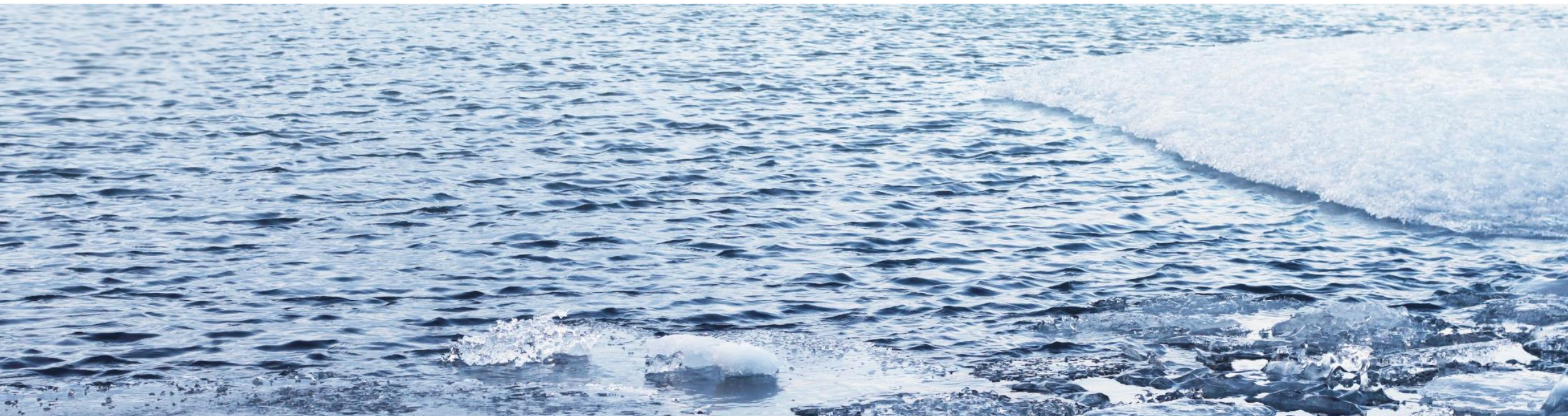


# The Journey to 100% Utilization

Erla Ósk Pétursdóttir, Managing Director at Marine Collagen

Fish Waste for Profit, June 10th, 2022





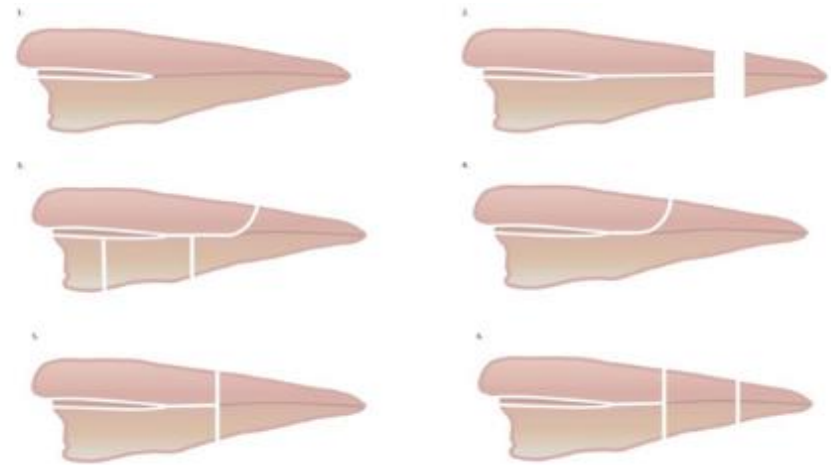
# Fishing

- Responsible Fishing
- Traceability
- Proper handling
- Vertical integration



