

GRAVNINGEN



Interreg  
North Sea



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FREIIA



Høgskolen i Østfold

**B25IPL01**

**BACHELOR'S THESIS**

**INTERREG FREIIA WP4**

**Jenny Louise Helt, Sofie Guldborg Gretland  
& Patrick Kakis Gabrielsen**

Innovasjon og Prosjektledelse  
Høgskolen i Østfold

# BACHELOR'S THESIS

Interreg FREIIA WP4  
**B25IPL01**

Jenny Louise Helt, Sofie Guldborg Gretland & Patrick  
Kakis Gabrielsen

13.05.2025

Innovasjon og Prosjektledelse  
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# ABSTRACT

This bachelor's thesis presents the results from our work in Work Package 4 (WP4) of the international and interdisciplinary Interreg project FREIIA (Facilitating Resilience Embracing Islands Innovation Approaches), conducted between 2022 and 2025. The project addresses growing societal challenges related to digitalization, climate change, centralization, and demographic imbalance, and explores how isolated island communities in Northern Europe can be strengthened through sustainable innovation, local anchoring, and student-driven processes.

During the fall semester of 2024, our group took on leadership roles in FREIIA through internships. Sofie and Jenny acted as project and process leader respectively, whilst Patrick focused on applying project development strategies to enhance the analytical processes of FREIIA. A key part of this semester was the organization, leadership, and execution of a field visit to Koster Island, led by Sofie and Jenny, while Patrick led a new approach to analysis. In the fall of 2025, we conducted two additional field trips to the French islands of Groix and Ouessant.

Our main goal throughout the project has been to identify possibilities for strengthening resilience and adaptability on each island through sustainable innovation. Across all six islands, Hvaler (Norway), Bornholm (Denmark), Koster (Sweden), Schiermonnikoog (Netherlands), Groix, and Ouessant (France), we collected qualitative data through 148 interviews with local stakeholders. The data was analysed using Grounded Theory and a newly developed AI-method. Informed by these insights, we conducted co-creation workshops designed around the Double Diamond framework and design thinking principles, offering arenas for dialogue, innovation, and collaborative problem-solving.

Emphasis was placed on discovering community-specific challenges and developing realistic, context-sensitive solution proposals. Despite regional differences, the islands face many shared issues: housing shortages, youth outmigration, reliance on seasonal tourism, limited infrastructure, and a need for improved cross-sector collaboration. At the same time, the project uncovered considerable potential for sustainable and transferable solutions, including mobile innovation hubs, strengthened democratic platforms, circular business models, localized cooperation, and initiatives that support year-round tourism.

Students have played a central role as both analysts and facilitators, demonstrating how young changemakers can contribute to local development through a combination of academic insight, creative methodology, and practical engagement. This thesis also explores the strengths and limitations of AI in qualitative research and highlights how participation, ownership, and trust-building contribute to long-term impact.

Our findings offer a cross-disciplinary and practice-oriented perspective on how sustainable innovation can be operationalized in small island communities. The work not only lays a foundation for future research, development, and implementation of targeted measures, but also aims to inspire other actors seeking to promote community resilience and capacity for change.

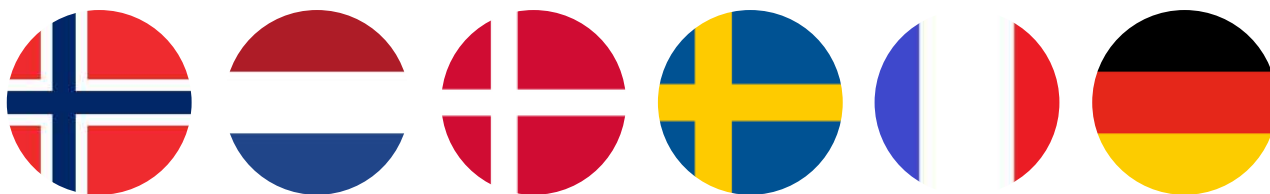


FIGURE 1 - THE PARTNER COUNTRIES INVOLVED IN FREIIA



FIGURE 2 - GROUP PICTURE OF SOME OF PARTNERS AT A PARTNERMEETING IN SCHIERMONNIKOOG

# PREFACE

This bachelor thesis is written as the final part of the bachelor's degree in Innovation and Project Management at Østfold University College in the spring of 2025. The thesis is connected to the Interreg project FREIIA, an international and interdisciplinary collaboration between six European countries.

We would like to express our sincere gratitude to our lecturers and project supervisors, Bjørn Gitle Hauge and Gunnar Andersson, for their support, trust, and guidance throughout the project. A warm thank you to Ellen W. Bjerga and Linnea Johansen for the work they conducted in [Phase 1. A](#). A special thanks also goes to academic mentor Anna Lena Kjøniksen, for her valuable input and constructive feedback during the process.

Furthermore, we extend our thanks to all the FREIIA project partners from Norway, Sweden, Denmark, France, Germany, and the Netherlands for their commitment and knowledge sharing. We would also like to thank the students from IPL21, IPL22, IPL23, and IPL24, as well as students from the Netherlands, France, Sweden, Belgium, and Denmark, who helped shape the direction and content of the project. A warm thank you is also extended to all lecturers who contributed with academic content and inspiration throughout the different phases.

It has been both challenging and highly rewarding to take part in such an extensive international collaboration. Working on this thesis has provided us with valuable experience in project management, networking, digitalization, sustainable innovation, and has strengthened our understanding of how cross-border and cross-disciplinary cooperation can generate real value.

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Attachments



# WORD PREFERENCES

Reports overview in the attachments, the reports will be referred to their name code with colour code on the right in the text. The colour represents the phase, this will be explained in detail with timeline in process section.

- 1 Hvaler Student Sustainable Entrepreneurship Report Project FREIIA - **V1H**
- 2 Hvaler Student Sustainable Entrepreneurship Report Project FREIIA - **V2H**
- 3 Hvaler Student Sustainable Entrepreneurship Report Project FREIIA - **V1HT**
- 1 Schiermonikoog Student Sustainable Entrepreneurship Report Project FREIIA - **V1S**
- 2 Schiermonikoog Student Sustainable Entrepreneurship Report Project FREIIA - **V2S**
- 3 Schiermonikoog Student Sustainable Entrepreneurship Report Project FREIIA - **V1ST**
- 1 Bornholm Student Sustainable Entrepreneurship Report Project FREIIA - **V1B**
- 2 Bornholm Student Sustainable Entrepreneurship Report Project FREIIA - **V2B**
- 3 Bornholm Student Sustainable Entrepreneurship Report Project FREIIA - **V1BT**
- 1 Koster Student Sustainable Entrepreneurship Report Project FREIIA - **V1K**
- 2 Koster Student Sustainable Entrepreneurship Report Project FREIIA - **V2K**
- 3 Koster Student Sustainable Entrepreneurship Report Project FREIIA - **V1KT**
- 4 Koster Student Sustainable Entrepreneurship Report Project FREIIA - **VAIK**
- 1 Groix Student Sustainable Entrepreneurship Report Project FREIIA - **V1G**
- 2 Groix Student Sustainable Entrepreneurship Report Project FREIIA - **V2G**
- 3 Groix Student Sustainable Entrepreneurship Report Project FREIIA - **V1GT**
- 4 Groix Student Sustainable Entrepreneurship Report Project FREIIA - **VAIG**
- 1 Ouessant Student Sustainable Entrepreneurship Report Project FREIIA - **V1O**
- 2 Ouessant Student Sustainable Entrepreneurship Report Project FREIIA - **V2O**
- 3 Ouessant Student Sustainable Entrepreneurship Report Project FREIIA - **V1OT**
- 4 Ouessant Student Sustainable Entrepreneurship Report Project FREIIA - **VAIO**

The transcript reports can be viewed in attachment 1; Freiia - Transcripts.pdf

## **Artificial intelligence - AI - Article 3 No 1 AI Act**

“a machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments” (Wendehorst & Nessler, 2024).

## **GPTs (Generative Pre-trained Transformers)**

Customizable versions of ChatGPT that combine instructions, extra knowledge, and specific skills to assist with various tasks in daily life, work, or education (OpenAI, 2023).

### **FREIIA Work Package 1 “Tipping Mechanism” (WP1)**

The "Tipping Mechanism" is a creative tool developed within the FREIIA project to facilitate the generation of innovative ideas aimed at sustainable development. Building upon the TIPPING Wheel from the Islands of Innovation project, it assists communities in identifying and formulating potential circular economy innovation projects. The mechanism emphasizes bottom-up participation, encouraging local stakeholders, including students and residents, to contribute to the innovation process. It integrates design thinking and aligns with the United Nations Sustainable Development Goals (SDGs) to ensure that the innovations are mission-oriented and contextually relevant (Organisation for Economic Co-operation and Development, 2022).

### **FREIIA Work Package 2 “Rudder Method” (WP2)**

The "Rudder Method" serves as an expert-based governance tool within the FREIIA framework, guiding sustainable innovations and interventions. It focuses on the development of strategic innovation action plans by fostering advanced governance structures that promote cross-sectoral and multilevel coordination. The method encourages inclusive participation from various stakeholders—public authorities, businesses, academia, and civil society—to co-create solutions for sustainable transitions. By applying design thinking methodologies, the Rudder Method aims to strengthen leadership roles, enhance collaboration, and create an environment conducive to innovation (Organisation for Economic Co-operation and Development, 2022).

### **Grounded Theory**

A systematic methodology that has been largely applied to qualitative research conducted by social scientists. The methodology involves the construction of hypotheses and theories through the collecting and analysis of data (Wikipedia contributors, 2025).

### **Casdaq Coding**

Computer-Assisted Qualitative Data Analysis Software, is a collective term for computer programs that uses Qualitative analysis (Johannesen, Tufte, & Christoffersen, 2023, p. 286).

### **Design Thinking**

Design thinking is a mindset and approach to problem-solving and innovation anchored around human-centred design (Harvard Business School Online, n.d.).

### **Prompt Engineering**

Prompt engineering is the process of structuring or crafting an instruction to produce the best possible output from a generative artificial intelligence (AI) model (Wikipedia contributors, d.d.).

## Quintuple helix

An innovation model describing collaboration between five sectors – academia, industry, government, civil society, and the natural environment – to promote sustainable development (Carayannis et al., 2012).

## Stakeholder

Any individual, group, or organization that can affect or is affected by the outcomes of a project, decision, or organization (Freeman, 1984).

## Student venture

A student venture is any entity that is, or is expected to be, substantially controlled, owned, or managed by a currently enrolled student. These entities include all for-profit and nonprofit businesses and social enterprises, as well as venture capital funds, private equity funds, hedge funds, search funds, and other investment vehicles. (Harvard Business school,2023)

## Problem Framing Session

Invitation to the students participating in the workshop to give feedback based on experience to change or improve the AI's suggested problem statements (V1G)

## Bias

Bias often stems from deeply ingrained societal stereotypes, cultural norms, personal experiences, and even institutional structures. These biases can seep into decision-making processes, leading to unfair treatment and perpetuating systemic inequalities (The Oxford Review, n.d.).



FIGURE 3 - THE SIX ISLAND WE HAVE VISITED

# INTRODUCTION

This bachelor's thesis reports on the results from the Interreg project FREIIA (Facilitating Resilience Embracing Islands Innovation Approaches) conducted from 2022 to 2025.

The world is changing faster than ever before. Digitalization, urbanization, and climate change pose real threats to isolated small communities, not only islands but also small municipalities across Northern Europe. It is becoming increasingly difficult and costly for these communities to adapt to the current social and environmental changes. These challenges are aligned by the Grand Societal Challenges (GSCs) and the Sustainable Development Goals (SDGs), (United Nations, 2025).

The FREIIA project aims to address these issues by equipping small communities with the skills, resources, and frameworks needed to adapt. By using a bottom-up approach within a quintuple helix model and involving young entrepreneurs, FREIIA seeks to strengthen the resilience and flexibility of local communities. Cultural diversity and local knowledge are core strengths in this process. (Interreg North Sea, 2025)

FREIIA is developing a governance framework based on two key components: the “Tipping Mechanism” WP1 and the “Rudder Method” WP2. The development of this framework heavily relies on young entrepreneurs and students, a group we ourselves represent in WP4 (Interreg North Sea, 2025). This thesis highlights the results of that process. (Interreg North Sea, 2025)

From 2022 to 2025, we participated actively in FREIIA, and from 2024 onwards, we took over the leadership of Work Package 4. Our responsibilities included planning, conducting research, and leading activities on the islands Koster (Sweden), Groix, and Ouessant (France).

**The central question has been: How can new entrepreneurial initiatives made by students contribute to equipping isolated communities to face the challenges of the future?**



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# THE TEAM



JENNY LOUISE HELT  
**Process Leader**



RESPONSIBLE FOR STRUCTURING AND FACILITATING COLLABORATIVE WORKFLOWS THROUGHOUT THE PROJECT. THE ROLE ENSURED CONTINUITY, GUIDED STAKEHOLDER INTERACTION, AND SUPPORTED THE TRANSFORMATION OF INPUT INTO ACTIONABLE OUTCOMES. A KEY FOCUS WAS MAINTAINING ALIGNMENT BETWEEN PROJECT OBJECTIVES AND PROCESS DEVELOPMENT.

*Jenny Louise Helt*



SOFIE GULDBERG GRETLAND  
**Project Manager**



COORDINATION OF ACTIVITIES, RESOURCES, AND TIMELINES, ENSURING ADHERENCE TO THE PROJECT PLAN. RESPONSIBILITIES INCLUDED PROGRESS MONITORING, ALIGNMENT OF TASKS WITH MILESTONES, AND MANAGING COMMUNICATION ACROSS PARTNERS AND WORK PACKAGES. THIS CONTRIBUTED TO EFFICIENT IMPLEMENTATION AND GOAL ATTAINMENT.

*Sofie Guldberg  
Gretland*



PATRICK KAKIS GABRIELSEN  
**Data & Digitalization Analyst**



INVOLVED THE IDENTIFICATION AND INTEGRATION OF TECHNOLOGICAL TOOLS TO SUPPORT THE PROJECT'S AIMS. FOCUS AREAS INCLUDED DIGITAL SOLUTION MAPPING, IMPLEMENTATION OF RELEVANT PLATFORMS, AND STRATEGIC USE OF SMART TECHNOLOGY AND AI. THE WORK ENHANCED WORKFLOW EFFICIENCY AND INNOVATION. SUPERVISING PREPARATION FOR WORKSHOPS.

*Patrick Kakis  
Gabrielsen*



FIGURE 4 - STUDENTS AND TEACHERS FROM FRANCE AND NORWAY QUessant V16V2

# SCOPE LIMITATION

This paper will not include the project managerial elements of the reports and is limited to the theories and methods that was used on the islands.

The discussion surrounding the use of artificial intelligence (AI) in qualitative research is primarily grounded in our experiential engagement with these tools over the past year. Given the nature of this application area, there remains a notable gap in established research and theoretical frameworks. While existing literature generally acknowledges the potential and limitations of AI to contribute to qualitative analytical approaches, most contributions remain on a theoretical level, emphasizing possibilities rather than tested methodologies. In contrast, our work has progressed beyond theoretical speculation. Through trial and error, in line with Double Dimond. We have developed and implemented a functional method that uses Generative-AI into qualitative research processes “. There are also not adequate or comprehensive guides for using AI in qualitative studies, such as critical reviews, systematic reviews, conceptual papers, and empirical studies that use thematic analysis” (Christou, 2023).

This thesis includes certain chapters that differ from the main structure and are not purely analyses of data or findings. Among these is a description of the process and implementation. This has been included to demonstrate how the work was carried out in practice and to enable others to replicate or build upon the approach. Additionally, we have chosen to include a review of Proffesor Han’s work on business proposals. This section serves to how the ideas and solutions developed through student engagement can and should be followed up and further developed in later phases of the project.

Furthermore, a chapter on the topic of Student Sustainable Entrepreneurship for Governance of Innovation has been included. This represents a distinct deliverable within the FREIIA project and is therefore relevant to include in order to strengthen the overall project output, while also providing a framework for understanding the role of students in innovation efforts within small communities.

These chapters are intended to provide a broader understanding of the project’s structure and continuity, but they do not constitute the core of the empirical analysis presented in the thesis.

# METHOD

FREIIA, as a project, has a desire to address GSCs (Grand Societal Changes) and SDGs (Sustainable Development Goals) with a bottom-up approach. This is to make island communities more aware of sustainable development and to build resilience, using various tools (Interreg North Sea, n.d.). To maintain the project's academic grounding and relevance within academia, we have applied various methods as practical and analytical tools. This is to be able to address the islands' sustainability challenges based on a context-based and qualitative approach. The methods have been selected based on a focus on qualitative data collection and involvement of local stakeholders.

## Student participation

FREIIA WP4 is named "Fostering Student Entrepreneurship." Our project is about including students and academia from the respective participating countries to optimize communication and gather information for further development. The process of selecting participants for the research project has been the same throughout the entire project period. We issue a call to the cohort we want to include in the process. This call requests a motivation letter in which the student thoroughly describes why they are a good addition to the team. The motivation letters along with reference checks, form the basis for the selection.

In the operational phases where students from other universities have been included, we have used partners from the respective countries as responsible for the recruitment process. This has ensured that all students who have participated have relevance to the project.

## Recruitment of Stakeholders

The individuals interviewed on the islands are referred to as "stakeholders." A stakeholder is an interested party who can influence/be influenced by an organization or action. On all the islands, stakeholders have been selected by the island's partner. This means we have been sent a list of actors that the partners believe have important insight into the island's function. This approach has worked well on several of the islands, but not all. On the island where this method did not work, we divided the island into geographical areas of responsibility. This, in combination with proactive and effective participants, ensured interviews that to a greater extent gave us comparable results.



FIGURE 5 - OUESSANT, STAKEHOLDER AREA FOR STUDENTS TO FIND STAKEHOLDERS

## Framework and Method

As the overall methodological framework, we have applied the Double Diamond framework, developed by the UK Design Council (Voltage Control, 2023). The model consists of four phases – Discover, Define, Develop, and Deliver, and is used as a structure for innovation and co-creation. The Double Diamond helps us alternate between opening for broad exploration of challenges and narrowing down toward concrete, implementable solutions.

The activities carried out on the islands are anchored in the model, and include:

- The UNIC method and qualitative, semi-structured interviews (Discover / Define)
- AI-assisted analysis of interview and observational data (Define)
- Design thinking workshops with local stakeholders (Develop / Deliver)
- Prototyping Pitching ideas (for future work, make business proposals)
- Practical project management, coordination, facilitating meetings, and documentation.

The use of the Double Diamond has contributed to creating structure, continuity, and coherence in the work across the different islands in the project. The various methods are elaborated upon in the following parts of the chapter and can also be visualized as part of the Double Diamond process.

In the Discover phase, we apply the UNIC method, which identifies development potential, originally in an organizational context, but in this case, in the island communities (Hein, L, 1988). It is based on semi-structured interviews which are transcribed.

The choice of interview structure naturally fell on semi-structured interviews, due to the need to ask follow-up questions. This interview form allows variation in the order of questions and themes beyond the main interview guide, so that we can obtain the answers we want from the interviewed stakeholder (Johannesen et al., 2023, p. 108). In FREIIA, we have used a shared interview guide that the students have worked with on each of the islands. This interview guide is designed with the goal of accessing information that paints a full picture of the islands.

Interview guide
1. What is your role in the island community?
2. How would you describe the island community and its current state?
3. What do you think are the best aspects of Hvaler?
4. What are the major challenges the island community faces in terms of innovative development and sustainable growth?
5. What initiatives has the island community undertaken in the past to address these challenges?
6. How does the island community collaborate to promote innovative development and sustainable growth?
7. How do you think the island community can improve its capacity for development?
8. How can you and your organization contribute to enhancing the island community's capacity for sustainable growth?
9. How can the island community better collaborate with surrounding communities and regions to achieve common goals?

FIGURE 6 - INTERVIEW GUIDE USED ON ALL ISLANDS.

Before each interview, the stakeholders are given a consent form to sign. This document explains the purpose of the study, informs them of their rights, and clarifies that all participation is voluntary. It also includes information about data protection and anonymity, ensuring that no identifying information will be linked to their responses.

The process of analysing the transcripts evolved throughout the FREIIA project. It began in [Phase 1.A](#), as a human-driven process, where involved students and professors manually reviewed the transcripts and identified common themes, which were eventually transformed into problem statements.

This was a time and resource-consuming process, which led us to look for new solutions. The result of this search is the AI process we use today. From [Phase 1.B](#) and [1C](#), AI is a tool that helps us with pattern recognition and thematization of the qualitative data. To ensure that the analysis reflects an accurate picture of the community, we also include the participating students in the process. To bring forward perspectives, nuances and observations that might not necessarily emerge from the transcripts. This aligns with elements from depth interview where you want, opinions, experiences, and attitudes (Tjora, 2023, p.182). The analysis results in problem statements that are used further in workshop settings.

For the AI analysis we created a method using Grounded Theory (Hein, L, 1988), CASDAQ Coding (S.163, Johannesen, Tufte, & Christoffersen, 2023) and Prompt engineering cheat sheet, to frame the Custom GPT (Ai) and to ensure academic integrity. In [Phase 1.B](#) we received some important feedback, regarding ownership and involvement from the students. Based on this feedback, we decided to involve students to increase their sense of ownership and created a segment we named “Problem framing session”. For full details and guide on how this process has been done (see the attached reports [VAIK](#), [VAIG](#) and [VAIO](#)).

In the Develop and Deliver phase, we organize a design thinking workshop. These workshops are designed so that participants can empathize with user needs. This is to find solutions that address discovered challenges using empathy, definition, prototyping, and testing (Voltage Control, 2023). In these workshops, the students collaborate with local stakeholders to develop proposed solutions to the identified challenges. Throughout the FREIIA trips, these workshops have had different facilitators. Each workshop has therefore used various methods and innovation processes, but all have been anchored in the Double Diamond framework.

# PROCESS

This process description aims to document and enable the replicability of our bachelor project, which included six island visits across Northern European Islands. The work was structured using the Double Diamond model, and this text provides an overview of how the process evolved and was adapted over time.

We felt it important to include the process to better showcase how we have impacted the project and how it has evolved over time.

The FREIIA project has been ongoing over multiple years with different leadership. It started in fall of 2022 with Ellen and Linnea as project leaders in 2023, and they are the ones responsible for the groundwork.

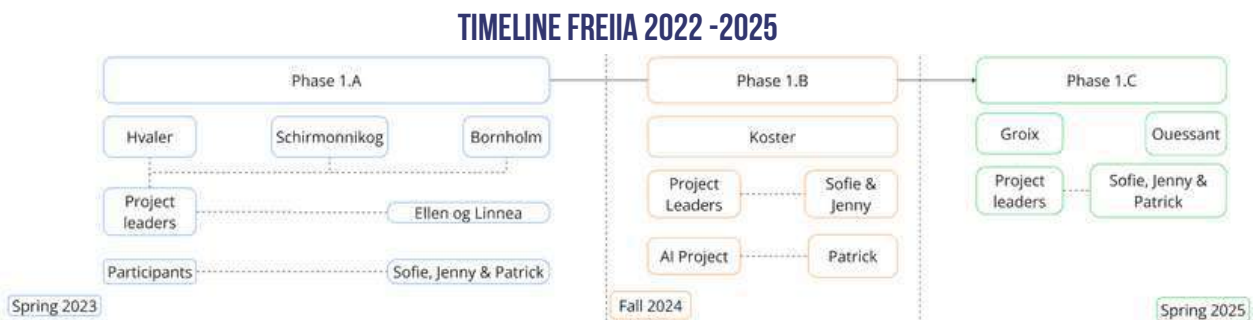


FIGURE 7 - TIMELINE DEMONSTRATING THE DIFFRENT PHASES DURING THE PROJECT, WHERE CHANGES HAS OCCURED.

We split the prossess into three phases.

**Phase 1.A** is the first three island visits where the foundational structure was established.

**Phase 1.B** is when Sofie and Jenny took over as project leaders, and Patrick developed the AI method for analysing the interview data.

**Phase 1.C** represents the last iteration, where we no longer visited each island twice, reduced the total travel down to one visit over one-week, combined interview gathering, data analysis and workshop within the same week.

The original process

**Phase 1.A** represent the work from reports; **V1H, V2H, V1HT, V1S, V2S, V1ST, V1B, V2B, V1BT.**

## PHASE 1.A

Timeline - FREIIA - Hvaler Manual prossess

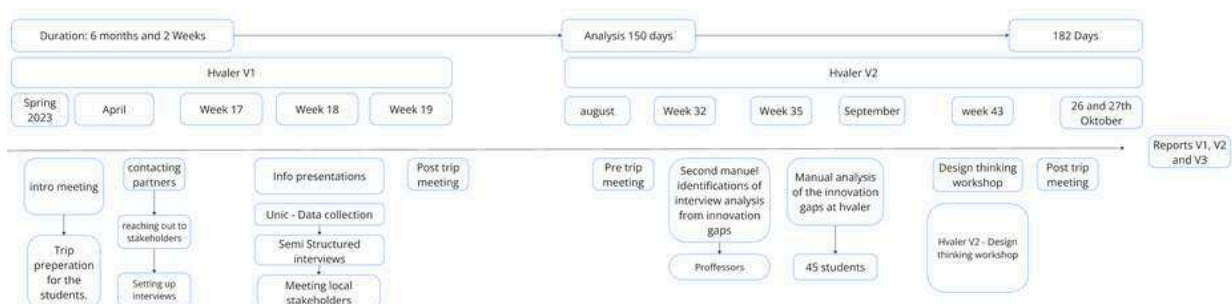


FIGURE 8 - TIMELINE DEMONSTRATING THE PHASE 1.A AND DURATION.

One of the important things to note is the time from first trip to last trip, Overall duration in Hvaler Visit V1 and V2 extends too 182 days. Another point is that not everyone that participated in V1 was the same as those who participated in V2. However, During this period of time, Hvaler V1, Schiermonnikoog V1 and Bornholm V1 all occurred before any of the visits of V2 happend. It must be mentioned that the duration between the visits was not spent on analyzing alone.

The following is a description on how double dimond looks and fits into V1 and V2.

**Phase 1: V1 Planning, Preparation and data gathering (Discover)**

**Purpose:**

To explore the context and gather diverse stakeholder perspectives relevant to the local innovation ecosystems of the islands.

**Actions:**

1. Employed the UNIC framework to guide qualitative inquiry into local challenges and opportunities.
2. Conducted semi-structured interviews with pre-identified and “pop-up” local stakeholders.
3. Engaged innovation students in fieldwork and data collection.
4. Used digital recording tools and pre-developed interview guides to ensure consistency.

**Experiences:**

1. Students expressed ownership and motivation after being included in the planning phase.
2. Early involvement allowed us to assign roles based on students` competence and interests.

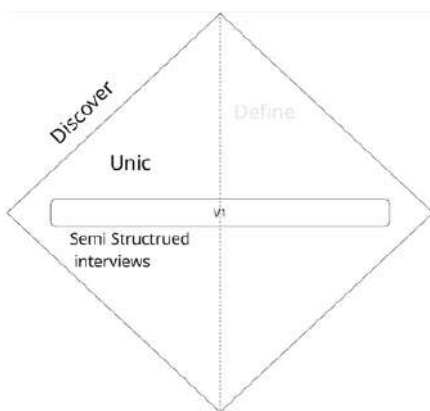


FIGURE 9 - DOBBLE DIMOND DISCOVER, CONNECTED WITH V1.

**Phase 2: V1 Data Analysis (Define)**

**Purpose:**

To find the current state, define their desired situation, establish gaps in the data, and find problem statements for the workshop

**Actions:**

1. Manual data analysis on Hvaler, Schiermonnikoog, and Bornholm using Unic method and Grounded Theory.
2. Turn Audio recording into text.
3. Split students into groups and have them analyse each interview to find gaps
4. Put gaps into categories and make a list.
5. Prioritize gaps based on how many times each category has been mentioned.
6. Find problem statements that can be used for the workshop.

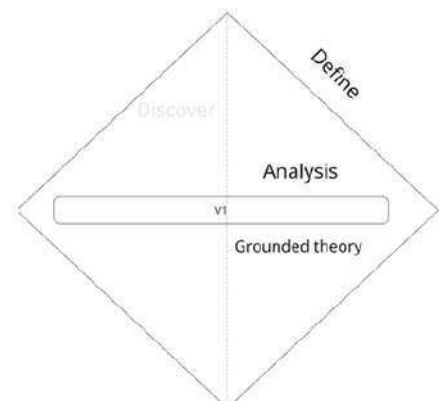


FIGURE 10 - DOBBLE DIMOND DEFINE, CONNECTED WITH V1.

### Phase 3: V2 Workshop (Develop)

#### Purpose:

To collaboratively frame concrete problem statements that serve as the foundation for ideation and innovation.

#### Actions:

1. Hosted workshops on-site with local stakeholders to validate and refine problem statements.
2. Adjusted the problem statements and focus, based on contextual needs and interest, to ensure participation (culture, gaps, improvement gaps).
3. Student assistants helped facilitate discussions and ensure inclusive engagement.

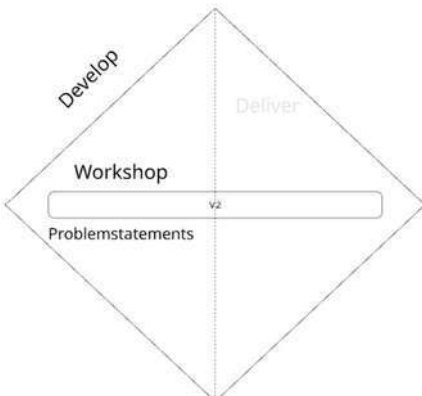


FIGURE 11 - DOBBLE DIMOND, DEVELOP, CONNECTED WITH V2.

### Phase 4: V2 Co-Creation (Deliver)

#### Purpose:

To generate and present sustainable and actionable ideas that address the co-defined problem statements.

#### Actions:

1. Used design thinking and ideation tools in workshops to co-create solutions with local **participants:**
2. Encouraged participants to pitch ideas
3. Collected student reflection notes post-visit for evaluation and process improvement

#### Experiences:

1. Low attendance at some workshops limited the potential for local anchoring.
2. The flexible methodology allowed for local adaptation and creative diversity.
3. Reflection notes provided valuable insights for continuous improvement.

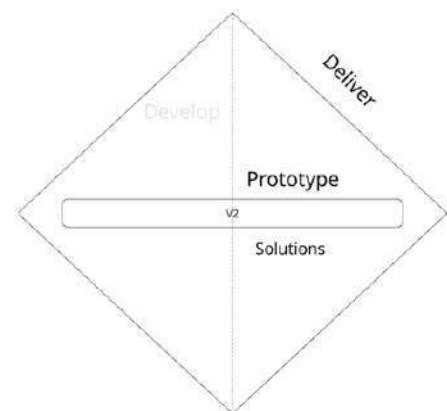


FIGURE 12 - DOBBLE DIMOND, DELIVER, CONNECTED WITH V2.

This marks the overview of the original processes.

Now follows the adaptation, where we have improved the process. This include the reports: **V1K**, **V2K**, **VAIK** and **V1KT**.

# PHASE 1.B

Timeline - FREIIA - Koster AI process



FIGURE 13 - TIMELINE ILLUSTRATING PHASE 1.B, AND DURATION.

In phase 1.B in the fall of 2024 Sofie and Jenny started their internship and took over the role as Project managers, Patrick joined the project in his course Applied Project Development.

In the timeline you can see that the total time from visit 1 to visit 2 is reduced to only two weeks. Both trips were conducted in October of 2024.

Actions: Digitize the analysis part between each island visit.

1. AI reduced analysis time from several days to a few hours but required fact-checking and validation. See attachment Koster VAIK for full guide.
2. Some students initially felt excluded due to lack of understanding of the AI process; they were later involved more directly.

# PHASE 1.C

Timeline - FREIIA - Ouessant Ai Analytics

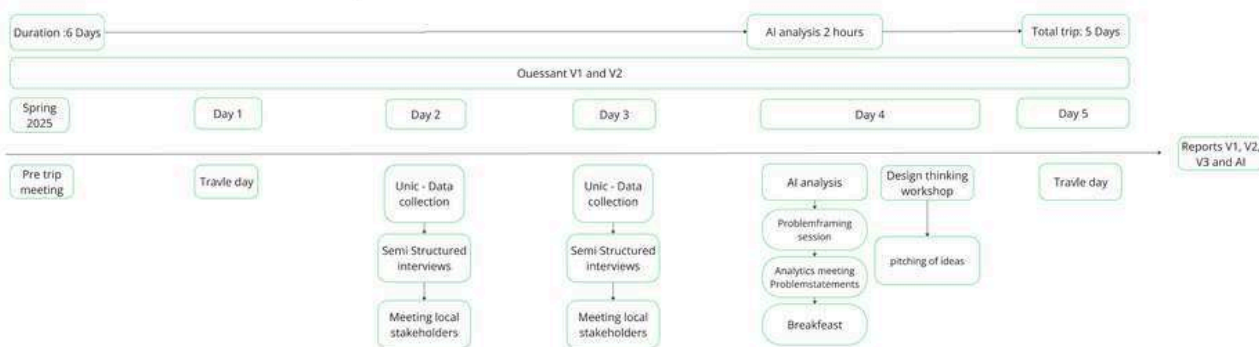


FIGURE 14 - TIMELINE ILLUSTRATING PHASE 1.C, AND DURATION.

This segment includes reports ; **V1G, V2G, VAIG, V1GT** and **V10, V20, VAIO** and **V10T**

In Phase 1.C we deviated from the original setup by fully using the AI method. We implemented a CustomGPT to perform data analysis, replacing the previously manual approach.

This methodological shift was implemented because of our experience during the Koster visit (Phase 1.B), is where we truly identified the opportunity to streamline and enhance the process through the use of our CustomGPT. The work had to be completed within the timeline of the FREIIA Work Package 4, which resulted in greater operational efficiency.

Additionally, practical constraints required us to innovate.

Budgetary limitations also played a crucial role. Due to rising costs caused by global instability (e.g., COVID-19, the war in Ukraine), the financial resources given at the beginning of the project had less value in 2025. The fixed budgets had to cover increasingly expensive logistics. This economic pressure made it essential to adapt the project design to ensure feasibility and continuity.

### **Benefits**

- **Increased Efficiency:** AI reduced the time required for data analysis from several days to just a few hours.
- **Replicability:** The standardized digital method enables other teams to replicate our approach more easily.
- **Scalability:** The new process can be applied across larger datasets or additional locations without proportional increases in cost or time.

### **Trade-offs and Limitations**

- **Reduced Student Engagement:** Some students felt disconnected from the analytical process when AI replaced manual methods, they had previously participated in.
- **Need for Validation:** AI-generated insights required thorough fact-checking to avoid bias or misinformation.
  - **Learning Curve:** Introducing AI tools involved an initial training period.

The project process underwent considerable evolution throughout its duration.

These changes were driven by hands-on learning, practical constraints, and a desire to improve relevance and impact. The integration of AI, the streamlining of logistics, and increased involvement of students demonstrate how process innovation can enhance both quality and feasibility. However, our experience also underscores the need to balance technological efficiency with human engagement and learning opportunities.

This process innovation strengthened our project's quality. At the same time, our experiences highlight that technological efficiency must be balanced with engagement.



# PRIVACY AND AI

The interviews were structured around nine open-ended questions, allowing for rich, reflective responses. Recordings were made with automated transcription using “Nettskjema”, the Norwegian universities' digital app for recording, storing, and transcribing research interviews. The recordings were then anonymized in terms of names in accordance with the signed consent form approved by the Norwegian Centre for Research Data (NSD). After that they are downloaded to a closed Teams group only accessible to the Norwegian Project leaders. Then each interview was checked manually to see if there are any names we had yet to remove.

