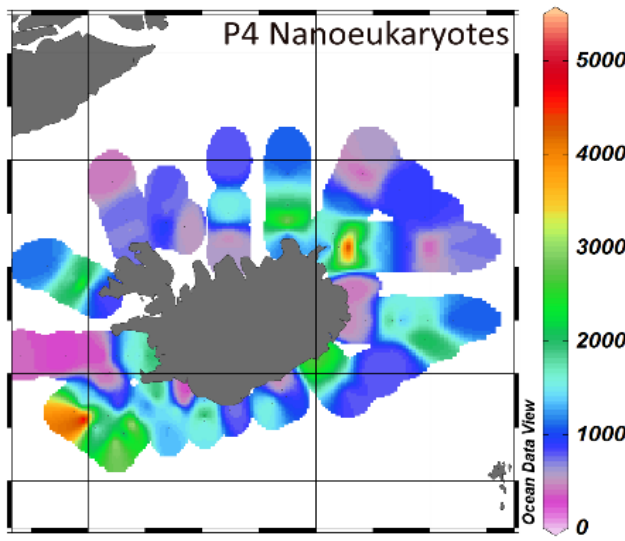
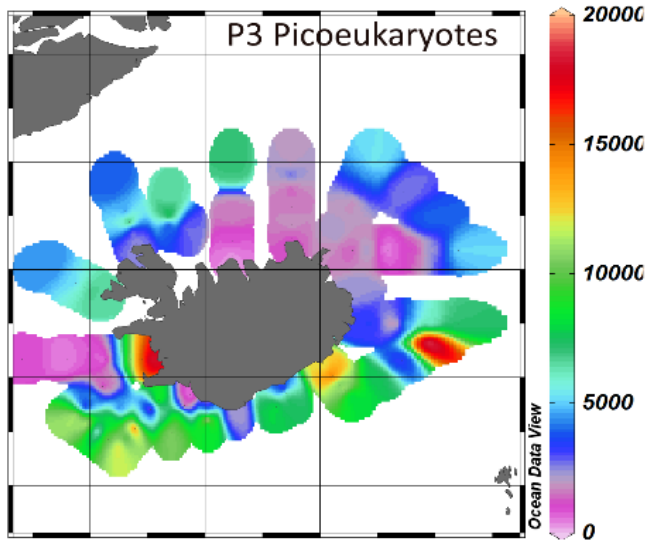
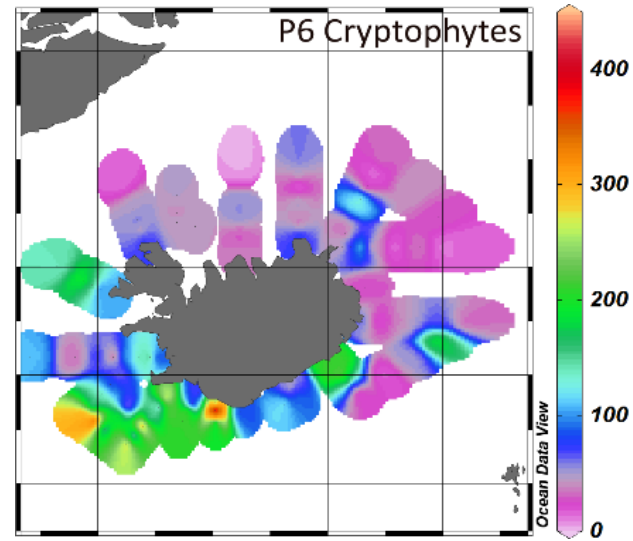
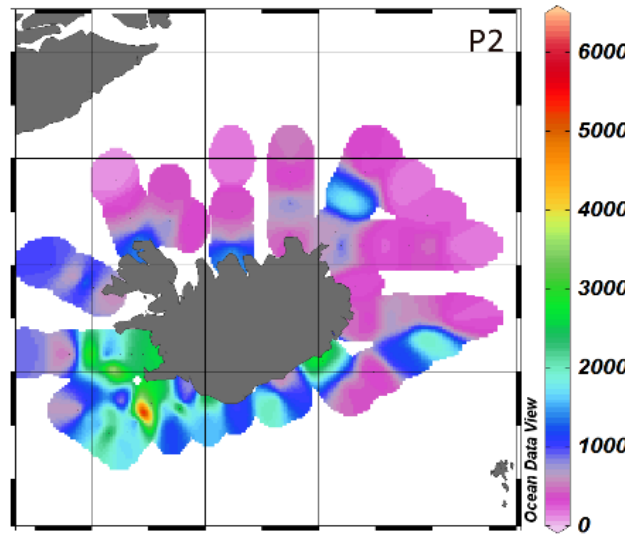
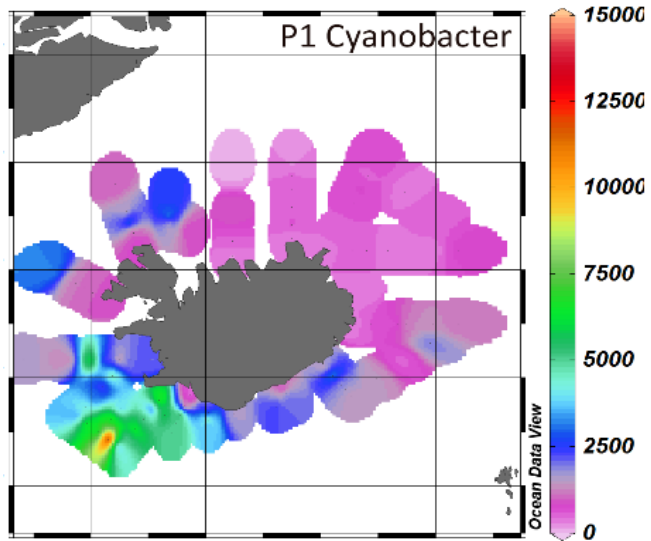