# Primary Processing

Technological advances → better yield and integrated value chain



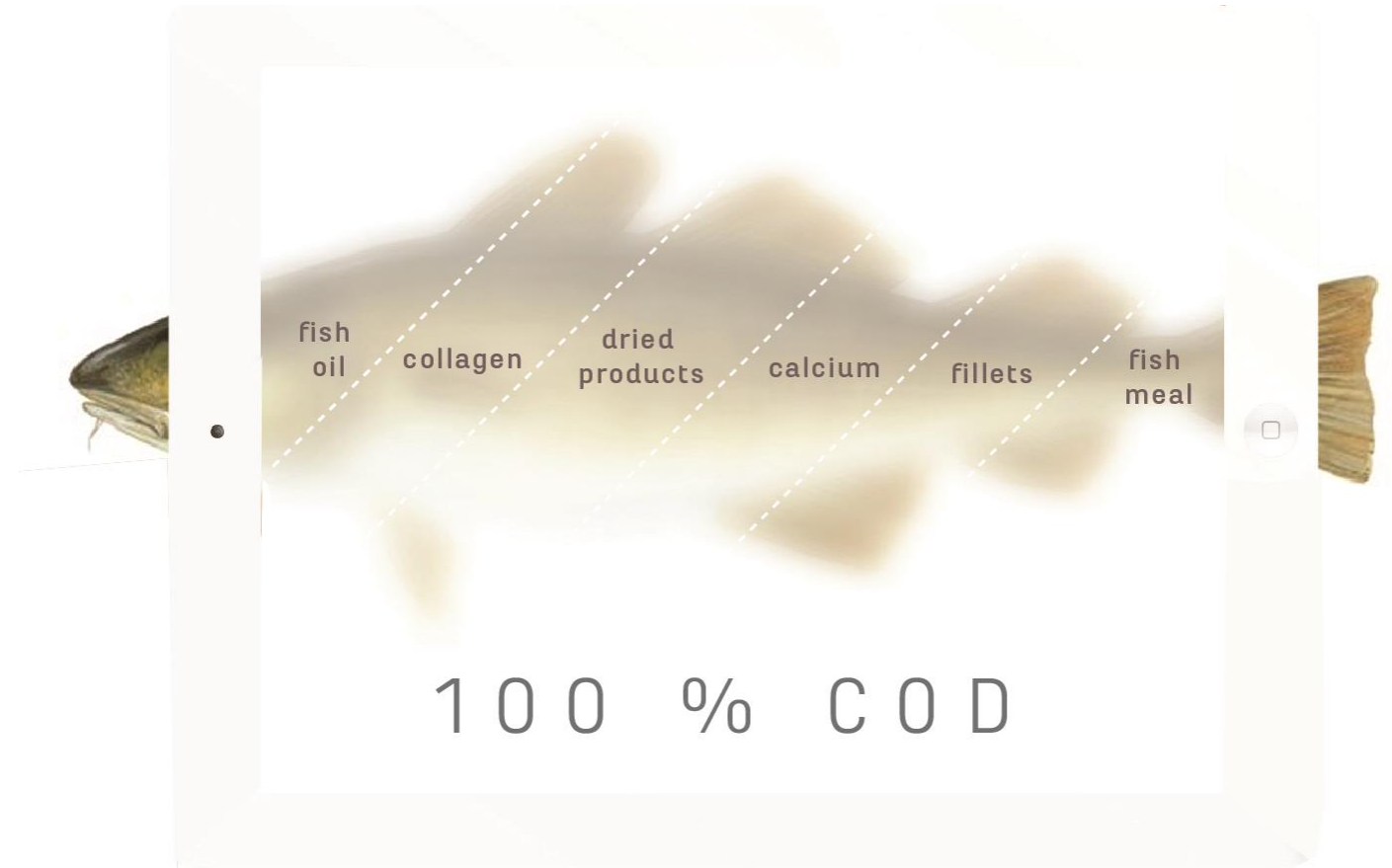
# Traditional By-products

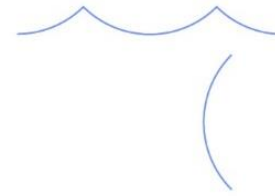
- Long history of by-products and collaboration
- Handling has been improving through the decades
- Haustak founded in 1999, uses renewable energy
- Focus is to use everything and increase value



