BlueRev

Bio-based revitalisation
of local communities

New models for social innovations to enable stakeholders to switch to socially and environmentally responsible behaviour

Deliverable 4.1

THIS DOCUMENT IS A PRE-PRINT VERSION PENDING REVIEW FROM THE EC

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DELIVERABLE TYPE	MONTH AND DATE OF DELIVERY
Report	Month 27, November 2024

WORK PACKAGE	LEADER
WP 4	UiA

DISSEMINATION LEVEL	AUTHOR(S)
Public	Giovanna Ottaviani Aalmo

DOI / ISBN

10.5281/zenodo.14063593

Programme	Contract Number	Duration	Start
Horizon Europe	101060537	36 Months	September 2022

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Bio-based revitalisation of local communities

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Revision History

Version	Date	Reviewer	Modifications
0.1	10/11/2024	Giovanna Ottaviani Aalmo	First draft shared to the Consortium
0.2	26/11/2024	Giovanna Ottaviani Aalmo	Implementation of comments received
1.0	27/11/2024	Ilaria Bientinesi	First version submitted

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Table of Abbreviations and Acronyms

Abbreviation	Meaning
APRE	Agenzia per la Promozione della Ricerca Europea
DFBG	Distretto della Pesca e Crescita Blu – COSVAP
EC	European Commission
EMÜ	Eesti Maaulikool (Estonian University of Life Sciences)
ESG	Environmental, Social, Governance
FBCD	FBCD AS
LOBA	GLOBAZ, S.A.
NIBIO	Norsk Institutt for Biookonomi
RISE	Research Institutes of Sweden AB
SI	Social Innovation
UiA	Universitetet i Agder
UNIPA	University of Palermo
WP	Work Package

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Index of Contents

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1 Executive Summary

This report aims at exploring innovative models fostering social and environmental responsibility among stakeholders in the blue biobased sector.

BlueRev aims to drive social and environmental impact within local communities across pilot regions (Denmark, Italy, Estonia) by establishing sustainable and socially responsible business models in the blue bio-based sector.

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2 Introduction

This document is the deliverable for Subtask 4.1.1. in Work Package 4 (WP4): Proposal of new solutions (recommendations) for the pilot regions *Assessment of the depth of change of the social innovation involved in the pilot regions and proposing new ways to achieve 'social enterprise'* under the BlueRev project. The goal of this document is to present a framework illustrating models of social innovation processes developed in the context of the blue bioeconomy within the BlueRev project. This framework incorporates key insights from pilot studies conducted across three regions (Denmark, Greenland, and Estonia), each with unique socio-economic and environmental contexts. These regions represent the empirical foundation for testing and refining social innovation models aimed at fostering environmentally and socially responsible behaviour among stakeholders in marine and coastal communities.

Additionally, this deliverable provides insights to draft the deliverable 4.4 under Work Package 4 (WP4): A best practice guideline including the best practices coming from the 3 pilot regions and informs Work Package 5 (WP5): Pilot regions Demonstration by identifying critical variables, phenomena requiring further research, and potential indicators for scenario planning. This document builds on previous deliverables, particularly Deliverable D3.2, which established a baseline for social innovation processes in sustainable blue bioeconomy initiatives.

2.1 The BlueRev Project

The BlueRev project is a Horizon Europe-funded initiative that seeks to develop and implement socially innovative models within the blue bioeconomy, focusing on sustainable practices in regions heavily dependent on marine resources. The project addresses the pressing need for environmental stewardship and social inclusivity by creating frameworks that enable local stakeholders to adopt and sustain environmentally responsible practices. By employing social innovation principles, BlueRev aims to increase local ownership of sustainability initiatives, enhance economic resilience, and strengthen regional collaboration among diverse stakeholders, including local governments, businesses, and community organizations.

BlueRev is implemented by a consortium of institutions from multiple countries, including research organizations, government bodies, and NGOs. Through a multidisciplinary approach combining social innovation theories, empirical research, and stakeholder engagement, the project develops and tests models that can be scaled and adapted across various contexts within the European Union's blue bioeconomy.

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Core goals of the BlueRev project include:

- Developing and demonstrate social innovation models that address sustainable practices in the blue bioeconomy.
- Engaging a diverse range of stakeholders to ensure inclusivity and responsiveness to local needs.
- Establishing a framework for knowledge-sharing and policy development that supports sustainable growth in marine resource sectors.

2.2 Objectives of WP4

WP4 supports BlueRev's overarching mission by:

1. Developing Social Innovation Models: Establish models that promote responsible behaviour within the blue bioeconomy, focusing on overcoming social, economic, and cultural barriers to sustainable practices.
2. Engaging Diverse Stakeholders: Facilitate continuous engagement with local stakeholders—including government, industry, civil society, and local communities—to co-create solutions and refine social innovation models.
3. Integrating social responsibility into business practices: Design social innovation frameworks that align with existing local practices, embedding social and environmental responsibility into blue bioeconomy operations.

2.3 Objectives of Subtask 4.1.1

Subtask 4.1.1 Assessment of the depth of change of the social innovation involved in the pilot regions and proposing new ways to achieve 'social enterprise'- Developing social innovation models for responsible behaviour

One of the goals of WP4 in BlueRev project is developing and testing social innovation models that encourage stakeholders within the blue bioeconomy to adopt socially and environmentally responsible behaviours. This work package encompasses designing innovative frameworks that foster behavioural change, supporting stakeholders in sustainable practices, and integrating social and environmental considerations into blue bioeconomy operations. WP4's efforts are pivotal for creating replicable models of social innovation that can serve similar communities across Europe, enhancing the impact of sustainable blue bioeconomy practices.

The WP4 objectives are achieved through collaborative engagements in three pilot regions—Denmark/ Greenland, Estonia, and Italy—each offering distinct opportunities to implement and refine social innovation models in diverse blue bioeconomy contexts:

- Fisheries and marine resource utilization in Denmark and Greenland, where local stakeholders are actively engaged in sustainable fisheries management.

- Different blue bioeconomy related activities (e.g fishfarming, multiuse of windfarms and mussel farming) with the focus on red algae processing for cosmetics and nutraceuticals in Estonia, mainly in Saaremaa island where innovative algae-based business models are developed for sustainable resource utilization.
- Marine by-product valorisation in Italy, which focuses on using fishery by-products to create value-added products.

Each pilot region provides a unique case for testing social innovation's role in fostering sustainable practices. WP4's approach allows BlueRev to uncover the factors and dynamics that drive responsible behaviour, leveraging stakeholder engagement and cultural values within the blue bioeconomy sector.

2.4 Structure of this deliverable

This deliverable is organized into twelve chapters. Following the introduction to the work carried out in WP4, Chapter 3 presents the background and rationale, Chapter 4 the theoretical framework and Chapter 5 the methodological framework. Chapter 6 presents an overview of the social innovation models developed, with specific attention to the blue bioeconomy applications for each pilot region (Denmark, Estonia, and Italy). Each of the subsequent chapters (7, 8, and 9) focuses on a single pilot region, providing in-depth case studies and examining the nuances of social innovation in each unique context. Chapter 10 synthesizes findings across the three regions, offering comparative insights. Finally, Chapter 11 provides recommendations for future research and policy development, while Chapter 12 outlines conclusions and identifies areas for future exploration.