The interview data in text format then was be uploaded to a private Custom GPT. Several options are available in the account settings to ensure that the Custom GPT remains private. Users can also opt out of allowing OpenAI to use their data for future training purposes.

Additionally, there are useful guidelines for prompting. By avoiding evaluative feedback on ChatGPT responses, the content will not be considered for future training.

We also conducted prompt engineering tests using other OpenAI accounts to try to interact with our uploaded material. These tests aimed to determine whether our data could be retrieved indirectly. No information related to our project was accessible in this manner, confirming the effectiveness of our privacy measures.

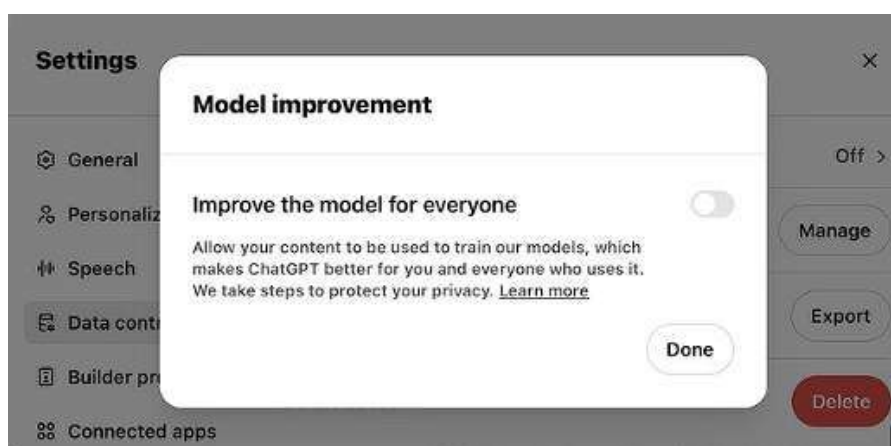


FIGURE 15 - OPEN AI OPTION TO NOT HELP IMPROVING FUTURE MODELLS.

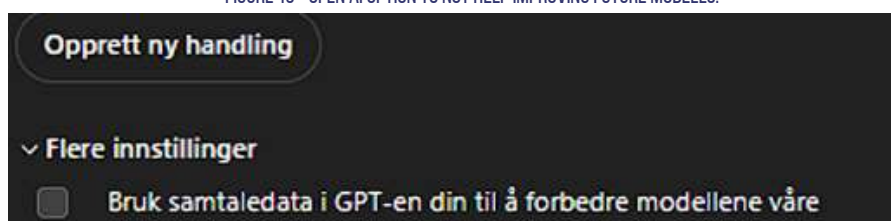


FIGURE 16 - OPEN AI OPTION TO NOT HELP IMPROVING FUTURE MODELLS.

We have taken all necessary precautions to ensure that the data we used is not exposed to the public, to the best of our ability and knowledge available to us, within the terms of conditions provided by Open AI as of the date 08.05.2025 (OpenAI, 2024)

# RESULTS

Since the start of the project, qualitative and quantitative data has been collected through interviews and participation in activities on six European islands. The results below provide insight into the scope of the project, what has been done, and who has participating.

We have conducted a total of **148** interviews with actors from various societal sectors on the six islands. The interviews resulted in **2,301** pages and **529,414** words of transcribed material.

 <b>INTERVIEWS</b>		INTERVIEW STATISTICS		
		Interviews	Pages	Words
	<b>Hvaler</b>	20	379	122 265
	<b>Schiermonikoog</b>	23	668	113 390
	<b>Bornholm</b>	17	124	70 909
	<b>Koster</b>	45	836	125 255
	<b>Groix</b>	13	101	38 729
	<b>Ouessant</b>	30	193	58 866
	<b>SUM</b>	<b>148</b>	<b>2301</b>	<b>529 414</b>

FIGURE 17 - TOTAL INTERVIEW STATISTICS.

These interviews form the basis for understanding how isolated communities think about future challenges, and what role youth initiatives can play.

The stakeholders we have interviewed come from various sectors and roles within society. This provides broad insight into the challenges and opportunities that exist.

 <b>STAKEHOLDERS</b>	Hvaler		Schiermonikoog		Bornholm		Koster		Groix		Ouessant		Sum Stakeholders
	InnovationGap	Design Thinking	InnovationGap	Design Thinking	InnovationGap	Design Thinking	InnovationGap	Design Thinking	InnovationGap	Design Thinking	InnovationGap	Design Thinking	
Inhabitants	2	3	1		3		12	1	4		7		33
NGO's	5	2	3	3	2		5		2		1		23
Public sector	1	5	2	2	4	4	5	1	2	3	5		34
Private sector	9	6	10	3	5	2	16	1	2	1	6		61
Politicians	3	4	3		2				1		1		14
Tourists			1				3		1		9		14
Others/unknown			3	1	1		5		1		1		12
<b>SUM</b>	<b>20</b>	<b>20</b>	<b>23</b>	<b>9</b>	<b>17</b>	<b>6</b>	<b>46</b>	<b>3</b>	<b>13</b>	<b>4</b>	<b>30</b>	<b>0</b>	<b>191</b>

FIGURE 18 - TOTAL STAKEHOLDERS ON EACH ISLAND.

These represent both local perspectives and positions of power that are central to understanding how young entrepreneurs can navigate and contribute.

FREIIA has a total of **471** participants involved. These are students and stakeholders from various countries. This highlights the international dimension of the project, and how youth initiatives are brought together across national borders to co-create solutions.


 <b>FREIIA PARTICIPANTS</b>		Hvaler		Schiermonikoog		Bornholm		Koster		Groix		Ouessant		Sum Participants
		InnovationGap	Design Thinking	InnovationGap	Design Thinking	InnovationGap	Design Thinking	InnovationGap	Design Thinking	InnovationGap	Design Thinking	InnovationGap	Design Thinking	
Students	Norwegian	21	49	12	15	12	12	18	17	15	15	15	15	216
	Dutch			10	4									14
	Belgian		9						19					28
	Danish					3	4							7
	Swedish							7	4					11
	French											2	2	4
	<b>SUM</b>	21	58	22	19	15	16	25	40	15	15	17	17	
<b>Total participating students</b>														<b>280</b>
Stakeholders	Norwegian	20	20											40
	Dutch			23	9									32
	Danish					17	6							23
	French									13	4	30		47
	Swedish							46	3					49
<b>Total participating stakeholders</b>														<b>191</b>
<b>TOTAL ACTORS</b>														<b>471</b>

FIGURE 19 - TOTAL PARTICIPANTS INVOLVED IN WP4, FREIIA.



FIGURE 20 - STUDENTS AND STAKEHOLDERS PARTICIPATING ON A DESIGN THINKING WORKSHOP IN SCHIERMONNIKOOG.



FIGURE 21 - PROJECT DINNER IN BORNHOLM

THIS CHAPTER PRESENTS THE MAIN CHALLENGES, PROPOSED SOLUTIONS, AND KEY FINDINGS FROM THE STUDENTS' WORK ON EACH ISLAND. THE CONTENT IS BASED ON ANALYSES FROM INTERVIEWS, LOCAL PROCESSES, AND COLLABORATION WITH STAKEHOLDERS, AS WELL AS THE REPORT ON AI WHEN IT WAS UTILIZED.

 **HVALER**

<p><b>INNOVATION GAP – CHALLENGES</b></p>	<p>Limited Cross-Sector Collaboration          Aging Population and Youth Migration          Over-Reliance on Seasonal Tourism          Insufficient Platforms for Innovation          Conflicts Between Conservation and Development</p>
<p><b>DESIGN THINKING – PROPOSED SOLUTIONS</b></p>	<p>Proposition 1: Mobile Innovation Hub          Proposition 2: Decentralized School Facilities          Proposition 3: Project House for Collaboration          Proposition 4: Improved Transport Solutions          Proposition 5: Community Collaboration Platforms          Proposition 6: Mobile Sauna Initiative</p>
<p><b>KEY INSIGHTS</b></p>	<p>Housing and Demographics          Tourism and Seasonal Economy          Infrastructure and Public Service          Collaboration Across Sector          Environmental Conservation and Development          Community and Culture</p>

 **SCHIERMONIKOOG**

<p><b>INNOVATION GAP – CHALLENGES</b></p>	<p>Circular Economy          Retaining Young Adults          Collaboration Across Sectors          Space and Resource Optimization</p>
<p><b>DESIGN THINKING – PROPOSED SOLUTIONS</b></p>	<p>Proposition 1: Key Stakeholder Collaboration          Proposition 2: Using Social Media as Influencers          Proposition 3: Creating a Collaboration Arena          Proposition 4: Blue Minimal Surfing Camp          Proposition 5: Educating Children on Waste as a Resource</p>
<p><b>KEY INSIGHTS</b></p>	<p>Circular Economy          Retaining Young Adults          Collaboration Across Sectors          Space and Resource Optimization</p>

## BORNHOLM

<p><b>INNOVATION GAP – CHALLENGES</b></p>	<p>Dependence on Tourism            Challenges with Innovation and Sustainable Development            Lack of Activities and Service Outside Peak Season            Youth Migration and Limited Return            Lack of Coordination and Collaboration</p>
<p><b>DESIGN THINKING – PROPOSED SOLUTIONS</b></p>	<p>Proposition 1: Education and Youth Engagement            Proposition 2: Collaboration and Innovation            Proposition 3: Promoting Bornholm as a Living Destination</p>
<p><b>KEY INSIGHTS</b></p>	<p>Dependence on Tourism            Challenges with Innovation and Sustainable Development            Lack of Activities and Service Outside Peak Season            Youth Migration and Limited Return            Lack of Coordination and Collaboration</p>

## KOSTER

<p><b>INNOVATION GAP – CHALLENGES</b></p>	<p>Lack of Housing for Young People and Families            Initiatives to Strengthen Community and Year-Round Activities            High Housing and Land Prices; Restrictions for New Initiatives            Traffic and Overcrowding in the Summer            Economic Barriers for Development and Investment</p>
<p><b>DESIGN THINKING – PROPOSED SOLUTIONS</b></p>	<p>Proposition 1: Events, Residents Exchange Services, Young and Old Generation            Proposition 2: Reopening the Local School            Proposition 3: Public and Private Collaboration – Trust Program            Proposition 4: Marketing Koster as a Destination for Scandinavian Businesses</p>
<p><b>KEY INSIGHTS</b></p>	<p>Circular Economy            Retaining Young Adults            Collaboration Across Sectors            Space and Resource Optimization</p>
<p><b>PROBLEM STATEMENTS</b></p>	<p>How might we make housing development sustainable on Koster?            How might we engage people in innovation projects that improve Koster?            How might we develop collaboration between business and public sector?            How might we balance tourism and permanent residence?            How might we use limited resources for sustainable economic opportunities?</p>

<p><b>INNOVATION GAP – CHALLENGES</b></p>	<p>Lack of Affordable Housing          Initiatives for Housing and Sustainable Development          Limited Municipal Resources for Housing          High Seasonal Rent Prices; Lack of Workers’ Accommodations          Economic Barriers for Investment and Infrastructure Development          Overcrowding in Peak Season</p>
<p><b>DESIGN THINKING – PROPOSED SOLUTIONS</b></p>	<p>Proposition 1: Extend the Tourist Season          Proposition 2: Add More Recycling Stations, Engage the Community          Proposition 3: Bike Infrastructure, Eco Transport, Ferry Access          Proposition 4: Marketing Local Products &amp; Tourism          Proposition 5: Regular Meetings Between Residents and Stakeholders</p>
<p><b>KEY INSIGHTS</b></p>	<p>Housing &amp; Economy, Community Structure          Environmental Concerns, Local Initiatives          Infrastructure, Services          Tourism and Ecotourism          Heritage          Innovation, Sustainability</p>
<p><b>PROBLEM STATEMENTS</b></p>	<p>How might we create better ways for businesses and residents to collaborate?          How might we create a sustainable tourism model with low environmental impact?          How might we boost visibility of local products and crafts?          How might we improve eco-friendly infrastructure?          How might we reduce waste during peak tourist season?</p>



FIGURE 22 - STUDENT ASSISTANTS, HOSTING WORKSHOP IN GROIX V2.

<p><b>INNOVATION GAP – CHALLENGES</b></p>	<p>Housing            Energy and Renewable Projects, Water Infrastructure            Local Food Production            Transport and Accessibility            Tourist Management            Community Collaboration            Lack of Digital Communication and Innovation</p>
<p><b>DESIGN THINKING – PROPOSED SOLUTIONS</b></p>	<p>Proposition 1: Seasonal Housing            Proposition 2: Energy Culture Through Education            Proposition 3: Island Council for Local Dialogue and Governance</p>
<p><b>KEY INSIGHTS</b></p>	<p>Housing and Economy, Community Structure            Environmental Concerns, Local Initiatives            Infrastructure, Services            Tourism, Local Economy            Ecotourism, Community Experience            Innovation, Sustainability</p>
<p><b>PROBLEM STATEMENTS</b></p>	<p>How can we create affordable housing for young residents?            How can we shift to renewable energy in line with the island's culture?            How can we improve collaboration between locals and seasonal residents?            How can we promote waste reduction and reuse?            How can we bring good ideas for Housing, Energy, and Daily Life?</p>



FIGURE 23 - STUDENT ASSISTANTS, HOSTING WORKSHOP IN OUESSANT V2.

The results from the six islands highlight how local challenges and opportunities take different forms, while also revealing several recurring themes across geographical and cultural contexts. Issues related to housing, collaboration, seasonal economies, and sustainability are prevalent in many of the island communities, offering insight into how structural conditions shape the space for development.

The proposed solutions illustrate how different actors identify and approach complex issues, often with an emphasis on local grounding, co-creation, and the use of existing resources. The results indicate that cross-sector collaboration is viewed as a potential pathway forward, particularly in addressing challenges such as outmigration, seasonal tourism, and environmental sustainability.

Several insights point to the need for arenas where ideas can be tested and further developed. The material also shows how questions of infrastructure, identity, ownership, and access to housing are closely tied to the future of each place. It provides a multidimensional picture of which issues are perceived as urgent, and which types of initiatives and ways of thinking are considered relevant.

# PERSONAS

Personas are fictional but realistic representations of typical residents, developed to provide deeper insight into the diverse needs, values, and challenges of local communities. In the FREIIA project, we have used personas as a tool to visualize and understand the people who live on the islands we are working with. Each persona is based on local insights and follows a common structure, including age, living situation, attitudes, challenges, and willingness to collaborate.

**The following text and images presented in Personas is generated by our Custom GPT in ChatGPT based on data from interviews conducted on the respective islands (OpenAI, 2025).**



## HVALER



### The Self-Reliant Community Builder

An older islander with strong commitment to community, sustainability, and cross-sector collaboration.

#### Characteristics:

**Age:** Often over 60, wants to attract younger people (20–30s)

**Living Situation:** Year-round resident in often inherited homes, faces challenges in permanent housing

**Volunteer Work:** Involved in social services, infrastructure, and local events

**Attitudes:** Strong connection to nature and inclusion; values self-sufficiency

**Challenges:** Aging population, expensive housing, seasonal tourism, lack of collaboration between sectors

**Willingness to Collaborate:** High, especially in housing, shared economy models, and multi-sector partnerships

### The Nature-Oriented Local

An older resident with a strong connection to nature and community, skeptical but curious about innovation.

#### Characteristics:

**Age:** 40–65 years, older demographic due to youth leaving

**Living Situation:** Owns/rents a small home in the village, housing is expensive and limited

**Volunteer Work:** Active in organizations like the rescue service, literary festivals, and environmental conservation

**Attitudes:** Values peace, nature, and strong community bonds; skeptical of innovation unless clearly beneficial

**Challenges:** High housing costs, aging population, overtourism, limited collaboration, lack of awareness of circular economy

**Willingness to Collaborate:** Moderate to high, if locally relevant and based on trust over time

## SCHIERMONIKOOG



The text and images is generated by our Custom GPT in ChatGPT based on data from interviews conducted on the respective islands (OpenAI, 2025).

## BORNHOLM



### The Down to Earth Tradition Keeper

An adult islander who balances tradition with a cautious openness to innovation.

**Characteristics:**

**Age:** 52 years old

**Living Situation:** Lives near Rønne in a small house, owns inherited farmland

**Volunteer Work:** Active in sports associations and reuse initiatives

**Attitudes:** Tradition-oriented, but open to tangible, useful innovation. Values nature, community, and sustainability

**Challenges:** Seasonal economy, aging population, youth outmigration, weak infrastructure off-season

**Willingness to Collaborate:** Open to collaboration when there is local ownership and relevance

### The Aging Island Guardian

An elderly resident with deep roots and strong commitment to the community, but concerned about the island's future.

**Characteristics:**

**Age:** Mostly over 60 years, many are retirees

**Living Situation:** Lives year-round in inherited family homes, faces healthcare service challenges

**Volunteer Work:** Active in sports clubs and community associations, especially for youth

**Attitudes:** Proud of the island's nature and peace, wants to attract young families, skeptical of increasing tourism

**Challenges:** Decline in permanent residents, expensive building land, limited jobs, poor access to healthcare

**Willingness to Collaborate:** Generally high, especially around housing, youth, and transport

## KOSTER



The text and images is generated by our Custom GPT in ChatGPT based on data from interviews conducted on the respective islands (OpenAI, 2025).

## GROIX



### The Conservative Islander

A middle-aged permanent resident who values community and a simple lifestyle, but is concerned about youth outmigration and increased tourism.

#### Characteristics:

**Age:** Middle-aged (40–50 years), concerned about young people leaving

**Living Situation:** Permanent resident, struggles with high housing costs, seeks stability

**Volunteer Work:** Moderate, often through mutual informal help

**Attitudes:** Strong local identity, wants to preserve the island's spirit, critical of tourism and second homes

**Challenges:** Housing costs, aging population, fewer jobs, dependence on seasonal economy and weather

**Willingness to Collaborate:** Willing but cautious, prefers locally rooted initiatives and bottom-up approaches

### The Loyal Tradition Guardian

A well-established resident with deep roots and strong belief in solidarity and local control.

#### Characteristics:

**Age:** 50–70 years, some returnees aged 25–35

**Living Situation:** Permanent resident, often with generational family ties; housing shortage due to second homes

**Volunteer Work:** High involvement, supports the elderly, organizes festivals, preserves traditions

**Attitudes:** Proud, values cleanliness, autonomy, and community spirit. Prefers simple, mutual help

**Challenges:** Housing shortage, high cost of living, aging infrastructure, balancing tourism and preservation

**Willingness to Collaborate:** Willing to collaborate, but sensitive to value clashes, prefers structured cooperation through known networks

## QUESSANT



The text and images is generated by our Custom GPT in ChatGPT based on data from interviews conducted on the respective islands (OpenAI, 2025).



# KEY SIMILARITIES



This overview provides a good picture of what is possible to do on the islands and which measures can be implemented that may suit several of them. If we connect the results from the workshop to this overview, we can see that many of the same solutions can be applied to multiple islands, as several of the islands share clear similarities in their challenges.

<p><b>HOUSING ISSUES</b></p>	<p>Found on all 6 islands.</p> <p>Housing affordability and availability, especially for young people or permanent residents, is a recurring theme.</p> <p>Groix: Housing is too expensive, dominated by tourist rentals.</p> <p>Bornholm: Decline in local industry pushes dependency on seasonal housing for tourists.</p> <p>Ouessant: Hard to find affordable lodging during tourist season.</p> <p>Hvaler: Few available development areas - housing for youth is limited.</p> <p>Koster: School closed - housing and services not supportive of young families.</p> <p>Schiermonikoog: Seasonal housing pressures - young workers live upstairs at work.</p>
<p><b>AGING POPULATION &amp; YOUTH RETENTION PROBLEMS</b></p>	<p>Common to at least 5 islands.</p> <p>Groix: Need more young people - average age ~ 45.</p> <p>Hvaler: Dominated by retirees - need to attract families.</p> <p>Koster: Difficult for young families to settle due to closed school and lack of services.</p> <p>Bornholm: Youth leave due to lack of opportunities.</p> <p>Schiermonikoog: Few young permanent residents.</p>
<p><b>TOURISM DEPENDENCY AND SEASONABILITY</b></p>	<p>Present on all 6 islands.</p> <p>Groix: Many rentals reserved for tourists, not locals.</p> <p>Bornholm: Economy depends on bringing tourists due to declining agriculture.</p> <p>Ouessant: Tourism is now the main economic activity.</p> <p>Hvaler: Large seasonal increase in population (from ~ 4700 to over 30 000)</p> <p>Koster: Very seasonal - “more tourists than locals” in summer.</p> <p>Schiermonikoog: Strong seasonality - summer booming, winter shutdown.</p>

<p><b>LIMITED INFRASTRUCTURE AND SERVICE AVAILABILITY</b></p>	<p>Found on at least 5 islands.</p> <p>Koster: Closed school, minimal services limit long-term settlement.</p> <p>Groix: Lack of social services and infrastructure.</p> <p>Ouessant: Limited accommodation and service capacity during tourist season.</p> <p>Hvaler: Small municipality - depends on Fredrikstad for many services.</p> <p>Bornholm: Decline in local industry, depends on tourism limits economic diversity.</p>
<p><b>NEED FOR CROSS-SECTOR OR INTER ISLAND COLLABORATION</b></p>	<p>Found in 4+ islands, emerging as a growing priority.</p> <p>Hvaler: Working to improve collaboration between public and private sectors.</p> <p>Koster: Several local initiatives, but no structured inter-island collaboration.</p> <p>Groix: Isolation leads to lack of shared initiatives and associations.</p> <p>Schiermonikoog: Innovation gaps include poor cross-sector communication.</p>
<p><b>ENVIRONMENTAL REGULATION PRESSURE VS. TRADITIONAL LIVELIHOODS</b></p>	<p>Found on 4+ islands.</p> <p>Bornholm: Strict environmental rules hurt agriculture and fisheries - "The farmers have to pay, otherwise the slaughterhouse will shut down".</p> <p>Koster: Small-scale fishing threatened by regulatory and ecological uncertainty.</p> <p>Ouessant: Fishing has declined significantly - tourism now dominates.</p> <p>Groix: Youth struggle to stay partly because of declining economy (historically tied to fishing).</p>
<p><b>GEOGRAPHIC ISOLATION AS BOTH BARRIER AND IDENTITY</b></p>	<p>Shared by all 6 islands.</p> <p>Groix: "Cut off from the world ... lack of social support services"</p> <p>Ouessant: Long ferry ride from Brest, perceived as very distant.</p> <p>Koster: "We are special ... we are far out" - limited ties to other island communities.</p> <p>Hvaler: Many services purchased from "mainland" - lack of space for local development.</p> <p>Bornholm: Known as "Utkantsdanmark" - peripheral Denmark.</p> <p>Schiermonikoog: Accessible but still has clear seasonal and isolation dynamics</p>

<p><b>DESIRE FOR MORE INNOVATION, ENTREPRENEURSHIP AND YOUTH ENGAGEMENT</b></p>	<p>Common on all 6 islands.</p> <p>Hvaler: High housing prices and limited job prospects pushing young people away.</p> <p>Koster: Lack of services for young families.</p> <p>Schiermonnikoog: Wealthy non-resident property owners reduce community involvement.</p> <p>Bornholm: Working to shift away from tourism dependency by promoting year-round tourism and local entrepreneurship.</p> <p>Groix : Need to "reclaim economic life and community structures for young people", implying a lack of accessible entrepreneurial and employment opportunities.</p> <p>Ouessant: Disconnect between innovative potential and actual initiatives, many ideas staying unimplemented due to bureaucracy or lack of capacity.</p>
<p><b>SMALL, TIGHT-KNIT COMMUNITIES WITH STRONG LOCAL IDENTITY</b></p>	<p>Found on all 6 islands.</p> <p>Groix: Pride in staying despite challenges - desire to raise family on the island.</p> <p>Koster: Longstanding family traditions - people deeply rooted.</p> <p>Hvaler: deep generational ties, where families have lived on the islands for decades.</p> <p>Bornholm: Described as "Denmark's Hawaii" - strong cultural pride.</p> <p>Ouessant: Even tourists note distinct local character and attraction to authenticity.</p> <p>Schiermonnikoog: Strong collective memory - returners open local businesses, preserves identity.</p>
<p><b>STRONG SEASONAL IMBALANCE AFFECTING SERVICES, JOBS AND COMMUNITY</b></p>	<p>Present on all 6 islands.</p> <p>Schiermonnikoog: Summer = full, Winter = quiet, many businesses closed.</p> <p>Koster: Quiet and calm in off-season - limited year-round economy.</p> <p>Groix: Seasonal jobs dominate, hard to find stable year-round housing.</p> <p>Bornholm: Seasonal tourist income replaces agriculture/fishing.</p> <p>Ouessant: Hotels plentiful. but bookings depends on early summer demand.</p> <p>Hvaler: Swells from ~4,700 to 30,000+ during summer.</p>
<p><b>NEED FOR BETTER COMMUNICATION, ENGAGEMENT AND PARTICIPATION</b></p>	<p>Found in at least 5 islands.</p> <p>Hvaler: Previous disconnect between politicians and entrepreneurs - better dialogue emerging.</p> <p>Schiermonnikoog: Reports note insufficient platforms for municipal-citizen dialogue.</p> <p>Groix: Isolation from wider society partly due to lack of community spaces and social organization.</p> <p>Koster: Citizens active through associations, but feel limited in formal influence.</p> <p>Bornholm: Calls for more collective strategies to adress declining industries.</p>

## PARTIAL SIMILARITIES (SHARED BY A FEW ISLANDS)

### **Loss of Public Institutions (e.g., Schools, Healthcare)**

Koster, Groix and Hvaler.

Trend: Decline in public institutions leads to weakened sustainability for full-time residents.

### **Educational or Youth-focused Initiatives (outside school)**

Hvaler and Schiermonikoog.

Trend: Engagement with youth outside formal education could help address demographic challenges.

### **Desire to Remain Independent Despite Limitations**

Hvaler and Bornholm.

Trend: Pride in local autonomy even when practical governance challenges exist.

### **Pressure from Tourism and Ecology**

Koster, Hvaler and Schiermonikoog.

Trend: Eco-tourism is a double-edged sword – it brings money but strains fragile environments.

### **Local Entrepreneurship in Hospitality and Food**

Schiermonikoog and Groix.

Trend: Young adults see food/hospitality as a viable, identity-driven livelihood.

### **Ferry Dependency as a Critical Vulnerability**

Groix, Ouessant and Schiermonikoog.

Trend: Transport bottlenecks affect job access, emergency response, and innovation.

### **Small-Scale Fishing Still Practiced but Declining**

Koster, Ouessant and Bornholm

Trend: Traditional livelihoods like fishing are fading, yet still culturally important.

### **Dependency on Nearby Mainland and Cities for Services and Employment**

Hvaler and Groix.

Trend: Islands function more like satellite communities, not fully independent.

### **Seasonal Employment Opportunities for Youth**

Schiermonikoog, Groix and Hvaler.

Trend: A temporary fix - doesn't solve long-term youth retention or professional development.

### **Limited space for Development (Land use Pressure)**

Hvaler, Koster

Trend: Environmental protection vs. livability tension.

### **Role of National Parks in Defining Island Policy and Identity**

Koster, Hvaler and Schiermonikoog.

Trend: National park designation creates benefits and constraints.

### **Cultural Heritage as a Tourism Asset**

Hvaler, Koster (also hinted in Groix and Schiermonikoog)

Trend: Identity is a resource, not just a narrative.

**Note: All the similarities in the previous chapter are suggestions from our CustomGPT tool.**

The suggestions is based on the information gathered in the interviews. And gives a picture of how we can use the interviews to make changes at more than one island.

## **IDEAS THAT CAN BE APPLIED ACROSS MULTIPLE ISLANDS**

### **Mobile Sauna Initiative (Hvaler)**

One of the most creative and low-threshold solution proposals from Hvaler is the establishment of a mobile sauna. This initiative responds to several simultaneous challenges: social isolation, lack of year-round offerings, and absence of informal meeting places. A mobile sauna can quickly move between communities and serve as a social magnet, especially in the winter months when activity and togetherness are often lacking. In addition, the initiative is both environmentally friendly and cost-effective. Similar needs were identified on Groix, Koster, and Schiermonnikoog, indicating that the idea has high transferability.

### **Island Council for Local Dialogue and Governance (Ouessant)**

A central proposal from Ouessant was to establish a local “Island Council”. A council that would serve as a platform for dialogue and co-creation among different community actors. It would include residents, seasonal inhabitants, businesses, youth, and public representatives. The goal is to create a space where input, needs, and ideas can be collected and discussed, and above all, contribute to more inclusive and grounded decisions.

Such a council has transfer value to several of the other islands in the FREIIA project. Koster and Groix lack formal participation structures, while Hvaler has faced challenges in the dialogue between politicians and entrepreneurs. Also on Bornholm, there is a call for stronger collective strategic thinking. In this context, the council represents an important step towards strengthening democratic participation and local trust, which is crucial for sustainable development processes.

# DISCUSSION

The purpose of this discussion is to explore how young entrepreneurial initiatives, such as the student-led processes in the FREIIA project, can contribute to strengthen isolated island communities facing future challenges. The discussion is based on our research question: *How can young entrepreneurial initiatives contribute to equipping isolated communities to face the challenges of the future?*

Answer: Our findings in the FREIIA project show that young entrepreneurial initiatives can help initiate processes that strengthen small island communities in facing future challenges. Not by offering ready-made solutions, but by initiating development, through asking questions, facilitating collaboration, and helping stakeholders see their own resources in a new light. The findings point directly to how this type of initiative can trigger reflection, collaboration, and action.

In this discussion, we highlight some of the key experiences from the project, with particular emphasis on how the students have worked iteratively, how the proposals have been shaped in dialogue with the local context, and the role relationships have played in the development process, grounded in the results. We also discuss how the process has been structured and how this has influenced both the insights gained and the outcomes produced.

To analyse the experiences and structure our reflections, we use the Double Diamond model as a guiding framework (Voltage Control, 2023). In this case, the Double Diamond has been used both as a method during the operational phase, and retrospectively as a tool to analyse the iterative and complex process we have been part of, characterized by insight gathering, redefinition, idea development, and concretization. It helps us see how the development has moved back and forth and provides a solid basis for discussing the students' role and the relevance of the proposals that have been developed.

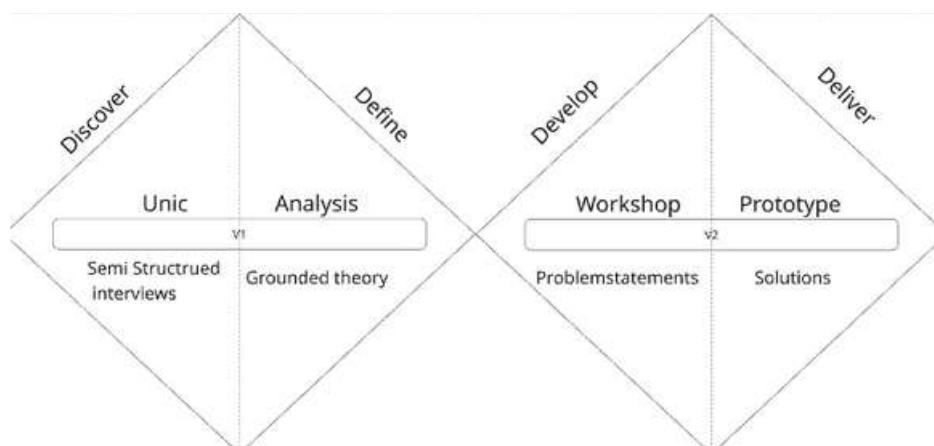


FIGURE 24 - DOUBLE DIMOND WITH V1 AND V2

### In-Between Roles – The Students’ Position

The participating students in the FREIIA project have held a central, yet unusual position. They have found themselves in the middle of a role as outsiders, but also as temporary actors within local communities with long-standing historical and social structures. This duality has opened opportunities but also created limitations. The students have been able to ask questions from the outside, challenge established assumptions, and contribute with new perspectives, but they have lacked deep local anchoring and have been dependent on trust and openness from those they wished to collaborate with. The students themselves have expressed, in retrospect, that the temporary nature of their role made it difficult to build the trust required to get close to sensitive and under-communicated challenges.



FIGURE 25 - STAKEHOLDERS AND STUDENTS ON V2 KOSTER WORKSHOP.

However, the results have shown that the students, in several cases, functioned as catalysts for reflection and development. They have not primarily provided ready-made solutions but have facilitated processes in which local knowledge was systematized and transformed into ideas. On Groix it became clear that the housing issue is not necessarily about the number of available homes, but about who has access to them, and on what terms.

The students highlighted how young adults without familial ties to the island were often excluded from the housing market, while tourism and vacation homes drove up housing-prices and reduced availability for year-round residents. This was further reinforced by a seasonal economy, which made it difficult to achieve stable income throughout the year. In response to this information, the students developed several proposals, including the idea of extending the tourist season with low-intensity activities based on local nature and culture, combined with arenas where local products and services could be better showcased (V1G & V2G). This illustrates how insight generated through conversations and observation can be transformed into ideas that are relevant to both political and social practice.

While this observation is valuable for the overall goals of the project, it may also be worth questioning whether such proposals gain traction. The students' role in the project is temporary, and several of the ideas remain at the conceptual stage. Without local ownership and further follow-up, there is a real risk that the results will not be carried forward after the project ends. This raises an important dilemma: Who is responsible for implementation when the project is driven by external actors? And what kind of value do proposals hold if they are not put into action?

On the other side, it can be argued that the value of the students' work does not lie in concrete change, but in the conversations, they have helped initiate. Several of the ideas did not come from the students alone, but because of discussions they set in motion. This suggests that the students' role has not only been to deliver insight, but to initiate processes in which the local community itself takes ownership of change. If this is the case, the impact of the work may become visible over time, more clearly than through immediate results.



FIGURE 26 - STUDENTS & STAKEHOLDERS ON V2 KOSTER WORKSHOP.

### **Iteration and Continuous Learning**

A recurring experience in the FREIIA project has been that the process has not followed a straight line from insight to solution. On the contrary, the students have had to move back and forth between phases, adjust their understanding along the way, and adapt to new information and changing conditions. This has not only been a practical necessity, but also a way of working that has allowed for depth, anchoring, and reflection.

This form of continuous learning highlights several aspects of the research question. On one hand, it can be argued that the ability to learn and adapt is exactly what is needed when facing societal challenges, especially in small, isolated communities where conditions can change rapidly. At the same time, the project has revealed some of the frameworks and limitations such processes must relate to. The students had limited time, little prior knowledge of the local context, and were in many cases dependent on establishing trust quickly. This created a need for flexibility and a listening approach, but also a vulnerability to misinterpret or overlook important details.

Even so, many of the groups demonstrated an ability to let new perspectives shape their work. On Schiermonnikoog, insights from participating stakeholders during the workshop were used to shift the focus from production to collaboration and visibility in food distribution (V2S). On Bornholm, the proposal was adjusted towards more inclusive meeting spaces following input from local actors (V2B). This reflection is also relevant to the analysis process. Issues that emerged during the AI analysis were adjusted, and in some cases the problem statements were changed based on the students' observations and experiences on the islands. These iterations are not only technical adjustments, but an expression of how learning occurs through interaction and collaboration. Such adjustments strengthened the relevance of the proposals and opened dialogue between groups that do not usually collaborate. This does not mean that the solutions developed were final or perfect, but that the process itself contributed to fostering awareness, engagement, and the exchange of knowledge.



FIGURE 27 - STUDENTS & STAKEHOLDERS IN INTERVIEW ACTION OUESSANT V1.

Iteration in the project has largely been a response to the complexity of the local work. The adjustments that were made did not arise because the students followed a specific method, but because the need to understand and adapt made it necessary. This led to processes where proposals developed in parallel with new insights, and where collaboration with local actors helped give the proposals direction and substance. These experiences have shown us that working flexibly and in dialogue can strengthen both relevance, ownership, and local involvement. Good solutions must be in dialogue with those they are intended for.