# codland

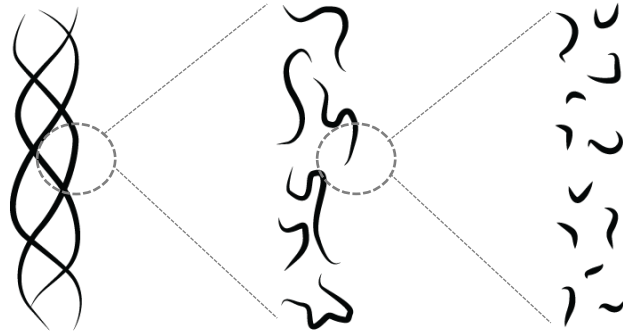
- Founded in 2013
- Platform to increase value of byproducts
- Focus on collaboration
- Research grants






**MARINE COLLAGEN**  
Iceland

- Producing collagen from fish skin
- Joint ownership
- Began operation in 2020
- Raised the market price of fish skin



**Smart Award for By-product Innovation  
at Icelandic Fisheries Exhibition 2022**



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73

BIOECONOMY

0331/2748/18/27

## TOWARDS SUSTAINABLE BIOECONOMY

Lessons learned from case studies

**Blue bioeconomy development (Iceland)**



**Type of intervention:**  
Private sector activity

**Since:** 2012

**Stakeholders involved:**  
Leading partners: Codland  
Beneficiaries: Retailer fish processing industries  
Others: Public national fisheries, partner research companies and high-value products manufacturers

**Sectors:**  
Agriculture sector  
Food and agri-industry  
Health care and biopharma

**Principles and criteria covered:**  
C1.1; C1.4  
C2.2; C2.3  
C3.1; C3.3  
C5.1; C5.2  
C5.3  
C7.1; C12  
C8.1  
C9.1  
C10.1

**SDGs supported:**



RESULTS

**BASIC INFORMATION**

- Within the Iceland Ocean Cluster, waste from traditional cod fisheries and cod processing is used for biomass feedstock. Several companies in the cluster created Codland, a start-up company, to obtain the maximum value from every part of the fish and increase revenues.
- Iceland has year-round cod production, but the capture level is limited, so there is a need for an integral utilization of the fish. Codland aims to promote progress in the fishing industry through collaboration and the production of innovative bioproducts.
- In the business model, facilities are set up near the port and beside a cod drying plant. This model, which allows for the processing of almost all fishery by-products at a single location, can be replicated in other coastal areas.
- Biotechnology is used to produce high-value products. This includes a new method for hydrolyzates using enzymes to replace chemical methods.

**BIOMASS VALUE CHAIN**

**Biomass production and/or collection:**  
Waste from sustainable fisheries of whitefish, particularly local wild-caught cod

**Biomass and bioproducts processing and use:**

- Fish oil from the liver and viscera with omega-3 fatty acids
- Fish meal from the viscera for feed supplement and organic fertilizer
- Mineral supplements, mainly calcium from the bones
- Collagen peptides from the skin produced by enzymatic hydrolyzation

**Sustainable end-of-life options and cross-cutting circularity aspects:**  
Fish waste from well-established companies is used in a closed-loop system.

**RESULTS OF THE REVIEW**

**Objectives shared with other case studies:**

- To safeguard food security
- To incentivize the sustainable and efficient use of biological resources while protecting biodiversity, water and the soil
- To increase profitability by adding value to biomass
- To create and secure employment through in situ value addition and enhance rural and urban economic resilience
- To move towards a more circular bioeconomy
- To support research, development and innovation and put it into practice to accelerate the deployment of sustainable bioeconomy

**Success factors shared with other case studies:**

- The use, when viable, of biomass residues and food that are otherwise lost or wasted
- The use and valorization of all by- and co-products obtained in the processing stage
- The use of local, indigenous and reselected/bred plants and animal breeds in ways that protect genetic resources, respect local communities' intellectual property rights and support nature conservation
- The harnessing of the macrobiome and microbiological processes, including processes that support renewable carbon capture and use
- The application of innovative practices and technologies for biomass production, processing and use
- The creation and development of markets for bioproducts, including assessing market potential and carrying out dissemination activities
- Clustering and the integration of sectors and levels
- The adoption of territorial and landscape approaches in national or local planning
- The involvement of all relevant stakeholders in the transition towards sustainable bioeconomy