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3 Background and rationale

3.1 Need for social innovation

The importance of shifting stakeholder behaviour toward sustainability, with specific emphasis on challenges like resource scarcity, environmental degradation, and the role of the bio-based sector, is crucial for local community resilience, economic stability, and long-term environmental impact, drawing from the broader goals of the BlueRev project.

Social innovation is critical for tackling complex issues that traditional frameworks have struggled to address, particularly in industries highly dependent on natural resources [1]. Social innovation promotes local engagement and empowers communities to co-create solutions that are contextually relevant and sustainable. In the blue bioeconomy, which includes fishing, algae processing, and marine resources management, traditional methods are becoming increasingly insufficient [2, 3]. Climate change, overfishing, and a global push for biodiversity conservation necessitate a shift toward sustainable practices [4].

In each pilot region, BlueRev has aimed to engage stakeholders in adopting practices that not only support environmental resilience but also contribute to local economies. For instance, in Greenland, where fishing is culturally significant and contributes to the local economy, social innovation offers a way to balance tradition with sustainable resource use.

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4 Theoretical framework

The work done has been following a step-by-step approach, each supporting the design, validation, and potential application of social innovation models tailored to the blue bioeconomy as suggested by Loorbach, Frantzeskaki [5]. The activities described in the following phases have been implemented across WP3 and WP4 and summarised in this deliverable:

Phase 1: Stakeholder Analysis and Engagement (WP3)

In this step we have been identifying and engaging key stakeholders across each pilot region, including government officials, industry leaders, academic institutions, and local communities. Through workshops, seminars, one-to-one meetings/interviews and collaborative sessions, stakeholders have co-designed practical models fostering social responsibility in sustainable practices. This engagement has been crucial for ensuring that social innovation models were aligned with local needs and preferences.

Phase 2: Profiling and Refining Social Innovation Models (WP3-WP4)

During this phase we profiled social innovation initiatives within each pilot region, detailing the processes, enabling factors, barriers, and outcomes. By examining each model's contextual factors, we highlighted how different social innovation approaches can be adapted and replicated. This phase also helps BlueRev understanding the key characteristics of successful models for social innovation within the blue bioeconomy.

Phase 3: Developing Frameworks for Responsible Behaviour (WP4)

Building on the insights gained in Phase 2, this step developed frameworks integrating responsible behaviour into blue bioeconomy practices. This included to a certain extent, evaluating how models for social innovation interact with existing governance structures and identifying opportunities to embed sustainability principles across the value chain.

Phase 4: Synthesis and Recommendations for D4.4 (WP4→WP5)

This last step synthesizes findings from Subtask 4.1.1, providing actionable recommendations and indicators that inform the D4.4 and will provide the material for the demonstration workshops of WP5. These indicators highlight behavioural and social innovation trends essential for policymaking, ensuring that the social innovation models of BlueRev are grounded in empirical insights and can be replicated effectively.

4.1 The concept of social innovation in BlueRev

The concept of **social innovation (SI)** has gained prominence across policy, academic, and public spheres, particularly over the past decade. Defined broadly, social innovation refers to "new ideas (products, services, and models) that simultaneously meet social needs (more effectively than existing alternatives) and create new social relationships or

collaborations." Social innovation solutions not only benefit society but also enhance society's capacity to act collectively in addressing challenges [6]. Within BlueRev, SI is understood as a transformation in social relationships, encompassing new ways of doing, organizing, understanding, and engaging with social and environmental issues. In this context, social innovation becomes transformative when it challenges or reshapes dominant structures, whether they are formal institutions, community norms, or established practices [7].

The BlueRev project applies the concept of social innovation to the blue bioeconomy, with a specific focus on promoting socially and environmentally responsible behaviour in marine and coastal communities. This approach reflects the commitment of BlueRev to addressing ecological and social challenges mobilizing stakeholders' creativity to generate sustainable solutions, optimizing resource use, and cultivating a culture of continuous learning and innovation. The application of social innovation in BlueRev involves examining how sustainable practices can be integrated into fishing, algae processing, and marine resource management, contributing to environmental resilience and economic vitality.

4.2 Social Innovation in the Blue Bioeconomy Context

BlueRev defines social innovation within the blue bioeconomy as a process of change in social relationships, configurations, and knowledge-sharing practices that leads to sustainable ways of producing, managing, and utilizing marine resources. Social innovation in this context not only addresses environmental challenges but also meets socio-economic needs within coastal communities [8]. This perspective aligns with the broader goals of fostering resilience and sustainability within the blue bioeconomy, where environmental and economic pressures require innovative solutions.

The various definitions of social innovations were assessed and NIBIO proposed the preferred definition tailored to the blue bioeconomy which was accepted by the rest of the consortium partners. This definition focuses on SI as a driver of change within coastal and marine resource sectors, emphasizing social learning, stakeholder collaboration, and sustainable practices. It captures BlueRev's approach to engaging local communities in sustainable development by addressing specific challenges in resource management, community engagement, and behavioural change.

4.3 Social innovation cases/clusters in BlueRev and in the blue bioeconomy

Each case study in BlueRev serves as a distinct example of social innovation in action, reflecting unique socio-economic and environmental challenges within the blue bioeconomy. The three clusters allow BlueRev to explore and refine social innovation models that can be adapted and scaled across similar contexts [9]. These cases can be defined as "clusters", and they are:

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1. **Sustainable fisheries management in Denmark**: This social innovation model focuses on collaborative management practices among fishers, local councils, and industry stakeholders to adopt sustainable fisheries management. The goal is to address overfishing, bycatch reduction, and habitat conservation, ensuring long-term viability and environmental responsibility in marine resource use.
2. Different blue bioeconomy related activities (e.g fishfarming, multiuse of windfarms and mussel farming) with the focus on **algae-based resource management in Estonia:** In this cluster, social innovation is applied to develop sustainable business models for algae processing, particularly in Saaremaa. Local stakeholders, including researchers, small businesses, and environmental groups, collaborate to enhance resource efficiency and explore new product markets, such as cosmetics and nutraceuticals, using algae as a renewable bioresource.
3. **Marine by-product valorisation in Italy and Greenland:** This cluster focuses on creating value from marine by-products and waste from fishing and seafood processing. Local stakeholders collaborate to transform these by-products into value-added items, reducing waste and generating economic benefits. This social innovation model encourages sustainable practices in the fishing industry by promoting circular economy principles.

Each cluster showcases different dimensions of social innovation and its role in fostering sustainable practices. By examining these clusters, BlueRev identifies how social dynamics, community values, and collaborative governance models can be leveraged to promote responsible behaviour within the blue bioeconomy.

