

Social Innovation and Business Models in the Blue Bio-Based Sector

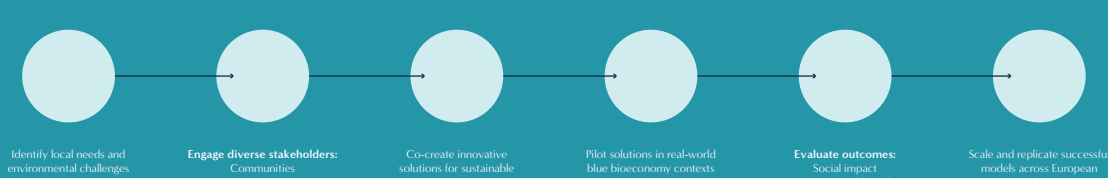
Innovative Social Models: Strengthening Blue Bioeconomy

In BlueRev, social innovation is a key driver of sustainable and responsible behaviour across Europe's marine and coastal regions. It encourages new approaches to resource management, community participation, and stakeholder collaboration — all essential for a thriving blue bioeconomy.

Through real-world case studies in Denmark, Greenland, Estonia, and Italy, BlueRev showcases how diverse actors — from local fishers to business leaders — can co-create solutions that are both environmentally sound and socially inclusive. These local insights help shape a broader, replicable model for sustainable transformation.

More than just a response to environmental pressures, social innovation in BlueRev is a forward-looking strategy to strengthen community resilience, support economic stability, and promote ecological responsibility. By addressing interconnected challenges through this lens, BlueRev is paving the way for scalable, systemic change in Europe's blue economy.

Social Innovation Process in BlueRev (Linear Format)



Business Models Developed

Leveraging the Sustainable Business Model Canvas for Blue Bio-Based Solutions

The Sustainable Business Model Canvas (SBMC) served as a core framework in the co-creation sessions across the pilot regions, enabling stakeholders to develop innovative, sustainable, and regionally relevant business models. This tool helped structure discussions around key business components, including value propositions, customer segments, revenue streams, eco-social costs, and eco-social benefits. By integrating the SBMC, BlueRev fostered stakeholder engagement, providing a common language for collaboration among fishers, policymakers, researchers, and businesses. The modular format ensured a systematic yet flexible approach, facilitating deeper insights into challenges and opportunities.

Pilot Region #1 – Greenland and Denmark: Innovation in Fisheries and Nutrient Recovery

In Greenland, the focus was on valorising fish by-products to create new revenue streams while reducing environmental impact. Business models explored the production of fish-based oils, powders, and bioactive extracts, supporting sustainable fisheries, local employment, and resource efficiency. These models leverage advanced extraction technologies to convert waste into high-value products, improving profitability while promoting circular practices.

In Denmark, the business models centered on transforming cod by-products into nutraceuticals and developing automated wastewater treatment systems for nutrient recovery. A key idea involved producing nutritional drinks for export markets such as China, using high-value fish-derived compounds like Omega-3 oils. These innovations integrate biotechnology and circular economy principles, creating scalable, commercially viable solutions while addressing waste reduction in the marine industry.

Pilot Region #2 – Italy: Valorization of Seafood By-Products

In Italy, the focus was on transforming seafood by-products into high-value products, including Omega-3 oils, shrimp powders, and gourmet ingredients such as fish-based broths. Business models explored partnerships with pharmaceutical companies for the development of medical-grade compounds from shrimp shells and other seafood by-products. To address market entry barriers, models integrated transparent communication strategies, consumer education, and regulatory alignment. The approach emphasised eco-social benefits, including waste reduction, product diversification, and sustainable revenue streams, positioning Italy's seafood industry for greater circularity and resource efficiency.

Pilot Region #3 – Estonia: Algae-Based Innovation and Marine Spatial Efficiency

In Estonia, business models focused on leveraging algae resources, particularly red algae (*furcellaria lumbricalis*), for applications in cosmetics, nutraceuticals, bioplastics, and other value-added industries. One of the key ideas involved integrating algae cultivation with offshore wind farms to optimise marine spatial efficiency and support nutrient management. This model enhances synergies between renewable energy and blue bioeconomy sectors, maximising the economic and environmental potential of marine resources.

Business Model Canva Structure Used in BlueRev

Key Partners	Key Activities	Value Propositions
Customer Segments	Key Resources	Cost Structure
Eco-Social Cost	Customer Relationship	Channels
Revenue Stream	Eco-Social Benefits	

Stakeholder Engagement in Co-Creation

BlueRev employed a stakeholder-driven co-creation process to develop business models tailored to regional blue bioeconomy challenges. Through workshops, seminars, and interviews held across the pilot regions, the project engaged a diverse set of actors—including fishers, policymakers, businesses, researchers, and NGOs—to refine business opportunities, align them with sustainability goals, and ensure their feasibility and scalability. By integrating designed thinking and the triple helix innovation model, the co-creation process facilitated collaborative problem-solving, allowing for the development of region-specific solutions that balance economic viability with environmental and social sustainability.

Stakeholder Engagement by Region

Greenland and Denmark

- Nuuk, Greenland (June 18, 2024): Engaged 19 regional stakeholders in assessing and refining business models for fish by-product valorisation.
- Denmark (May 22, 2024): Engaged 15 regional stakeholders. The co-creation focused on nutrient recovery and circular fisheries, emphasising cod by-product transformation and nutritional drinks targeting export markets like China.
- Outcome: Four business models—two for Greenland and two for Denmark—emerged from these sessions.

Estonia

- BANOS Mission Arena Workshop (April 25, 2024): Engaged 10 stakeholders (enterprises, universities, local government) using a world café format to explore macroalgae business models.
- Kõiguste, Saaremaa (August 12, 2024): Engaged 15 stakeholders. The session focused on multi-trophic aquaculture, exploring blue mussel and rainbow trout farming as an ecological compensation mechanism.
- Outcome: Two business models emerged.

Italy

- Stakeholder Interviews (March & October 2024, Sicily): Conducted by University of Palermo with 10 participants from fisheries, processing companies, cooperatives, and local governance bodies.
- Workshops & Follow-ups: Sessions facilitated by APRE and DFBG identified strategies for by-product valorisation and market expansion.
- Outcome: Three business models emerged.



GREENLAND AND DENMARK



ESTONIA



ITALY