### **The Role of Artificial Intelligence in FREIIA: Opportunities and Limitations**

One of the most significant innovations in the FREIIA project was the application of artificial intelligence (AI) to support the analysis of the qualitative interviews. This approach was first piloted on the Koster Islands during Phase 1.C, as part of the “Define” stage in the Double Diamond. The use of AI did not just enhance analytical speed but also enabled logistical innovations in how the fieldwork was structured. For example, while earlier project phases (V1H, V1B, V1S) required two separate trips to complete data collection and analysis, we were able to consolidate the visits to Groix and Ouessant into a single trip. This adjustment resulted in considerable savings in both time and cost.

From a project management perspective, this was a critical improvement. The site visits to France were among the most resource-intensive, and FREIIA's timeline required that they be completed within a specific window in spring 2025. Without AI-assisted analysis, it is unlikely that the necessary fieldwork could have been completed within the given budget and scheduled time.

Beyond logistics, AI enabled rapid processing of large volumes of transcribed interviews. This capacity proved essential in managing multilingual data. Several islands, notably Groix and Ouessant in **phase 1.C**, presented significant language barriers. While Norwegian students could generally communicate in English, many interviewees preferred or required French. By leveraging digital translation tools such as Microsoft Translator, Google Translate, and the ChatGPT, the team was able to conduct interviews in French while still allowing for analysis in English or any other language. This ensured that local stakeholders could speak in their native language without compromising data usability or analytical consistency.

### **Why did we start with the idea of using AI in the first place?**

We were all participating as students in the manual coding process for the first visits to Hvaler, Schiermonnikoog and Bornholm, and after testing several times with one single picture the AI (ChatGPT) with a single picture input was able to get 10 out of 10 problem statements correctly. We spent days and weeks with 50+ students in a classroom, and yet the AI was able to deliver the same results. This led to the development of method that secured academic integrity and being able to produce effectively the same results. At Koster island, we had students from Högskolan I Vest, Sweden with us in the interview process. They did a separate analysis with the interview data. We shared the AI-produced problem statements so that they could check with their own findings if we had similar results. The results were amazing. We received feedback that showed the same results, despite their process being manual (VAIK).

### **Participation and Inclusion: Strengths and Risks of Digitalization trough AI**

“I wish we saw the whole process before the problem statements were introduced” student, class of 2024 Innovation and project management.

While AI allowed for greater analytical reach, it also introduced risks related to stakeholder involvement. A key tension observed was the potential detachment of students from the analytical process when AI tools replaced manual coding. In response to this challenge, we therefore implemented a Problem Framing Session (VAIG). These sessions were held after the AI-based analysis on Groix and Ouessant and included a structured review of AI findings by the students. This allowed participants to validate, question and expand upon the AI-generated insights, thereby reclaiming ownership of the analytical outcomes. These sessions did not only strengthen the quality of the findings but also helped us retain student-involvement

“I felt included and when I could see the processes and help decide on the problem statements based on my conversations and interviews and what I saw and experienced during the island visit, this helped me get very engaging problem statements for the workshop” Workshop host and student, Class of 2023 Innovation and project management.

### **Limits of AI: Reliability, Hallucinations, and Verification Overhead**

Despite its advantages, the use of AI also raised concerns about reliability. One critical limitation is the non-deterministic nature of generative AI, identical prompts may yield different results across sessions. This variability can compromise analytical transparency and makes the process difficult, as discussed in recent post made by (Paine, 2025, LinkedIn post).

Another concern is the occurrence of hallucinations, where AI generates content that is plausible but factually incorrect or unverifiable. This makes it essential to double-check all AI-generated findings against primary sources. In some cases, the effort required to verify AI outputs exceeded the effort required to complete the analysis manually. As such, we argue that AI should not be seen as a replacement for qualitative research competencies, but rather as an assistive tool that must be carefully integrated within an accountable research workflow. Our findings align with the paper published by Bennett Institute for Public Policy, 2024. However, this paper only suggests the way AI can be used in qualitative data analysis while we show how this can be done in a real project.

### **The Proposals Concrete, Contextual, and Sustainable?**

The proposals developed in the FREIIA project reflect a clear willingness to work based on the local context. Common to many of the proposals is that they are simple, realistic, and directly anchored in what already exists in the communities. The students largely related to existing resources, social structures, and ongoing initiatives. They aimed to identify opportunities for improvement, visibility, and collaboration. An example of this is the proposal from Bornholm to promote the island as a vibrant and attractive place to live, not just as a holiday destination.

Instead of developing new initiatives from scratch, the students wanted to highlight and systematize existing success stories of families and young people who had already settled on the island. By linking the stories to factors such as quality of life and sustainable local communities, they proposed a campaign that could strengthen the island’s identity and appeal without major investments or structural changes. This is one example that shows how, instead of introducing new systems or external solutions, the students let the proposals focus on connecting stakeholders, strengthening meeting places, and making available information more accessible (V2B).

This approach has made the proposals feasible within the frameworks the islands are given and operate under, both economically and organizationally. At the same time, this raises a discussion about whether the proposals represent innovation in the traditional sense (Aasen & Amundsen, 2017). They challenge established structures to a limited extent but rather seek to reinforce what is already in motion. On one side, this can be interpreted as an expression of respect for the local context and a realistic assessment of what is possible to implement. On the other side, it raises questions about whether there could, in some cases, have been room to challenge even more, particularly where local patterns maintain social or economic vulnerability.

As a result of the workshop on Hvaler, it was proposed to establish the “Project House for Collaboration”. A mobile innovation platform that can function as a physical meeting place for cross-sector collaboration. The proposal aims to strengthen both participation and cross-sectoral coordination. This is a direct response to the lack of formal arenas for idea development and influence on decision-making (V2H).

On Schiermonnikoog, it was proposed to use existing arenas, in this case, the local school to connect knowledge and generations. An idea was presented in which the private and public sectors would come together to teach schoolchildren about circular economy and extending the life of textiles. A reuse initiative where young and elderly people meet to exchange knowledge, experience, and belongings (V2S). This was a part of a broader focus on making circular economy more tangible and socially rooted in the local community of Schiermonnikoog.

What distinguishes these proposals from ordinary entrepreneurship logic is that they do not seek quick solutions or financial gain but aim to contribute to local resilience. In other words, they are not “innovative” in a technological or commercial sense, but in how they attempt to work with what already exists and make it stronger. Within this lies an alternative and mature understanding of sustainability, not as an end goal, but as a practice built over time, through relationships, trust, and adaptation.

In this way, the proposals also say something about how the students have understood their own role. By prioritizing collaboration, relationships, and accessibility, the proposals point to an approach to development-work that values participation over efficiency and local processes over scalability. This does not mean that the proposals avoid complexity, but that they addressed it through a form of grounded innovation, a willingness to contribute. All of this takes place within the limits of the information they have had access to. It opens a reflection on how young actors assume responsibility and seek influence when they are allowed to work on the community’s terms.

## The Double Diamond as a Framework – Relevance

The Double Diamond has functioned both as a method and as a framework in the FREIIA project. It has provided the students with a practical structure for organizing their work, from initial exploration and problem understanding to idea development and proposal design. In retrospect, we also see that it is a valuable tool for reflecting on where in the process one has been, what has been challenging, and how insights and actions have been connected. This dual function has made the model applicable in a project characterized by social, and societal goals.



FIGURE 28 - RESEARCH LEADER PRESENTING DESIGN THINKING ON V2 KOSTER WORKSHOP.

In practice, the Double Diamond has been filled with various methods and tools. The UNIC framework structured the interview process in the discovery phase and helped highlight key themes in dialogue with the local population. AI was used to analyse large amounts of qualitative data and identified patterns that naturally placed it in the define phase. In the develop and deliver phases, the students were inspired by principles from design thinking and used co-creation workshops to develop ideas together with local stakeholders. The model was therefore not used as a rigid management tool, but as a flexible structure where different approaches could be combined and adapted to the different islands.

This calls for a reflection on the suitability of the model in this type of project and context. On one side, the Double Diamond has contributed a language that helps us communicate the phases of the process across the islands. The iterative structure, with the possibility of going back and adjust, has also aligned with the students' actual experiences. On the other side, the model is developed for design and service development in controlled environments and may be too simplistic when faced with societal development in complex and dynamic systems. Many decisions in the project were made based on relationships, availability, language, and chance encounters, factors that are not easily captured in a structured model.

Nevertheless, it has been a strength to use the model as a framework for reflection. It has helped create awareness of how insight becomes action, and how creative processes need space for both openness and focus. For the students and for us in the project group, it has also served as an entry point to understanding our own role in development work, not as planners of a linear process, but as participants in an unfinished, exploratory journey

# ROAD AHEAD

In our research, we identified numerous challenges, illustrated by the creation of island-specific personas. Additionally, our workshops, as detailed in the Results section, have uncovered shown opportunities. These opportunities offer the potential for meaningful and impactful sustainable business proposals, that are transferable across islands, demonstrating broad applicability rather than being island specific.

Through collaboration with our project partners in Aarhus, we have received a comprehensive blueprint, outlining effective methods for realizing these opportunities. By integrating insights such as Key Similarities across Islands, Partial Similarities, Island personas, cross-island applicable ideas, and the Student Venture Proposal, we establish a robust foundation for actionable initiatives. Such initiatives are likely to succeed, particularly when supported by active local involvement.

This blueprint, initially proposed by Professor. Han Brezet (Aalborg University, Adviser to Province Fryslan - FREIIA-project). The proposal specifically targets objectives including enhanced year-round tourism, adherence to circular economy principles, and increased youth engagement, exemplified from Hvaler. Ultimately, the blueprint offers a practical guide for developing these initial concepts into trans-island business opportunities (*For empty Blueprint see Attachment 2*).

## **Hvaler**

### **Mobile Sauna Initiative**

A student-driven idea to attract both tourists and locals by introducing a mobile sauna by the water. This initiative combines entrepreneurship with local tourism development, offering a unique experience that connects the community and visitors.

## **Schiermonnikoog**

### **Educating Children on Waste as a Resource**

To instill a long-term shift in sustainability practices, the public and private sectors must work closely with local schools to change how children perceive waste. Schools should be encouraged to integrate sustainable resource management into their learning activities, emphasizing how waste can be transformed into new and useful materials. A greater focus on environmental education would help children develop an early understanding of responsible consumption and waste reduction.

To reinforce this learning, schools could participate in interactive workshops on Schiermonnikoog, where children engage in hands-on activities, creatively repurposing waste into new products. By actively working with materials, they would gain practical experience in sustainability, fostering a circular mindset from an early age.

## Groix

For tourism: Extend the tourist season, offer guided experiences rooted in local culture and nature, and create better information tools for visitors.

## Bornholm

### Promoting Bornholm as a Living Destination

Marketing Campaigns: A proposal emerged for a marketing initiative highlighting successful families who have moved to Bornholm and thrived. This could be part of a broader effort to showcase the benefits of living on the island, emphasizing factors like quality of life, family-friendly environments, and successful business ventures

## Ouessant

### Seasonal Housing for Temporary Workers

The group identified that temporary workers often struggle to find accommodate on during peak seasons, sometimes commuting by ferry due to high rental costs. Their solution involved creating an island-owned network of renovated housing dedicated to seasonal workers, managed as part of an "Ouessant Wealth Fund". Revenue generated would be reinvested in local services, increasing the island's self-sufficiency while strengthening local acceptance of change.



FIGURE 29 - STUDENTS AT PROJECT DINNER AT KOSTER



FIGURE 30 - WORKSHOP INTRODUCTION KOSTER



FIGURE 31 - FIELDTRIP ON OUR VISIT TO BORNHOLM



FIGURE 32 - STUDENTS ON A GUIDED TOUR AT THE MUDFLATS IN SCHIERMONNIKOOG



FIGURE 33 - STUDENTS TALKING IN THE STREETS OF GROIX

# STUDENT VENTURE PROPOSAL - 3 -PAGER EXAMPLE

## (FREIIA – TIPPING ALIGNED)

*Created by our project partners in Aarhus University, Adviser to Province Fryslan, professor, Han Brezet FREIIA-project).*

Source: FREIIA - Østfold Report nr: 2 (V2H)

Island: Hvaler (Norway)

Title: Mobile Sauna Initiative – Circular Wellness Innovation for Hvaler

This document outlines a student-driven sustainable entrepreneurship proposal designed to support year-round tourism, circular economy principles, and youth engagement on Hvaler Islands.

### 1. Target group

Eco-conscious tourists, residents seeking health and wellness experiences, young families, and student visitors engaged in sustainability projects.

### 2. Problem and opportunity

Hvaler suffers from a strong reliance on seasonal tourism, limited winter activities, and a need to attract younger visitors. A mobile sauna experience can extend the tourist season, promote local pride, and serve as a visible icon for Hvaler's green innovation goals.

### 3. Your solution

Develop a mobile sauna made from upcycled boat parts, reclaimed wood, and renewable energy systems (e.g., solar thermal heating). Operable year-round, the sauna will move between beaches and harbours across Hvaler. Activities include 'Sauna Talks' on conservation, eco-tourism workshops, and student-led guided sauna tours.

### 4. What already exists?

- National and local pride in marine conservation (Ytre Hvaler National Park).
  - Established eco-tourism sector.
  - Skilled local boatbuilders and carpenters.
- Inspiration from examples like 'Solar Egg' (Kiruna, Sweden), 'Skargaards Floating Saunas' (Sweden), and 'Nomad Sauna' (UK).

### 5. What is needed?

- Approx. €15,000 startup budget (materials, building, solar system).
  - Local partnerships for recycled materials.
- Support for permits (temporary installation at beaches/marinas).
  - Digital booking platform (student-led development).
  - Marketing collaboration with Visit Fredrikstad & Hvaler.

## 6. Who implements it?

- FREIIA and Østfold University College students (project development and operations).
  - Local artisans and technical mentors.
  - Municipality of Hvaler (facilitation and promotion).
- Tourism stakeholders (integration into year-round offers).

## 7. When is it feasible?

- Planning & Co-design: September – November 2025
  - Building Phase: December 2025 – March 2026
  - Test Phase: April 2026
- Launch: May 2026 (pre-tourist season)

## 8. Expected Impacts

- Economic: Extending the tourism season, new business opportunities.
  - Social: Strengthening youth participation and island identity.
- Environmental: Circular material use and renewable energy showcase.
  - Educational: Real-world experience for sustainability students.

## 9. Risk Factors and Mitigation Strategies

- Weather damage → Use marine-grade, weatherproof designs.
- Regulatory hurdles → Early collaboration with local authorities.
  - Maintenance issues → Partnership with local repair services.
  - Low winter usage → Bundle with other winter activities.

## 10. Possible Funding or Business Model

- EU Interreg Microgrants.
  - Local crowdfunding campaign.
- Corporate sponsorships (outdoor brands, wellness companies).
  - Booking fees for private sauna rentals.

## 11. Suggested Next Steps

- Present concept to municipality and Visit Fredrikstad & Hvaler.
  - Launch a student competition for detailed design.
  - Secure recycled materials through local networks.
- Develop a basic prototype for pilot-testing by early 2026.



### Municipality's Facilitating Role (RUDDER Framework)

- Leadership: Take active co-ownership by appointing a municipal innovation officer or dedicated project liaison to ensure continuity after student involvement ends. Define wellness and circularity as strategic goals embedded in Hvaler's sustainable development plans.
- Connector: Facilitate connections between students, artisans, and tourism operators.
- Facilitator / Creator: Support design thinking workshops and co-creation events.
  - Provider: Help secure start-up grants, offer in-kind support (e.g., building materials, access to beaches/marinas).
- Ambassador: Promote the sauna project through local tourism websites, social media, and eco-tourism campaigns.
- Leverage / Capitalize: Use the sauna initiative to build momentum for a broader sustainable tourism strategy.
  - Network Orbiting: Link Hvaler to other islands and sustainable destination networks in the Nordics and Europe.
  - Procurement Trendsetter: Inspire flexible, sustainability-first municipal procurement models supporting circular economy initiatives.

### Stakeholder Map – Mobile Sauna Initiative (Hvaler)

Stakeholder  
Role in Project  
Interest / Motivation  
Students (FREIIA, ØUC)  
Initiators, designers, operators  
Practical experience, sustainable innovation  
Municipality of Hvaler  
Facilitator, co-owner, connector  
Sustainable development, strengthen

# STUDENT SUSTAINABLE ENTREPRENEURSHIP FOR GOVERNANCE OF INNOVATION

## 1. Introduction

Throughout the FREIIA project, a key objective has been to develop sustainable solutions in coastal island communities through interdisciplinary collaboration between students, mentors, and local stakeholders. A central element has been to create arenas where strategies and action plans are developed collaboratively, while also giving students the opportunity to practice sustainable entrepreneurship. This chapter highlights how such collaborative processes have been carried out across several workshops, and the significance of the students' role in the governance and development of innovation.

## 2. Joint Development of Strategies and Action Plans

During the project period, several workshops have been held in different local communities, where students from Norway, Sweden, Denmark, Belgium, the Netherlands, and France collaborated to develop solutions to real challenges in island regions. Common to all workshops was a methodological approach characterized by interdisciplinary group work, student involvement, creative idea development, and local anchoring.

The students gained insights into the communities through meetings with, for example, local stakeholders, organizations, and businesses. Based on this, concrete proposals for strategies and measures for sustainable development were developed. These could include topics such as year-round tourism, green mobility, social inclusion, circular business models, or the preservation of local natural values. The processes were structured through workshops using the design thinking method.

Because the strategies and action plans were developed in collaboration between students and local stakeholders, genuine co-creation emerged. The students' perspectives were valuable because they combined innovative thinking with academic insight and worked outside of the established frameworks and routines of the local communities. This allowed for both practical and visionary proposals and [PG1] contributed to more holistic solutions. A strong example of innovative local housing policy can be found in Hvaler Municipality. When we interviewed them during the V1H phase, they had just passed a new initiative politically aimed at attracting young families to settle in the area. The municipality now offers a supplementary loan to young families, which helps them secure a bank mortgage to cover the high costs of housing. This municipal guarantee acts as a safety net if the bank initially refuses their loan application, making it easier for families to invest in homes on the island. This offer was put into action 10. march 2025.

### **3. Student-Driven Sustainable Entrepreneurship**

A recurring feature of the workshops was that students were challenged to think and act as sustainable entrepreneurs. This involved identifying challenges, developing ideas, “testing” them, and presenting solution proposals with a view toward real implementation. In this process, the students took ownership of the innovation, not just as an assignment, but as a potential solution with actual value for the community.

The students’ entrepreneurship was characterized by creativity, but also by reflection on sustainability. Emphasis was placed on ensuring that the proposals were environmentally responsible, economically realistic, and socially inclusive.

This aligns with the thinking behind the “triple bottom line” in sustainable development, where the goal is to balance economic, social, and environmental considerations.

An important aspect of the students’ role was their ability to challenge the status quo and introduce new perspectives. By working in interdisciplinary and international teams, they also learned how cross-cultural and cross-disciplinary collaboration can strengthen both the process and the outcome.

### **4. Innovation Governance with a Sustainable Perspective**

Governance of innovation refers to how innovation processes are led, organized, and shaped. Within the FREIIA project, student involvement has proven to be a valuable resource in such governance processes. The students have not only developed ideas, but also contributed to defining problems, identifying needs, and involving relevant stakeholders. This creates a more inclusive and democratic innovation process.

By using workshops as arenas for interaction, a dynamic form of governance was established, where decisions and strategic directions were developed collectively. This allowed local communities to gain access to new proposals and insights, while the students gained practical experience with development work in real-life contexts.

Another key point is that innovation does not necessarily emerge in silos or technological environments, but in the encounters between people and practice.

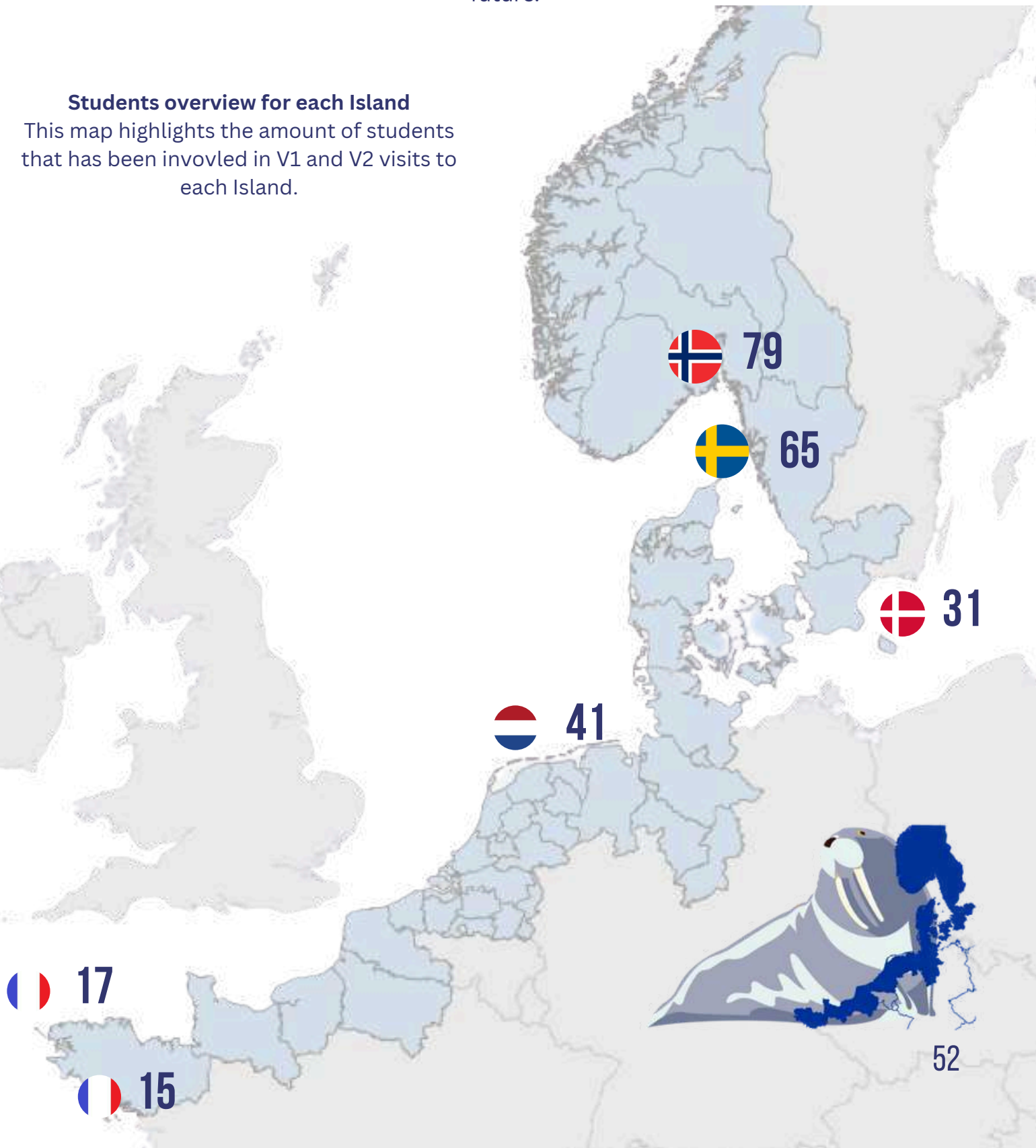
In FREIIA, this occurred when young, engaged individuals met challenges with openness and curiosity, while also receiving necessary support from mentors and local partners.

## 5. Summary/Conclusion

The experiences from the work in the FREIIA WP4 project clearly demonstrate that the joint development of strategies and action plans, combined with student-driven sustainable entrepreneurship, adds significant value to the innovation process. When young people are actively involved and given the space to work on real challenges, solutions are created that have both local relevance and a broad sustainability focus. This strengthens both the capacity for innovation and the governance of change processes in response to the societal challenges of the future.

### Students overview for each Island

This map highlights the amount of students that has been involved in V1 and V2 visits to each Island.



# APPENDIX 1

Just prior to the submission of this thesis, we were informed that our work has contributed to the development of a new course in the upcoming Master's Programme in Green Energy Technology (120 ECTS) at Høgskolen i Østfold. While this course is still pending formal approval, we are deeply honored and encouraged by the prospect that our work may live on and inspire future students. It brings us great joy to see the potential for our research to continue making an impact within an academic and practical context.

## **Course Title: Venture Planning in the Green Transition**

### **Credits: 10 ECTS**

#### **Description:**

This course provides students with a deeper understanding of the processes and methodologies used in innovation projects within the green transition. Students will learn to identify project owners, mobilize stakeholders, map and uncover the innovation gap using the UNIC methodology, actively use AI in the analysis of large data sets, and apply design thinking to develop prototypes and solution drafts. The course concludes with the development of a venture plan for the prioritized solutions.

#### **Learning Outcomes:**

##### **Knowledge:**

Understanding of the green transition and its significance for business model innovation  
Insight into methodologies for identifying project owners and mobilizing stakeholders  
Knowledge of interview techniques and data analysis using AI

##### **Skills:**

Ability to conduct interviews and assess situations on location  
Skills in analyzing interview data and identifying challenges  
Competence in using design thinking to develop prototypes and solutions

##### **General Competence:**

Ability to collaborate with various stakeholders and professionals  
Skills in preparing and presenting a venture proposal  
Understanding of sustainable solutions and their practical implementation  
Organization

##### **Teaching Methods:**

Introductory lectures, seminars, and workshops. Fieldwork and interviews with selected SMEs.

##### **Course Requirements:**

A written note identifying and describing relevant project owners for the selected project. The report should include justification for the choice of project owners and their potential role and influence in the project.

A stakeholder analysis that maps and assesses all relevant stakeholders. The analysis should include a stakeholder matrix and an evaluation of each stakeholder's influence and interest in the project.

A written note identifying and describing the innovation gap in the selected project. The analysis should assess existing solutions and identify areas in need of innovation.

A report documenting the use of AI tools in the analysis of large data sets. The report should describe the methodology, the tools used, and the results of the analysis.

A presentation of the design thinking process used to develop prototypes and solution drafts. The presentation should describe each phase of the process and the resulting prototypes.

A venture plan describing how the developed solutions can be implemented in practice. The plan should include a market analysis, business model, financing strategy, and an implementation plan.

##### **Assessment Method:**

**Individual oral examination with a presentation of the project as part of the final conference with companies and stakeholders**

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# ATTACHEMENTS

[1 Hvaler Student Sustainable Entrepreneurship Report Project FREIIA - V1H](#)

[2 Hvaler Student Sustainable Entrepreneurship Report Project FREIIA - V2H](#)

[3 Hvaler Student Sustainable Entrepreneurship Report Project FREIIA – V1HT](#)

[1 Schiermonnikoog Student Sustainable Entrepreneurship Report Project FREIIA - V1S](#)

[2 Schiermonnikoog Student Sustainable Entrepreneurship Report Project FREIIA - V2S](#)

[3 Schiermonnikoog Student Sustainable Entrepreneurship Report Project FREIIA – V1ST](#)

[1 Bornholm Student Sustainable Entrepreneurship Report Project FREIIA - V1B](#)

[2 Bornholm Student Sustainable Entrepreneurship Report Project FREIIA - V2B](#)

[3 Bornholm Student Sustainable Entrepreneurship Report Project FREIIA – V1BT](#)

[1 Koster Student Sustainable Entrepreneurship Report Project FREIIA - V1K](#)

[2 Koster Student Sustainable Entrepreneurship Report Project FREIIA - V2K](#)

[3 Koster Student Sustainable Entrepreneurship Report Project FREIIA – V1KT](#)

[4 Koster Student Sustainable Entrepreneurship Report Project FREIIA – VAIK](#)

[1 Groix Student Sustainable Entrepreneurship Report Project FREIIA - V1G](#)

[2 Groix Student Sustainable Entrepreneurship Report Project FREIIA - V2G](#)

[3 Groix Student Sustainable Entrepreneurship Report Project FREIIA – V1GT](#)

[4 Groix Student Sustainable Entrepreneurship Report Project FREIIA - VAIG](#)

[1 Ouessant Student Sustainable Entrepreneurship Report Project FREIIA - V1O](#)

[2 Ouessant Student Sustainable Entrepreneurship Report Project FREIIA - V2O](#)

[3 Ouessant Student Sustainable Entrepreneurship Report Project FREIIA – V1OT](#)

[4 Ouessant Student Sustainable Entrepreneurship Report Project FREIIA - VAIO](#)



## **Student Sustainable Entrepreneurship in Action: UNIC Methodology and Innovation Gaps on Hvaler, Norway as part of the interreg FREIIA project**

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### **Abstract**

*FREIIA, Facilitating Resilience Embracing Islands Innovation, is a INTERREG project financed by the European Union running from 1. October 2022 until 31. December 2025. The project consists of 14 partners from 6 countries, Netherlands, Denmark, Sweden, Germany, France and Norway.*

*The aim of this project is to help 6 island communities in the European Union to create competences, capabilities & structures that support the public sector in becoming successful in the green transition, through the involvement of community, young entrepreneurs and students.(«FREIIA», u.å.)*

*Østfold University College is responsible for Work Package 4 (WP4), which focuses on fostering student entrepreneurship. The main objective of WP4 is to integrate entrepreneurship students into the strategic governance of island innovation, strengthening their role in green transitions. When referring to the FREIIA project in this paper, it refers to WP4 of the FREIIA project.*

*The following sections describe the first phase conducted on Hvaler island, Norway, which focused on identifying innovation gaps through interviews conducted by students with stakeholders from public, private, and civil sectors. Key challenges included limited cross-sector collaboration, an aging population, and insufficient platforms for innovation. These insights, gathered using UNIC and Design thinking principles, will serve as the foundation for the next phase, where Co-creation workshops will develop tailored solutions to address the identified gaps.*



*(Students and professors from Østfold University College at Hvaler archipelago may 2023)*

## Introduction

Through the project, the current and desired state and challenges faced by the island communities around the North sea region are examined to identify potential gaps in between these. In these gaps lies the opportunity for innovation and to improve development capacity. Development capacity, in this context, refers to the ability of various stakeholders to collaborate effectively in driving innovative development and fostering sustainable growth.

The initiative is part of the EU Interreg North Sea Region FREIIA project, which supports Østfold University Collage's 2030 vision: Knowledge for human development and a sustainable society. (Strategy 2030 - Østfold University College, u.å.)

Hvaler, an archipelago in southeastern Norway, was selected as the pilot site for this project. In May 2023, the first UNIC interviews were conducted with local stakeholders to identify challenges and opportunities. Stakeholders included representatives from a broad range of sectors, such as local government, private businesses, NGOs, and residents, each with a vested interest and unique perspective in the island's development.

The FREIIA project's activities on Hvaler included comprehensive mapping and workshops designed to uncover key challenges and opportunities for sustainable development in the island community. This first part of our work package in the project was carried out in April and May 2023, with student teams visiting or hosting interviews with local stakeholders across the Hvaler Archipelago. Stakeholders varied from the mayor and local taxi operator to cabin owners and politicians. This phase, while exploratory, lays the groundwork for the next steps by capturing diverse perspectives and initiating important face to face dialogue about the future of the island from its inhabitants and stakeholders.

The process was based on approximately 20 hours of interview data collected. The challenges identified during Workshop 1 will be used as the foundation for Workshop 2: collaborative problem-solving workshop with the local community and stakeholders.



*(Students at local restaurant in Skjærhalden on the Hvaler islands)*

## Hvaler

Hvaler is an island municipality in southeastern Norway, located at the outer edge of the Oslofjord. It comprises 833 islands and islets, covering a total land area of 20 km<sup>2</sup>. The administrative center, Skjærhalden, is situated on Kirkøy, the largest island in the archipelago. In 2023, Hvaler had a population of 4,762, which swells to over 30,000 during the summer months as tourists flock to the area.

Renowned for its natural beauty, Hvaler is home to Ytre Hvaler National Park, Norway's first marine national park. This protected area features unique ecosystems, including kelp forests and cold-water coral reefs, making it a haven for biodiversity and marine conservation. Cultural landmarks such as the 12th-century Hvaler Church showcase the municipality's rich history, while the rugged coastline and tranquil bays attract enthusiasts of boating, fishing, and hiking.

Strict housing regulations, which permit only registered residents to purchase homes, are designed to preserve the local community's character. However, this policy has sparked debates, particularly in relation to a potential merger with the neighboring city of Fredrikstad, located 28 km away. With a population of 85,230 in 2024, Fredrikstad serves as a regional hub for services and infrastructure.

The municipality is led by Mayor Mona Vauger from the Labor Party, whose priorities include balancing sustainable development with the preservation of Hvaler's unique environmental and cultural heritage. Hvaler's commitment to protecting its natural resources while navigating modern challenges reflects the community's determination to secure its future for both residents and visitors. *(Hvaler – Island by Island, u.å.)*



*(Skjelsbusund Bridge that connects Hvaler to the mainland, making it possible to drive to the islands by car.)*

## Methods: Theoretical frameworks

In this study, we applied principles from the UNIC method and the Double Diamond framework to address challenges in sustainable development on Hvaler. The methodologies share a user-centred approach to problem-solving. This makes them ideal for our needs to gain insights into the challenges faced by island communities and tackling them.

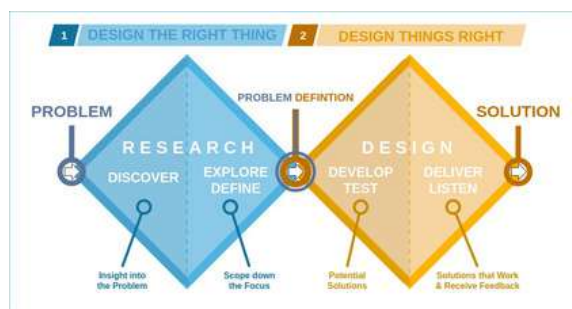
### UNIC Method - Phase 1: Analysis

In the first phase of the UNIC method, we focused on data collecting and analysis. In Phase 1, in-depth interviews with stakeholders from the Hvaler archipelago to understand their challenges, needs, and perspectives on sustainability. This phase is parallel to the "Discover" stage in the Double Diamond framework, focusing on gathering insights about the user's needs and problems. In this case, the users or stakeholders, included community members, business owners, and local officials,

ensuring a wide range of perspectives were captured. (Hein, L. (December, 1988b). Diagnose på udviklingsfunktionen (notat 2). UNIC-gruppen.).

## Double Diamond - Discover & Define

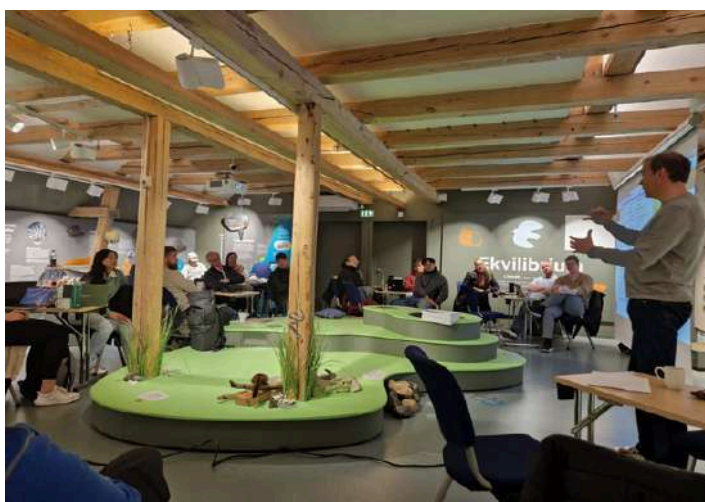
The Double Diamond framework, developed by the British Design Council, structures innovation processes into four phases: Discover, Define, Develop, and Deliver. In this study, we utilized the Discover and Define phases to explore and synthesize stakeholder insights. Thematic analysis of interview data helped identify core issues such as limited collaboration, youth retention, and community engagement gaps. («The Double Diamond Model», 2024)



## Semi-Structured Interview Approach

To ensure consistency across islands, a standardized interview guide was employed. Questions were designed to elicit both specific insights and broader reflections on sustainability challenges. The eight questions included:

1. What is your role in the island community?
2. How would you describe the island community and its current state?
3. What are the biggest challenges the island community faces regarding innovative development and sustainable growth?
4. What initiatives has the island community previously undertaken to address these challenges?
5. How does the island community collaborate to promote innovative development and sustainable growth?
6. In your opinion, how can the island community improve its development capacity?
7. How can you and your organization contribute to improving the island community's development capacity?
8. How can the island community collaborate better with surrounding communities and regions to achieve common goals?