4.4 Features of social innovation

For each social innovation model, we assessed several key features capturing the transformative nature of SI within the blue bioeconomy [6, 10-12]:

- **Starting points**: Analysing initial drivers of social innovation, including community awareness of environmental issues, the diffusion of sustainable values, and the role of local champions or leaders in mobilizing change.
- **Changes in resource management and utilization**: Assessing how new models of production, resource management, and by-product utilization promote sustainability, reduce waste, and optimize resource use within the blue bioeconomy.
- **Transformation of social relationships and governance**: Exploring shifts in social relationships and governance configurations, such as new partnerships between government, industry, and civil society, and changes in rules or business models that support sustainable behaviour.
- **Strategies for gaining social support**: Identifying approaches used to build community support, raise awareness, and foster social acceptance of sustainable

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practices. This includes public awareness campaigns, training programs, and collaborative governance frameworks.

- **Critical challenges and conflict resolution**: Documenting the obstacles and conflicts encountered in each cluster, as well as the negotiation processes and strategies used to address these issues. This includes resistance from traditional industry players, regulatory hurdles, and community opposition to new practices.
- **Knowledge sharing and social learning**: Emphasizing the role of knowledge-sharing practices, community workshops, and feedback mechanisms that promote social learning and enable communities to engage with sustainable practices meaningfully.
- **Environmental and social benefits**: Assessing the societal and environmental outcomes of each social innovation model, including reductions in waste, improvements in biodiversity, and increased economic stability in resource-dependent communities.
- **New behaviours and community norms**: Evaluating how social innovation initiatives contribute to the adoption of new, sustainable behaviours and create lasting changes in community norms and practices.
- **Potential for scaling and replicability**: Examining the scalability of each model and its potential for adaptation to other contexts within the blue bioeconomy, ensuring that successful social innovation approaches can be replicated across similar coastal regions in Europe.

4.5 Applying social innovation

In BlueRev, social innovation is a mechanism to foster sustainable and responsible behaviour within the blue bioeconomy by promoting new ways of resource management, community engagement, and stakeholder collaboration. By examining case studies in Denmark, Greenland, Estonia, and Italy, BlueRev captures how diverse stakeholders—from local fishers to business leaders—can collaborate to develop environmentally and socially sustainable practices. The insights gained from each cluster provide a nuanced understanding of the social processes that drive sustainable transformation and advise BlueRev broader mission of creating a replicable model for sustainable practices in marine and coastal regions.

Social innovation, in this framework, is not only a response to immediate environmental challenges but also a proactive approach to building community resilience, economic stability, and ecological responsibility. BlueRev focus on social innovation allows it to address complex, interdependent challenges in the blue bioeconomy, creating pathways to sustainable development that can be scaled across different European contexts.

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5 Methodological framework

To investigate how social innovation functions within the three BlueRev clusters, a qualitative research strategy has been implemented. This methodology consists of two main steps, ensuring a comprehensive analysis of social innovation models within Denmark, Estonia, and Italy. The research framework allows for an in-depth understanding of the social dynamics, challenges, and opportunities associated with fostering sustainable practices in the blue bioeconomy.

5.1 Document Analysis

The first step in the BlueRev research methodology involved a detailed document analysis across the three pilot regions. Documents were sourced from key stakeholders and publicly available resources, covering a wide range of types that offer insights into each cluster's social innovation context. This step aimed to establish a foundational understanding of each region's social innovation processes and its distinct factors affecting sustainable behaviour within the blue bioeconomy.

The documents analysed included:

- General and Case-Specific Profiles: Initial descriptions of each case, outlining the key objectives, stakeholders, and challenges.
- Grant and Application Documents: Reports and applications for EU or local funding, providing background on the financial aspects and goals of each initiative.
- Strategic and Planning Documents: Regional and national strategic plans related to sustainable blue bioeconomy practices, including long-term goals for social innovation.
- Progress Reports: Updates on ongoing activities, reflecting the stages of implementation and immediate challenges encountered.
- Evaluation and Impact Reports: Documents assessing the outcomes of each social innovation model, highlighting achievements and areas for improvement.
- Regulatory and Legislative Texts: Local regulations and national policies that influence or enable social innovation within each cluster.
- Technical and Operational Reports: Documents detailing the technical specifics of each project, particularly for algae processing, fisheries management, and marine by-product utilization.
- Benchmark and Scalability Studies: External reports and case studies exploring replicability and scalability, offering insights into how similar models could be adapted in other regions.

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- Stakeholder Narratives and Case Stories: Personal accounts from stakeholders directly involved in the projects, capturing the social and cultural dimensions of the initiatives.
- Media Articles and Social Media Posts: Local news stories and online discussions that provide public perspectives and highlight community engagement in the initiatives.
- National and Regional Statistics: Data from government and Eurostat sources, offering demographic and economic context for each cluster.
- Conference Presentations: Summaries of presentations given at conferences or seminars, providing updates on progress, lessons learned, and stakeholder feedback.
- Meeting Minutes: Documentation from BlueRev project visits to each region, capturing discussions, stakeholder feedback, and observations from each pilot region.
- Research and Academic Publications: University dissertations, research papers, and expert analyses related to sustainable practices in the blue bioeconomy, which provide external perspectives on each initiative.

This document analysis provided an initial foundation for understanding each case, highlighting regional challenges, key stakeholders, and the regulatory context.

5.2 Key-Informant Interviews

The second step involved conducting interviews with key informants in each of the three pilot regions. These interviews were guided by a structured protocol developed by the BlueRev NIBIO team in WP3, in collaboration with local project partners. The protocol included specific questions designed to capture insights into the social innovation process, focusing on stakeholder roles, challenges, and success factors. Semi-structured interviews with key informants allowed for deeper exploration of the nuances and complexities involved in promoting sustainable practices within the blue bioeconomy. Key informants were selected from the following categories:

- Initiators and Pioneers: Individuals who played a significant role in launching the social innovation initiatives, such as government officials, business leaders, and community activists. These informants provided insights into the early stages of the projects, including motivations, initial challenges, and the role of policy and funding.
- Secondary Stakeholders: Representatives from relevant groups who may not have direct roles in the initiatives but are well-versed in the local context and understand the broader social dynamics. This group includes civil society representatives, municipal authorities, and business leaders who are indirectly impacted by the initiatives.

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- Key Supporters and Influencers: Stakeholders who have supported the initiatives at various stages, such as local NGOs, environmental advocates, and social entrepreneurs. Their perspectives helped to highlight the external support networks and partnerships that have contributed to the success of each project.
- Beneficiaries and Community Members: Individuals from the community who have directly benefited from or participated in the social innovation initiatives. These informants provided personal experiences and insights into the practical impact of the projects, as well as feedback on areas for improvement.
- Social Innovation Experts: Academics, NGO representatives, and professional experts who bring an external perspective to the social innovation process. These informants offered critical insights into the strengths and limitations of each initiative, as well as broader implications for the blue bioeconomy.