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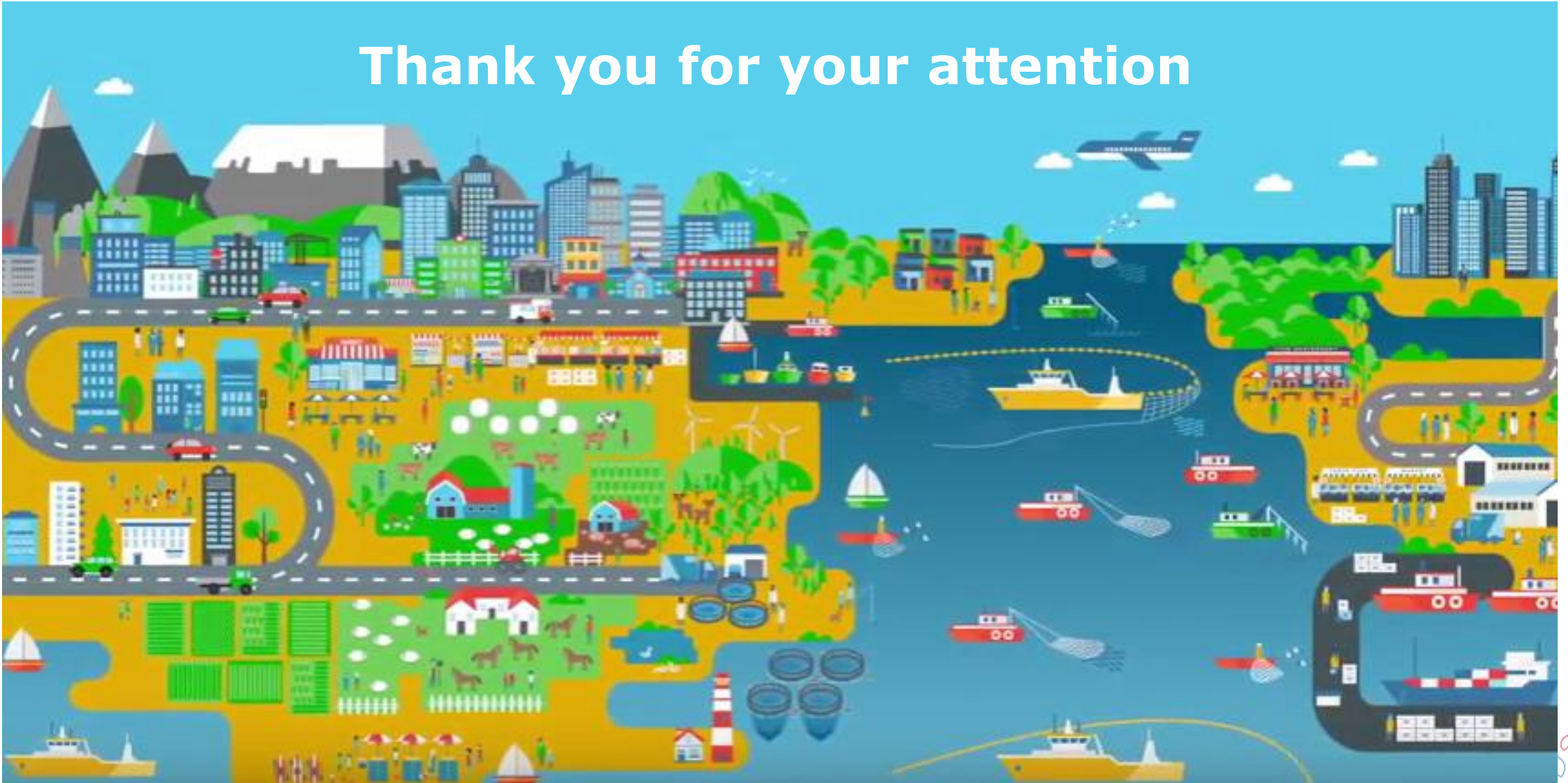