This semi-structured format allowed respondents to explore broader topics beyond the predefined questions, offering valuable insights into the island's present conditions and potential interventions to enhance development capacity. This method is particularly important for exploring wicked problems, which are complex and resist straightforward approaches. In the context of sustainable development, wicked problems are challenges that involve multiple stakeholders, conflicting interests, and long-term impacts, making them hard to address through traditional methods.

## Methods: Applied in practice

Østfold University College (HiØ) plays a key role in supporting the FREIIA project by conducting the UNIC analysis on designated islands. This analysis forms the foundation for identifying systemic gaps and opportunities for innovation, with a particular emphasis on fostering collaboration between local stakeholders and academic institutions.

HiØ initiated the pilot implementation of the UNIC analysis on Hvaler, making it the first island studied in the project. Proximity to Fredrikstad allowed HiØ to utilize its existing network of local stakeholders, ensuring a smooth launch for this initial phase. Hvaler's familiarity and accessibility made it a great testing ground for refining the analysis process, which would later be applied to other islands.

## Stakeholder engagement and interview process

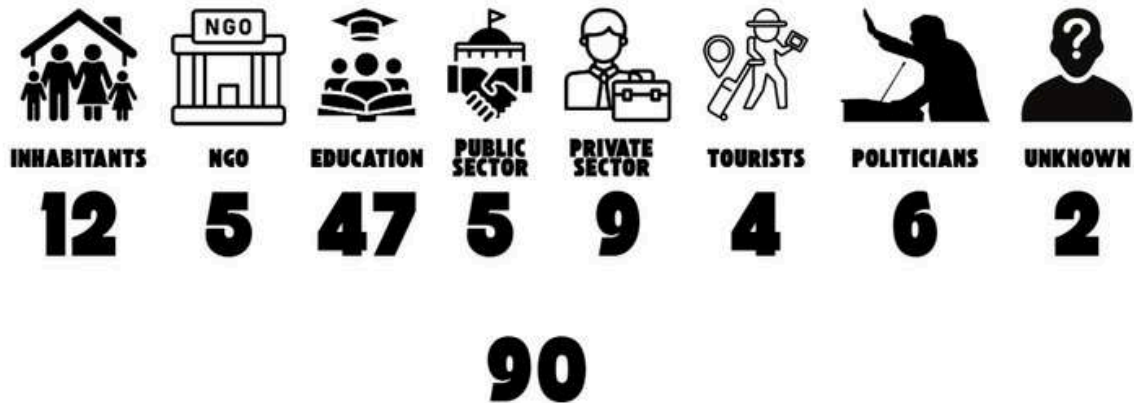
On May 3 and 4, 2023, the interview phase pilot was launched on Hvaler using the selected methods. Student teams of two from HiØ conducted all interviews, blending academic learning with practical fieldwork experience. Stakeholders were identified through HiØ's local network and recommendations, ensuring representation from municipal leaders, business owners, NGO representatives, community members, and returning tourists. This approach was essential for understanding the local challenges related to sustainable development. While most interviews were conducted in person at stakeholders' workplaces, creating a direct connection to their environments, others were held via Zoom to accommodate scheduling constraints.

To complement these structured interviews, students also engaged in spontaneous "stunt interviews" with locals and visitors. These unscheduled interviews showed us that this was an imperative part of collecting diverse perspectives, aligning with the exploratory ethos of the **Empathize** phase in Design Thinking. The stunt-interviews will be incorporated and used consciously as the project progresses.

## Conducting interviews and Data collection

To maintain consistency, all interviews followed a predefined set of 8 questions, the semi-structured interview approach. Each interaction was recorded using SIKT, a security database for data storage, to maintain confidentiality. (Sikt – Kunnskapssektorens tjenesteleverandør | Sikt, u.å.) The data was transcribed using the same software, and anonymized by students in the class "organizational development" at HiØ. The students carried out thematic analysis of all collected data.





(This model provides an overview of the number of interviews conducted ,and other involved stakeholders in this part of the project, categorized by group, as part of the Innovation Gap analysis on Hvaler)

## Results

The FREIIA project’s initial phase on Hvaler identified key challenges and opportunities for sustainable development through a comprehensive analysis of community dynamics. The interviews and workshops captured a wide array of perspectives, providing valuable insight into both structural barriers and emerging opportunities. The analysis highlights challenges that hinder development while also pointing to actionable solutions aligned with the project’s overarching objectives of innovation and collaboration. These findings will be used in workshops aimed at co-creating actionable solutions and are providing valuable lessons for future implementations.

Key findings from this phase are summarized below.

1. **Limited Cross-Sector Collaboration** – Despite existing networks, such as the Hvaler Business Association, stakeholders identified a fragmented approach to community development, which often results in overlapping initiatives targeting the same issues, but led by different groups. This lack of coordination leads to duplicated efforts and missed opportunities for greater impact.
2. **Aging Population and Youth Migration** – High housing costs and limited job prospects are driving younger residents away, threatening the demographic balance and future workforce. Although the municipality has expressed a desire to attract young entrepreneurs, this will require more than just encouragement—it necessitates tangible solutions such as affordable housing, supportive infrastructure, and accessible business opportunities to create an environment where young people can thrive.
3. **Over-Reliance on Seasonal Tourism** – Tourism on Hvaler is heavily skewed towards cottage owners and the summer months, with the island’s many beaches and campgrounds attracting most visitors during peak season. This seasonal reliance limits opportunities for broader economic diversification. To align with Hvaler’s vision of becoming a year-round destination, there is a need to expand tourism offerings, attract off-season visitors, and develop infrastructure that supports year-round economic activity.
4. **Insufficient Platforms for Innovation** – The lack of formal spaces or initiatives for interdisciplinary collaboration posed a significant barrier to developing new solutions. Many private sector actors have expressed a desire for better cooperation with the municipality, while the municipality itself also seeks stronger partnerships with external stakeholders. Additionally, external developers wishing to invest in Hvaler face significant challenges in

navigating local regulations and engaging with key decision-makers, further hindering potential growth and innovation.

5. **Conflicts Between Conservation and Development** – Hvaler's commitment to preserving its natural environment, particularly within Ytre Hvaler National Park, often conflicts with the community's desire for economic growth. Additionally, the mindset of many permanent residents and cabin owners, who value the tranquility and rural character of the island, presents a challenge. This desire for peace and preservation contrasts with the municipality's goals of attracting younger residents, increasing tourism, and making Hvaler a year-round destination, creating tension between maintaining the island's traditional lifestyle and embracing modern growth opportunities.



*(Students and Stakeholders During an Interview)*

Representative from the welfare association:

*"The welfare association works to make it attractive to live on Papper, ensuring that young people have the opportunity to establish themselves here."*

– Highlights the challenge of settlement and depopulation on Hvaler .

Local entrepreneur:

*"Otherwise, there's the experience company we're starting. It's one of the most important things we've set out to do – to make the local community itself engaged and proud of the island."*

– Illustrates efforts to drive business development .

Local politician (mayor):

*"Because we are so attractive, there is an unfortunate effect. Housing prices here are extremely high. So, it's a high barrier for young people to enter the housing market."*

– Describes how Hvaler's attractiveness simultaneously creates economic barriers .

Resident and community advocate:

*"If you look at the demographics, there are many retirees living out here. A sustainable community development requires a better age balance."*

– Emphasizes the need for more young people in the local community .

Local innovator:

*"We need to think differently – maybe the solution lies in a sharing economy, where people can live more affordably by sharing resources like cars, tools, and common areas."*

– Suggests alternative housing and lifestyle solutions .

These insights are directly derived from the interviews done on Hvaler in may of 2023, and underscores the challenges facing Hvaler but also provide a clear foundation for the next steps of the FREIIA project, where collaborative and innovative solutions will be co-created with stakeholders and students to address these challenges.

## Methodological Reflections

The combination of standardized interview questions and spontaneous, informal approaches proved highly effective in gathering diverse data. This dual approach, rooted in Design Thinking principles, enriched the analysis and allowed for the discovery of unexpected opportunities and challenges.

Having students physically present on the islands fostered deeper connections, while their mobility between islands provided a nuanced understanding of local dynamics. Moreover, integrating academic programs such as *Innovation and Project Management* into real-world problem-solving underscored the value of equipping students with practical skills and experience while contributing to the community.

Despite these strengths, certain limitations were observed:

- **Underrepresentation of Key Groups:** Younger residents and seasonal workers were underrepresented in the interviews, creating gaps in the analysis.
- **Time Constraints:** The two-day timeframe limited opportunities for follow-ups and more in-depth exploration of complex issues.
- **Staying objective:** While the students involved in conducting interviews and analysis were committed to maintaining an objective stance, they faced challenges at various stages due to their proximity to the stakeholders and the process. This is not uncommon in projects where researchers engage closely with participants. However, the use of a standardized interview guide and thematic analysis, ensured that the findings remained reliable and unbiased.

These reflections highlight areas for improvement in future analyses, including more extensive training of the student researchers, broader outreach strategies, and extended data collection periods.

## Discussion

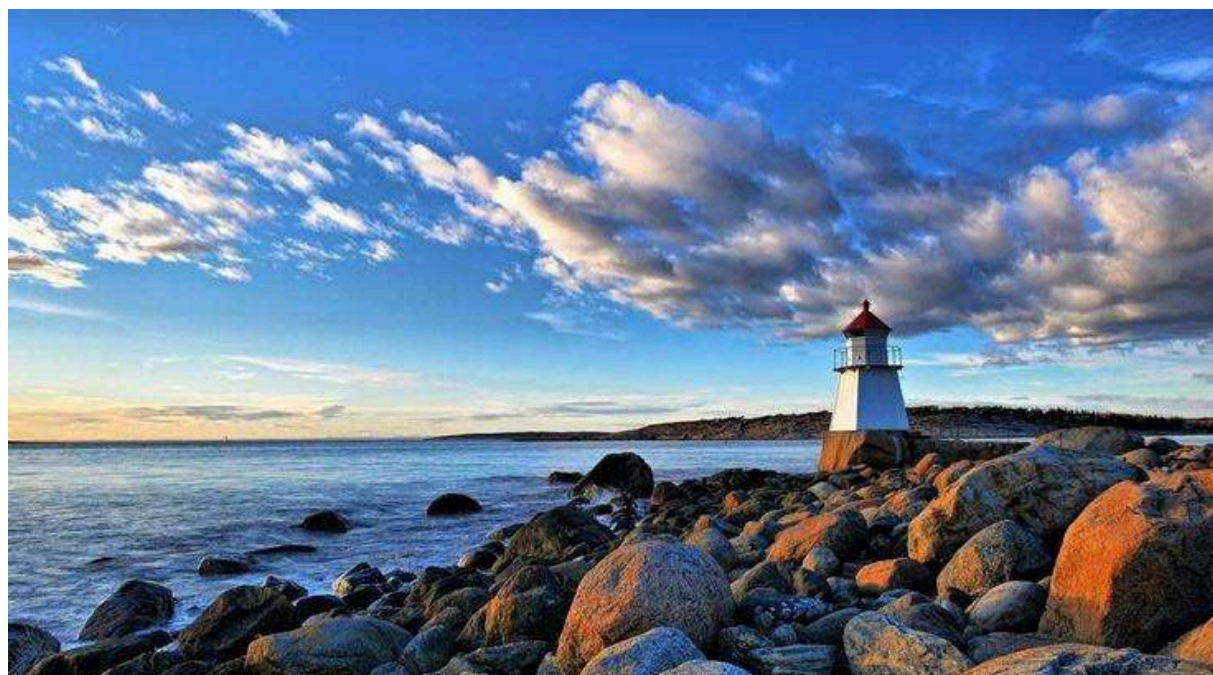
The key findings from the first Phase of the FREIIA projects highlight several significant challenges and opportunities for Hvaler's sustainable development. To address these, there is a clear need for collaboration between the public and private sectors as well as solutions that tackle the aging population and youth migration. Initiatives like affordable housing programs, coupled with incentives for local businesses, could help retain young residents and foster economic growth.

Another significant challenge is the need to balance conservation and economic development. While preserving Ytre Hvaler National Park is crucial, stakeholders are divided on how to approach tourism and growth. Eco-tourism presents a potential solution, balancing environmental protection with economic benefits.

A lack of a shared vision for Hvaler's future further complicates progress. Stakeholders need alignment to develop a cohesive strategy that integrates local, municipal, and business interests. Establishing collaborative platforms and learning from other island communities in the FREIIA project can support this effort.

Despite these challenges, existing networks such as the Hvaler Business Association and Destination Council provide a strong foundation for fostering dialogue and innovation. With targeted initiatives, these networks can be strengthened to support sustainable growth and cross-sector collaboration. By enhancing cooperation and fostering a shared vision, ongoing efforts on Hvaler can be made more

efficient and impactful. Avoiding duplication of work and instead promoting coordinated initiatives will enable stakeholders to achieve greater results together.



*(Brattestø Hvaler, Outer Hvaler National Park)*

## **Conclusions**

The initial analysis of the FREIIA project has provided valuable insights into the island community's challenges and opportunities for sustainable development. By applying the UNIC method and Design Thinking principles, the project identified critical gaps, including limited cross-sector collaboration, an aging population, and a lack of innovative platforms for co-creation. These findings emphasize the need for targeted efforts to foster collaboration, diversify economic opportunities, and attract young people to the area.

This phase established a strong foundation for future work, capturing a diverse range of perspectives through interviews and thematic analysis. The insights gained have not only deepened our understanding of Hvaler's social, economic, and environmental dynamics, but also identified possible opportunities going forward.

Moving forward, these findings will be used in phase two of the project: Co-creation workshop with local stakeholder. By addressing the identified challenges face-to-face with local stakeholders on Hvaler, this pilot has the potential to be a valuable model of how small island communities across the North Sea region can achieve sustainable development through collaboration.

## **Acknowledgements**

We wish to thank our mentor and project leader from the Norwegian partner, Bjørn Gitle Hauge for his mentoring, trust and support throughout the project duration. Thank you to Dr. Gunnar Andersson for his invaluable feedback and guidance throughout the project. Mr Eivind Andre Leister for providing knowledge and support in who to contact through his invaluable network. Dr. Houg Wu, Dr Frode Ramsvik Johansen and Dr. Mathew Lynch for their contribution to the projects whole.

This work was made possible by the generous support of the Interreg NSR and the EU. We would also acknowledge Hogskolen i Østfold for providing access to the necessary facilities, staff and data. Our gratitude extends to the technical staff at SIKT for their assistance with all matters regarding data collection.

We are grateful to all the students who carried out all interviews, worked on analysing and transcribing data and contributing time and engagement in the project. Lastly, we extend our thanks to the stakeholders from Hvaler, who shared their time and perspectives, which were essential for our analysis and success of the project.

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## **Student Sustainable Entrepreneurship in Action: Design thinking and Co-creation on Hvaler, Norway as Part of the INTERREG FREIIA Project**

Ellen Winnem Bjergaa, Linnea Margrethe Johansena Gunnar Anderssona, Frode Ramstad Johansena, Hong Wua, Mathew Lynch, Eivind Andre Leistera, Bjørn Gitle Haugea, Mathew Lynch

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### **Abstract**

*FREIIA (Facilitating Resilience Embracing Islands Innovation Approaches) is an INTERREG North Sea Region project funded by the European Union, aimed at enhancing resilience and innovation capacity in island communities across six countries. (FREIIA FREIIA | Interreg North Sea, u.å.)*

*Østfold University College is responsible for Work Package 4 (WP4), which focuses on fostering student entrepreneurship. The main objective of WP4 is to integrate entrepreneurship students into the strategic governance of island innovation, strengthening their role in green transitions. When referring to the FREIIA project in this paper, it refers to WP4 of the FREIIA project.*

*In the first phase of this project, we identified innovation gaps on the Hvaler archipelagos through semi-structured interviews with stakeholders from the public, private, and civil sectors. Key challenges included limited cross-sector collaboration, an aging population, and insufficient platforms for community engagement.*

*The following section presents the next phase of the project, which uses design thinking and the double diamond framework to co-create solutions to the identified challenges through workshops. Initiatives include a Mobile Innovation Hub to facilitate entrepreneurship, community-centered educational programs, and new digital platforms to enhance municipal-citizen dialogue.*

*This study offers a model for fostering sustainable development through collaboration, creativity, and local ownership and offers a model for other island communities facing similar challenges.*



*(students at hvaler)*

## Introduction

Through the project, the current and desired state and challenges faced by the island communities of Hvaler are examined to identify potential gaps in between these. In these gaps lies the opportunity for innovation and to improve development capacity. Development capacity, in this context, refers to the ability of diverse stakeholders- public officials, private enterprises and civil society- to collaboratively drive sustainable innovation and growth.

This project is part of the EU Interreg North Sea Region FREIIA initiative and aligns with Østfold University College's 2030 vision: Knowledge for human development and a sustainable society.

Hvaler, located at the outer edge of the Oslofjord in southeastern Norway, was selected as the pilot site for FREIIA. The initial phase of the project, conducted between April and May 2023, involved qualitative interviews with over 20 stakeholders, including municipal leaders, local business owners, returning tourists, and representatives from NGOs.

The initial phase of the FREIIA project revealed five key gaps to innovate in on Hvaler:

1. **Limited Cross-Sector Collaboration** – Despite existing networks, such as the Hvaler Business Association, stakeholders identified a fragmented approach to community development, leading to overlapping initiatives and missed opportunities for greater impact.
2. **Aging Population and Youth Migration** – High housing costs and limited job opportunities are driving younger residents away. The municipality's desire to attract young entrepreneurs requires tangible solutions, including affordable housing and accessible business infrastructure.
3. **Over-Reliance on Seasonal Tourism** – Tourism is concentrated in the summer months, limiting economic diversification. To align with Hvaler's vision of becoming a year-round destination, more diverse offerings and infrastructure are needed to attract off-season visitors.
4. **Insufficient Platforms for Innovation** – A lack of formal spaces for interdisciplinary collaboration hinders progress. Many private sector actors and external developers face challenges in cooperating with the municipality and navigating local regulations.
5. **Conflicts Between Conservation and Development** – While Hvaler is committed to preserving its natural environment, the desire for economic growth, including attracting younger residents and increasing tourism, creates tension with the island's traditional peaceful lifestyle.

In response, the second phase of the project, initiated in August 2023, focused on co-creation workshops that aimed to develop tailored solutions for these five challenges. Drawing on the principles of Design Thinking and the Double Diamond framework, these workshops fostered collaboration among diverse stakeholders, emphasizing a user-centered approach to innovation.

By grounding the workshops in the insights from the initial phase, UNIC analysis, the FREIIA project aimed to create scalable and sustainable solutions that align with Østfold University College's 2030 vision: Knowledge for human development and a sustainable society. (*Strategy 2030 - Østfold University College*, u.å.).

This paper outlines the process and outcomes of these workshops, offering a potential model for other island communities facing similar socio-economic and environmental challenges.

## Hvaler

Hvaler is an island municipality in southeastern Norway, located at the outer edge of the Oslofjord. It comprises 833 islands and islets, covering a total land area of 20 km<sup>2</sup>. The administrative center, Skjærhalden, is situated on Kirkøy, the largest island in the archipelago. In 2023, Hvaler had a population of 4,762, which swells to over 30,000 during the summer months as tourists flock to the area.

Renowned for its natural beauty, Hvaler is home to Ytre Hvaler National Park, Norway's first marine national park. This protected area features unique ecosystems, including kelp forests and cold-water coral reefs, making it a haven for biodiversity and marine conservation. Cultural landmarks such as the 12th-century Hvaler Church showcase the municipality's rich history, while the rugged coastline and tranquil bays attract enthusiasts of boating, fishing, and hiking.

Strict housing regulations, which permit only registered residents to purchase homes, are designed to preserve the local community's character. However, this policy has sparked debates, particularly in relation to a potential merger with the neighboring city of Fredrikstad, located 28 km away. With a population of 85,230 in 2024, Fredrikstad serves as a regional hub for services and infrastructure.

The municipality is led by Mayor Mona Vauger from the Labor Party, whose priorities include balancing sustainable development with the preservation of Hvaler's unique environmental and cultural heritage. Hvaler's commitment to protecting its natural resources while navigating modern challenges reflects the community's determination to secure its future for both residents and visitors. *(Hvaler – Island by Island, u.å.)*



*(Skjelsbusund Bridge that connects Hvaler to the mainland, making it possible to drive to the islands by car.)*

## Methods: Theoretical Frameworks

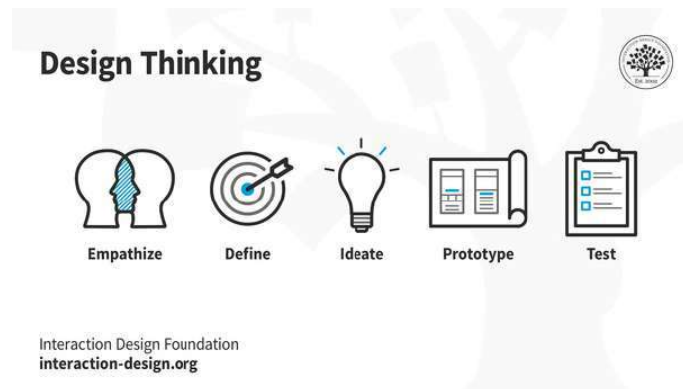
In this study, we applied principles from Design Thinking and the Double Diamond framework to guide the co-creation workshops aimed at addressing sustainable development challenges on Hvaler. Both methodologies share a user-centered approach, making them ideal for tackling complex challenges faced by island communities.

### Design Thinking: Define, Ideate, and Prototype

*(Innovation as a Learning Process, u.å.)*

Design Thinking emphasizes empathy, creativity, and iteration. In this study, we utilized the Define, Ideate, and Prototype phases to co-create solutions:

- Define: Insights gathered from earlier interviews with stakeholders were synthesized to identify the core challenges facing the community, including youth retention, economic development, and collaboration gaps. Ideate: During the co-creation workshops, stakeholders collaboratively brainstormed a wide range of potential solutions. These sessions were designed to encourage creativity and generate diverse ideas to address the identified issues. Prototype: The most promising ideas were developed into low-fidelity prototypes.
- These prototypes were simple, testable models that allowed for iterative refinement based on stakeholder feedback.



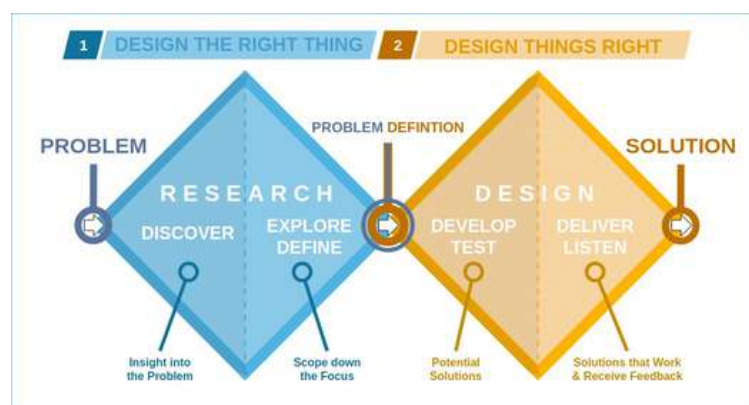
### Double Diamond: Define, Ideate, and Prototype

(«The Double Diamond Model», 2024)

The Double Diamond framework structures innovation into four phases: Discover, Define, Develop, and Deliver. In this study, we focused on the Define, Ideate, and Prototype phases:

- Define: This phase involved synthesizing insights from the Empathize phase (interviews) into clear problem statements. This ensured all stakeholders had a shared understanding of the core issues.
- Ideate: Collaborative brainstorming sessions allowed participants to explore multiple solutions, ensuring that ideas were generated with input from a diverse set of perspectives.
- Prototype: The most promising solutions were turned into prototypes, which were evaluated and iterated upon during the workshops.

Both Design Thinking and Double Diamond provided a structured approach to problem-solving, ensuring a creative and collaborative process that focused on real-world needs.

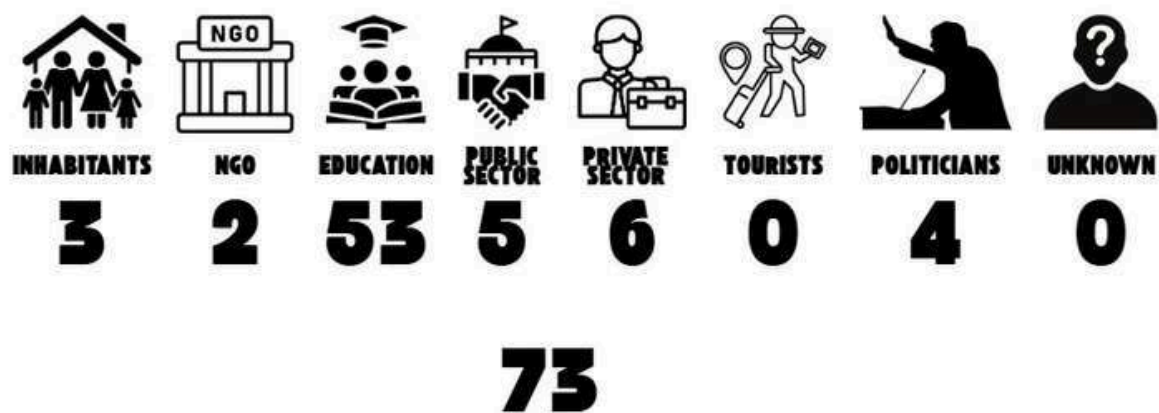


## Methods: Applied in practice

Building on the findings from the Empathize and Define phases of Design Thinking from Workshop 1, the FREIIA team organized two co-creation workshops on Hvaler to engage stakeholders in developing solutions to the identified challenges. The workshop aimed to move into the Ideation and Prototyping phases, fostering collaboration between a diverse range of participants.

### Stakeholder Involvement

After analyzing the transcribed interviews and identifying core challenges from Workshop 1, we invited stakeholders and students to participate in the next phase. Participants included Belgian students from Artevelde University of Applied Science, stakeholders from both the public and private sectors, and students from Østfold University College's Innovation and Project Management program. This diverse composition ensured a range of perspectives, which was essential for addressing the identified challenges effectively.



(This model provides an overview of the participants in the two co-creation (design thinking) workshops and word cafe session, categorized into group)

### Ideation Phase

The workshop began with stakeholders being divided into interdisciplinary teams, consisting of both Norwegian and Belgian students with local stakeholders from different sectors. Following the principles of the Ideation phase of Design Thinking, each team worked on the problem statement of their choosing. Sitting together at tables, brainstorming potential solutions to the core challenges identified. Participants were encouraged to think creatively, focusing on generating a wide range of ideas without immediate judgment or constraints. This process emphasized open dialogue, inclusion of diverse perspectives, and exploration of innovative possibilities.

### Prototyping Phase

The teams then selected their most prominent solution and transitioned into the Prototyping phase. Here, the task is to develop the idea into low-fidelity prototypes. These prototypes took various forms, from conceptual models and visual representations and theatricals. The goal was not to create perfect solutions but to develop tangible concepts that could later be tested and refined.



### **Emphasis on Collaboration and Inclusivity**

The workshop's success was rooted in the interdisciplinary teams, and the structured but creative format. By involving a range of stakeholders and students, the process ensured that the solutions were grounded in local needs while incorporating fresh, innovative perspectives. The participation of Belgian students also introduced new cultural and methodological insights, enriching the overall outcomes.

### **World Café Session**

Following the two co-creation workshops, a World Café session was organized. This provided opportunities for the Norwegian and Belgian students to come together and reflect on the outcomes of the workshop. During this session, students shared their perspectives and experiences, discussing the collaborative process and the solutions developed. The World Café format encourages open dialogue, enabling participants to exchange insights and learn from each other's viewpoints. This session led to a deeper understanding of how diverse perspectives contribute to innovative problem-solving. («(PDF) The "World Café" as a Participatory Method for Collecting Qualitative Data», 2025)



*(From the World Café Session)*



## **Results**

The second phase of the FREIIA project on Hvaler focused on transforming the challenges identified during Workshop 1 into actionable, community-driven solutions. These concrete solutions were co-created by students and stakeholders from various sectors during an interactive workshop. The interdisciplinary collaboration fostered creative problem-solving and provided a platform for addressing key challenges, including limited cross-sector collaboration, youth engagement, and the need for greater innovation capacity.

Through structured discussions and collaborative activities, participants developed several innovative concepts tailored to Hvaler's context. Below are the key solutions proposed during the workshops:

### **Mobile Innovation Hub**

A flexible hub designed to support the creation of new business models. The hub would include dedicated spaces for different stages of the innovation process, facilitate external participation, and streamline support for startups.

### **Decentralized School Facilities**

This concept aims to strengthen ties with research and development (R&D) environments and higher education institutions. It seeks to attract young people back to Hvaler by fostering collaboration between students and local businesses and demonstrating the relevance of education to the island's economy.

### **Project House for Collaboration**

A dedicated physical space to facilitate interaction between the municipality, businesses, and academia. This "Project House" would serve as a hub for collaboration, providing a structured environment for partnerships and fostering innovation.

### **Improved Transport Solutions**

Proposed initiatives included better school transport, the introduction of high-speed boats, and free boat services between schools and islands. These measures aim to improve connectivity and accessibility for both residents and visitors.

### **Community Collaboration Platforms**

Recognizing the need for stronger communication channels between residents and the municipality, proposals included monthly dialogue meetings, physical idea boxes, and digital platforms to encourage participatory development and collect community input.

### **Mobile Sauna Initiative**

A student-driven idea to attract both tourists and locals by introducing a mobile sauna by the water. This initiative combines entrepreneurship with local tourism development, offering a unique experience that connects the community and visitors.

These proposals reflect the combined efforts of local stakeholders and students, demonstrating the power of collaboration and creative thinking in addressing Hvaler's challenges. By leveraging diverse perspectives and innovative methods, the FREIIA project has laid a strong foundation for sustainable development and actionable solutions tailored to the island's needs.



*(Students and Stakeholders during the Workshop)*

## **Discussion**

The results of the workshops highlighted the importance of collaboration in addressing Hvaler's development challenges. Many of the proposed solutions, such as the Project House and monthly dialogue meetings, emphasize creating structured arenas for interaction. These collaborative spaces are essential for building trust between stakeholders and reducing duplication of efforts that we uncovered is a recurring thing. While also fostering shared goals and a common vision for the communities.

Collaboration is particularly important in island communities where resources are limited, and the integration of individual initiatives into a unified framework can significantly improve the effectiveness of solutions. By working together, diverse stakeholders can achieve better results and develop innovative solutions that benefit the entire community. This collective approach is essential for Hvaler to meet its challenges effectively and sustainably.

## **Entrepreneurship**

The workshops also underscored the need to attract and retain young people in Hvaler. Initiatives like the Decentralized School Facilities and Mobile Innovation Hub connect education, entrepreneurship, and local industries, offering valuable opportunities for youth. These initiatives seek to address the gap between wanting and fostering. By providing a pathway for young people to contribute meaningfully to their local economy, while promoting creativity and innovation, we can bridge this gap.

Finally, balancing traditional community values with the introduction of progressive solutions will be crucial for Hvaler's long-term development. While modernizing infrastructure and creating new opportunities, it is essential to maintain the island's cultural identity and sense of community. This balance will ensure that the development is sustainable and supported by the community, reinforcing the importance of local ownership and participation.



*(Students and Stakeholders during the Workshop)*

## **Conclusions**

The FREIIA project's investigation into innovation gaps on Hvaler has highlighted critical challenges that must be addressed to support sustainable growth and resilience. The research, conducted through the application of the UNIC method and Design Thinking, identified several barriers, including:

- Limited collaboration across sectors and between stakeholders
- Challenges in attracting and retaining young people,
- A lack of accessible platforms for community engagement.
- Lack of shared vision and/or common understanding
- Development VS conservation

The Interdisciplinary workshops played a pivotal role in addressing these challenges by bringing together stakeholders from different sectors—municipality, education, businesses, and local residents. This collaborative framework led to the development of several key initiatives, such as:

1. A Mobile Innovation Hub to stimulate local entrepreneurship and support emerging businesses.
2. Decentralized School Facilities aimed at fostering stronger ties between the education sector and local industry to retain young talent.
3. A Project House for Collaboration, which would serve as a dedicated physical space to facilitate partnerships across sectors.
4. Improved Transport Solutions, including the potential for high-speed boats to enhance accessibility.
5. Community Collaboration Platforms to improve communication and engagement between residents and the municipality.

These solutions demonstrate how co-creation and shared ownership of initiatives can effectively address complex local issues and foster innovation. The workshops also emphasized the importance of balancing Hvaler's traditional values with progressive solutions, ensuring that future development aligns with the community's identity.

One key insight from the Co-creation workshop is the necessity of creating structured arenas for collaboration. Initiatives like the *Project House for Collaboration* highlight the importance of providing physical spaces where stakeholders from the municipality, businesses, and academia can engage in regular dialogue and co-create solutions.

In conclusion, Hvaler's future development will depend on its ability to effectively balance local knowledge with innovative approaches tailored to its specific context. While the island community faces significant challenges such as limited collaboration, an aging population, and constrained infrastructure, the proposed solutions offer a pathway to gradual improvement. By fostering continuous collaboration across sectors and leveraging targeted interventions, Hvaler can build resilience and enhance its capacity for sustainable development.

### **Next Steps**

The next phase of the FREIIA project on Hvaler will focus on refining and pilot-testing these solutions to evaluate their impact on the community. A continuous feedback loop between stakeholders will be crucial to ensuring these initiatives remain adaptive to evolving needs and contribute to the island's long-term sustainability. The idea is that the stakeholders involved in the workshops now take ownership to their solutions based on their participation and involvement in their creation and that they feel a sense of ownership to the problem question.

By fostering ongoing collaboration and learning, Hvaler can serve as a model for other small island communities facing similar challenges in the North Sea Region, By demonstrating how collaborative innovation can drive sustainable development even in resource- constrained environments.

### **Acknowledgements**

We wish to thank our mentor and project leader from the Norwegian partner, Bjørn Gitle Hauge for his mentoring, trust and support throughout the project duration. Thank you to Dr. Gunnar Andersson for his invaluable feedback and guidance throughout the project. Special thanks to Dr. Mathew Lynch for his expertise in Design Thinking and for developing the workshop material with us. Thank you to Mr Eivind Andre Leister, Dr. Houg Wu and Dr Frode Ramsvik Johansen for their contribution to the projects whole.

This work was made possible by the generous support of the Interreg NSR and the EU. We would also acknowledge Innovation and Project management students at Hogskolen i Østfold and International relations students and professors from Artevelde University of applied science, Belgium, for contributing immensely in both co-creation workshops and reflection workshops.

Lastly, we extend our thanks to the stakeholders from Hvaler, who shared their time and perspectives, creativity and engagement in the co-creation workshops. Without them, there would not be a project to write about.