The key-informant interviews complemented the document analysis by adding firsthand accounts and diverse perspectives, enhancing BlueRev understanding of how social innovation fosters environmentally and socially responsible behaviour within the blue bioeconomy. The data related to the interviews are available in D3.2.

Key informants were suggested by the case study coordinators prioritising capturing diverse perspectives and deep insights into the social innovation processes within the three BlueRev pilot regions: Denmark, Estonia, and Italy. This selection process was structured to ensure a comprehensive understanding of how social innovation drives environmentally and socially responsible behaviour in the blue bioeconomy.

The selection approach involved first individuals previously known to the BlueRev partners due to earlier collaboration or existing relationships within each pilot region. These initial contacts, many of whom were instrumental in launching social innovation initiatives, served as primary sources of information and entry points into local networks.

Then, where necessary, additional informants were identified through references found in the document analysis phase, which included planning documents, regulatory texts, reports, and case studies. This document analysis highlighted influential stakeholders, such as project leaders and community advocates, with critical knowledge of each initiative. Finally, during interviews, researchers asked informants to recommend others with relevant expertise or experience in social innovation within the blue bioeconomy. This snowball sampling approach allowed the team to expand the pool of informants to include a broader array of voices, including those with indirect involvement but valuable perspectives on each case.

These interviews were conducted following a semi-structured format, allowing flexibility for informants to share their unique insights while ensuring consistency across interviews. Interviews were conducted face-to-face wherever possible, but telephone or online methods were also used when necessary to accommodate remote stakeholders.

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To ensure informed consent and compliance with GDPR, each participant was fully briefed on the purpose of the research and the voluntary nature of their involvement. Interviewees were informed that they could withdraw at any time and were provided with contact information for the researchers if they had questions or concerns. Interviews were recorded and anonymized where feasible; if anonymization was not possible due to the informant's identifiable role, explicit written consent was obtained before including their input in the report.

5.3 Interview Protocol

The interview protocol for BlueRev was organized into five thematic blocks, tailored to gather comprehensive information about the social innovation processes in each pilot region. These blocks were designed to capture key aspects of each case, from the motivations behind participation to the factors that facilitate pro-environmental behaviour.

Initial questions focused on gathering a detailed profile of each case, integrating background knowledge obtained from document analysis. This section aimed to understand the case's context of the cases, its transformative goals, and the main actors involved. Additionally, we explored the primary social challenges, the the motivations driving stakeholders to engage in social innovation initiatives, and the strategies used to attract and retain community involvement. Additional questions focused on identifying the factors that enhance or hinder the acceptance of sustainable practices within each community. Topics included community perceptions, socio-economic factors, and cultural attitudes towards innovation. In addition to that, we proposed questions exploring how social innovation initiatives influenced collective empowerment and community engagement, assessing whether and how these projects helped foster a sense of empowerment among local stakeholders and their ability to actively influence outcomes. Finally, we addressed the effectiveness of social innovation in promoting environmentally responsible behaviour. We explored changes in practices, the development of new norms, and the impact of social innovation on sustainable resource management.

5.4 Use of Interview Data in WP4 and WP5

According to BlueRev Description of Activities (DoA), the qualitative interviews are intended to support both WP4 and WP5 by providing in-depth insights into the drivers of sustainable behaviour and the broader social dynamics within each pilot region. For WP4, the interviews provide information on social innovation's role in fostering sustainable practices, contributing to behaviour-focused research on stakeholder engagement. For WP5, interview data inform the scenario development process by highlighting key indicators, potential barriers, and critical success factors relevant to the blue bioeconomy.

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Specifically, the interviews contributed information on the following aspects:

Case Study Profiles:

- Transformative goals and ambitions of each social innovation initiative.
- Key actors and pioneers involved in the projects.
- Development phases and critical milestones of the social innovation processes.
- Dimensions of social innovation, including new behaviours, organizational structures, knowledge sharing, relationships, impacts, and the potential for up-scaling and replicability.

Motivations for Participation:

- Strategies used to gain social support and encourage participation.
- Methods for addressing and overcoming resistance or conflicts among stakeholders.

Social Acceptability Factors:

- Motivations driving stakeholders to engage in social innovation within the blue bioeconomy.
- Reasons for continued commitment to sustainable practices, reflecting factors that influence long-term engagement.

5.5 Presentation format/sheets

Based on document analysis and interview data, a detailed presentation in ppt/sheet was developed for each pilot region, these sheets were used in different contexts from the BANOS arena in Gothenburg in 2024 to the presentation in Sicily in September 2024 during the G7 Agriculture. The sheets were structured according to the following format:

- Background and Context: Overview of the social, economic, and environmental context that shapes each social innovation case.
- Implemented Actions: Summary of key actions taken within each initiative to promote social innovation and sustainable practices.
- Stakeholder Analysis: Identification of the primary stakeholders involved, their roles, partnerships, negotiation processes, and communication channels.
- Milestones: Key milestones and turning points in the social innovation process, capturing critical phases of development.
- Outcomes and Effects: Assessment of social and environmental impacts, including improvements in quality of life, environmental benefits, changes in behaviour, new governance strategies, and knowledge gains.
- Challenges and Critical Issues: Analysis of major challenges and obstacles encountered, along with strategies used to address these issues.

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- Up-Scaling Potential: Evaluation of the replicability and scalability of each social innovation model, with a focus on factors that could facilitate adaptation in other regions.

These presentation sheets offer a comprehensive overview of each case and serve as a resource for deeper understanding of social innovation within the blue bioeconomy, highlighting both successes and lessons learned.

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6 Social innovation in the Clusters

6.1 Cluster sustainable fisheries management in Denmark

In Denmark and Greenland, the BlueRev project explores social innovation as a pathway for addressing labour shortages, infrastructure limitations, and economic disparities within the blue bioeconomy. By fostering inclusive and sustainable growth, the project promotes the efficient utilization of fish side-streams and the development of sustainable business models.

In Denmark, the **Collective Impact** model [13] drives cross-sectoral collaboration between government bodies, businesses, and community organizations. This model supports initiatives to streamline regulatory processes and attract skilled labour through the implementation of efficient permit systems. Danish companies in the blue bioeconomy sector are working to transform fish side-streams into high-value products, such as fishmeal, fertilizers, and pharmaceuticals. By addressing shared challenges like sustainability and resource management, the collective impact approach strengthens partnerships and aligns diverse stakeholders toward a common goal of sustainable bioeconomic growth

Negotiated governance model in Denmark allows stakeholders to collaboratively address regulatory challenges and workforce needs. This approach is critical for managing policy changes related to sustainable practices, labour diversification, and infrastructure development. Danish blue bioeconomy enterprises are increasingly focusing on sustainable practices to meet market demands, and initiatives like fast-tracking permits for foreign labour are designed to support these efforts. By coordinating with government agencies, the blue bioeconomy sector can create positive conditions for sustainable business models and improve access to resources for local communities.