KEYnatura





Thank you for your attention



From wood to food

Opportunities across sectors



Wood



Food

Industrial residual streams



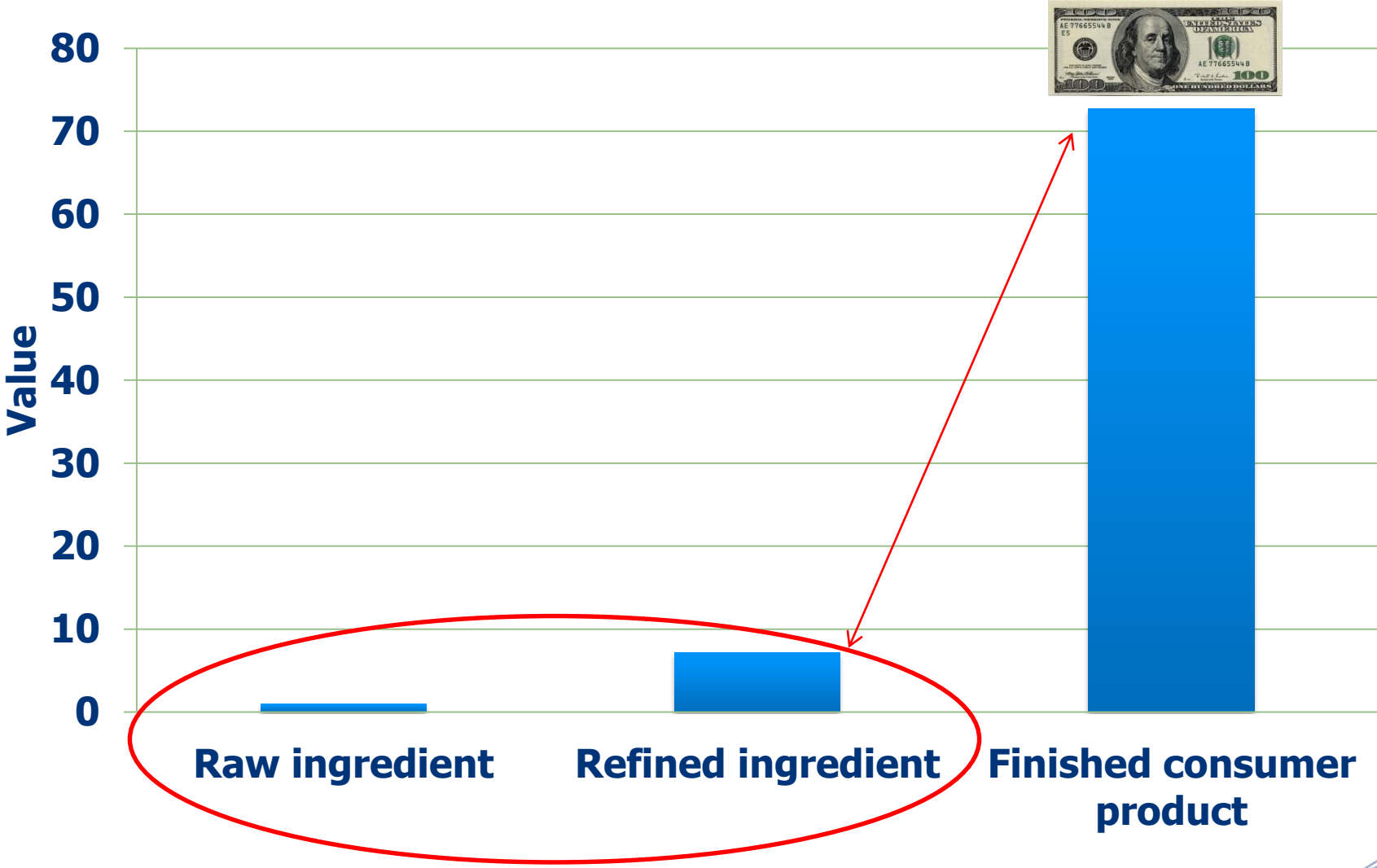
Single cell protein



Cultivated fish



Value addition at different stages



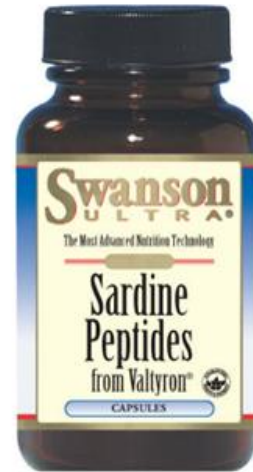
Great value addition potential – The case of fish proteins