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**Student Sustainable Entrepreneurship in Action:**  
UNIC Methodology and Innovation Gaps on Hvaler, Norway  
*as Part of the INTERREG FREIIA Project*  
*The interviews and Process*

Linnea Margrethe Johansena Ellen Winnem Bjergaa, Gunnar Anderssona, Frode Ramstad Johansena, Hong Wua, Eivind Andre Leistera, Bjørn Gitle Haugea , Mathew Lynch

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**Abstract**

*FREIIA, Facilitating Resilience Embracing Islands Innovation, is a INTERREG project financed by the European Union running from 1. October 2022 until 31. December 2025. The project consists of 14 partners from 6 countries, Netherlands, Denmark, Sweden, Germany, France and Norway.*

*The aim of this project is to help 6 island communities in the European Union to create competences, capabilities & structures that support the public sector in becoming successful in the green transition, through the involvement of community, young entrepreneurs and students.(FREIIA FREIIA | Interreg North Sea, u.å.)*

*Østfold University College is responsible for Work Package 4 (WP4), which focuses on fostering student entrepreneurship. The main objective of WP4 is to integrate entrepreneurship students into the strategic governance of island innovation, strengthening their role in green transitions. When referring to the FREIIA project in this paper, it refers to WP4 of the FREIIA project.*

*The following paper focuses on the interviews conducted on Hvaler island, Norway, as part of the initial phase of the FREIIA project. It highlights the recruitment process for stakeholders and the methodology employed to ensure diverse representation from public, private, and civil sectors. The student-led interviews revealed key challenges, including limited cross-sector collaboration, an aging population, and insufficient platforms for innovation. These findings, gathered through the application of the UNIC method, provides a foundation for the next phase, where Co-creation workshops will focus on developing tailored solutions to address the identified gaps.*



(Skjærhalden,  
Hvaler)

## Introduction

As part of the FREIIA project on Hvaler, interviews were conducted to capture the voices and perspectives of the local community. Rather than providing a detailed analysis, this document presents raw and unfiltered data, ensuring that stakeholders' experiences and concerns are conveyed in their own words.

The interviews were conducted with a diverse group of stakeholders, including representatives from the public sector, local businesses, NGOs, permanent residents, seasonal visitors, and politicians. Before arriving at Hvaler, we worked closely with Visit Fredrikstad & Hvaler, the Hvaler Business Association, and informal local networks to compile an initial list of relevant stakeholders. This helped us connect with key individuals who shared valuable insights on the community's challenges and opportunities.

While many participants were scheduled in advance based on this initial list, others were identified through spontaneous interactions during our time on the islands. This combination of planned outreach and organic engagement allowed us to include both well-established voices and perspectives that might not typically be captured in formal research. By blending structured recruitment with on-the-ground flexibility, we gained a more nuanced and representative understanding of life on Hvaler.

By focusing exclusively on the transcriptions, the document preserves the integrity of the participants' viewpoints, allowing their stories to form a foundation for future research, policymaking, and community-led initiatives. It is intended for policymakers, researchers, stakeholders and community members seeking a detailed and honest understanding of the dynamics, priorities, and potential of life on Hvaler, with a focus on sustainable and innovative development.



*(Humlungen Lighthouse, where the students stayed during their fieldwork on Hvaler.)*

## Hvaler

Hvaler is an island municipality in southeastern Norway, located at the outer edge of the Oslofjord. It comprises 833 islands and islets, covering a total land area of 20 km<sup>2</sup>. The administrative center, Skjærhalden, is situated on Kirkøy, the largest island in the archipelago. In 2023, Hvaler had a population of 4,762, which swells to over 30,000 during the summer months as tourists flock to the area.

Renowned for its natural beauty, Hvaler is home to Ytre Hvaler National Park, Norway's first marine national park. This protected area features unique ecosystems, including kelp forests and cold-water coral reefs, making it a haven for biodiversity and marine conservation. Cultural landmarks such as the 12th-century Hvaler Church showcase the municipality's rich history, while the rugged coastline and tranquil bays attract enthusiasts of boating, fishing, and hiking.

Strict housing regulations, which permit only registered residents to purchase homes, are designed to preserve the local community's character. However, this policy has sparked debates, particularly in relation to a potential merger with the neighboring city of Fredrikstad, located 28 km away. With a population of 85,230 in 2024, Fredrikstad serves as a regional hub for services and infrastructure.

The municipality is led by Mayor Mona Vauger from the Labor Party, whose priorities include balancing sustainable development with the preservation of Hvaler's unique environmental and cultural heritage. Hvaler's commitment to protecting its natural resources while navigating modern challenges reflects the community's determination to secure its future for both residents and visitors. (*Hvaler – Island by Island*, u.å.)



*(Skjelsbusund Bridge that connects Hvaler to the mainland, making it possible to drive to the islands by car.)*

## Methods & Process

As part of the FREIIA project, 20 interviews were conducted with local stakeholders on Hvaler. The informants represented both permanent residents and seasonal actors, with the goal of documenting their perspectives on challenges and opportunities related to innovation and sustainable development.

The interviews were conducted using a semi-structured approach, balancing structure and flexibility. Predefined questions ensured that key topics, such as local sustainability, housing challenges, and collaboration, were addressed. At the same time, the method allowed the interviewer to explore additional themes that emerged naturally during the conversation. This approach enabled the collection of rich and detailed data by allowing informants to share their experiences and perspectives at their own pace.

All interviews were transcribed using the 'Diktafon' app and securely stored on SIKT, Norway's national digital service provider for research and education. SIKT ensured that the data was handled in compliance with ethical and privacy standards, safeguarding the confidentiality of participants. They were manually reviewed to ensure high accuracy. To protect the privacy of informants, all identifiable information was anonymized. The transcriptions are presented chronologically in this report to preserve the original structure of the interviews. Only minimal editing was carried out, primarily to remove repetitions and unclear sections, without altering the content or meaning. *(Sikt – Kunnskapssektorens tjenesteleverandør | Sikt, u.å.)*

In research involving interviews, obtaining informed consent is a critical step to uphold ethical standards. The stakeholders interviewed were asked to sign a consent form outlining the purpose of the study, their voluntary participation, and the confidentiality of their identities. This formal agreement ensures transparency and compliance with ethical research guidelines. The consent form specifies that personal information will remain confidential, details how the data will be used, and reassures participants that they can withdraw at any time without consequence. This process fosters trust between researchers and participants, creating a safe environment for open and honest discussions.

(Consent Form for interviewees)

**Will you participate in the research project**  
**The Development Capacity of Island Communities?**

This is a question to you about participating in a research project aimed at exploring the current state and challenges of island communities, as well as identifying possible opportunities to increase development capacity. In this document, we provide you with information about the project's goals and what participation will entail for you.

**Purpose**  
The project aims to investigate the current state and challenges of island communities as a basis for possible interventions to improve development capacity. Development capacity here refers to the interaction between various actors regarding innovation, development and sustainable growth.  
The project aligns with the university college's vision for 2030: Knowledge for human development and a sustainable society.

**Who is responsible for the research project?**  
The University College of Østfold is responsible for the project.

**Why are you being asked to participate?**  
We would like you to participate in the research project as a participant in our initiative in the EU Horizon North Sea Region (tryk workshops and gatherings).

**What data is being collected for you?**  
If you choose to participate in the research project, it means that you will take part in one or more interviews. The interviews will be audio-recorded (audio) and will take approximately 30 to 45 minutes. The interviews will focus on your experiences and reflections on the current state and challenges of the island community as a basis for possible interventions to improve development capacity. All names will be anonymized.

**Participation is voluntary** Participating in the project is voluntary. If you choose to participate, you can withdraw your consent at any time without stating a reason. All your personal information will then be deleted. There will be no negative consequences for you if you choose not to participate or later decide to withdraw.

**Your privacy - how we store and use your information**  
We will only use the information you provide for the purposes stated in this document. We handle the information confidentially and in accordance with privacy regulations.  
The audio recordings will be stored and processed in accordance with the university college's guidelines and security requirements.

**As a participant, you will be anonymized in publications.** However, due to the project's size and the number of participants, there may be instances where individuals factor with the organization can recognize you in the publication. Therefore, you will have the opportunity to request the use of quotes (anonymized) and to withdraw the quotes if desired.

**What happens to your personal information when the research project concludes?**

All recordings will be deleted, and the information will be anonymized when the project concludes, which is planned for December 2025.

**What gives us the right to process personal information about you?**  
We process information about you based on your consent.  
On behalf of the University College of Østfold, the Knowledge Sector's service provider, we assure you that the processing of personal information in this project is in compliance with privacy regulations.

**Your rights**  
As long as you can be identified in the data, you have the right to:

- Access the information we process about you and receive a copy of the information.
- Correct incorrect or misleading information about you collected.
- Have your personal information deleted.
- Submit a complaint to the Norwegian Data Protection Authority regarding the processing of your personal information.

If you have any questions about the study or wish to exercise your rights, please contact:  
University College of Østfold, Service Assistant: [spjenn@ostfold.no](mailto:spjenn@ostfold.no) and Data Protection Officer: Helene Lundeheim (contact: [spjenn@ostfold.no](mailto:spjenn@ostfold.no))

If you have questions regarding the assessment made by SIKT's privacy partners, you can contact them via:  
Email: [spjenn@ostfold.no](mailto:spjenn@ostfold.no) or phone: +47 22 88 80 80.

**Consent**  
I have read and understood the information about the Island Community Development Project and have had the opportunity to ask questions. I consent to:

- Participate in an interview.
- Allow anonymized quotes from the interview to be used in the research.

I consent to the processing of my information until the project is concluded.

\_\_\_\_\_  
(Sign by the project participant, (date))

### **Semi-structured interview guide**

To ensure consistency across the islands and for data collecting purposes, a standardized interview guide was developed. 8 questions were designed to elicit both specific insights and broader reflections on sustainability challenges. Following are the eight questions asked:

1. What is your role in the island community?
2. How would you describe the island community and its current state?
3. What are the biggest challenges the island community faces regarding innovative development and sustainable growth?
4. What initiatives has the island community previously undertaken to address these challenges?
5. How does the island community collaborate to promote innovative development and sustainable growth?
6. In your opinion, how can the island community improve its development capacity?
7. How can you and your organization contribute to improving the island community's development capacity?
8. How can the island community collaborate better with surrounding communities and regions to achieve common goals?

### **Identifying Stakeholders: Process and Approach**

The recruitment of stakeholders for the FREIIA project on Hvaler was a collaborative effort, involving multiple partners and strategies to ensure a broad and representative range of perspectives. Visit Fredrikstad & Hvaler, a partner in the FREIIA project, played a vital role in the early stages by using its extensive network and local knowledge to identify potential participants. The organization helped create an initial list of relevant stakeholders, ensuring a diverse selection across public officials, business owners, NGOs, and local residents.

Once this initial list was established, Østfold University College took over the process, broadened the group by identifying additional stakeholders and following up on those already contacted. Professors involved in the FREIIA project also leveraged their own networks to directly reach out to new participants, further enriching the diversity of perspectives.

The recruitment process followed a structured approach. First, an invitation email was sent to potential participants, outlining the purpose of the project and the importance of their involvement. This was followed up with phone calls to confirm participation and schedule interview times and locations. Throughout this process, trust and clarity were prioritized to encourage participation and ensure stakeholders felt their contributions were valued.

A key factor in fostering open and honest conversation was to have students conduct the interviews. Their presence made the process feel more approachable and less formal, helping to put stakeholders at ease. The presence of students often fostered a more open dialogue, as their natural curiosity and willingness to explore topics in a non-judgmental way encouraged participants to share their perspectives more freely. This dynamic not only enriched the data collection process but also strengthened stakeholder engagement by making the interviews feel more like conversations rather than formal assessments.

To keep track of the logistics, the project leader team maintained a detailed Excel sheet listing the names, organizations, scheduled times, and locations for each interview. This comprehensive schedule was later shared with the student teams conducting the interviews, providing them with a clear plan and ensuring a smooth process.

In addition to the efforts of Visit Fredrikstad and Hvaler, the Hvaler Destination Council, Business Association, Cabin Owners' Association, and local enthusiasts provided significant support. They not only participated as stakeholders themselves but also helped connect the team with the right people, ensuring the interviews covered a wide spectrum of perspectives. Their contributions were instrumental in creating a well-rounded understanding of the challenges and opportunities facing the Hvaler community.



*(Students on their way to Hvaler by boats)*

## **Kickoff and Logistics**

The kickoff for the FREIIA project began with an unforgettable experience: the students traveled by boat from Østfold University College to Hvaler. The journey offered their first glimpse of the archipelago's greatness, stunning scenery and the serene life by the sea. As previously stated, the archipelago is made

up of 833 islands which is hard to fathom on land. More than just transportation, the boat ride set the tone for the project, connecting the students to Hvaler's unique maritime heritage and preparing them for the work ahead.



The students stayed at Humlungen Lighthouse, spending two nights between interview days. This choice of accommodation was intentional, offering the students a chance to experience Hvaler in an authentic way while fostering a deeper connection to the island's culture and natural environment.

*(Humlungen fyr at Hvaler where the students stayed while executing interviews)*

The first day began with a gathering at the Hvaler Visitor Center, where representatives from the Hvaler Destination Council, Business Association, Cabin Owners' Association, and local enthusiasts shared their perspectives on the community's challenges and opportunities. While this session provided valuable background information, it may have unintentionally influenced the students by giving them a stronger understanding of the Destination Council's perspective, which could have affected their objectivity in the interviews that followed.

Throughout the data collection period, the Hvaler Visitor Center served as the project's central base. This location was not only a convenient space for the team to regroup, plan, and prepare between interviews but also a welcoming environment where stakeholders could stop by to engage with the team. This setup fostered additional opportunities for collaboration and dialogue.

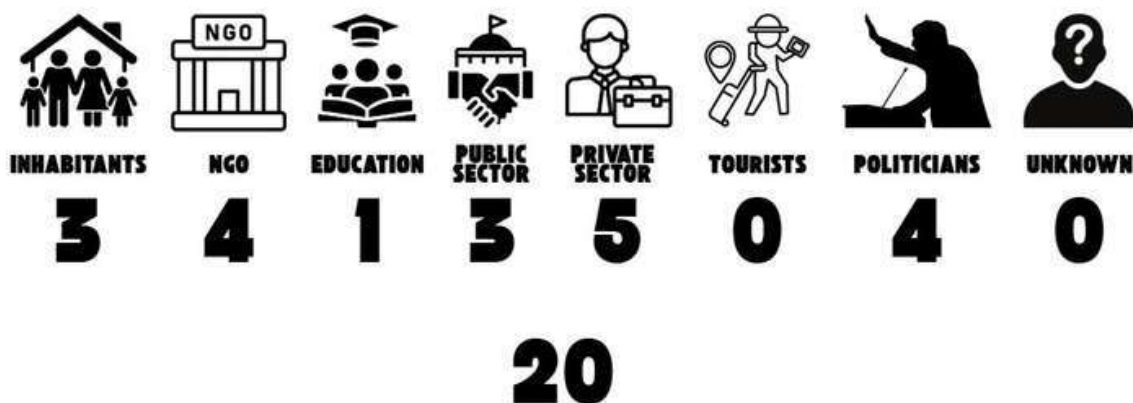
We gathered for meals at Big Fish, a local restaurant located right next to the visitor center. To create an open and welcoming atmosphere, we invited all stakeholders, both those directly involved in the project and our interview subjects, to join us for lunch or dinner. This gave us a strong presence at the harbor, right in the heart of Skjærhalden, Hvaler, making us more accessible. The approach seemed to have a ripple effect, as the people we reached out to become more engaged. Students were even picked up by private boats, taken to various businesses for interviews, and later joined us for meals, fostering further connection and dialogue.

Over the next two days, students ventured out in pairs to conduct interviews according to a planned schedule. They traveled to meet stakeholders using a variety of transport methods, including walking, buses, ferries, and cars. In some cases, stakeholders provided transportation by boat to their premises, allowing students to explore their businesses and gain insights directly from their environments.

In addition to the scheduled interviews, spontaneous interviews were also conducted. Students took the initiative to approach individuals on the islands, expanding the range of perspectives and reaching stakeholders who might otherwise have been missed. These firsthand experiences provided students with a deeper understanding of the stakeholders' environments and daily activities, significantly enriching the quality and depth of the interviews.

### Stakeholders and key insights

As part of the FREIIA project, 20 interviews were conducted with a diverse group of stakeholders on Hvaler. The informants represented a broad range of actors, including permanent residents, non-governmental organizations (NGOs), the public sector, the private sector, and cabin owners. This diversity of backgrounds and perspectives provided valuable insights and laid a strong foundation for identifying themes critical to the island's sustainable development and future growth.



*(This model shows the number of interviewees divided into groups.)*

### Key insights

The interviews revealed several key insights on the challenges and opportunities facing the Hvaler community. While the island offers a unique and attractive environment, several structural and social factors influence its long term sustainability. Stakeholders highlighted critical issues related to housing, tourism, infrastructure, collaboration, environmental conservation, and community cohesion. These insights illustrate both pressing concerns and potential pathways for future development, emphasizing the importance of balancing economic growth with social and environmental sustainability. Below are the key findings from the interviews

## **Housing and Demographics**

A significant challenge on Hvaler is the lack of affordable housing and available plots for young families and entrepreneurs. Strict housing regulations, designed to preserve the island's character, have driven up property prices, making it difficult for younger residents to establish themselves. This has contributed to youth migration, leaving the island with an aging population and threatening its long-term sustainability.

## **Tourism and Seasonal Economy**

Tourism is a vital part of Hvaler's economy but remains highly seasonal. Most visitors arrive during the summer, drawn by the beaches, Ytre Hvaler National Park, and the island's cultural heritage. Stakeholders emphasized the need to diversify tourism offerings to attract year-round visitors and to improve infrastructure that supports off-season activities.

## **Infrastructure and Public Services**

Limited ferry routes, closed schools, and inadequate access to healthcare were frequently cited as challenges. These issues, particularly pronounced during the off-season, negatively impact the livability of the island and hinder the retention of permanent residents. Stakeholders also highlighted the need for improved communication and collaboration with neighboring Fredrikstad to address these challenges.

## **Collaboration Across Sectors**

A lack of collaboration between the public, private, and civic sectors was identified as a key barrier to innovation and progress. While existing networks, such as the Hvaler Business Association, play a role, stakeholders noted that efforts often operate in silos. Creating formal platforms for interdisciplinary cooperation could help address shared challenges and drive innovative solutions.

## **Environmental Conservation and Development**

Protecting Hvaler's natural beauty, particularly within Ytre Hvaler National Park, remains a top priority for stakeholders. However, balancing conservation efforts with economic development poses a significant challenge. While some residents favor eco-tourism and sustainable growth, others resist development initiatives to preserve the island's tranquility. Achieving this balance will require innovative approaches that respect the island's unique environment.

## **Community and Culture**

Many stakeholders underscored the importance of strengthening local community bonds. Sports, cultural activities, and other shared initiatives were highlighted as critical tools for fostering a sense of belonging and countering demographic challenges, such as the aging population and outmigration of young people.

## **Next Steps**

The insights from these interviews provide a foundation for addressing Hvaler's challenges and opportunities. The findings suggest the need for co-creation workshops that bring together stakeholders

to develop actionable solutions. Fostering collaboration, addressing demographic challenges, and balancing conservation with sustainable development will be critical for the island's future.

## **Acknowledgments**

We wish to thank our mentor and project leader from the Norwegian partner, Bjørn Gitle Hauge, for his mentoring, trust, and support throughout the project duration. Thank you to Dr. Gunnar Andersson for his invaluable feedback and guidance throughout the project. Mr Eivind Andre Leister for providing knowledge and support in who to contact through his invaluable network. Dr. Houg Wu, Dr Frode Ramsvik Johansen and Dr. Mathew Lynch for their contribution to the projects whole.

This work was made possible by the generous support of the Interreg NSR and the EU. We would also like to acknowledge Østfold University College for providing access to the necessary facilities, staff, and data. Our gratitude extends to the technical staff at SIKT for their assistance with all matters regarding data collection.

We are deeply grateful to all the students from the Innovation and project management program at Østfold University College, who carried out interviews, worked on analyzing and transcribing data, and contributed their time and dedication to the project. Additionally, we extend our thanks to the stakeholders from Hvaler, who generously shared their time and perspectives, which were essential for our analysis and the project's success.

Finally, we would like to thank Visit Fredrikstad og Hvaler, the Hvaler Cabin Owners' Association, the Hvaler Destination Council, and the Hvaler Business Association for their invaluable support in identifying stakeholders and enriching the project with their insights and contributions.

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## **Student Sustainable Entrepreneurship in Action: UNIC Methodology and Innovation Gaps on Schiermonnikoog, Netherland as part of the interreg FREIIA project**

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### **Abstract**

*FREIIA, Facilitating Resilience Embracing Islands Innovation, is a INTERREG project financed by the European Union running from 1. October 2022 until 31. December 2025. The project consists of 14 partners from 6 countries, Netherlands, Denmark, Sweden, Germany, France and Norway.*

*The aim of this project is to help 6 island communities in the European Union to create competences, capabilities & structures that support the public sector in becoming successful in the green transition, through the involvement of community, young entrepreneurs and students.*

*Østfold University College is responsible for Work Package 4 (WP4), which focuses on fostering student entrepreneurship. The main objective of WP4 is to integrate entrepreneurship students into the strategic governance of island innovation, strengthening their role in green transitions. When referring to the FREIIA project in this paper, it refers to WP4 of the FREIIA project.*

*The following paper describes the process of determining the innovation gaps on Schiermonnikoog in the Netherlands using students from the participating universities and stakeholders from the islands. The next step will be to resolve the gaps by finding new solutions created by innovative methods like design thinking.*



*(Students and stakeholders at mudflat excursion with Natuurmonumenten at Schiermonnikoog.)*

## Introduction

Through the project, the current and desired state and challenges faced by the island communities of Schiermonnikoog are examined to identify potential gaps in between these. In these gaps lies the opportunity for innovation and to improve development capacity. Development capacity, in this context, refers to the ability of various stakeholders to collaborate effectively in driving innovative development and fostering sustainable growth on island communities.

The initiative is part of the EU Interreg North Sea Region FREIA project, which supports Østfold University College's 2030 vision: Knowledge for human development and a sustainable society. (*Strategy 2030 - Østfold University College, u.å.*)

A key feature of this phase was the close collaboration between Østfold University College (HiØ), Hanza Høgenskol, Natuurmonumenten, and the municipality of Schiermonnikoog. This partnership was essential for establishing connections with a diverse range of stakeholders and ensuring that the analysis was grounded in local realities. The interdisciplinary approach, combining academic expertise and community perspectives, created a strong foundation for identifying challenges and opportunities unique to the island.

With this collaborative framework, the second implementation of the UNIC analysis not only enhanced the methodology but also highlighted the critical role of adaptability and co-creation in addressing Schiermonnikoog's sustainability challenges.

## Schiermonnikoog

Schiermonnikoog is one of the West Frisian Islands in the Netherlands, located in the province of Friesland. The smallest inhabited island in the archipelago, it lies in the Wadden Sea, a UNESCO World Heritage Site. Covering approximately 40 square kilometers and home to around 950 residents, Schiermonnikoog combines a small, closely-knit village with vast, open natural landscapes.

The island is renowned for its unique natural environment and commitment to sustainability. Large parts of Schiermonnikoog are designated as a national park, featuring sand dunes, expansive beaches, and a rich variety of wildlife, including numerous bird species. A popular destination for tourists, especially nature enthusiasts, the island is celebrated for its peaceful atmosphere, eco-friendly tourism, and cycling-friendly infrastructure. Visitors can only get around by foot or bicycle, as the island is car-free for tourists. Regular ferry connections link the island to the mainland.

Tourism is the primary source of income for Schiermonnikoog, with a strong emphasis on balancing economic activity with environmental preservation. The combination of a rich ecosystem, focus on sustainability, and a unique location makes Schiermonnikoog an integral part of the Netherlands' efforts in environmental conservation and local development.



## Method: Theoretical framework

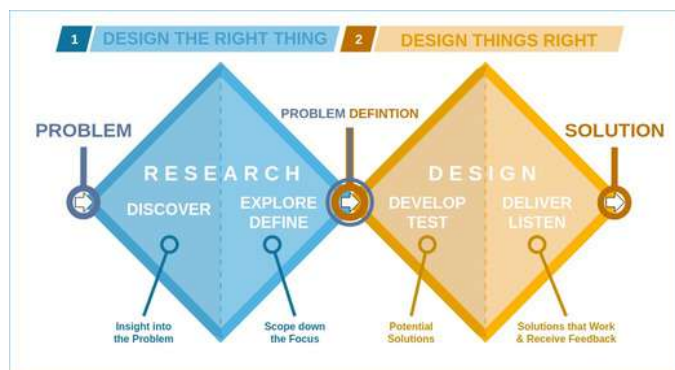
In this study, we applied principles from the UNIC method and the Double Diamond framework to address challenges in sustainable development on Schiermonnikoog. The methodologies share a user-centred approach to problem-solving. This makes them ideal for our needs to gain insights into the challenges faced by island communities and tackling them.

### UNIC Method - Phase 1: Analysis

In the first phase of the UNIC method, we focused on data collecting and analysis. In Phase 1, in-depth interviews with stakeholders from Schiermonnikoog to understand their challenges, needs, and perspectives on sustainability. This phase is parallel to the “Discover” stage in the Double Diamond framework, focusing on gathering insights about the user’s needs and problems. In this case, the users or stakeholders, included community members, business owners, and local officials, ensuring a wide range of perspectives were captured. (Hein, L. (December, 1988b). Diagnose på udviklingsfunktionen (notat 2). UNIC-gruppen).

### Double Diamond - Discover & Define

The Double Diamond framework, developed by the British Design Council, structures innovation processes into four phases: Discover, Define, Develop, and Deliver. In this study, we utilized the Discover and Define phases to explore and synthesize stakeholder insights. Thematic analysis of interview data helped identify core issues such as limited collaboration, youth retention, and community engagement gaps. ([«The Double Diamond Model», 2024](#)).



### Semi-Structured Interview Approach

To ensure consistency across islands, a standardized interview guide was employed. Questions were designed to elicit both specific insights and broader reflections on sustainability challenges. The eight questions included:

1. What is your role in the island community?
2. How would you describe the island community and its current state?
3. What are the biggest challenges the island community faces regarding innovative development and sustainable growth?
4. What initiatives has the island community previously undertaken to address these challenges?
5. How does the island community collaborate to promote innovative development and sustainable growth?
6. In your opinion, how can the island community improve its development capacity?
7. How can you and your organization contribute to improving the island community’s development capacity?
8. How can the island community collaborate better with surrounding communities and regions to achieve common goals?

This semi-structured format allowed respondents to explore broader topics beyond the predefined questions, offering valuable insights into the island's present conditions and potential interventions to enhance development capacity. This method is particularly important for exploring wicked problems, which are complex and resist straightforward approaches. In the context of sustainable development, wicked problems are challenges that involve multiple stakeholders, conflicting interests, and long-term impacts, making them hard to address through traditional methods.

## **Methodes: Applied in practice**

The UNIC analysis on Schiermonnikoog was the second implementation of this methodology within the FREIIA project. Building on lessons learned during the pilot study on Hvaler, the process was adapted to address the specific dynamics of the Dutch island community. Østfold University College (HiØ), in collaboration with Hanzehogeschool, the local municipality, and Natuurmonumenten, facilitated this phase.

### **Stakeholder Engagement and Interview Process**

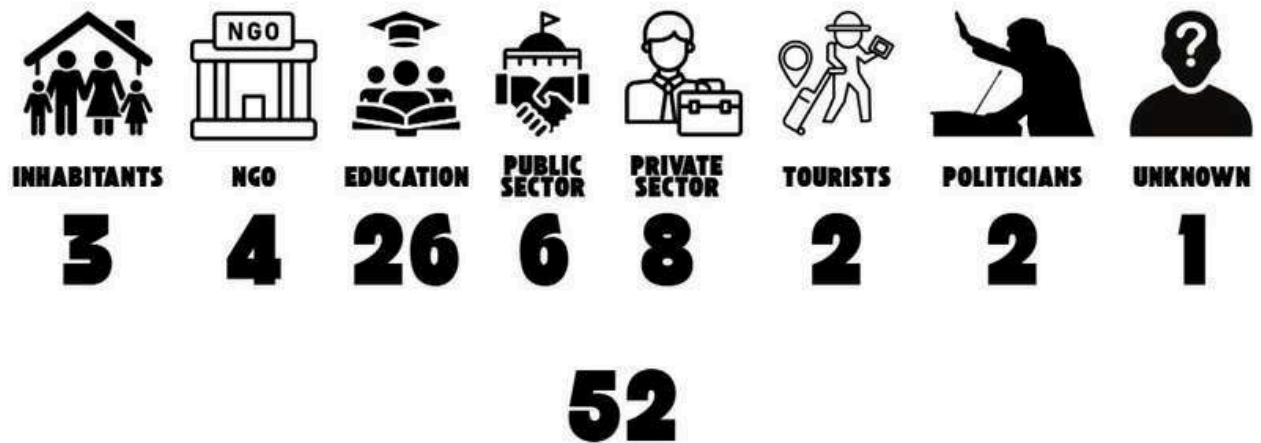
On Schiermonnikoog, establishing a diverse and representative stakeholder network was pivotal. Unlike the Hvaler pilot, where existing relationships facilitated access, the Schiermonnikoog team faced the additional challenge of building connections from scratch. Close collaboration with local partners ensured a comprehensive approach to stakeholder selection, encompassing municipal leaders, conservationists, business owners, community members, and tourists.

The interviews were conducted over two days by interdisciplinary teams comprising Dutch and Norwegian students from Hanze University and HiØ. Teams of two to three students conducted semi-structured interviews in Dutch or English, depending on stakeholder preference. This bilingual approach allowed for a broader range of perspectives, while team collaboration helped bridge cultural and methodological differences.

### **Data Collection and Methodology**

The interviews were guided by a standardized framework of eight semi-structured questions used consistently across all FREIIA project sites. These questions targeted the challenges, needs, and aspirations of the island community while allowing flexibility for respondents to share unique insights. Teams were encouraged to perform spontaneous "stunt interviews" during their fieldwork, capturing unplanned but valuable input from residents and visitors.

All interviews were recorded and securely stored using SIKT, Sikt ensures secure digital infrastructure, protecting data and communication in research and education (*Sikt – Kunnskapssektorens tjenesteleverandør | Sikt, u.å.*). Following transcription, the data was anonymized and subjected to thematic analysis by the students. This systematic approach ensured that the findings were both comprehensive and aligned with the objectives of the UNIC method. (Hein, L. (December, 1988b). Diagnose på utviklingsfunksjonen (notat 2). UNIC-gruppen.).



(This model provides an overview of the number of interviews conducted, and other involved stakeholders in this part of the project, categorized by group, as part of the Innovation Gap analysis on Schiermonnikoog)

### Key Adaptations

The methodology applied on Schiermonnikoog incorporated adjustments to address initial challenges, including:

- Refining Stakeholder Lists: Early misalignment in interviewee selection highlighted the importance of diverse representation. The final interview list included stakeholders across public, private, and civic sectors.
- Pre-Interview Alignment: Meetings with project partners clarified objectives and resolved discrepancies in methodology.
- Integrated Team Dynamics: Dutch and Norwegian students collaborated closely, fostering mutual learning and enhancing the quality of data collection.

By adapting the methodology to the local context, the Schiermonnikoog phase successfully balanced rigorous data collection with the flexibility needed to engage a unique island community.

Schiermonnikoog's UNIC workshop focused on engaging a diverse range of stakeholders to capture a wide spectrum of perspectives, essential for understanding the island's challenges and opportunities. Stakeholders included business owners, municipal representatives, conservationists, tourists, and community members. The emphasis on inclusivity ensured that insights from all sectors were represented in the analysis.

### Student involvement

Over two days, Norwegian and Dutch student teams traveled across the island to meet stakeholders in their own environments, including businesses, municipal offices, and local landmarks. A detailed schedule was created to ensure efficient time management and maximize participation, which was then shared with the students. Meeting points were set throughout the day to provide support and address any questions or challenges. A designated lunch station served as a base for the leadership team during the interview period for availability purposes. Students conducted semi-structured interviews using a predefined format consistent across all islands in the FREIIA project. This approach ensured standardized data collection while allowing participants to share personal insights and experiences.



*(Students and leader team at the cafe "KoffieKajuit" for lunch on interview day.)*

The interviews were designed to align with the Discover phase of the double diamond method, focusing on uncovering stakeholders' challenges, needs, and aspirations. This approach ensured that the analysis captured the nuances of local perspectives while maintaining compatibility with findings from other islands. Students also conducted spontaneous "stunt interviews" with tourists and locals they encountered during fieldwork, enriching the dataset with unanticipated perspectives.

### **World Café Session**

Following the interviews, a World Café session was organized. This provided opportunities for the Norwegian and Dutch students to come together and reflect on the outcomes of the interviews. During this session, students and professors shared their perspectives and experiences, discussing the collaborative process and the solutions developed. The World Café format encourages open dialogue, enabling participants to exchange insights and learn from each other's viewpoints. This session led to a deeper understanding of how diverse perspectives contribute to innovative problem-solving. («(PDF) The "World Café" as a Participatory Method for Collecting Qualitative Data», 2025)



*(From the World Café Session)*

## Results

The FREIIA project's initial phase on Schiermonnikoog identified key challenges and opportunities for sustainable development through a comprehensive analysis of community dynamics. The interviews and workshops captured a wide array of perspectives, providing valuable insight into both structural barriers and emerging opportunities. These findings were essential in shaping the next steps of the project and will serve as a basis for co-creating actionable solutions in the subsequent workshops.

Key findings from this phase are summarized below:

- 1. Circular Economy:** There is a difference in the understanding of the circular economy as a concept amongst the different sectors. While the municipality has a huge interest in it, some stakeholders struggled to see how the concept of a circular economy applied to their daily lives and businesses. The concept felt abstract and disconnected from local realities, making it difficult to implement effectively.
- 2. Retaining Young Adults:** The island loses many young people to urban centers, creating demographic challenges. A lack of opportunities and inspiration for young adults reduces the island's appeal as a place to live and work. High cost of housing is also an issue in this debate.
- 3. Collaboration Across Sectors:** Limited cooperation between public, private, and civic actors slows progress on shared goals. Stakeholders noted a lack of collaboration between sectors, which is hindering innovation. The lack of an arena for collaboration was mentioned. The will is there.
- 4. Space and Resource Optimization:** Limited physical space and resources constrain development on the island. For example: While Schiermonnikoog is growing and adapting for the future, it also has strict building laws that make development difficult. Finding sustainable ways to grow while respecting natural and spatial limits is a key issue.

These results highlighted Schiermonnikoog's critical sustainability challenges and opportunities for growth. Addressing the disconnect between the circular economy concept and local realities will require developing a shared vision that resonates with stakeholders. Retaining young adults is crucial for the island's future and demands targeted initiatives to create opportunities for this demographic. Strengthening collaboration across sectors and optimizing limited resources will be essential to the island's sustainable growth. These insights will guide the next phases of the FREIIA project, focusing on co-created, community-driven solutions.



*(Dutch and Norwegian students Schiermonnikoog)*

### **Local Business Owner**

*"The houses for sale are very expensive. So a lot of people with money are buying houses, and not all of them are becoming part of the community."*

– Highlights the challenge of increasing property prices and the decline of permanent residents.

*"Not everybody is happy with us. But we are focusing on young people, also students. People who come to the island to have some fun."*

– Illustrates efforts to attract younger visitors and maintain a vibrant tourism industry.

*"We need workers for tourism, and it's difficult in the Netherlands—and I guess also in all of Europe."*

– Describes labor shortages in the tourism sector and the reliance on foreign workers.

### **Returning Resident**

*"After COVID, some youngsters started coming back. They were born here, they studied, and then said: 'Maybe it's not that bad on the island.' It's small, but we have our freedom."*

– Shows a shift in attitudes where younger generations reconsider island life post-pandemic.