6.2 Cluster algae-based resource management in Estonia

The BlueRev project recognizes social innovation as a tool for transformative change within Estonia's blue bioeconomy, particularly in the valorisation of macroalgae in the Saaremaa region. Estonia's pilot focuses on building innovative sustainable economic models by leveraging local resources while addressing regulatory/legislative, workforce, investment and resource challenges that are prevalent in the region.

In Saaremaa, the **Living Lab model** has been crucial in advancing the blue bioeconomy by fostering collaboration between local stakeholders [14, 15]. This approach involves the establishment of a specialized laboratory at the local college in Kuressaare, which supports local businesses through research and development of marine resource valorisation, especially for red algae. Workshops and consultations with local

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bioresource processors allow stakeholders to provide input on essential lab services, contributing to an adaptable and community-informed process. By including educational opportunities for training lab technicians and PhD students, the model promotes sustainable workforce development, aligning with the circular economy principles emphasized in BlueRev.

Another relevant model for Estonia is the **local government mobilization** within a **community-based innovation model [16]**. The BlueRev project in Estonia mobilizes local stakeholders, including the Saaremaa County Development Center, to support emerging blue bioeconomy businesses. The Development Center has taken an active role in business support, from providing essential resources to advocating for sustainable bioeconomy practices and ESG (Environmental, Social, Governance) initiatives. This model of local government mobilization empowers local businesses to address the lack of skilled labour and encourages environmentally responsible practices. Additionally, it fosters ownership of the sustainable bioeconomy by strengthening local governance and promoting new employment opportunities in the marine resource sector.

6.3 Cluster Marine Product Valorisation (Italy & Greenland).

In the context of the BlueRev project, social innovation is recognized as a transformative process that facilitates structural changes within local communities. The focus is on advancing sustainable practices in Italy's blue bioeconomy, particularly within the Sicilian fishery and marine sectors. BlueRev Italy leverages the concept of social innovation as a means to address environmental and social challenges unique to coastal and island economies, such as those in Sicily. This transformation is aimed at transitioning the fishery sector towards sustainable models that can support long-term ecological and economic health.

In BlueRev, social innovation is defined as the emergence of new behaviours, organizational forms, knowledge exchanges, and social configurations that collectively foster sustainable transitions. Social innovation here functions as a catalyst for systemic change, aiming to modify existing operational frameworks within fisheries and marine industries. This aligns with the broader goal of achieving a sustainable circular bioeconomy where waste is minimized, and the socio-economic value of marine resources is maximized.

6.3.1 Structural change models for social innovation in the Italian pilot

Social innovation models provide frameworks for implementing transformative changes in complex socio-ecological settings, especially when addressing intertwined economic, environmental, and social issues. For the BlueRev project, several social innovation models play a central role in facilitating sustainable practices in the blue bioeconomy, particularly within its Italian pilot in Sicily. This project seeks to integrate ecological,

economic, and social benefits for local communities through a structured approach, with a focus on using marine bioactive compounds from fish processing residues and algae in nutraceutical, food, and cosmetic industries.

One prominent model relevant to BlueRev is **Collective Impact [17, 18]**, which emphasizes cross-sectoral collaboration and shared objectives among diverse stakeholders. In Sicily, a core group has been formed, consisting of key representatives from the University of Palermo, local fishing cooperatives, industry leaders, and policymakers. This core group drives social innovation initiatives focused on waste valorisation and product development in the nutraceutical and cosmetic industries, using marine by-products. The collaborative structure facilitates a shared vision and a coordinated action, making it possible to navigate regulatory and economic challenges specific to the Sicilian fishery sector.

The laboratory of the department of marine biotechnology in Trapani has closely collaborated with the local fishermen and businesses to draft protocol for the productions of high value transformation of low value by-catch such as menola, a Mediterranean fish that is particularly abundant in spring. Menola, encompassing three species in the Spicara genus (Spicara smaris, Spicara maena, and Spicara flexuosa), has traditionally been of low commercial value due to the large volumes caught. In the Trapani area, a historical tradition has developed around processing this fish, known locally as “ritunnu salatu”. After being salted and dried, it is preserved in oil or grated as a flavourful condiment, often likened to bottarga. This "poor man’s bottarga" has, however, become a high-quality, sought-after product, now fetching up to 200 euros per kilogram.

Natale Amoroso, a fisherman with a long family tradition in Trapani, has revived this traditional product. In his ittiturismo (fishing tourism business) called La Tramontana, Amoroso used his mother’s original recipe to co-develop with UNIPA the official protocol for the commercial preparation of “ritunnu salatu”, which he serves in his restaurant and sells both locally and online. His eco-friendly version, which he calls “eco-bottarga”, utilizes the entire fish rather than just the roe, promoting a sustainable approach to by-catch use. Through collaborations like these, the BlueRev project showcases how traditional practices can be adapted to support modern, sustainable blue bioeconomy models in Sicily.

The Living Lab Approach is another model that aligns well with BlueRev’s objectives, as it supports real-world testing and co-creation among stakeholders (Leminen, Westerlund, & Nyström, 2012). In Sicily, the project employs this model through workshops and local consultations to develop traceability systems for premium species, such as the red shrimp, and to improve by-product value chains. This iterative process allows the project to adapt to community feedback, making the model highly effective in addressing the regulatory constraints and waste management needs identified in the local context analysis. A diffused lab was created by this collaboration where local actors have access to the equipment and can benefit from the scientific competence provided by UNIPA.

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Local government mobilization within a community-based innovation model is evident in BlueRev's work in Italy. The University of Palermo, along with local cooperatives and small-to-medium enterprises (SMEs), mobilizes a network of stakeholders committed to transforming the blue bioeconomy through sustainable practices. Community-based workshops foster a circular economy mindset, engaging actors across the value chain to develop business models focused on waste minimization and high-value by-product creation. This model of engaging local stakeholders not only empowers communities but also fosters ownership over the sustainable business models being developed. An example of such local stakeholders mobilization is seen in "Beehive Valore Sud", a social enterprise in Trapani, Sicily. Beehive supports local economic development by providing shared workspaces, promoting "South Working" (remote work from Southern Italy), offering digital skills training, and supporting young entrepreneurs. Through its coworking space and community-driven initiatives, Beehive aims to reduce brain drain by enabling local professionals to work remotely and connecting them with national and international companies. It also organizes workshops and provides resources for digital transformation and business innovation, which are essential for the sustainable and inclusive growth of the local economy. Beehive's approach aligns with BlueRev objectives by strengthening community stakeholders and supporting a circular economy, contributing to a resilient blue bioeconomy model in Southern Italy.

In addition, BlueRev Sicilian pilot embodies elements of **Negotiated Governance**—an approach essential for addressing conflicts and aligning the interests of diverse stakeholders [19]. Ongoing negotiations within the core group address issues such as bycatch management, funding allocations, and the adoption of advanced waste processing technologies, like biogas production from bycatch, which could enhance energy self-sufficiency in coastal communities.