Fishmeal



\$2.1/Kg protein

Valytron®



\$1372/Kg protein

Amino®



\$1185/Kg protein



Bioactive substances are in high demand

Dietary supplements \$90 billion globally CAGR 6-7%	Sports nutrition \$7 billion in USA (83%) CAGR 13%
Functional foods \$37 billion in USA CAGR 3%	Beauty/personal care \$433 billion CAGR 4-6%

„Natural“

„Sustainable“

„Environmentally friendly“

„Free-from“

„Unique“

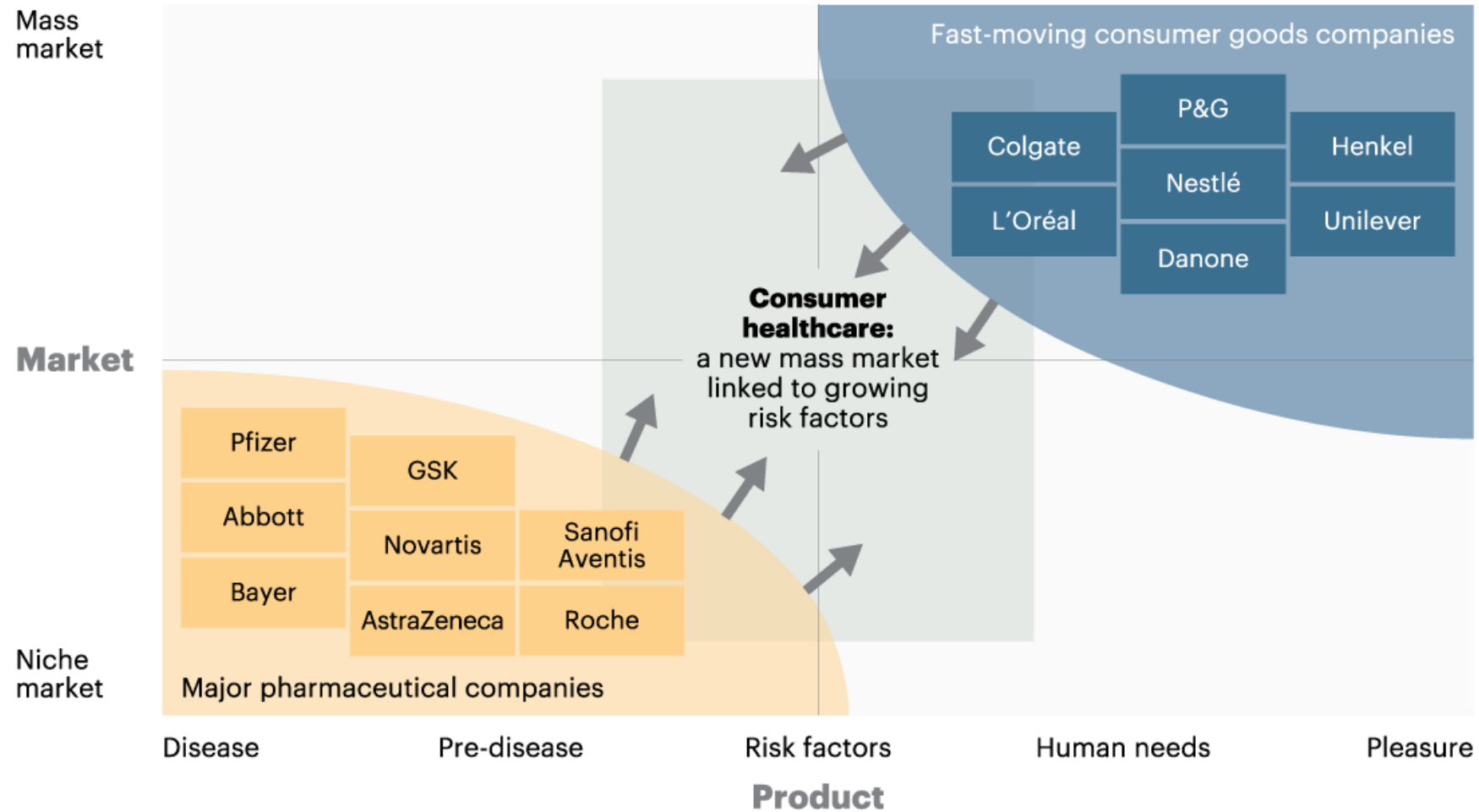
„Pure“

„Renewable“



Developing and Fast Growing Market

A new, large mass market will develop midway between pharmaceutical and consumer goods companies



Changing demographics