### **Local Education Initiative Leader**

*"We started three years ago a school—Schier Academy—in cooperation with a college from the mainland. Our dream is to build a campus."*

– Illustrates efforts to provide local education opportunities to retain young people.

*"We need 25 to 30 students to make the finances work, but we are growing every year."*

– Highlights the challenge of financial sustainability in small-scale educational initiatives.

### **Community Member**

*"You feel like ownership of the island is yours. Definitely."*

– Emphasizes the strong sense of community belonging and identity.

*"If you are not doing anything, you can say there is nothing on the island. But you have to make it yourself."*

– Underlines the importance of community engagement in maintaining island life.

These insights are directly derived from the interviews done on Schiermonnikoog, September 2023, and underscores the challenges facing Schiermonnikoog but also provide a clear foundation for the next steps of the FREIIA project, where collaborative and innovative solutions will be co-created with stakeholders and students to address these challenges.

## **Methodological reflection:**

The UNIC analysis provided valuable qualitative insights, but some methodical challenges emerged during the initial phase of the FREIIA project on Schiermonnikoog. While the standardized semi-structured interview approach ensured consistency across islands, practical issues such as stakeholder expectations and communication gaps required adaptation

A wide range of stakeholders: local business owners, returning residents, education leaders, and community members - offered invaluable insights into the island's sustainability challenges. However, a significant issue arose from the lack of shared vision and common understanding of core concepts, such as the circular economy. While the municipality expressed significant interest in adopting circular economy practises, many other stakeholders struggled to see its practical application in their daily lives and businesses. This gap between the theoretical concepts and local realities creates a barrier for further work with the topic going forward.

Practical aspects of data collection and communication also played a role. For instance, some stakeholders did not fully understand the FREIIA project's goals or how their participation aligned with these goals. This confusion led to a need for adjustments in our approach, with an emphasis on clearer communication of the project's objectives and methodologies. To ensure better coordination in future phases, it became clear that pre-interview collaboration and targeted outreach would be crucial. We refined our strategy early in the project, ensuring that interview questions were communicated clearly to all participants and a diverse group of interviewees was selected to represent a range of perspectives.

Through these adjustments, we aimed to mitigate any confusion and ensure that stakeholders had a clearer understanding of their roles in achieving the overarching objectives of the FREIIA project.

## **Discussion**

Reflecting on the initial phase of the FREIIA project, several key issues emerged that shaped the data collection process and also pointed to potential gaps, barriers and opportunities for Schiermonnikoog's future development.

### **Bridging the Circular Economy Gap**

A significant barrier to progress was the gap between stakeholders' understanding of the circular economy. The municipality's enthusiasm for circular economy practices contrasted with the struggles of other stakeholders to apply the concept in their daily lives. This lack of shared vision is an important finding, as it emphasizes the need for a more grounded, tailored approach to implementing concepts like circular economy—ones that are contextually relevant to Schiermonnikoog's community and challenges. Future workshops and discussions should focus on bridging this gap, providing concrete examples and actionable steps for stakeholders to engage with.

### **Fostering Entrepreneurship**

Local business owners expressed concerns about the high cost of housing, combined with a limited local labor market, which was pushing away permanent residents, especially young people. The gap between the municipality's aspirations and the practical challenges faced by businesses and residents was clear. One possible solution is to create a formal arena for collaboration where the municipality, businesses, and other sectors can come together to share ideas, resources, and knowledge. This collaborative space could bridge the knowledge gap and help businesses understand how such concepts like circular economy could be applied in their local context.

Another major issue identified was the outflow of young people from Schiermonnikoog. Interviews with local business owners and community members revealed that the high cost of housing, limited job opportunities, and a lack of inspiration for young adults were pushing them to seek opportunities in urban centers. The establishment of local education initiatives, like Schier Academy, represents a positive step toward reversing this trend, yet the sustainability of such projects remains a concern. The challenge of attracting and retaining young people on the island must be prioritized, and future phases of the FREIIA project should focus on developing targeted strategies to create attractive opportunities for this demographic.

### **Strengthening Cross-sector collaboration**

A key identified gap in the project was the lack of cross sector collaboration (public, private, civic). Stakeholders noted the lack of a formalized arena for cross-sector collaboration, despite a shared willingness to work together. This underlines the need for a structured framework or platform where diverse stakeholders can come together to share ideas, resources, and expertise. Building this platform will be essential to ensuring the successful implementation of the project's objectives.

## Balancing conservation and development

Schiermonnikoog also faces significant challenges with space and resource optimization. While there is a growing demand for housing and services, strict building laws and limited resources constrain development. Future phases of the project should explore innovative, sustainable solutions that allow the island to grow while respecting its natural and spatial limits.

A recurring theme from the interviews was a tension between nature conservation and development. Many stakeholders expressed frustration with the island's strict building and conservation laws, which they felt hindered innovation and sustainable growth. For example, the regulations preventing the installation of solar panels in the town center forced innovators to lease rooftops on farms on the island's outskirts. While these solutions offered some progress toward sustainability, the gap between development goals and environmental protection remained a pressing issue. Finding a balance between ecological preservation and growth will be a delicate process. Both those advocating for development and those focused on conservation must collaborate to find creative, context-sensitive solutions that respect the island's unique natural environment.



(Sanddunes on the top and typical housing on the bottom)



## **Conclusions**

The initial UNIC analysis on Schiermonnikoog provided valuable insights into the island's sustainability challenges, specifically focusing on the gaps in circular economy implementation, youth retention, cross-sector collaboration, and space/resource optimization. These findings highlight the island's need for a shared vision among stakeholders to ensure effective development and sustainable growth.

The gap in understanding and communication across different stakeholders, especially regarding key concepts like the circular economy, highlighted the importance of clearer dialogue and better alignment across sectors. This disconnect has posed challenges for collaboration and hindered the identification of practical solutions.

Moving forward, the lessons learned from this phase, such as the importance of creating an arena for collaboration and ensuring clearer communication with a shared vision, will guide the next stages of the project. Tailored workshops and more targeted outreach will be essential to ensure that all stakeholders are aligned and fully engaged in the process. Specifically, the next phase will focus on translating these insights into concrete strategies. Co-creation workshops will be central to this, where stakeholders will collaboratively develop actionable solutions tailored to local needs and circumstances.

In the upcoming phases, we will compile a comprehensive report comparing findings and solutions across all project islands. This comparative analysis will help identify best practices and foster cross-island learning, enhancing the overall transferability of solutions and maximizing the impact of the FREIIA project.

Through these actions, the FREIIA project aims to make tangible progress toward Schiermonnikoog's sustainable future, setting a model for other island communities navigating the complexities of the green transition.

## **Acknowledgements**

We wish to thank our mentor and project leader from the Norwegian partner, Bjørn Gitle Hauge for his mentoring, trust and support throughout the project duration. Thank you to Dr. Gunnar Andersson for his invaluable feedback and guidance throughout the project. Thank you Dr. Frode Johansen for his support during the trip to Schiermonnikoog.

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We are grateful to all the students from Innovation and project management (HiOF) and Product Design students (Hanze hogeschool) who carried out all interviews, worked on analysing and transcribing data and contributing time and engagement in the project.

We are grateful for the collaboration with the municipality of Shiermonnikoog and Natuurmonumenten, We could not have done this without you. Lastly, we extend our thanks to the stakeholders from Shiermonnikoog, who shared their time and perspectives, which were essential for our analysis and success of the project.

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## **Student Sustainable Entrepreneurship in Action: Design thinking and Co-creation on Schiermonnikoog, Netherlands as Part of the INTERREG FREIIA Project**

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### **Abstract**

*FREIIA (Facilitating Resilience Embracing Islands Innovation Approaches) is an INTERREG North Sea Region project funded by the European Union, aimed at enhancing resilience and innovation capacity in island communities across six countries.*

*Østfold University College is responsible for Work Package 4 (WP4), which focuses on fostering student entrepreneurship. The main objective of WP4 is to integrate entrepreneurship students into the strategic governance of island innovation, strengthening their role in green transitions. When referring to the FREIIA project in this paper, it refers to WP4 of the FREIIA project.*

*In the first phase of this project, we identified innovation gaps on the island of Schiermonnikoog, Netherlands, through semi-structured interviews with stakeholders from the public, private, and civil sectors. Key challenges included limited cross-sector collaboration, an aging population, and insufficient platforms for community engagement.*

*This paper presents the next phase of the project, which uses design thinking and the double diamond framework to co-create solutions to the identified challenges through workshops. Initiatives include a Mobile Innovation Hub to facilitate entrepreneurship, community-centered educational programs, and new digital platforms to enhance municipal-citizen dialogue.*

*This study offers a model for fostering sustainable development through collaboration, creativity, and local ownership and offers a model for other island communities facing similar challenges.*



*(Figure students and stakeholders on Schiermonnikoog's co-creation workshop.)*

## Introduction

Through the project, the current and desired state and challenges faced by the island community of Schiermonnikoog are examined to identify potential gaps in between these. In these gaps lies the opportunity for innovation and to improve development capacity. Development capacity, in this context, refers to the ability of diverse stakeholders- public officials, private enterprises and civil society- to collaboratively drive sustainable innovation and growth.

Schiermonnikoog is a small, car-free island in the Netherlands, part of the West Frisian Islands in the North Sea. Known for its pristine beaches, dunes, and salt marshes, it is a designated national park and a haven for nature lovers. Schiermonnikoog was the second island we conducted both phases on, UNIC analysis and Design thinking workshop.

In the first phase of the FREIA project, the UNIC analysis on Schiermonnikoog revealed four key gaps:

1. **Circular Economy Understanding:** While the municipality showed significant interest, many stakeholders found the concept abstract and disconnected from their daily operations.
2. **Retention of Young Adults:** The high cost of housing and limited opportunities drive young residents to urban centers, creating demographic challenges.
3. **Cross-Sector Collaboration:** Despite a willingness to collaborate, the lack of a dedicated arena for dialogue and cooperation hindered progress.
4. **Space and Resource Optimization:** Strict building laws and limited physical space constrain the island's ability to grow sustainably.

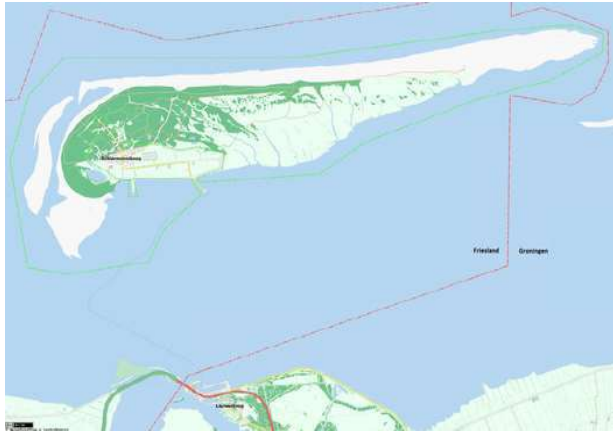
These findings established the foundation for the second phase of the project, which this paper is about. Here we employed Design Thinking principles to co-create actionable solutions tailored to Schiermonnikoog's unique needs. By involving local stakeholders in structured workshops, the second phase aimed to address these gaps through collaboration and prototyping, ensuring that the solutions resonated with the community and were feasible within the island's socio-economic and environmental context. (*Innovation as a Learning Process*, u.å.)

## Schiermonnikoog

Schiermonnikoog is one of the West Frisian Islands in the Netherlands, located in the province of Friesland. The smallest inhabited island in the archipelago, it lies in the Wadden Sea, a UNESCO World Heritage Site. Covering approximately 40 square kilometers and home to around 950 residents, Schiermonnikoog combines a small, closely-knit village with vast, open natural landscapes.

The island is renowned for its unique natural environment and commitment to sustainability. Large parts of Schiermonnikoog are designated as a national park, featuring sand dunes, expansive beaches, and a rich variety of wildlife, including numerous bird species. A popular destination for tourists, especially nature enthusiasts, the island is celebrated for its peaceful atmosphere, eco-friendly tourism, and cycling-friendly infrastructure. Visitors can only get around by foot or bicycle, as the island is car-free for tourists. Regular ferry connections link the island to the mainland.

Tourism is the primary source of income for Schiermonnikoog, with a strong emphasis on balancing economic activity with environmental preservation. The combination of a rich ecosystem, focus on sustainability, and a unique location makes Schiermonnikoog an integral part of the Netherlands' efforts in environmental conservation and local development.



## Methods: Theoretical framework

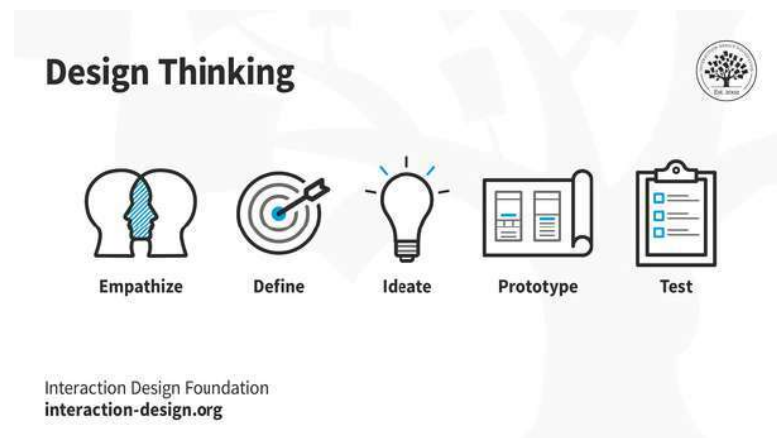
In this study, we applied principles from Design Thinking and the Double Diamond framework to guide the co-creation workshops aimed at addressing sustainable development challenges on Schiermonnikoog. Both methodologies share a user-centered approach, making them ideal for tackling complex challenges faced by island communities.

### Design Thinking: Define, Ideate, and Prototype

(«Tim Brown, Change by Design», 2024)

Design Thinking emphasizes empathy, creativity, and iteration. In this study, we utilized the Define, Ideate, and Prototype phases to co-create solutions:

- **Define:** Insights gathered from earlier interviews with stakeholders were synthesized to identify the core challenges facing the community, including youth retention, economic development, and collaboration gaps.
- **Ideate:** During the co-creation workshops, stakeholders collaboratively brainstormed a wide range of potential solutions. These sessions were designed to encourage creativity and generate diverse ideas to address the identified issues.
- **Prototype:** The most promising ideas were developed into low-fidelity prototypes. These prototypes were simple, testable models that allowed for iterative refinement based on stakeholder feedback.



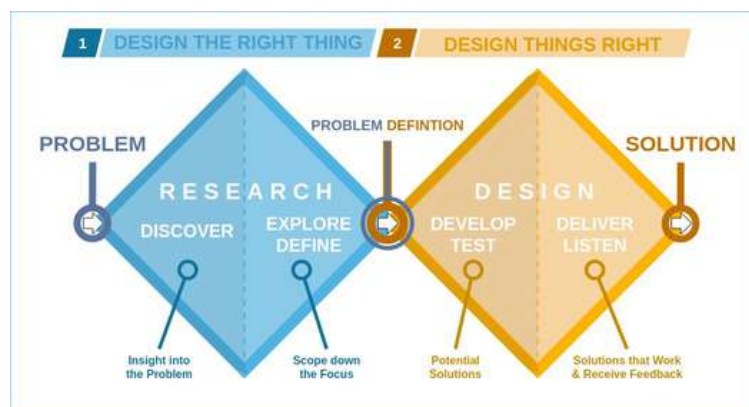
## Double Diamond: Define, Ideate, and Prototype

(«The Double Diamond Model», 2024)

The Double Diamond framework structures innovation into four phases: Discover, Define, Develop, and Deliver. In this study, we focused on the Define, Ideate, and Prototype phases:

- Define: This phase involved synthesizing insights from the Empathize phase (interviews) into clear problem statements. This ensured all stakeholders had a shared understanding of the core issues.
- Ideate: Collaborative brainstorming sessions allowed participants to explore multiple solutions, ensuring that ideas were generated with input from a diverse set of perspectives.
- Prototype: The most promising solutions were turned into prototypes, which were evaluated and iterated upon during the workshops.

Both Design Thinking and Double Diamond provided a structured approach to problem-solving, ensuring a creative and collaborative process that focused on real-world needs.



## Methods: Applied in practice

Building on the findings from the Empathize and Define phases of Design Thinking in Workshop 1, we, as operative project leaders, together with Head of Research, Dr. Gunnar Andersson, decided to invite representatives from the municipality of Schiermonnikoog and Natuurmonumenten to a preliminary workshop ahead of the main co-creation workshop.

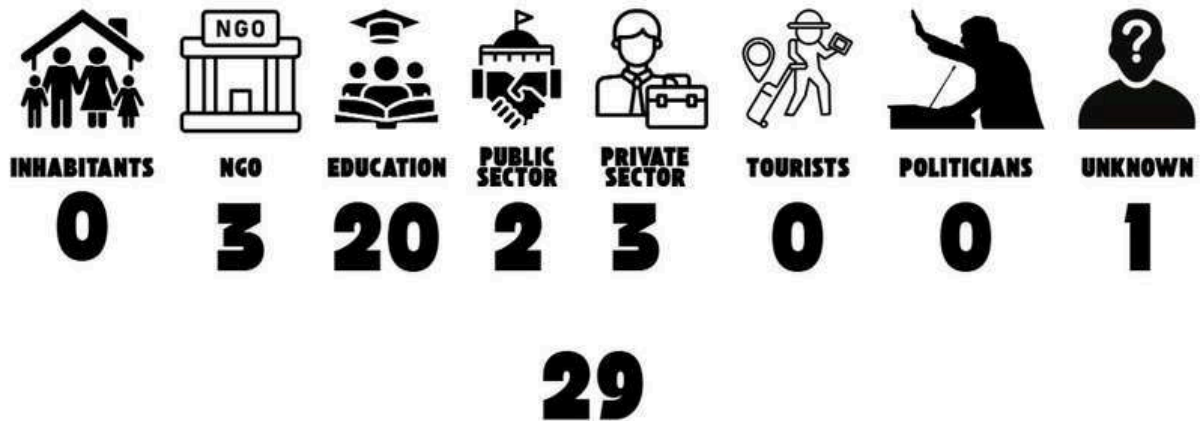
Our aim was to conduct an interest-based conflict resolution workshop, focusing on development vs. conservation as the core theme. This workshop was conducted via Zoom, where the representatives from the municipality and Natuurmonumenten worked with us to assess the key challenges and determine which areas should be prioritized in the upcoming co-creation workshop.

Following this, we organized a co-creation workshop on Schiermonnikoog, designed to engage stakeholders in developing solutions to the identified challenges. This workshop moved into the Ideation and Prototyping phases of Design Thinking, fostering collaboration between a diverse group of participants.

## Stakeholder Involvement

After analyzing the transcribed interviews and identifying core challenges from Workshop 1, we invited stakeholders and students to participate in the next phase. Participants included students from Hanze University of Applied Sciences and Artevelde University of Applied Sciences—this time a different group of students than those who participated in Workshop 1. Additionally, the workshop included stakeholders from both the public and private sectors and students from Østfold University College’s Innovation and Project Management program.

This diverse composition ensured a range of perspectives, which was essential for addressing the identified challenges effectively.



(This model provides an overview of the participants in the co creation (design thinking) workshop categorized into groups)

## Ideation Phase

To ensure a structured and interdisciplinary approach, students were first organized into designated groups, after which stakeholders were strategically assigned to different tables based on their roles and expertise. This approach facilitated cross-disciplinary collaboration, ensuring that each team benefited from a diverse range of perspectives and fostered a dynamic exchange of ideas.

Aligned with the Ideation phase of Design Thinking, teams selected a problem statement relevant to the core challenges identified in previous phases and worked collaboratively to develop innovative solutions. By structuring teams intentionally to maximize diversity, the workshop promoted open dialogue, creative brainstorming, and solution-oriented discussions, ensuring a comprehensive and inclusive approach to addressing the identified challenges.

## Student involvement

For this iteration of the workshop, we took student involvement a step further by entrusting two second-year students from Norway with the task of designing and facilitating the session. With close support and mentoring, these students led the workshop, ensuring an engaging and structured process, while also gaining valuable hands-on experience in facilitation, stakeholder collaboration, and interdisciplinary problem-solving.

This approach emphasized student leadership and active participation, reinforcing the importance of practical learning and interdisciplinary teamwork in addressing real-world challenges. By stepping

into leadership roles, the students were able to develop critical skills, such as adaptability, communication, and stakeholder management, all of which are essential in professional settings.

Furthermore, their involvement bridged the gap between academic learning and real-world application, demonstrating how student-led initiatives can actively contribute to local development. This also benefited stakeholders, as fresh perspectives and innovative methods were introduced into the workshop, fostering a more dynamic and interactive exchange of ideas.

By integrating student leadership into the core of the workshop, this model showcases a sustainable and scalable approach to inclusive engagement, where young professionals are empowered to take ownership of collaborative problem-solving processes.

### **Emphasis on Collaboration and Inclusivity**

Due to logistical constraints, it was not feasible to conduct a World Café session in the Netherlands this time. Norwegian and Dutch students arrived and departed the island at different times, resulting in limited shared time for joint activities. Additionally, securing stakeholder participation beyond a single workday proved challenging, as they had to balance workshop involvement with their professional responsibilities. A recurring challenge in such engagements is the time commitment required from stakeholders, making it essential to structure participation efficiently to maximize impact while minimizing disruption to their ongoing work obligations.



*(Students and stakeholders at the workshop.)*

## **Results**

The second phase of the FREIIA project on Schiermonnikoog centered on converting the challenges identified in Workshop 1 into practical, community-focused solutions. These solutions were collaboratively designed during an interactive workshop that brought together students and stakeholders from diverse sectors. This interdisciplinary approach fostered creative problem-solving and provided a platform to tackle pressing issues such as limited cross-sector collaboration, low youth engagement, and the need to enhance innovation capacity.

Through structured discussions and collaborative activities, participants co-created a range of innovative concepts specifically tailored to the context of Schiermonnikoog. Below is an overview of the key solutions developed during the workshops:

## **Key Stakeholder Collaboration**

The municipality and the local waste management company must work together to develop educational programs on waste management. By engaging young people in creative reuse initiatives, such as turning waste into new products, a mindset shift can be fostered. This approach would help reframe waste as a resource, promoting a circular economy perspective and encouraging sustainable practices within the community.

## **Using Social Media and Influencers**

Social media platforms and influencers can serve as powerful tools to shape public attitudes toward sustainable tourism. By leveraging digital campaigns, the goal is to encourage eco-friendly behaviors, attract visitors who prioritize responsible tourism, and reduce the ecological footprint of tourism-related activities. This strategy would help integrate sustainability into the local tourism industry while making it more appealing to environmentally conscious travelers.

## **Creating a Collaboration Arena**

A dedicated physical space should be established to facilitate interaction and cooperation between the local community and the municipality. Currently, the lack of a structured venue for joint initiatives and discussions limits the potential for effective collaboration. By creating a collaboration arena, local residents, businesses, and public authorities would have a centralized hub for sharing ideas, co-developing projects, and fostering a stronger sense of community involvement.

## **Blue Minimal Surfing Camp**

Utilize influencers and social media marketing to promote Schiermonnikoog as a surfing destination, emphasizing its natural beauty and sustainable tourism potential. By establishing a minimal-impact surf camp, visitors would be encouraged to engage in eco-friendly activities while supporting local businesses. This initiative would make the island more attractive to young, environmentally conscious travelers, fostering sustainable tourism growth while preserving the island's unique ecosystem.

## **Educating Children on Waste as a Resource**

To instill a long-term shift in sustainability practices, the public and private sectors must work closely with local schools to change how children perceive waste. Schools should be encouraged to integrate sustainable resource management into their learning activities, emphasizing how waste can be transformed into new and useful materials. A greater focus on environmental education would help children develop an early understanding of responsible consumption and waste reduction.

To reinforce this learning, schools could participate in interactive workshops on Schiermonnikoog, where children engage in hands-on activities, creatively repurposing waste into new products. By actively working with materials, they would gain practical experience in sustainability, fostering a circular mindset from an early age.

These solutions not only address the challenges identified in Workshop 1 but also highlight the broader dynamics of development and conservation on Schiermonnikoog. Successfully implementing these ideas requires a careful balance between fostering innovation and preserving the island's unique environment and community values.



*(Students and Natuurmonumenten at excursion on Schiermonnikoog.)*

## **Discussion**

The workshops highlighted the importance of collaboration in addressing Schiermonnikoog's development challenges. Initiatives like the Collaboration Arena and partnerships between the municipality and the waste management company emphasize the need for structured spaces and processes that facilitate interaction. These efforts are critical for fostering trust, reducing inefficiencies, and creating shared goals that unite diverse stakeholders.

In island communities like Schiermonnikoog, where resources are limited, collaboration is especially vital. Integrating individual initiatives into a cohesive framework can significantly enhance the effectiveness of solutions. By working together, stakeholders can achieve more impactful and sustainable outcomes, demonstrating the value of collective problem-solving in addressing local issues.

Additionally, the need to engage and retain young people emerged as a pressing concern. Initiatives like Key Stakeholders Collaboration aim to connect youth with the principles of the circular economy, helping them see waste as an opportunity rather than a problem. This approach not only fosters creativity and entrepreneurship but also encourages young people to contribute meaningfully to their local economy.

Finally, balancing development with conservation remains a central challenge. Schiermonnikoog's long-standing tension between nature conservation organizations and the local community highlights the importance of creating a shared vision. By aligning efforts across different sectors, the island can modernize infrastructure and introduce progressive solutions while maintaining its cultural identity and environmental integrity. This balance is essential for ensuring that development is both sustainable and supported by the community.

## Conclusion

The FREIIA project's exploration of innovation gaps on Schiermonnikoog has illuminated several critical challenges that must be addressed to ensure sustainable development and resilience. Using the UNIC method and Design Thinking approach, the research identified key barriers, including:

- Limited collaboration across sectors and stakeholders.
- Challenges in engaging and retaining young people.
- A lack of accessible and dedicated spaces for collaboration and community engagement.
- Disparities in understanding and commitment to the circular economy.
- Long-standing tensions between development and nature conservation.

The interdisciplinary workshops provided a crucial platform for tackling these issues by bringing together stakeholders from different sectors—municipality, businesses, education, and the local community. This collaborative framework resulted in several actionable initiatives tailored to Schiermonnikoog's unique context, such as:

- **Key Stakeholders Collaboration** to educate and inspire a circular mindset, particularly among youth.
- **Leveraging Social Media and Influencers** to promote sustainable tourism practices.
- **Creating a Collaboration Arena** to establish a structured physical space for joint problem-solving and dialogue.

These solutions demonstrate the power of co-creation in addressing complex, localized challenges and fostering innovation. Furthermore, the workshops highlighted the importance of aligning innovation with Schiermonnikoog's community values, ensuring that development respects and preserves the island's cultural and environmental identity.

A key takeaway from this phase of the project is the critical need for structured arenas and consistent collaboration. Initiatives such as the **Collaboration Arena** exemplify how physical spaces can facilitate meaningful engagement and enable stakeholders to co-develop solutions that benefit the entire community.

In conclusion, Schiermonnikoog's path to sustainable development lies in its ability to balance innovation with local traditions and environmental stewardship. By fostering cross-sector collaboration, engaging its youth, and embracing a shared vision for the circular economy, the island can overcome its challenges and build resilience for the future.

## Next Steps

The next stage of the FREIIA project on Schiermonnikoog will focus on refining and testing the proposed solutions to assess their impact on the local community. A continuous feedback loop between stakeholders will be vital to ensure these initiatives remain adaptive to the community's evolving needs and priorities.

The aim is for stakeholders who participated in the workshops to take ownership of the solutions they co-created, fostering a sense of shared responsibility for addressing the island's challenges. By maintaining this collaborative momentum, Schiermonnikoog can serve as a model for other small island communities in the North Sea Region, demonstrating how collective innovation can drive sustainable growth and resilience in resource-constrained environments.



*(Students and stakeholders at the workshop)*

## **Acknowledgements**

We wish to thank our mentor and project leader from the Norwegian partner, Bjørn Gitle Hauge for his mentoring, trust and support throughout the project duration. Thank you to Dr. Gunnar Andersson for his invaluable feedback and guidance throughout the project. Thank you for the contribution and leadership during the trip Mr Eivind Andre Leister.

Thank you to students Patrick Kakis Gabrielsen and Jonas Klemetsen for developing and facilitating the workshop seamlessly.

This work was made possible by the generous support of the Interreg NSR and the EU. We would also acknowledge Innovation and Project management students at Hogskolen i Østfold, for contributing immensely in the co-creation workshop, with engaging stakeholders and guiding them through the structured innovation process. Thank you to all contributing staff at HioF who made this project possible.

Lastly, we extend our thanks to the stakeholders from Schiermonnikoog, who shared their time and perspectives, creativity and engagement in the co-creation workshops. Without them, there would not be a project to write about.

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**Student Sustainable Entrepreneurship in Action:**  
The Unic analysis on *Schiermonnikoog, Netherlands*  
as Part of the INTERREG FREIIA Project  
*The interviews and process*

Linnea Margrethe Johansena Ellen Winnem Bjergaa, Gunnar Anderssona, Frode Ramstad Johansena,  
Eivind Andre Leistera, Bjørn Gitle Haugea<sup>a</sup>

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**Abstract**

*FREIIA, Facilitating Resilience Embracing Islands Innovation, is a INTERREG project financed by the European Union running from 1. October 2022 until 31. December 2025. The project consists of 14 partners from 6 countries, Netherlands, Denmark, Sweden, Germany, France and Norway.*

*The aim of this project is to help 6 island communities in the European Union to create competences, capabilities & structures that support the public sector in becoming successful in the green transition, through the involvement of community, young entrepreneurs and students.*

*Østfold University College is responsible for Work Package 4 (WP4), which focuses on fostering student entrepreneurship. The main objective of WP4 is to integrate entrepreneurship students into the strategic governance of island innovation, strengthening their role in green transitions. When referring to the FREIIA project in this paper, it refers to WP4 of the FREIIA project.*

*The following section focuses on identifying innovation gaps in Schiermonnikoog, Netherlands, using interviews with local stakeholders and students from participating universities. Stakeholders were engaged through targeted outreach via local networks and direct invitations, ensuring diverse input. Students played an active role in conducting semi-structured interviews, gathering insights from community members, businesses, and the municipality. The interviews highlighted key challenges related to sustainable development and cross-sector collaboration, which will inform the next phase of the project, where design thinking methods will be applied to develop solutions.*



(Noordertoren Lighthouse,  
Schiermonnikoog.)

## **Introduction**

As part of the FREIA project on Schiermonnikoog, 23 interviews were conducted to capture the voices and perspectives of the local community. Rather than providing a detailed analysis, this document presents raw and unfiltered data, ensuring that stakeholders' experiences and concerns are conveyed in their own words.

The interviews were conducted with a diverse group of stakeholders, including representatives from the public sector, local businesses, NGOs, permanent residents, seasonal visitors, and politicians. Before arriving on Schiermonnikoog, we worked closely with Natuurmonumenten and the municipality to compile an initial list of relevant stakeholders. This helped us connect with key individuals who shared valuable insights on the community's challenges and opportunities.

While many participants were scheduled in advance based on this initial list, others were identified through spontaneous interactions during our time on the island. This combination of planned outreach and organic engagement allowed us to include both well-established voices and perspectives that might not typically be captured in formal research. By blending structured recruitment with on-the-ground flexibility, we gained a more nuanced and representative understanding of life on Schiermonnikoog.

A key feature of this phase was the close collaboration between Østfold University College (HiØ), Hanze University of Applied Sciences, Natuurmonumenten, and the municipality of Schiermonnikoog. This partnership was essential in facilitating the interview process, helping to identify relevant stakeholders and establish trust with the local community. By combining academic and local expertise, the process ensured that the selection of participants was both well-informed and reflective of the community's diverse perspectives.

By focusing exclusively on the transcriptions, the document ensures that participants' perspectives remain intact, offering valuable insights for researchers, local actors, and decision-makers. It serves as a resource for understanding the island's social and economic landscape, highlighting key challenges and opportunities in sustainable and innovative development.

## **Schiermonnikoog**

Schiermonnikoog is one of the West Frisian Islands in the Netherlands, located in the province of Friesland. The smallest inhabited island in the archipelago, it lies in the Wadden Sea, a UNESCO World Heritage Site. Covering approximately 40 square kilometers and home to around 950 residents, Schiermonnikoog combines a small, closely-knit village with vast, open natural landscapes.

The island is renowned for its unique natural environment and commitment to sustainability. Large parts of Schiermonnikoog are designated as a national park, featuring sand dunes, expansive beaches, and a rich variety of wildlife, including numerous bird species. A popular destination for tourists, especially nature enthusiasts, the island is celebrated for its peaceful atmosphere, eco-friendly tourism, and cycling-friendly infrastructure. Visitors can only get around by foot or bicycle, as the island is car-free for tourists. Regular ferry connections link the island to the mainland.

Tourism is the primary source of income for Schiermonnikoog, with a strong emphasis on balancing economic activity with environmental preservation. The combination of a rich ecosystem, focus on sustainability, and a unique location makes Schiermonnikoog an integral part of the Netherlands' efforts in environmental conservation and local development.



## Methods & Process

As part of the FREIIA project, 23 interviews were conducted with local stakeholders on Schiermonnikoog. The informants represented both permanent residents and seasonal actors, with the goal of documenting their perspectives on challenges and opportunities related to innovation and sustainable development.

All interviews were transcribed using the 'Diktafon' app and securely stored on SIKT, Norway's national digital service provider for research and education. SIKT ensured that the data was handled in compliance with ethical and privacy standards, safeguarding the confidentiality of participants. (*Sikt – Kunnskapssektorens tjenesteleverandør | Sikt, u.å.*)

The transcriptions are presented chronologically in this report to preserve the original structure of the interviews. Only minimal editing was carried out, primarily to anonymize and remove repetitions and unclear sections, without altering the content or meaning.

The interviews were conducted using the UNIC method, which balances structure with flexibility. This approach ensured that key topics such as local sustainability, housing challenges, and collaboration were covered, while still allowing space for emerging themes. This provided rich and detailed insights, capturing the informants' perspectives in an authentic and comprehensive manner. (Hein, L. (December, 1988b). Diagnose på utviklingsfunksjonen (notat 2). UNIC-gruppen).

In research involving interviews, obtaining informed consent is a critical step to uphold ethical standards. The stakeholders interviewed were asked to sign a consent form outlining the purpose of the study, their voluntary participation, and the confidentiality of their identities. This formal agreement ensures transparency and compliance with ethical research guidelines. The consent form specifies that personal information will remain confidential, details how the data will be used, and reassures participants that they can withdraw at any time without consequence. This process fosters trust between researchers and participants, creating a safe environment for open and honest discussions.



capture the diverse insights and perspectives needed for the study. The team contacted additional stakeholders and scheduled interviews with those already on the list, confirming times and locations ahead of the arrival of students from Østfold University College and Hanze University of Applied Sciences.

While on the island, the research group cycled across Schiermonnikoog to approach stakeholders on the list and identify new ones. Face-to-face planning proved highly effective, enabling clearer communication and stronger commitments to interviews, including with tourists, nature conservationists, and store employees.

A clarification meeting with the municipality of Schiermonnikoog further refined the stakeholder list and finalized the interview schedule to ensure inclusivity and diversity. During this meeting, the team also reviewed the interview questions to ensure alignment with the project's goals. However, this process proved somewhat challenging, as we had our set of eight predefined questions, while the municipality wanted to include additional questions focused on the circular economy and how municipal procedures could better support businesses. This revealed a misalignment, or at least a lack of clarity, between different work packages and their objectives. Had we approached this differently, for example, by establishing clearer communication and coordination earlier in the process, we might have avoided this overlap and ensured a more streamlined approach.