Lastly, **Self-Reflexivity** is an essential component of BlueRev social innovation approach, aligning with the principle of continuous feedback and adaptation within transformative social innovation [20]. In Sicily, the core group regularly evaluates project activities based on feedback from community stakeholders and data collected during workshops. This reflective process has led to an increased focus on engaging small-scale fishers in waste valorisation initiatives, which is critical for sustaining a circular economy in the region.

6.3.2 Structural change models for social innovation in the Greenlandic pilot

Social innovation models within the BlueRev project provide a framework to address multifaceted socio-economic challenges in Greenland's blue bioeconomy, particularly in the sustainable use of marine resources like shrimp and halibut. While the issues described here are real, the current role of social innovation and its models are theoretical as only one case was found implemented. A central issue in Greenland involves high transportation costs, inadequate infrastructure, and significant labour

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shortages, which limit effective resource utilization and market reach. One prominent model applied in this context is **Collective Impact**, encouraging cross-sector collaboration among municipalities, business councils, and research institutions. This collective approach aims to create a more inclusive workforce and enhance infrastructure, especially by involving vulnerable community groups often excluded from the blue bioeconomy sector. Though this is not really implemented it is a wish that local stakeholders have been clearly expressing.

In addition, the **Living Lab Model** supports Greenland's pilot activities by fostering real-world testing and co-creation. Workshops have engaged various local actors to address legislative barriers and gaps in food production knowledge. Currently, Greenland lacks local food laboratories and standardized production processes, complicating safe and sustainable practices. The Arctic Hub and Research Council of Greenland have been identified as key stakeholders in developing these knowledge resources, potentially leading to innovation in safe processing techniques and market-ready product development.

The **Community-Based Innovation Model** also applies, focusing on workforce mobilization and skill-building for sustainable practices. Greenland's cultural context presents unique challenges, as fishing is often viewed as a way of life rather than a business. Greenland produces over 45,000 tons of fish waste annually that remains unprocessed. Locally seminars were organised to explore ways to utilize this waste—such as fish bones, skins, innards, and shrimp shells—for innovative products. Inspired by the Faroe Islands, participants emphasized that Greenland must embrace new production models to capture value from these by-products. Faroe Marine Biotech, for example, partners with European firms to turn fish waste into valuable ingredients like peptides, collagen, oil, and proteins. This collaboration generates revenues comparable to those earned from primary fish products. In the case of Greenland, this model encourages small producers to adopt socially responsible business practices while respecting traditional lifestyles, addressing both economic and social resilience issues in local communities. This is demonstrated by the small business "Qalut" where the effort has led to unique dog food products, such as Kromix Fiberkost and Kromix Favorit, available in 15kg bags at prices of 295 DKK and 345 DKK, respectively. Another product, a 20kg mix of 50% lamb and fat with 50% halibut and cod, is offered for 499 DKK. These products reflect the business's innovative approach to resource utilization, generating local economic value from marine by-products while supporting Greenland's circular economy aspirations.

Negotiated Governance emerges as another essential model to address regulatory and economic challenges, such as outdated policies that hinder bycatch utilization and food production. Ongoing policy dialogues between Denmark and Greenland, including initiatives like hydropower development for green energy and potential green hydrogen projects, offer avenues to integrate sustainable practices across sectors. This governance model aims to balance economic needs with environmental sustainability and cultural preservation.

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Lastly, **Self-Reflexivity** within the social innovation framework promotes continuous adaptation to Greenland's distinct socio-cultural landscape. Feedback from stakeholders highlights the need for sensitive development approaches that respect traditional livelihoods, such as hunting, while also offering vocational training to support economic diversification. This reflective process is essential for evolving strategies that harmonize innovation with Greenlandic cultural values, ultimately fostering a resilient and sustainable blue bioeconomy.

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7 Best practices and recommendations

The BlueRev project's social innovation initiatives across Denmark, Greenland, Estonia, and Italy provide valuable insights into sustainable practices within the blue bioeconomy. Each region demonstrates unique social innovation models addressing specific regional challenges, such as regulatory constraints, workforce limitations, and economic and environmental sustainability. The following section highlights successful approaches from the BlueRev pilot region followed by recommendations for scaling up these practices across the blue bioeconomy.

7.1 Successful approaches

1. **Collective Impact in Denmark's Blue Bioeconomy**

In Denmark, the Collective Impact model has proven essential for aligning diverse stakeholders within the blue bioeconomy. By fostering cross-sectoral collaboration between government agencies, industry leaders, and community organizations, this model addresses the need for regulatory improvements, workforce development, and resource efficiency. Danish companies, for example, are leveraging side-stream fish products to create high-value items like fishmeal, fertilizers, and pharmaceuticals. This model encourages partnerships that streamline regulatory processes, making it easier for companies to access skilled labour through initiatives like fast-tracking permits for foreign workers. By promoting a shared vision and coordinated action, Collective Impact fosters sustainable bioeconomic growth while addressing critical resource management and environmental challenges.

2. **Negotiated Governance for Collaborative Policy-Making in Greenland and Denmark**

The negotiated governance model, used in both Denmark and Greenland, demonstrates a successful approach for addressing regulatory challenges and creating policy changes tailored to the blue bioeconomy's needs. This model promotes active dialogue among stakeholders, including government bodies, businesses, and local communities, to create flexible and responsive policies that support sustainable practices. For example, the governance model has been used to fast-track permits for foreign labour in Denmark, addressing workforce shortages, while in Greenland, it has helped align national policies with sustainable bycatch practices. This model enables stakeholders to negotiate solutions for regulatory barriers that hinder the development of circular bioeconomy practices, fostering a supportive policy environment for long-term sustainable growth.

3. **The Living Lab Approach for Innovation and Capacity Building in Estonia and Italy**

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The Living Lab model in both Estonia and Italy exemplifies a successful framework for fostering local innovation through community involvement. In Estonia's Saaremaa region, a specialized laboratory at Kuressaare College supports local businesses in the valorization of macroalgae and other blue bioresources. Through continuous workshops and consultations with local bioresource processors, this lab serves as a testing ground for bioeconomic practices and business models, and its training programs for lab technicians and PhD students enhance local capacity. Similarly, in Sicily, Italy, the Living Lab approach facilitates collaboration between local fishermen, scientists, and industry experts in developing protocols for high-value transformation of traditionally low-value by-catch, such as menola (known locally as "ritunnu salatu"). This model supports innovation in waste valorisation, where community-driven research and development empower local stakeholders and promote sustainable economic practices. The community-informed approach in both regions ensures that solutions developed are adaptable and directly relevant to local socio-economic contexts.

4. **Community-Based Innovation and Collective Impact in Italy's Blue Bioeconomy**

In Sicily, the Collective Impact model combined with Community-Based Innovation has successfully driven sustainable transformation in the local fishery sector. The University of Palermo collaborates closely with local cooperatives, industry leaders, and policymakers, forming a core group that leads initiatives for waste valorisation and product development in food sector, nutraceuticals and cosmetics, using by-products like menola (ritunnu salatu). This traditional fish product, previously undervalued, has been elevated to a premium product fetching up to 200 euros per kilogram. Natale Amoroso, a local fisherman, revived the tradition of producing ritunnu salatu using eco-friendly methods and now markets it as "eco-bottarga." These community-based initiatives empower local stakeholders, foster economic value through sustainable practices, and strengthen the local blue bioeconomy. The Collective Impact and Community-Based Innovation models effectively engage community ownership and resource stewardship, creating a resilient and self-sustaining industry rooted in local cultural heritage.

5. **Local government mobilization within Community-Based Innovation in Greenland**

In Greenland, the Community-Based Innovation Model mobilizes local stakeholders to address challenges unique to the region, such as high transportation costs, limited infrastructure, and labour shortages. The BlueRev project facilitates community-driven workshops and local training initiatives that foster a circular economy mindset, encouraging small producers to find innovative ways to use marine resources sustainably. A notable success is the transformation of fish processing waste into dog food products, exemplified by small businesses producing Kromix Fiberkost and Kromix Favorit from by-products. This model empowers local businesses to adopt socially responsible practices, generate local economic value, and support Greenland's circular

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economy, highlighting the importance of community specific stakeholders in addressing regional challenges.

7.2 Recommendations for scaling up

The BlueRev project's pilot initiatives in Denmark, Greenland, Estonia, and Italy demonstrate how targeted social innovation models can drive sustainable transformation in the blue bioeconomy. To maximize the impact and facilitate the broader adoption of these models, additional support from policymakers and a framework for replicating these successful practices across different regions are essential.

Policy Support is crucial to overcome financial and regulatory barriers, enabling regions to adapt these social innovation models to their unique socio-economic and environmental contexts. Policymakers should consider implementing specific regulatory incentives, grants, or tax benefits that encourage sustainable practices and reduce the financial burden on businesses and communities engaged in the blue bioeconomy. Flexible policies and incentives can facilitate access to resources, attract skilled labour, and encourage sustainable practices, particularly in emerging or resource-dependent regions.

Furthermore, a Framework for Replication can provide practical guidelines on how other regions can adopt and adapt these social innovation models effectively. This framework outlines structured approaches for stakeholder engagement, partnership building, and step-by-step implementation of social innovation models, ensuring that the core principles of sustainability and community ownership are maintained across diverse socio-economic landscapes.

The following sections outline key best practices derived from the BlueRev project's regional experiences and offer actionable recommendations for scaling these models. These recommendations are designed to provide both policy support and a replicable framework that can help regions implement similar initiatives in a way that promotes sustainable growth, community engagement, and inclusive development within the blue bioeconomy.

7.2.1 Strengthening Cross-Sectoral Partnerships

To expand the impact of social innovation in the blue bioeconomy, cross-sectoral partnerships should be prioritized. Collective Impact models, as seen in Denmark and Italy, offer a proven pathway to align government policies with industry needs and community interests. Establishing formal collaboration frameworks between government agencies, private sector players, and non-profit organizations can streamline regulatory processes and attract investments. These partnerships also create a supportive environment for sustainable practices, such as the transformation of side-stream fish products into value-added goods, fostering economic growth while addressing environmental concerns.

7.2.2 Enhancing Capacity Through Localized Training Programs

Scaling up social innovation requires a skilled workforce capable of implementing sustainable practices within the blue bioeconomy. Training programs, like those implemented in Estonia's Living Lab, should be adapted and expanded to other regions to build technical capacity for bioeconomic processes. Educational institutions and industry partners can collaborate to create curricula focused on blue bioresource valorisation, providing local talent with the skills needed to support sustainable practices. Such initiatives are vital for addressing workforce shortages and ensuring that local businesses have access to the skills required to thrive in a circular bioeconomy.

7.2.3 Promoting Policy Flexibility and Responsive Governance

The success of the negotiated governance model in Denmark and Greenland illustrates the importance of flexible and responsive policies in supporting social innovation. Policymakers should develop adaptable regulatory frameworks that can quickly respond to industry changes and market demands. This may include fast-tracking permits for foreign labour to meet workforce demands, as seen in Denmark, or creating policy incentives for companies to adopt sustainable practices. Policy flexibility can reduce bureaucratic barriers, facilitate business operations, and attract a diverse talent pool, all of which are essential for scaling up social innovation in the blue bioeconomy.

7.2.4 Building Community Ownership and Engagement

Empowering local communities to take ownership of bioeconomic initiatives is critical for sustained impact. The local government/stakeholders mobilization model in Greenland and the community-driven approaches in Italy highlight the benefits of community-based innovation, especially in regions with limited infrastructure. Community-based workshops and locally led business development programs should be encouraged in other regions to foster a sense of ownership and accountability. This approach not only builds community resilience but also ensures that the benefits of social innovation, such as job creation and environmental conservation, are felt directly within the community.

7.2.5 Leveraging Digital Platforms for Knowledge Sharing and Collaboration

Digital platforms can play a pivotal role in scaling up social innovation by enabling knowledge sharing and fostering collaboration across regions. By creating an online network of stakeholders involved in blue bioeconomy projects, regions can exchange insights, share best practices, and coordinate efforts. For example, Italy's experience with eco-bottarga and Estonia's laboratory findings could be shared with other regions looking to establish similar bioresource valorisation facilities. Digital platforms also offer training resources and support virtual collaboration, enhancing the ability of remote communities to access the expertise needed for sustainable blue bioeconomic growth.

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7.2.6 Encouraging Sustainable Business Models Through Financial Incentives

Financial incentives, such as grants or tax breaks, can encourage businesses to adopt sustainable practices. The valorisation of fish side-streams in Denmark, Italy, and Greenland demonstrates the economic potential of by-products within the blue bioeconomy. Governments and funding organizations should consider expanding support for innovative business models that prioritize sustainability, circularity, and local economic development. These incentives can reduce the financial risks for companies exploring new bioeconomic ventures, driving the transition toward a sustainable and inclusive blue bioeconomy.

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8 Further research and development needs

While the BlueRev project has achieved significant progress in implementing social innovation across Denmark, Greenland, Estonia, and Italy, several barriers remain that hinder the full potential of behaviour-change interventions within the blue bioeconomy. Identifying these areas for further research and refining social innovation models will be crucial for overcoming challenges related to community engagement, resource management, regulatory adaptation, and market sustainability. By addressing these areas, BlueRev can increase the effectiveness of its interventions and better foster sustainable and inclusive practices within local communities. Below are key areas where additional research and refinement could further strengthen social innovation efforts:

1. **Enhancing community engagement in resource-dependent regions**

While community engagement is a core principle of the BlueRev social innovation approach, certain resource-dependent regions, particularly in Greenland and remote parts of Italy, face unique cultural and logistical challenges that can limit participation. Additional research is needed to understand the socio-cultural dynamics that shape community perspectives on resource use, as well as to develop tailored engagement strategies that can build trust and cooperation among local stakeholders. Refining models like Community-Based Innovation to include culturally adaptive methods—such as community-led resource management and the integration of traditional knowledge—could enhance local buy-in and foster long-term commitment to sustainable practices.