By building on the initial list and expanding it through proactive outreach, the team included a broader range of voices representing various roles and sectors within the community. This flexible and hands-on approach ensured the interviews captured a wide spectrum of perspectives, laying a strong foundation for the FREIIA project's goals on Schiermonnikoog.

### **Student Involvement and Field work**

A key aspect of the project was the involvement of students, whose enthusiasm and creative approaches were crucial to its success. The students stayed at De Kooiplaats on Schiermonnikoog and were organized into international, cross-sector teams of two. These teams explored the island and engaged directly with stakeholders, both from a prearranged list and new contacts they identified during fieldwork. Their ability to adapt and approach individuals with diverse perspectives provided valuable insights and enriched the overall study.



(De Kooiplaats campsite, Schiermonnikoog.)

Over two days, Norwegian and Dutch student teams traveled across the island to meet stakeholders in their own environments, including businesses, municipal offices, and local landmarks. A detailed schedule was created to ensure efficient time management and maximize participation, which was then shared with the students. Meeting points were set throughout the day to provide support and address any questions or challenges. A designated lunch station served as a base for the leadership team during the interview period for availability purposes.

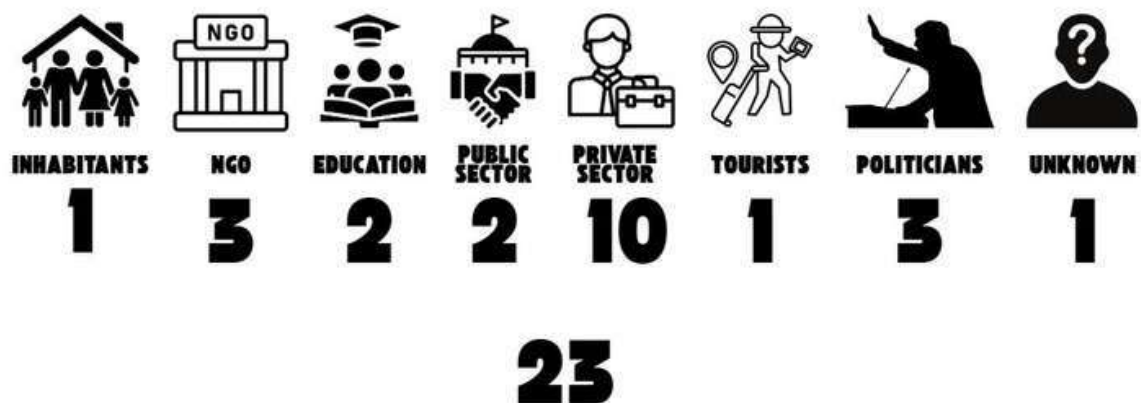
Students conducted semi-structured interviews using a predefined format, consistent across all islands in the FREIIA project. This approach ensured standardized data collection, while allowing participants to share personal insights and experiences.

The interviews were designed to align with the Discover phase of the Double Diamond Method, focusing on uncovering stakeholders' challenges, needs, and aspirations. This approach ensured that the analysis captured the nuances of local perspectives, while maintaining compatibility with findings from other islands. («The Double Diamond Model», 2024)

Additionally, students conducted spontaneous "stunt interviews" with tourists and locals they encountered during fieldwork. This enriched the dataset with unanticipated perspectives, further strengthening the breadth and depth of the findings.

## Stakeholders and key insights

As part of the project, we conducted 23 interviews with stakeholders on Schiermonnikoog. The informants represented a broad range of actors, including permanent residents, non-governmental organizations (NGOs), the public sector, the private sector, tourists, and a category labeled "Others/Unknown." This diversity of backgrounds and perspectives provided valuable insights and laid a strong foundation for identifying themes critical to the island's future development.



(This model shows the number of interviewees divided into groups.)

## **Key insights**

The FREIIA project's initial phase on Schiermonnikoog focused on uncovering key challenges and opportunities for sustainable development through interviews and workshops with a diverse group of stakeholders. These activities provided important insights into the island's community dynamics, structural barriers, and areas for potential innovation. The findings below summarize the critical themes that emerged during this phase:

### **Circular Economy**

A prominent theme was the differing levels of understanding regarding the concept of a circular economy among stakeholders. While the municipality showed strong interest in advancing circular economy initiatives, many local actors struggled to see how this concept applied to their daily lives and businesses. For some, the idea felt abstract and disconnected from local realities, making implementation challenging. Bridging this gap between theory and practical application will be vital to achieving progress in this area.

### **Retaining Young Adults**

The outmigration of young people to urban centers emerged as a major demographic challenge for Schiermonnikoog. Stakeholders pointed to limited opportunities, a lack of inspiration, and high housing costs as key factors reducing the island's appeal to young adults. Without targeted initiatives to create opportunities for this demographic, the long-term sustainability of the island community is at risk.

### **Collaboration Across Sectors**

A lack of collaboration between the public, private, and civic sectors was another significant issue raised by stakeholders. While there is a willingness to work together, the absence of formal platforms for collaboration hinders progress and innovation. Developing spaces for cross-sector cooperation could unlock shared solutions and drive sustainable development on the island.

### **Space and Resource Optimization**

Schiermonnikoog faces physical and environmental constraints that limit its capacity for growth. Strict building regulations, while essential for preserving the island's character and natural environment, present challenges for sustainable development. Stakeholders emphasized the need for innovative approaches that balance conservation with the community's evolving needs. Finding ways to grow sustainably within these spatial and resource limitations is a critical priority for the island's future.

### **Next Steps**

These findings provide a foundation for addressing Schiermonnikoog's key challenges and opportunities. Bridging the gap between the concept of a circular economy and its practical implementation will require creating a shared vision that resonates with local stakeholders. Similarly, retaining young adults demands targeted initiatives focused on housing, employment, and cultural engagement. Building platforms for cross-sector collaboration and finding sustainable ways to optimize space and resources are also critical to fostering long-term growth and resilience.

## Acknowledgments

We wish to thank our mentor and project leader from the Norwegian partner, Bjørn Gitle Hauge, for his mentoring, trust, and support throughout the project duration. Thank you to Dr. Gunnar Andersson for his invaluable feedback and guidance throughout the project. We also wish to thank Dr. Frode Johansen for his support during the trip to Schiermonnikoog.

This work was made possible by the generous support of the Interreg NSR and the EU. We would also like to acknowledge Østfold University College for providing access to the necessary facilities, staff, and data. Our gratitude extends to the technical staff at SIKT for their assistance with all matters regarding data collection.

We are deeply grateful to all the students from Innovation and Project Management (HiØ) and Product Design (Hanze Hogeschool) who conducted interviews, analyzed and transcribed data, and contributed their time and dedication to the project.

We are especially thankful for the collaboration with the municipality of Schiermonnikoog and Natuurmonumenten. Your guidance and support were invaluable to the success of this phase. Lastly, we extend our heartfelt thanks to the stakeholders from Schiermonnikoog, who generously shared their time and perspectives, which were essential for our analysis and the project's success.

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## Transcripts

The following transcripts represent raw data collected during the research phase of the project. To ensure accuracy and efficiency, AI-assisted transcription tools were used. While we have made efforts to verify the content, minor errors or inconsistencies may still occur.

For privacy reasons, all interviewees have been anonymized, and identifying details have been removed where necessary as according to signed consent forms by our interview objects. Additionally, some phrasing may be difficult to understand when reading due to the raw nature of the preserved data.

These transcripts serve as foundational research material and should be interpreted within the broader context of the study.

**Student Sustainable Entrepreneurship in Action:**  
UNIC Methodology and Innovation Gaps on Bornholm, Danmark  
as part of the interreg FREIIA project

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**Abstract**

*FREIIA, Facilitating Resilience Embracing Islands Innovation, is a INTERREG project financed by the European Union running from 1. October 2022 until 31. December 2025. The project consists of 14 partners from 6 countries, Netherlands, Denmark, Sweden, Germany, France and Norway.*

*The aim of this project is to help 6 island communities in the European Union to create competences, capabilities & structures that support the public sector in becoming successful in the green transition, through the involvement of community, young entrepreneurs and students.*

*Østfold University College is responsible for Work Package 4 (WP4), which focuses on fostering student entrepreneurship. The main objective of WP4 is to integrate entrepreneurship students into the strategic governance of island innovation, strengthening their role in circular economy transitions. This paper specifically addresses WP4, led by Østfold University College. When referring to the FREIIA project in this context, it is WP4 that is being examined.*

*The following paper describes the first phase conducted in Bornholm, Denmark, which focused on identifying innovation gaps through interviews conducted by students with stakeholders from public, private, and civil sectors. Key challenges included the island's dependence on tourism, the need for circular economy initiatives, seasonal economic fluctuations, youth migration, and limited cross-sector collaboration. These insights, gathered using UNIC and Design Thinking principles, will serve as the foundation for the next phase, where Co-creation workshops will develop tailored solutions to address the identified gaps.*



*(Students on the ferry from Ystad to Rønne.)*

## Introduction

As part of the FREIIA project on Bornholm, a field study was conducted from February 28 to March 1, 2024, to examine the current and desired state of the island community, as well as the challenges it faces. The interviews were carried out on February 29 and March 1, 2024, capturing the voices and perspectives of local stakeholders. Rather than providing a detailed analysis, this document presents raw and unfiltered data, ensuring that stakeholders' experiences and concerns are conveyed in their own words.

The interviews included a diverse group of stakeholders from across the community, representing the public sector, private businesses, NGOs, local residents, and politicians. A systematic mapping process was used to identify participants based on their roles, expertise, and relevance to the project's themes. This method ensured an inclusive and representative sample, providing a holistic understanding of the challenges and opportunities faced by the Bornholm community.

By focusing exclusively on the transcriptions, this document preserves the integrity of the participants' viewpoints, allowing their stories to form a foundation for future research, policymaking, and community-led initiatives. It is intended for policymakers, researchers, and community members seeking a detailed and honest understanding of the dynamics, priorities, and potential of life on Bornholm, with a focus on sustainable and innovative development.

## Bornholm

Bornholm is a Danish island and municipality in the Baltic Sea, located 170 kilometers from Copenhagen and 40 kilometers southeast of Skåne, Sweden. The island has been part of Denmark since 1658 and includes the Ertholmene archipelago. Covering 588.5 km<sup>2</sup>, Bornholm features diverse landscapes, including granite bedrock in the north, sandy dunes in the southeast, and fertile farmland in the south. Its highest point is Rytterknægten at 165 meters above sea level.

As of 2024, Bornholm has a population of 39,332, with Rønne (13,759) as its largest town and administrative center. The island's economy relies heavily on tourism and agriculture, particularly livestock farming and fishing. Bornholm is known for its cultural traditions, including smoked herring and ceramics. Tourism plays a vital role, attracting visitors to landmarks such as Hammershus, Northern Europe's largest medieval fortress, and the round churches from the 12th century.

Despite modern transport connections, including flights to Copenhagen and ferries to Sweden, Germany, and Poland, Bornholm faces challenges such as an aging population, youth migration, and a seasonal economy, making sustainable development strategies crucial for its future. (Pihl, 2024).



## Method: Theoretical framework

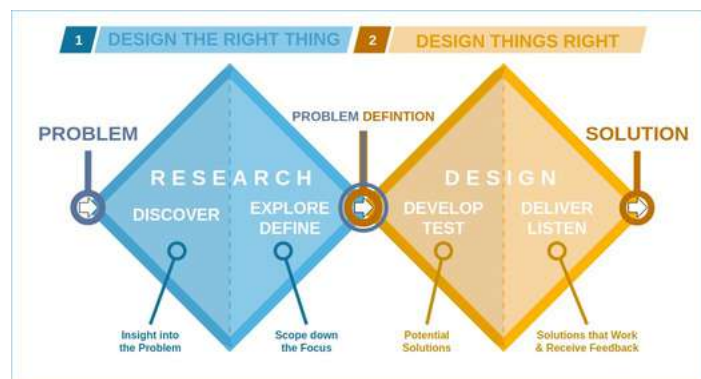
In this study, we applied principles from the UNIC method and the Double Diamond framework to address challenges in sustainable development on Hvaler. The methodologies share a user-centred approach to problem-solving. This makes them ideal for our needs to gain insights into the challenges faced by island communities and tackling them.

### UNIC Method - Phase 1: Analysis

In the first phase of the UNIC method, we focused on data collecting and analysis. In Phase 1, in-depth interviews with stakeholders from Bornholm to understand their challenges, needs, and perspectives on sustainability. This phase is parallel to the “Discover” stage in the Double Diamond framework, focusing on gathering insights about the user’s needs and problems. In this case, the users or stakeholders, included community members, business owners, and local officials, ensuring a wide range of perspectives were captured. (NTNF. 1989, 28. mars. Strukturerte intervjuer (Teknikknotat nr 4). NTNF.

### Double Diamond - Discover & Define

The Double Diamond framework, developed by the British Design Council, structures innovation processes into four phases: Discover, Define, Develop, and Deliver. In this study, we utilized the Discover and Define phases to explore and synthesize stakeholder insights. Thematic analysis of interview data helped identify core issues such as limited collaboration, youth retention, and community engagement gaps. («The Double Diamond Model», 2024).



### Semi-Structured Interview Approach

To ensure consistency across islands, a standardized interview guide was employed. Questions were designed to elicit both specific insights and broader reflections on sustainability challenges. The eight questions included:

1. What is your role in the island community?
2. How would you describe the island community and its current state?
3. What are the biggest challenges the island community faces regarding innovative development and sustainable growth?
4. What initiatives has the island community previously undertaken to address these challenges?
5. How does the island community collaborate to promote innovative development and sustainable growth?
6. In your opinion, how can the island community improve its development capacity?
7. How can you and your organization contribute to improving the island community’s development capacity?
8. How can the island community collaborate better with surrounding communities and regions to achieve common goals?

This semi-structured format allowed respondents to explore broader topics beyond the predefined questions, offering valuable insights into the island's present conditions and potential interventions to enhance development capacity. This method is particularly important for exploring wicked problems, which are complex and resist straightforward approaches. In the context of sustainable development, wicked problems are challenges that involve multiple stakeholders, conflicting interests, and long-term impacts, making them hard to address through traditional methods.

## **Methodes: Applied in practice**

The UNIC analysis on Bornholm was the third implementation of this methodology within the FREIIA project. Building on lessons learned during the pilot study on Hvaler and the second implementation on Schiermonnikoog, the process was adapted to address the specific dynamics of the Danish island community. Østfold University College (HiØ), in collaboration with Aalborg University, and BOFA (local waste management and project partner) facilitated this phase.

### **Stakeholder Engagement and Interview Process**

On Bornholm, establishing a diverse and representative stakeholder network was essential. This differed from Hvaler, where existing relationships facilitated access. On Schiermonnikoog, insight into the project was greater, partly because it was written by the Dutch and partly because the island had two project partners: the Naturpreceve company and the municipality, which played a key role in outreach. Bornholm, therefore, faced a different kind of challenge. To ensure a broad spectrum of perspectives, we aimed to work closely with BOFA to identify and recruit stakeholders from various sectors. From the outset, we emphasized the importance of gathering diverse viewpoints rather than focusing on a single issue, ensuring that the findings would reflect the full range of challenges and opportunities on the island.

Recognizing the value of spontaneous interviews, we also prepared students for stunt interviews, encouraging them to actively seek out additional perspectives beyond the pre-arranged meetings. This helped capture unexpected insights and ensured that a wider cross-section of the community was represented.

Over two days, interdisciplinary teams consisting of Norwegian and Danish students from HiØ and Aalborg University conducted 17 interviews. Each team, composed of two to three students, carried out semi-structured interviews in Danish or English, depending on stakeholder preference. This approach not only facilitated a richer data collection process but also fostered collaboration between students from different academic backgrounds and nationalities.

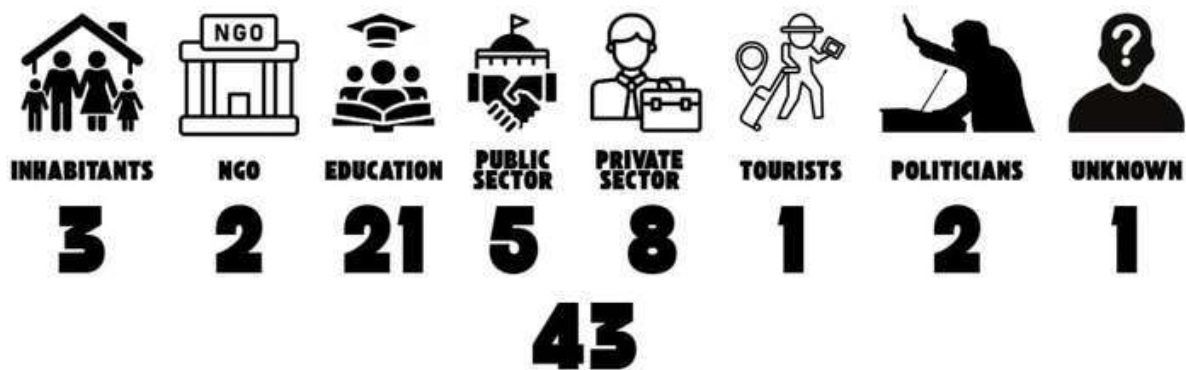


*(Norwegian and Danish student team out on interview round on Bornholm.)*

## Data Collection and Methodology

The interviews were guided by a standardized framework of eight semi-structured questions used consistently across all islands in the FREIIA project. These questions targeted the challenges, needs, and aspirations of the island community while allowing flexibility for respondents to share unique insights. The interdisciplinary teams were encouraged to perform spontaneous “stunt interviews” during their fieldwork, capturing unplanned but valuable input from residents and visitors. This time, the students were prepared well to perform these stunt interviews, researching in advance the different stakeholder possibilities to seek out.

All interviews were recorded and securely stored using designated data management systems SIKT. Following transcription, the data was anonymized and subjected to thematic analysis by students. This systematic approach ensured that the findings were both comprehensive and aligned with the objectives of the UNIC method. (*Sikt – Kunnskapssektorens tjenesteleverandør | Sikt, u.å.*)



(This model provides an overview of the number of interviews conducted, and other involved stakeholders in this part of the project, categorized by group, as part of the Innovation Gap analysis on Bornholm)



Over a two-day period, student teams traveled across the island to meet stakeholders in their own environments, such as businesses, municipal offices, and local landmarks. A detailed schedule was developed to ensure effective time management and maximize participation. The list included locations and scheduled times where stakeholders were set to meet with the teams, ensuring an organized and efficient interview process.

The process involved semi-structured interviews, following the same predefined format applied across all islands in the FREIIA project. This standardization allowed for consistency in data collection while leaving room for participants to share personal insights and experiences.

*(Students travelled by bicycle to interview stakeholders all over the island.)*

**World Café Session** Following the interviews, a World Café session, a structured dialogue method that fosters open and collaborative discussions, was organized the last day. This provided opportunities for the Norwegian and Danish students to come together and reflect on the outcomes of the workshop. During this session, students shared their perspectives and experiences, discussing the collaborative process and the insights gathered the previous days. Here, the students get a chance to build on their understanding of their insight, and to corroborate their data. The World Café format encourages open dialogue, enabling participants to exchange insights and learn from each other's viewpoints. This session led to a deeper understanding of how diverse perspectives contribute to a more complex understanding of the challenges the island faces.



*(Danish and Norwegian students during world cafe reflection session following interviews.)*

## Results

The initial phase of the FREIIA project on Bornholm identified key challenges and opportunities for sustainable development through a comprehensive analysis of community dynamics. By conducting interviews and workshops, the project gathered diverse perspectives, offering valuable insight into both structural barriers and emerging opportunities. These findings will serve as a foundation for co-creating practical solutions in the upcoming workshops.

Key findings from Bornholm Interviews:

- 1. Dependence on Tourism** – Bornholm's economy is heavily reliant on seasonal tourism, leading to economic instability outside peak seasons. Many businesses close during the off-season, significantly reducing job opportunities and economic activity. While tourism is a key driver of the local economy, this dependence creates challenges for long-term sustainability, as businesses struggle to generate revenue year-round. Some entrepreneurs have attempted to diversify their operations by offering year-round services or targeting niche markets, but these efforts remain limited by seasonal fluctuations in visitor numbers.
- 2. Challenges with Innovation and Sustainable Development** – While Bornholm has a growing number of innovative businesses, including those focused on local product sales and international distribution, many entrepreneurs find it difficult to introduce new initiatives. Several stakeholders cited resistance to change within the local community, making it harder for novel ideas and business models to gain traction. Regulations, bureaucratic hurdles, and local skepticism toward new approaches also present barriers to innovation. However, despite these challenges, there is strong potential for sustainable development, with many

businesses actively seeking ways to improve their environmental impact and expand beyond seasonal tourism.

3. **Lack of Activities and Services Outside Peak Seasons** – The limited infrastructure and social offerings during the off-season negatively impact both permanent residents and potential visitors. Many businesses, restaurants, and cultural venues close for several months, leaving few options for those who live on the island year-round. This lack of services also discourages potential newcomers, particularly young professionals and families, from settling on Bornholm. Some local initiatives have aimed to extend cultural and recreational activities throughout the year, but sustaining these efforts remains a challenge due to economic constraints and fluctuating demand.
4. **Youth Migration and Limited Return** – Many young residents leave the island for higher education and employment opportunities on the mainland, with only a fraction returning. High housing costs, limited career prospects, and a lack of professional networks make it difficult for young people to establish themselves in Bornholm after completing their studies. However, some returning residents have successfully started businesses, leveraging their Bornholm identity and local resources to create niche markets. To retain young talent, targeted initiatives such as affordable housing projects, business incentives, and local career development programs could help make the island a more attractive long-term option for young professionals.
5. **Lack of Coordination and Collaboration** – Despite Bornholm’s strong sense of local identity, cooperation between public, private, and civic sectors remains fragmented. Many stakeholders acknowledge the need for improved collaboration, yet structured platforms for cross-sector interaction are missing. While some organizations and business clusters have formed to support entrepreneurship and sustainable development, more formalized networks and support structures are needed to foster long-term collaboration. Stakeholders expressed interest in creating spaces for regular dialogue and cooperation, potentially through innovation hubs or expanded municipal initiatives that bring different actors together.

Local business owner:

*"In the summer, everything is happening. But when the season ends, it's like the island takes a deep breath, and everything slows down."*

– Highlights the economic instability due to seasonal tourism.

Shop owner:

*"Our biggest challenge is online shopping. The physical stores need to step up, but it's hard when so much of the income relies on the summer months."*

– Demonstrates the reliance on seasonal tourism and the struggle for local businesses.

Local entrepreneur:

*"We often run into roadblocks when trying to expand or develop something new. It's frustrating because we see potential, but approvals take forever."*

– Describes bureaucratic barriers that hinder innovation and growth.

Local politician:

*"We have a strategy, we have a climate plan—but plans don't change anything unless we act on them. And funding is always a challenge."*

– Highlights the gap between planning and action in sustainable development.

Resident:

*"In the summer, it's amazing. There are concerts, restaurants, life. But in winter? There are only a few places open, and social life almost disappears."*

– Reflects on the lack of year-round infrastructure and services.

Business owner:

*"If we could spread tourism across the year instead of cramming everything into the summer, it would change everything. But people just don't come in winter."*

– Emphasizes the challenge of creating year-round economic activity.

Local journalist:

*"The young people leave for education and never return. We need more opportunities, but attracting businesses is difficult when the workforce keeps shrinking."*

– Highlights the ongoing challenge of youth migration.

Local politician:

*"We have some of the lowest incomes in Denmark and a growing elderly population. If we don't make Bornholm attractive for young families, we're in trouble."*

– Points out the demographic and economic struggles of retaining young residents.

Community leader:

*"Many businesses want to collaborate, but there's no real structure for it. We need platforms that actually connect people across industries."*

– Identifies the need for better coordination between stakeholders.

Entrepreneur:

*"We've become better at helping each other, but too often, small businesses feel isolated. If we had stronger networks, we could achieve much more."*

– Stresses the importance of better collaboration for economic and social development.

These insights, based on interviews conducted on Bornholm, April 2024, highlight the key challenges facing Bornholm while also establishing a strong foundation for the next phase of the FREIIA project. Moving forward, stakeholders and students will collaborate to develop innovative solutions tailored to these challenges through a co-creation process based on Design Thinking principles.



(Students on business visits.)

## Reflection and Findings for project improvement

Building on experiences from previous islands, we (the leader team from HiØ) conducted several pre-visit online meetings with project partners from BOFA. From our earlier work, we had learned that cultural and language differences, combined with varying work package objectives, could lead to misunderstandings regarding the purpose and scope of our activities on each island.

To mitigate this, we aimed to clarify our role early in the process by emphasizing that our primary task was to collect data in a structured and consistent manner across all partner islands. This involved conducting semi-structured interviews with diverse stakeholders, transcribing and analyzing the data, and then organizing a Design Thinking-based co-creation workshop. The purpose of the workshop was to collaboratively address the key findings from the interviews, ensuring that solutions were developed within the resources and realities of each island community.

Despite our efforts, a key challenge arose in aligning expectations with local project leaders. In our preliminary meetings, we outlined our methodology, emphasizing our role as data collectors and facilitators rather than advocates for any specific agenda. However, these meetings were conducted with a newly appointed project leader at BOFA rather than their main project leader. In hindsight, this lack of direct communication with the primary decision-maker resulted in a disconnect between expectations. Upon arriving in Bornholm, it became clear that BOFA had expected a stronger focus on waste management, particularly in relation to construction sites, as this aligned with BOFA's core objectives. However, as with all partner islands, our role was not to advance local stakeholder priorities but rather to objectively identify innovation gaps across various sectors. This misunderstanding underscores the importance of ensuring that pre-visit meetings are held with key decision-makers who have a comprehensive understanding of both their own objectives and the overarching FREIIA project structure.

Additionally, the fact that we were students may have contributed to this misalignment. While we clearly define roles and responsibilities, it is possible that our input was not fully acknowledged at the decision-making level. This highlights a broader challenge in student-led research projects, which is ensuring that student project leaders are taken seriously by professional partners. Had we engaged directly with BOFA's project leader from the beginning, we could have avoided much of the confusion and potential misalignment of expectations. This experience reinforces the necessity of thorough role clarification at multiple levels within partner organizations, ensuring that all stakeholders understand the FREIIA project's core mission. Our job is to gather data, analyze findings, and foster innovation based on objective insights rather than predefined local agendas.

### Insights and key takeaways

We arrived well-prepared, incorporating lessons from Schiermonnikoog and Hvaler. Before our visit, we held multiple meetings with BOFA to establish a clear approach. Despite this, cultural or linguistic differences may have contributed to misunderstandings.

Students worked in pairs—one Norwegian and one Danish—and conducted both pre-booked and spontaneous "stunt interviews" with a more informed approach. Unlike previous iterations, they had familiarized themselves with the project and key stakeholders in advance, making them better equipped to identify relevant interview opportunities.

Using standardized interview questions in combination with both planned and spontaneous interviews proved highly effective in gathering diverse data. This aligns with the UNIC method, which emphasizes collecting perspectives from a broad range of stakeholders while maintaining consistency. On Bornholm, students were briefed on conducting spontaneous interviews and had researched potential interviewees beforehand.

Students traveled by bicycle or bus to meet stakeholders, leading to a diverse range of interviews. A significant number of interviewees were local shop owners, as Bornholm has many privately owned, community-based businesses, which naturally became an integral part of the data collection process.

Despite these strengths, certain limitations were observed:

- **Underrepresentation of Key Groups** – Younger residents and seasonal workers were underrepresented, creating gaps in the analysis.
- **Time Constraints** – The limited timeframe restricted follow-ups and in-depth exploration of complex issues.
- **Communication and Coordination Challenges** – Initial misalignment with stakeholders highlighted the need for clearer pre-interview communication to align project objectives with local expectations.

### Key Takeaways for Future adaptation

- Engage directly with key decision-makers from the outset to ensure shared expectations.
- Expand training for student researchers to enhance credibility and clarity in fieldwork.
- Develop broader outreach strategies to capture a more diverse range of perspectives.
- Extend data collection periods to allow for deeper engagement and follow-ups.



By refining pre-interview coordination and ensuring engagement with the correct stakeholders, future iterations of the project can improve alignment between research teams and local partners, leading to smoother collaboration and more effective outcomes.

*(Students in Bornholm.)*

### Discussion

The findings from the first phase of the FREIIA project highlight several significant challenges and opportunities for Bornholm's sustainable development. Among the key challenges is the dependence on tourism, which leads to economic instability during the off-season. As highlighted in the interviews, many businesses close during the low season, significantly reducing job opportunities and overall economic activity. Although some efforts have been made to diversify by offering year-round services or targeting niche markets, these attempts are still limited by seasonal fluctuations. This underlines the need for long-term economic strategies that reduce reliance on seasonal tourism and create stable, year-round job opportunities.

Another major challenge identified is the difficulty in innovation and sustainable development. Despite having a growing number of innovative businesses, several stakeholders expressed frustration with the resistance to change within the local community. This makes it harder for new initiatives and business models to gain traction. Local regulations, bureaucratic hurdles, and skepticism towards new approaches were often cited as barriers to innovation. However, despite these challenges, there is strong potential for sustainable development, with many businesses actively seeking ways to reduce their environmental impact and expand beyond seasonal tourism.

Youth migration and limited return is another significant issue. Many young people leave Bornholm for education and job opportunities on the mainland, with only a small fraction returning. High housing costs, limited career prospects, and a lack of professional networks make it difficult for young people to settle back on the island. Targeted initiatives, such as affordable housing, local business incentives, and career development programs, are essential to making Bornholm an attractive place for young professionals to build their futures.

Although these challenges are considerable, Bornholm benefits from a strong local engagement and a distinct cultural identity. Leveraging these strengths while addressing the identified gaps will be crucial in shaping a resilient and innovative future for the island.

## **Conclusions**

The initial analysis of the FREIIA project on Bornholm has provided valuable insights into the island community's challenges and opportunities for sustainable development. By applying the UNIC method and Design Thinking principles, the project identified key gaps, including limited cross-sector collaboration, economic reliance on tourism, and difficulties in retaining young residents. These findings emphasize the need for targeted efforts to foster collaboration, diversify economic opportunities, and create an environment that retains and attracts the next generation of professionals and create long-term strategies for sustainability.

Bornholm's heavy reliance on seasonal tourism remains a significant vulnerability. The challenge of diversifying the economy to create stable, year-round employment opportunities is clear. To achieve this, a unified effort across public, private, and civic sectors is necessary. Stakeholders have expressed the need for structured collaboration through innovation hubs and business networks, which could serve as platforms for long-term, sustainable growth.

The issue of youth migration stands out as a pressing concern for the island's demographic future. The findings underscore the importance of offering young residents affordable housing, career pathways, and local business incentives to create an environment where young professionals can thrive. Without these measures, Bornholm risks continued population decline and the loss of vital talent.

Despite these challenges, Bornholm has unique strengths that could guide its path to a sustainable future. The island's strong local identity and the engagement of its community offer a solid foundation for development. Moreover, the growing interest in sustainable businesses and environmental innovation presents a tremendous opportunity. To capitalize on these strengths, however, Bornholm must overcome barriers to innovation and foster a culture that embraces change.

This phase of the FREIIA project has laid the groundwork for tangible solutions, and the next steps, design thinking based co-creation workshops with local stakeholders, offer an exciting opportunity to directly engage the community in shaping their future with these challenges in mind. These workshops will be pivotal in crafting solutions that align with Bornholm's needs, ensuring the community drives its own sustainable development.

Ultimately, the findings from this phase are not only crucial for Bornholm but also have the potential to serve as a model for other island communities across the North Sea region. This research-driven, collaborative approach could inspire new strategies for sustainable development in island economies globally. With the right focus, Bornholm can transition from a seasonal tourist destination to a thriving, year-round community at the forefront of sustainable innovation.



(One of many white beautiful beaches on Bornholm)

## Acknowledgements

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We are deeply grateful to all the students who carried out interviews, worked on analyzing and transcribing data, and contributed their time and dedication to the project. Additionally, we extend our thanks to the stakeholders from Bornholm, who generously shared their time and perspectives, which were essential for our analysis and the project's success.

Finally, we would like to thank BOFA and Aalborg University for their invaluable support in identifying stakeholders and enriching the project with their insights and contributions.

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## **Student Sustainable Entrepreneurship in Action: Design thinking and Co-creation on Bornholm, Denmark as Part of the INTERREG FREIIA Project**

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### **Abstract**

*FREIIA (Facilitating Resilience Embracing Islands Innovation Approaches) is an INTERREG North Sea Region project funded by the European Union, aimed at enhancing resilience and innovation capacity in island communities across six countries. (FREIIA FREIIA | Interreg North Sea, u.å.)*

*Østfold University College is responsible for Work Package 4 (WP4), which focuses on fostering student entrepreneurship. The main objective of WP4 is to integrate entrepreneurship students into the strategic governance of island innovation, strengthening their role in circular economy transitions. This paper specifically addresses WP4, led by Østfold University College. When referring to the FREIIA project in this context, it is WP4 that is being examined.*

*In the first phase of this project, we identified innovation gaps on the island of Bornholm, Denmark, through semi-structured interviews with stakeholders from the public, private, and civil sectors. Key challenges included limited cross-sector collaboration, circular waste management, an aging population, and insufficient platforms for community engagement.*

*This paper presents the next phase of the project, which uses design thinking and the double diamond framework to co-create solutions to the identified challenges through workshops. Initiatives include developing youth-focused educational programs and innovation hubs, enhancing collaboration between stakeholders, leveraging Bornholm's proximity to Copenhagen for marketing and talent attraction, and creating sustainable business opportunities through circular economy initiatives.*

*This study offers a model for fostering sustainable development through collaboration, creativity, and local ownership and offers a model for other island communities facing similar challenges.*



*(Students and teacher at Bornholm)*

## Introduction

Through this project, the current and desired states, along with the challenges faced by the island community of Bornholm, were examined to identify potential gaps between these states. These gaps present opportunities for innovation and improvement in development capacity. In this context, development capacity refers to the ability of diverse stakeholders, including public officials, private enterprises, and civil society, to collaboratively drive sustainable innovation and growth.

To explore these challenges and opportunities in depth, on-site research was conducted on Bornholm from April 10 to April 12, 2024, with a workshop held on April 11. This setting enabled stakeholders to engage in discussions, share insights, and collaboratively explore solutions to the island's key challenges. Bornholm was the third location where both phases of the FREIIA project were carried out, following prior studies on Hvaler and Schiermonnikoog. These phases incorporated findings from the UNIC analysis, which will be further applied in the Design Thinking workshop, providing a structured approach to assessing and enhancing Bornholm's development capacity.

In the first phase of the FREIIA project, the UNIC analysis on Bornholm revealed five key findings:

1. **Dependence on Tourism:** The island's economy is heavily reliant on seasonal tourism, which creates economic instability outside the peak seasons. This dependency underscores the need for sustainable alternatives to tourism-driven growth.
2. **Development of Circular Economy for Construction Waste:** There is a significant need for improved waste management and the development of circular economy solutions, particularly in the construction sector. The increasing amount of construction waste presents an opportunity for implementing circular practices.
3. **Lack of Activities and Services Outside Peak Seasons:** Limited infrastructure and social offerings during the off-season periods hinder long-term sustainability. This seasonal fluctuation in service availability poses a challenge to maintaining a stable economy and engaging the local community year-round.
4. **Youth Migration and Limited Return:** Young residents often leave the island for education and employment opportunities elsewhere, with few returning due to limited career prospects on Bornholm. This demographic shift threatens the island's long-term viability and innovation potential.
5. **Lack of Coordination and Collaboration:** Insufficient cooperation between stakeholders across public, private, and civil sectors creates barriers to innovation and development. The lack of structured spaces for collaboration hinders effective partnerships and progress.

These findings laid the foundation for the second phase of the project, which is the focus of this paper. In this phase, we applied Design Thinking principles to co-create actionable solutions tailored to Bornholm's unique challenges and needs.