2. **Developing comprehensive frameworks for workforce development and retention**

Workforce shortages remain a pressing issue in the blue bioeconomy, particularly in regions like Denmark and Greenland, where skilled labour for sustainable resource management is scarce. Refining social innovation models to include enhanced frameworks for workforce development, skill training, and retention strategies could mitigate these shortages. Additional research could explore the factors that influence labour mobility, retention, and upskilling within the blue bioeconomy, leading to more effective workforce development interventions. For instance, examining how incentive structures, training programs, and local mentorship opportunities impact workforce stability could inform the design of more resilient labour pipelines.

3. **Advancing circular economy practices for Improved resource valorisation**

Resource valorisation, especially the utilization of fish side-streams, is a cornerstone of BlueRev's sustainability goals. However, challenges persist around the economic viability, logistical costs, and technological capacity for processing side-streams in remote areas. Further research could examine innovations in processing technology, logistics, and supply chain management that are specifically tailored to small-scale or isolated bioeconomy operations. Additionally, exploring partnerships with technology

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providers and conducting feasibility studies on decentralized processing hubs could refine the Collective Impact model to better support circular economy practices.

4. **Investigating policy flexibility for regulatory adaptation**

Navigating regulatory barriers remains a challenge in implementing social innovation within the blue bioeconomy, especially as market demands and sustainability standards evolve. Research on adaptive policy frameworks could help stakeholders understand the pathways for creating flexible regulations that accommodate innovation while maintaining environmental protections. For example, analysing successful policy adjustments in other industries with strong environmental regulations could offer insights into how negotiated governance models can be adapted. Additionally, developing metrics for evaluating the socio-economic and environmental impacts of flexible regulations could provide a valuable tool for policymakers to assess the long-term benefits of adaptive regulatory approaches.

5. **Understanding the psychological drivers of behaviour change**

To increase the effectiveness of behaviour-change interventions, a deeper understanding of the psychological drivers that influence individual and collective actions within the blue bioeconomy is essential. Research could explore factors such as social norms, perceived risks and benefits, and the role of identity and cultural values in shaping sustainable behaviour. Integrating these insights into the Self-Reflexivity model could refine feedback mechanisms, making it easier to identify and address potential resistance points. This could lead to the design of targeted communication strategies and educational programs that resonate with specific community groups, fostering a greater willingness to adopt sustainable practices.

6. **Building robust data systems for monitoring and adaptive management**

Effective monitoring and evaluation are critical for the success of social innovation models, especially in dynamic and resource-intensive industries like the blue bioeconomy. Additional research could focus on developing data collection and analysis methods that allow stakeholders to track progress and adapt strategies in real-time. For instance, investigating how digital monitoring tools, such as IoT sensors and data platforms, can be implemented in remote fishing and algae-processing sites could support more responsive and adaptive management practices. Enhanced data systems could also provide a stronger evidence base to inform model refinement, helping stakeholders to make data-driven decisions that increase intervention efficacy.

7. **Expanding knowledge on market dynamics and sustainable business models**

Understanding market trends, consumer behaviour, and financial barriers is essential to scaling sustainable business models within the blue bioeconomy. Further research could explore the dynamics of emerging markets for valorised marine products, such as nutraceuticals, cosmetics, and bio-based materials, as well as the factors influencing

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consumer demand for sustainable products. Insights from this research could refine the Collective Impact and Living Lab models to include market research and business model innovation as integral components, enabling local enterprises to better align product development with evolving market opportunities.

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9 References

1. Osburg, T. and R. Schmidpeter, *Social innovation.* Solutions for a sustainable future, 2013. **18**.
2. Adams, D. and M. Hess, *Social innovation and why it has policy significance.* The Economic and Labour Relations Review, 2010. **21**(2): p. 139-155.
3. Chiffoleau, Y. and A.M. Loconto, *Social innovation in agriculture and food.* International Journal of the Sociology of Agriculture and Food, 2018. **24**(3): p. 306-317.
4. Pascual, U., et al., *Valuing nature's contributions to people: the IPBES approach.* Current opinion in environmental sustainability, 2017. **26**: p. 7-16.
5. Loorbach, D., N. Frantzeskaki, and F. Avelino, *Sustainability transitions research: transforming science and practice for societal change.* Annual review of environment and resources, 2017. **42**(1): p. 599-626.
6. Moulaert, F., *The international handbook on social innovation: collective action, social learning and transdisciplinary research*. 2013: Edward Elgar Publishing.
7. Choi, N. and S. Majumdar, *Social entrepreneurship as an essentially contested concept: Opening a new avenue for systematic future research.* Journal of business venturing, 2014. **29**(3): p. 363-376.
8. Bennett, N.J. and T. Satterfield, *Environmental governance: A practical framework to guide design, evaluation, and analysis.* Conservation Letters, 2018. **11**(6): p. e12600.
9. Bocken, N.M., et al., *A literature and practice review to develop sustainable business model archetypes.* Journal of cleaner production, 2014. **65**: p. 42-56.
10. Leal Filho, W., et al., *Social innovation for sustainable development: assessing current trends.* International Journal of Sustainable Development & World Ecology, 2022. **29**(4): p. 311-322.
11. Portales, L., *Social innovation: Origins, definitions, and main elements*, in *Social innovation and social entrepreneurship*. 2019, Springer. p. 1-14.
12. Terstriep, J., et al., *Measuring social innovation*, in *A Research Agenda for Social Innovation*. 2021, Edward Elgar Publishing. p. 263-286.
13. Kania, J. and M. Kramer, *Collective impact*. 2011: FSG Beijing, China.
14. Cossetta, A. and M. Palumbo, *The co-production of social innovation: The case of living lab.* Smart city: how to create public and economic value with high technology in urban space, 2014: p. 221-235.
15. Edwards-Schachter, M.E., C.E. Matti, and E. Alcántara, *Fostering quality of life through social innovation: A living lab methodology study case.* Review of policy research, 2012. **29**(6): p. 672-692.
16. Mazzarol, T., *Empowering Communities Through Innovation in Local Government.* Centre for Entrepreneurial Management and Innovation Working Paper, 2011(1101).
17. Lucas, M., *Social innovation through collective impact.* Professional Educator, 2016. **15**(2): p. 8-11.

Funded by the European Union

18. Zuckerman, S.J., *"Why can't this work here?": Social innovation and collective impact in a micropolitan community.* Community Development, 2020. **51**(4): p. 401-419.
19. Plotnikof, M., *Negotiating collaborative governance designs: a discursive approach.* The Innovation Journal, 2015. **20**(3): p. 1.
20. Murray, R., *The open book of social innovation.* National endowment for science, technology and the art, 2010.

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