By engaging local stakeholders in structured workshops, the second phase aimed to address these gaps through collaboration and prototyping, ensuring that the solutions were both relevant and feasible within the island's socio-economic and environmental context.



## Bornholm

Bornholm is a Danish island and municipality in the Baltic Sea, located 170 kilometers from Copenhagen and 40 kilometers southeast of Skåne, Sweden. The island has been part of Denmark since 1658 and includes the Ertholmene archipelago. Covering 588.5 km<sup>2</sup>, Bornholm features diverse landscapes, including granite bedrock in the north, sandy dunes in the southeast, and fertile farmland in the south. Its highest point is Rytterknægten at 165 meters above sea level.

As of 2024, Bornholm has a population of 39,332, with Rønne (13,759) as its largest town and administrative center. The island's economy relies heavily on tourism and agriculture, particularly livestock farming and fishing. Bornholm is known for its cultural traditions, including smoked herring and ceramics. Tourism plays a vital role, attracting visitors to landmarks such as Hammershus, Northern Europe's largest medieval fortress, and the round churches from the 12th century.

Despite modern transport connections, including flights to Copenhagen and ferries to Sweden, Germany, and Poland, Bornholm faces challenges such as an aging population, youth migration, and a seasonal economy, making sustainable development strategies crucial for its future. (Pihl, 2024).



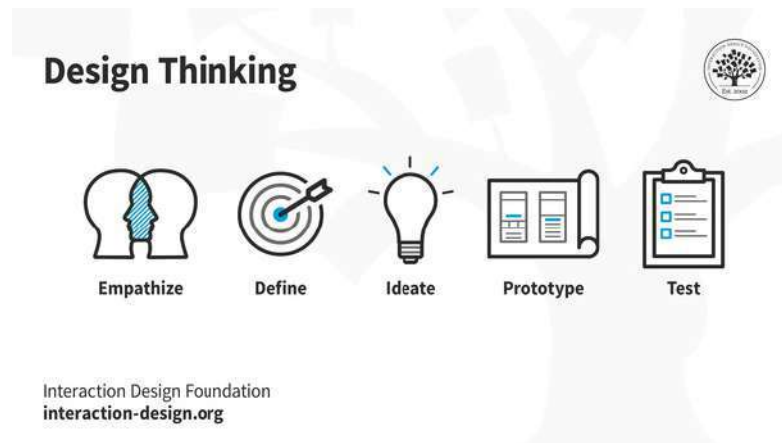
## Methods: Theoretical framework

In this study, we applied principles from Design Thinking and the Double Diamond framework to guide the co-creation workshops aimed at addressing sustainable development challenges on Bornholm. Both methodologies share a user-centered approach, making them ideal for tackling complex challenges faced by island communities.

### Design Thinking: Define, Ideate, and Prototype

Design Thinking emphasizes empathy, creativity, and iteration. In this study, we utilized the Define, Ideate, and Prototype phases to co-create solutions. (*Innovation as a Learning Process*, u.å.)

- Define: Insights gathered from earlier interviews with stakeholders were synthesized to identify the core challenges facing the community, including youth retention, economic development, and collaboration gaps. Ideate: During the co-creation workshops, stakeholders collaboratively brainstormed a wide range of potential solutions. These sessions were designed to encourage creativity and generate diverse ideas to address the identified issues. Prototype: The most promising ideas were developed into low-fidelity prototypes. Test: These prototypes were simple, testable models that allowed for iterative refinement based on stakeholder feedback.

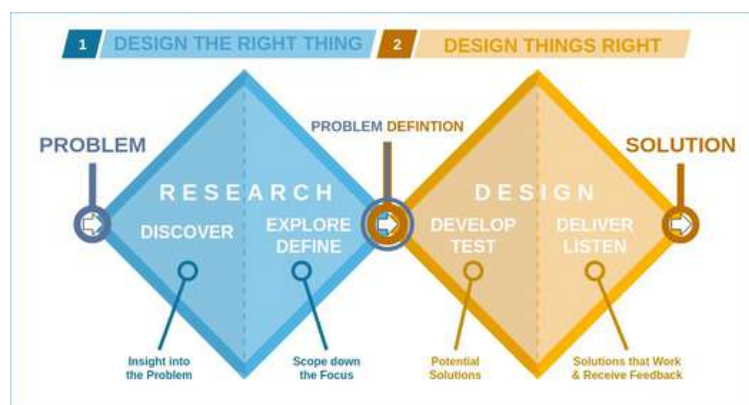


### Double Diamond: Define, Ideate, and Prototype

The Double Diamond framework structures innovation into four phases: Discover, Define, Develop, and Deliver. In this study, we focused on the Define, Ideate, and Prototype phases:

- Define: This phase involved synthesizing insights from the Empathize phase (interviews) into clear problem statements. This ensured all stakeholders had a shared understanding of the core issues.
- Ideate: Collaborative brainstorming sessions allowed participants to explore multiple solutions, ensuring that ideas were generated with input from a diverse set of perspectives.
- Prototype: The most promising solutions were turned into prototypes, which were evaluated and iterated upon during the workshops.

Both Design Thinking and Double Diamond provided a structured approach to problem-solving, ensuring a creative and collaborative process that focused on real-world needs. («The Double Diamond Model», 2024).



### Methods: Applied in Practice

Building on the findings from the fieldwork in March of 2024, we held a clarification meeting with BOFA (Bornholm waste management company and FREIIA partner) to review the results from the UNIC interviews and analysis, to set the direction for the Design Thinking workshop.

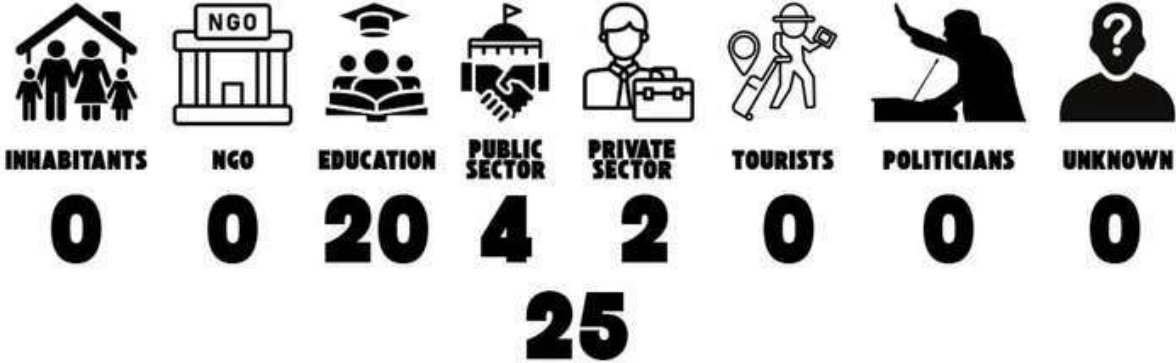
This meeting, conducted via Zoom, allowed representatives from Bofa to collaborate with us in verifying key challenges and determining which areas should be prioritized in the upcoming Design Thinkin based co-creation workshop. The goal was to ensure that the workshop addressed the most pressing issues while aligning with the broader objectives of sustainable development on Bornholm, while also contributing to the FREIIA projects overall goals.

We traveled to Bornholm in April 2024, with Norwegian students, professors, and representatives from Drivhuset to organize a co-creation workshop, designed to engage stakeholders in developing solutions to the identified challenges. This workshop moved into the Ideation and Prototyping phases of Design Thinking, fostering collaboration between a diverse group of participants.

### Stakeholder Involvement

After analyzing the transcribed interviews and identifying core challenges from the UNIC Workshop in phase 1, we invited stakeholders and students to participate in the next phase, Co- creation workshop. Participants included Danish students from Aalborg University and Norwegian students from the Innovation and Project Management program at Østfold University College. Additionally, the workshop included stakeholders from both the public and private sectors, ensuring a broad and interdisciplinary approach to problem-solving.

However, there was a noticeable lack of stakeholder participation during the workshop. Despite initial efforts to recruit a diverse group, it became evident that not enough proactive measures had been taken in advance to secure stakeholder attendance. This limited the range of perspectives present and may have affected the depth of discussions. The low turnout was largely due to a lack of clarity and misunderstandings regarding the purpose of the workshop and the role of stakeholders in the process. Additionally, the fact that the initiative was student led may have influenced how seriously our efforts were taken by potential participants. This experience underscores the importance of clear communication, defined expectations, and stronger engagement strategies to ensure meaningful stakeholder involvement in future iterations.



(This model provides an overview of the participants in the co creation (design thinking) workshop categorized into groups)

## **Ideation Phase**

The Design Thinking framework is a structured, iterative approach to problem-solving that emphasizes empathy, problem definition, ideation, prototyping, and testing. A key feature of this process, as implemented in previous FREIIA workshops, has been guiding participants through a focused ideation phase where teams select a single problem statement, refine it into their Point of View, and develop a concrete, prototyped solution.

On Bornholm, however, the workshop did not fully follow this structure. Instead of choosing one challenge to work with per group, participants engaged with multiple problem statements at once. While this encouraged broader discussions, it resulted in fragmented and less actionable solutions. Several teams produced loosely connected ideas rather than a singular, well-defined solution that could be tested and refined. This deviation from the established methodology affected both the consistency and comparability of results across the different islands in the FREIIA project. A well-facilitated ideation and prototyping phase would have ensured that each group refined a specific challenge into a concrete solution, rather than generating scattered ideas that lacked clear implementation paths.

Without this structured approach, the outputs from Bornholm were less tangible compared to earlier workshops. While some valuable discussions emerged, they lacked the clear, testable solutions that the project aims to generate.

## **Student Involvement and Leadership Transition**

A core element of the FREIIA project's methodology is the structured progression of student involvement, transitioning from an internship phase, where students take on project leadership roles for Work Package 4 (WP4), to a bachelor thesis phase, where they conduct research within the project based on their chosen academic focus. This model provides students with both hands-on leadership experience and a research-oriented approach to innovation and sustainable development.

For this iteration of the workshop, we transferred much of the responsibility to the next generation of student project leaders, primarily from the Innovation and Project Management program. These students were tasked with workshop logistics, stakeholder coordination, and facilitation, marking an essential step in their leadership training. This transition aligns with the FREIIA project's long-term goal of empowering students to take ownership of complex, interdisciplinary projects while developing critical skills in adaptability, communication, and stakeholder management.

The workshop was facilitated in collaboration with Drivhuset, an organization specializing in student entrepreneurship and innovation, which has an established partnership with Østfold University College. Drivhuset contributed to the session design, ensuring alignment with Design Thinking principles. However, despite this support, the execution of the workshop deviated from the structured Design Thinking process used in previous iterations of the project.

Unlike earlier workshops, where teams selected a single problem statement to refine, ideate upon, and prototype into a concrete solution, the Bornholm workshop allowed groups to address multiple issues simultaneously. While this encouraged broad discussions, it also led to fragmented and less actionable solutions. The shift away from the structured process made it more difficult to extract clear, implementable outcomes from the workshop.

## **Key Takeaways for Future Student Leadership**

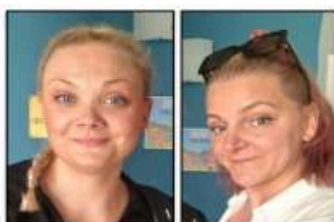
This experience highlights the need for stronger methodological guidance and facilitation training when transitioning responsibility to new student project leaders. While transferring leadership is

essential for long-term project sustainability, it must be paired with closer mentorship and clearer expectations to maintain the consistency and effectiveness of the Design Thinking approach.

Future workshops should ensure that student leaders receive structured training in facilitation techniques, particularly in guiding participants toward well-defined problem statements and concrete, prototyped solutions. Additionally, a more hands-on role from senior project leaders during workshop execution would help prevent deviations from the established methodology and ensure that the co-creation process remains structured and effective.

## NORWEGIAN INTERNSHIP PROJECT MANAGERS

2023 - 2024



Linnea Johansen

Ellen W. Bjerga

2024 - 2025



Sofia G. Gretland

Jenny L. Helt



### Methodical Reflection

Before presenting the key findings from the workshop, it is essential to reflect on the methodological challenges encountered during this phase. These insights help contextualize the results and provide guidance for future implementations of the FREIIA project.

One of the key challenges encountered in the planning and execution of the workshop was the need for improved coordination and clearer communication between project partners. While BOFA was a valuable local partner, the absence of a clearly defined engagement strategy during the early planning phases resulted in some stakeholder groups being underrepresented in the workshop. The transition of project leadership from one pair of Norwegian students to another introduced additional complexity, as it required a new team to align with pre-existing plans and expectations. Unclear expectations within BOFA regarding their role in the process, coupled with insufficient communication between project partners, further complicated the engagement process.

The Bornholm workshop marked a deliberate transition of responsibility from the current student project leaders to the next generation, preparing them for leadership in the upcoming phases of FREIIA. While this provided invaluable hands-on experience in stakeholder engagement, logistical

planning, and facilitation, it also revealed challenges in securing stakeholder participation and maintaining structured facilitation in line with Design Thinking principles.

One of the most significant challenges was low stakeholder turnout. Only five stakeholders attended, the lowest participation rate in the project so far. Unlike previous workshops, where participants were actively reminded and encouraged to attend, this time, no structured follow-up was conducted beyond the initial invitation. BOFA was responsible for outreach, but without additional reminders or direct engagement, many previously interviewed stakeholders were not contacted again. This lack of follow-up likely contributed to the poor attendance.

To compensate for the missing stakeholders, the workshop included three Danish students who had participated in the UNIC analysis phase, along with five new international students from various academic programs. Their contributions helped sustain meaningful discussions, but the absence of key stakeholders limited the depth of collaboration between students and local actors.

This experience highlights two key areas for improvement in future workshops. First, structured stakeholder follow-up must be prioritized, email invitations should be reinforced with reminders, personal outreach, and possibly physical handouts distributed during interviews. Second, while leadership transition is an essential part of the FREIIA model, stronger mentorship and oversight from senior student project leaders is necessary to maintain methodological consistency and ensure that future workshops remain well-structured and impactful.

## **Results**

This co-creation workshop on Bornholm differed from previous workshops held on Hvaler and Schiermonnikoog in its approach to solution development. Unlike the earlier workshops, where the focus was more on arriving at specific, actionable solutions, this session took a broader, more open-ended approach. The group engaged in a wide-ranging discussion, brainstorming a variety of potential solutions to the challenges of youth retention and sustainable development. As a result, the outcomes of the workshop are organized into key thematic categories, with the discussed solutions placed under each, reflecting the diverse ideas that emerged during the session.

### **1. Education and Youth Engagement**

- Natur Bornholm Museum: Suggested as a potential educational and engagement hub for young people, the museum could offer programs that connect youth to local nature and sustainability issues, encouraging a deeper connection to the island.
- Technical University of Denmark (DTU): There was discussion around collaborating with DTU to provide local educational programs, internships, or innovation hubs. This would help keep students engaged with Bornholm while also boosting innovation and knowledge transfer to the island.
- Hub for Kids: A dedicated physical or digital space where young people could gather, share ideas, access resources, and participate in community activities. This could serve as a platform for building a sense of belonging and engagement for youth.
- Educational Courses: The creation of targeted educational programs in collaboration with local schools, businesses, and universities could help equip young residents with relevant skills and career pathways, making Bornholm a more attractive destination for young professionals.

### **2. Collaboration and Innovation**

- Student Involvement in Innovation: There were ideas around incorporating students into local innovation initiatives, especially in the context of sustainable development, to bring fresh perspectives and foster a more innovation-driven culture.

- **Municipality as a Key Actor:** The municipality was identified as a key stakeholder in driving change, particularly in implementing policies and initiatives aimed at youth retention. Potential strategies include housing incentives, job creation, and community development projects.
- **Cultural Houses and Workshops:** There was interest in revitalizing cultural houses or old buildings, turning them into spaces for workshops, collaboration, and lectures. These spaces could serve as innovation hubs and places for professional development, especially in areas like circular economy and sustainability.

### 3. Promoting Bornholm as a Living Destination

- **Marketing Campaigns:** A proposal emerged for a marketing initiative highlighting successful families who have moved to Bornholm and thrived. This could be part of a broader effort to showcase the benefits of living on the island, emphasizing factors like quality of life, family-friendly environments, and successful business ventures.
- **Close Proximity to Copenhagen:** The geographic advantage of Bornholm's proximity to Copenhagen was discussed as a potential asset for attracting people, particularly young professionals. The idea is to market Bornholm as a “getaway” with easy access to urban centers while still offering the peace and natural beauty of the island.
- **Recycling and Circular Economy Awareness:** There were discussions about increasing awareness around sustainability, particularly the reuse of materials in construction and the promotion of circular economy practices. These efforts could be integrated into educational programs and the innovation hubs, tying into Bornholm's broader sustainability goals.



*(Students and Stakeholders in Process During the Workshop)*

## **Discussion**

The workshop on Bornholm differed from previous workshops held on Hvaler and Schiermonnikoog by adopting a more open-ended approach to solution development, allowing for a broader range of ideas. While challenges were encountered during the implementation process, the proposed solutions reflect key opportunities to address Bornholm's unique issues, such as youth migration and economic dependence on seasonal tourism.

A significant part of the workshop's outcome revolved around four central themes: education and youth engagement, collaboration and innovation, attracting young people and families, and circular economy practices. These themes emerged as crucial pillars for strengthening Bornholm's economy and ensuring its long-term sustainability. Below, the main discussions and proposed solutions are addressed within these thematic categories.

### **Education and youth engagement**

First and foremost, discussions around education and youth engagement highlighted the importance of providing concrete educational opportunities and community platforms for young people on Bornholm. The idea of using the Natur Bornholm Museum as an educational and engagement hub for youth is particularly relevant for fostering a deeper connection to the island's nature and sustainability. A collaboration with DTU to offer local educational programs or innovation hubs could help reduce youth migration by creating job opportunities and increasing engagement with the island's development.

### **Collaboration and innovation**

These themes emerged as crucial pillars for strengthening Bornholm's economy. By integrating students into local innovation projects related to sustainability, the island can benefit from fresh, creative perspectives that contribute to a more sustainable and innovative economy. This could also make Bornholm more attractive as a destination for young professionals who seek a closer connection to the local job market. Revitalizing cultural houses and establishing physical or digital hubs could serve as community gathering spaces for youth, and over time help build a more dynamic and engaged youth culture on the island.

### **Attracting young people and families**

The discussions around marketing campaigns to promote Bornholm as a viable and attractive place for young families and professionals emphasized the island's proximity to Copenhagen as a key selling point. Bornholm could position itself as a "getaway" destination that offers easy access to urban life while providing a tranquil and natural environment. Increased marketing around success stories of families and businesses thriving on the island could help change the perception of Bornholm as a place for young professionals.

### **Circular economy**

However, the implementation of these solutions will require careful consideration of resources, partnerships, and long-term support from both public and private stakeholders. For instance, collaboration with the municipality and local businesses will be necessary to realize the proposed innovation hubs and cultural houses, as well as to develop a more integrated approach to circular economy practices on the island. Close cooperation between project partners, with clearly defined roles and early alignment of expectations, will be essential to ensure that these initiatives receive the necessary backing and execution.

Overall, the results from the workshop demonstrate that Bornholm has significant potential to become a more sustainable and attractive destination for young people. However, the successful implementation of these solutions will require long-term collaboration, clear communication, and strategic planning.

### **Entrepreneurship**

The workshops also highlighted the importance of attracting and retaining young people on Bornholm. The ongoing challenge of youth migration requires initiatives that connect education, entrepreneurship, and local industries. By creating opportunities for young people to engage in the local economy and develop innovative solutions, Bornholm can work towards a more sustainable future. Encouraging entrepreneurship and fostering an environment where young professionals see viable career paths on the island will be essential in bridging the gap between education and employment.

Finally, balancing Bornholm's deep rooted traditions with the need for innovation is critical for its long term development. While modernizing infrastructure and expanding economic opportunities, it is equally important to preserve the island's cultural identity and strong sense of community. Ensuring that development initiatives align with local values will help maintain public support and strengthen Bornholm's resilience as a sustainable island community.



(Beautiful and picturesque street in Bornholm)

## Conclusions

The implementation of the FREIIA project on Bornholm provided valuable insights into the island's innovation challenges and opportunities. Using the UNIC method and the Design Thinking approach, the research highlighted key barriers to sustainable development, including:

- Heavy dependence on seasonal tourism, leading to economic instability outside peak months.
- Limited activities and services in the off-season, reducing Bornholm's attractiveness as a year-round place to live and work.
- Youth migration, with few returning due to limited career opportunities.
- A lack of structured coordination and collaboration between stakeholders, hindering innovation and sustainable initiatives.
- Challenges in the implementation of circular economy principles, particularly in the construction sector.

The interdisciplinary workshops provided a collaborative platform for addressing these challenges by bringing together stakeholders from public institutions, private enterprises, and the local community. Through this process, several actionable initiatives were co-created, such as:

- Strategies for extending tourism beyond the summer season to create a more stable economy.
- Concepts for improving stakeholder collaboration, particularly between public and private actors.
- Exploring circular economy solutions in the construction industry to enhance sustainability and waste management.

These solutions demonstrate the power of co-creation in tackling complex, localized issues. The workshops underscored the importance of ensuring that innovation aligns with Bornholm's existing strengths while addressing its socio-economic and environmental vulnerabilities.

A key takeaway from this phase of the project is the necessity of structured collaboration platforms. Many of the challenges identified, such as youth migration and seasonal economic fluctuations, require long-term, coordinated efforts that extend beyond individual initiatives. Strengthening stakeholder engagement and fostering a culture of innovation will be crucial for ensuring Bornholm's future resilience.

## Next Steps

The next stage of the FREIIA project on Bornholm will focus on refining and testing the proposed solutions through continued collaboration with local stakeholders. Establishing long-term engagement strategies will be essential to ensure that the co-created solutions translate into concrete actions.

A crucial aspect will be ensuring that stakeholders take ownership of the initiatives developed in the workshops. By maintaining a continuous feedback loop and building local capacity, Bornholm can become a model for how island communities can overcome structural challenges through collective innovation and sustainable development.

## Acknowledgements

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Finally, we would like to thank BOFA, Aalborg University, and Drivhuset AS for their invaluable support in identifying stakeholders, facilitating workshops, and enriching the project with their insights and contributions.

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**Student Sustainable Entrepreneurship in Action:**  
UNIC Methodology and Innovation Gaps on Hvaler, Norway  
as Part of the INTERREG FREIIA Project  
The interviews and Process

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**Abstract**

*FREIIA, Facilitating Resilience Embracing Islands Innovation Approaches, is a INTERREG project financed by the European Union running from 1. October 2022 until 31. December 2025. The project consists of 14 partners from 6 countries, Netherlands, Denmark, Sweden, Germany, France and Norway. (FREIIA FREIIA | Interreg North Sea, u.å.)*

*The aim of this project is to help 6 island communities in the European Union to create competences, capabilities & structures that support the public sector in becoming successful in the green transition, through the involvement of community, young entrepreneurs and students.*

*Østfold University College is responsible for Work Package 4 (WP4), which focuses on fostering student entrepreneurship. The main objective of WP4 is to integrate entrepreneurship students into the strategic governance of island innovation, strengthening their role in green transitions. When referring to the FREIIA project in this paper, it refers to WP4 of the FREIIA project.*

*The following sections focus on the interviews conducted on Bornholm island, Denmark, as part of the initial phase of the FREIIA project. It highlights the recruitment process for stakeholders and the methodology employed to ensure diverse representation from public, private, and civil sectors. The student-led interviews revealed key challenges, including limited cross-sector collaboration, an aging population, and insufficient platforms for innovation. These findings, gathered through the application of the UNIC method(gap analysis), provide a foundation for the next phase, where Design Thinking baes Co-creation workshops will focus on developing tailored solutions to address the identified gaps.*



**(Students on the ferry from Ystad to Rønne.)**

## Introduction

As part of the FREIIA project on Bornholm, 17 interviews were conducted from February 29 to March 1, 2024, to capture the voices and perspectives of the local community.

Rather than providing a detailed analysis, this document presents raw and unfiltered data, ensuring that stakeholders' experiences and concerns are conveyed in their own words.

The interviews included a diverse group of stakeholders from across the community, representing the public sector, private businesses, NGOs, local residents, and politicians.

A systematic mapping process was used to identify participants based on their roles, expertise, and relevance to the project's themes. This method ensured an inclusive and representative sample, providing a holistic understanding of the challenges and opportunities faced by the Bornholm community.

By focusing exclusively on the transcriptions, this document preserves the integrity of the participants' viewpoints, allowing their stories to form a foundation for future research, policymaking, and community-led initiatives. It is intended for policymakers, researchers, and community members seeking a detailed and honest understanding of the dynamics, priorities, and potential of life on Bornholm, with a focus on sustainable and innovative development.

## Bornholm

Bornholm is a Danish island and municipality in the Baltic Sea, located 170 kilometers from Copenhagen and 40 kilometers southeast of Skåne, Sweden. The island has been part of Denmark since 1658 and includes the Ertholmene archipelago. Covering 588.5 km<sup>2</sup>, Bornholm features diverse landscapes, including granite bedrock in the north, sandy dunes in the southeast, and fertile farmland in the south. Its highest point is Rytterknægten at 165 meters above sea level.

As of 2024, Bornholm has a population of 39,332, with Rønne (13,759) as its largest town and administrative center. The island's economy relies heavily on tourism and agriculture, particularly livestock farming and fishing. Bornholm is known for its cultural traditions, including smoked herring and ceramics. Tourism plays a vital role, attracting visitors to landmarks such as Hammershus, Northern Europe's largest medieval fortress, and the round churches from the 12th century.

Despite modern transport connections, including flights to Copenhagen and ferries to Sweden, Germany, and Poland, Bornholm faces challenges such as an aging population, youth migration, and a seasonal economy, making sustainable development strategies crucial for its future. (Pihl, 2024)



## Methods & Process

As part of the FREIIA project, 17 interviews were conducted with local stakeholders in Bornholm. The informants represented both permanent residents and seasonal actors, with the goal of documenting their perspectives on challenges and opportunities related to innovation and sustainable development.

The interviews were conducted using a semi-structured approach, balancing structure and flexibility. Predefined questions ensured that key topics, such as local sustainability, housing challenges, and collaboration, were addressed. At the same time, the method allowed the interviewer to explore additional themes that emerged naturally during the conversation. This approach enabled the collection of rich and detailed data by allowing informants to share their experiences and perspectives at their own pace.

All interviews were transcribed using the 'Diktafon' app and securely stored on SIKT, Norway's national digital service provider for research and education. SIKT ensured that the data was handled in compliance with ethical and privacy standards, safeguarding the confidentiality of participants. They were manually reviewed to ensure high accuracy. To protect the privacy of informants, all identifiable information was anonymized. The transcriptions are presented chronologically in this report to preserve the original structure of the interviews. Only minimal editing was carried out, primarily to remove repetitions and unclear sections, without altering the content or meaning. (*Sikt – Kunnskapssektorens tjenesteleverandør | Sikt, u.å.*)

In research involving interviews, obtaining informed consent is a critical step to uphold ethical standards. The stakeholders interviewed were asked to sign a consent form outlining the purpose of the study, their voluntary participation, and the confidentiality of their identities. This formal agreement ensures transparency and compliance with ethical research guidelines. The consent form specifies that personal information will remain confidential, details how the data will be used, and reassures participants that they can withdraw at any time without consequence. This process fosters trust between researchers and participants, creating a safe environment for open and honest discussions.

(Consent Form for interviewees)

The image shows two pages of a consent form. The left page is titled "Will you participate in the research project? The Development Capacity of Island Communities?". It contains sections for "Purpose", "Who is responsible for the research project?", "Why are you being asked to participate?", "What does participating entail for you?", "Your privacy - how we store and use your information", and "What happens to your personal information when the research project concludes?". The right page contains sections for "What gives us the right to process personal information about you?", "Your rights", "If you have any questions about the study or wish to exercise your rights, please contact...", "Consent", and "I have read and understood the information about the Island Community Development Project and have had the opportunity to ask questions. I consent to: Participate in an interview, Allow anonymized quotes from the interview to be used in the research, and Consent to the processing of my information until the project is concluded." There is a line for a signature and a date field.

### **Semi-structured interview guide**

To ensure consistency across the islands and for data collecting purposes, a standardized interview guide was developed. 8 questions were designed to elicit both specific insights and broader reflections on sustainability challenges. Following are the eight questions asked:

1. What is your role in the island community?
2. How would you describe the island community and its current state?
3. What are the biggest challenges the island community faces regarding innovative development and sustainable growth?
4. What initiatives has the island community previously undertaken to address these challenges?
5. How does the island community collaborate to promote innovative development and sustainable growth?
6. In your opinion, how can the island community improve its development capacity?
7. How can you and your organization contribute to improving the island community's development capacity?
8. How can the island community collaborate better with surrounding communities and regions to achieve common goals?



*(Students cycled across the island to conduct interviews.)*

### **Identifying Stakeholders: Process and Approach**

The UNIC analysis on Bornholm marked the third implementation of the FREIA project methodology, following earlier studies on Hvaler and Schiermonnikoog. Hein, L. (December, 1988b). Diagnose på

udviklingsfunktionen (notat 2). UNIC-gruppen). Several preparatory meetings were held between BOFA (FREIIA Partner and waste management company in Bornholm) and us, University college of Østfold, to discuss project objectives, stakeholder selection, and logistical arrangements. These meetings focused on ensuring a diverse range of perspectives, clarifying the scope of the study, and refining the interview methodology to best capture the challenges and opportunities on the island. The collaboration with BOFA was particularly valuable, as their local knowledge and connections helped identify key stakeholders across different sectors, ensuring a comprehensive and representative dataset.

### **Stakeholder Selection and Engagement Strategies**

An initial list was developed in collaboration with BOFA, forming a solid foundation for engagement. To broaden the perspectives, students proactively reach out directly to businesses and organizations before the fieldwork to arrange additional interviews. Many interviewees on Bornholm turned out to be local shop owners, as the island has a high number of privately owned, community-based businesses. This naturally became an integral part of the data collection process.

Despite these efforts, engaging a broad range of stakeholders proved to be more challenging than anticipated. While an initial stakeholder list was developed in collaboration with BOFA, some sectors were underrepresented. This may have been due to limited direct engagement in the early planning phases and the challenges of coordinating with stakeholders within a short timeframe. Additionally, the fact that the project was student-led may have influenced how seriously it was perceived by some potential participants. A key issue was that the FREIIA team primarily engaged with a project staff member rather than BOFA's project leader, which may have contributed to misalignment in expectations. It also became clear that BOFA itself had not fully clarified its internal objectives for participating in the project.

### **Fieldwork and Stakeholder interaction**

The research team stayed at Rønne Vandrehjem, (a local hostel in Rønne) which provided a base for traveling to stakeholders across the island. Students traveled by bicycle or bus. The combination of pre-booked interviews and spontaneous 'stunt interviews' allowed students to adapt and maximize stakeholder engagement. Prior preparation and research on potential interviewees further enhanced the team's ability to identify and leverage additional opportunities for valuable insights.

Interviews were conducted primarily on Thursday, the designated fieldwork day, with a small number of interviews conducted on Friday morning, just before the group's departure. Students worked in pairs, typically one Norwegian and one Danish, but some teams consisted solely of Norwegian students. This setup encouraged collaboration where possible while accommodating practical realities such as language and familiarity with local stakeholders.

During the fieldwork, students visited stakeholders in their own environments, including businesses, municipal offices, and key local landmarks. The interviews started after breakfast and continued throughout the day, following a schedule designed to accommodate stakeholders availability. This flexibility in planning was crucial for ensuring maximum participation and collecting diverse perspectives.

The semi-structured interviews followed a standardized format used across all islands in the FREIIA project. This method ensured consistency in data collection while leaving room for participants to share personal insights and experiences. The combination of standardized questions and both pre-arranged and spontaneous interviews proved highly effective in gathering rich and diverse data.

## Reflections and Future Improvements

Based on our experiences in the Netherlands and on Hvaler, we were highly aware of the need to clearly communicate our vision and objectives. However, in retrospect, we recognize that additional time for clarification and expectation setting with local partners could have improved alignment. This experience on Bornholm emphasized the need for even more focused effort in ensuring a shared understanding of project goals, roles, and responsibilities from the outset, which could have strengthened engagement and reduced misalignment.

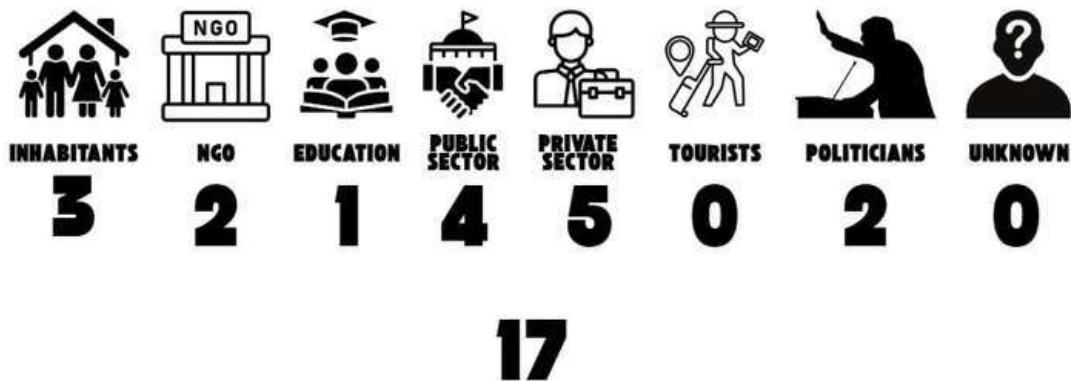
Despite thorough preparation and collaboration with BOFA, some cultural and linguistic differences may have led to minor misunderstandings. However, these challenges provided valuable learning opportunities. Direct engagement with key stakeholders, rather than relying on intermediaries, emerged as a crucial factor in improving participation. A more structured onboarding process with clearer communication from BOFA's leadership could have mitigated some of the challenges. Moving forward, these insights will be key in refining the approach to stakeholder engagement in future implementations of the FREIIA project.



(Danish and Norwegian students at Rønne Vandrerhjem.

## Overview of Stakeholders and Themes from the Interviews

As part of the FREIIA project, 17 interviews were conducted with a diverse group of stakeholders on Bornholm. The informants represented a broad range of actors, including permanent residents, non-governmental organizations (NGOs), the public sector, the private sector, and tourists. This diversity of backgrounds and perspectives provided valuable insights and laid a strong foundation for identifying themes critical to the island's sustainable development and future growth.



(This model shows the number of interviewees divided into groups.)

## Key Themes

The interviews revealed several key insights into the challenges and opportunities facing the Bornholm community. While the island offers a unique and attractive environment, several structural and social factors influence its long-term sustainability. Stakeholders highlighted critical issues related to seasonal tourism dependence, youth migration, infrastructure limitations, collaboration between sectors, environmental sustainability, and community resilience. These insights illustrate both pressing concerns and potential pathways for future development, emphasizing the importance of balancing economic stability with social and environmental sustainability. Below are the key findings from the interviews.

### Dependence on Tourism

Bornholm's economy is heavily reliant on seasonal tourism, creating economic instability during the off-season. Many businesses close outside the peak summer months, limiting job opportunities and negatively affecting the local economy. Stakeholders highlighted the importance of diversifying tourism offerings to ensure year-round economic activity and stability.

### Challenges with Innovation and Sustainable Development

A cautious approach to adopting new ideas has slowed innovation and hindered the transition to sustainable practices. While stakeholders recognize the need for progress, resistance to change remains a significant barrier. Encouraging openness to new solutions and fostering collaboration will be essential for driving sustainable development.

### Lack of Activities and Services Outside Peak Seasons

Limited infrastructure and social activities during the off-season negatively affect both residents and potential visitors. Stakeholders noted that this lack of year-round services reduces Bornholm's attractiveness as a place to live and settle long-term.