



**Interreg
North Sea**



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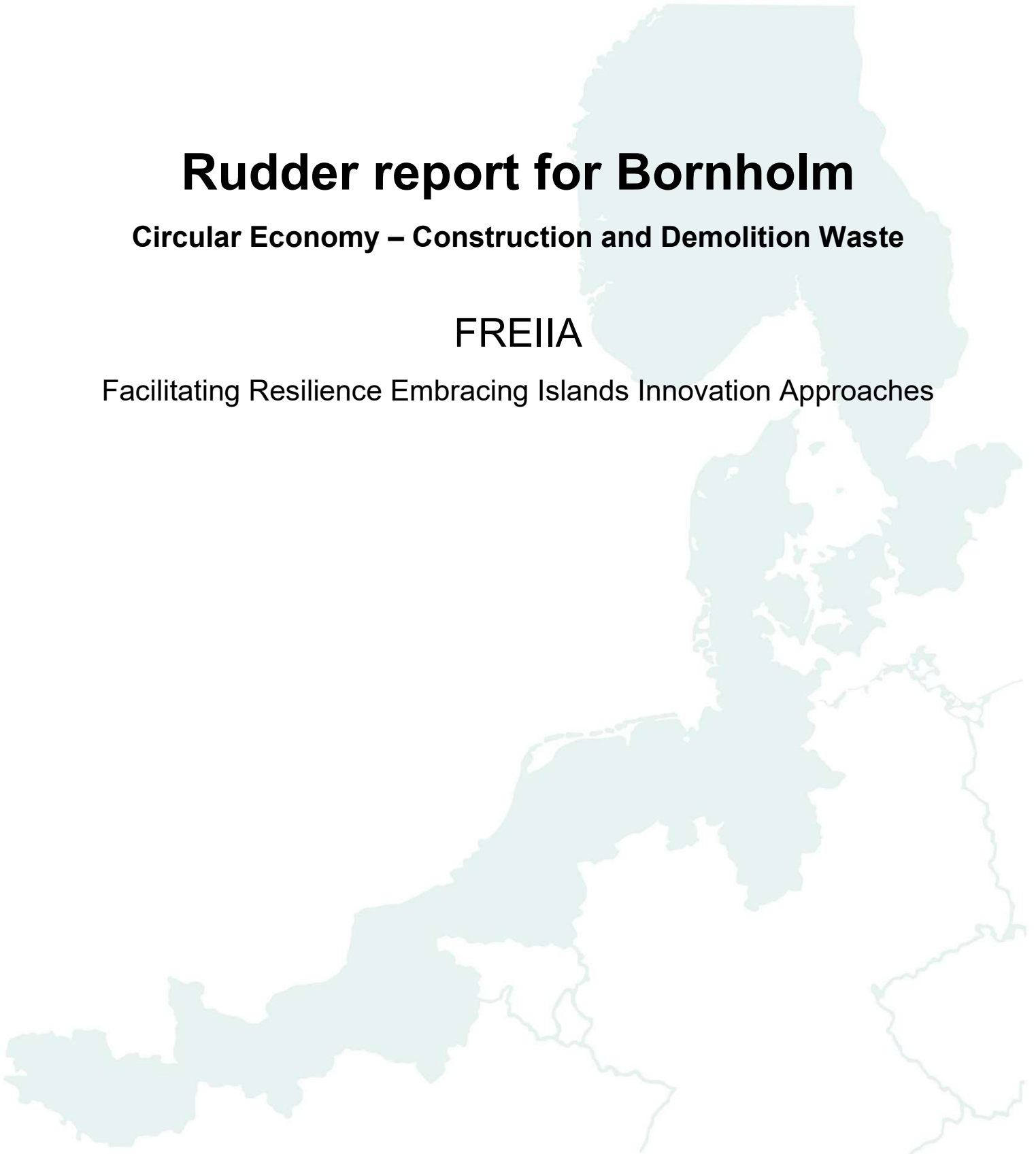
FREIIA

Rudder report for Bornholm

Circular Economy – Construction and Demolition Waste

FREIIA

Facilitating Resilience Embracing Islands Innovation Approaches



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Introduction

This report is written in a collaboration between Aalborg University (AAU) and BOFA (Bornholm's waste treatment). In earlier stages of FREIIA, BOFA chose to focus on the following two subjects:

1. Circular economy for construction and demolition waste
2. Circular economy for electrical and electronic goods

This report has the focus on Circular economy for construction and demolition waste.

The report is built upon the Tipping report for Bornholm – Circular Economy for Construction and Demolition Waste and the Feasibility Report for Bornholm - Circular Economy and the Tipping Strategies. In the Tipping report it was chosen to work further with the project Material Bank in the rudder process.

The aim of the Material Bank is to organise the reuse of construction and demolition waste on Bornholm. In the rudder process, role and responsibility delegation are especially crucial and for the creation of a Material Bank on Bornholm. Increasing capacity for developing and future maintenance are sought through network creation and the detailing of project description and action plan within the newly found network.

This report is aiming to find a way for Bornholm to work further with the idea of the Material Bank, by including and analysing the relevant actors' roles related to the eight rudder roles from the Whitepaper: Opening the Blackbox of Governance. Through a rudder workshop with relevant actors, a roadmap for the Material Bank on Bornholm has been suggested.

Background

The Interreg North Sea project FREIIA was developed in response to urgent and interrelated societal challenges such as climate change, biodiversity loss, and growing social inequality. Addressing these complex issues requires more than market-driven solutions or incremental policy adjustments; it demands new forms of societal innovation in which governments play an active, adaptive, and enabling role. FREIIA is built on the recognition that governments are indispensable actors in shaping and accelerating such transformations, particularly when innovation must emerge from the bottom up and serve broad public missions.

In recent decades, however, governments have often struggled to fulfil this role effectively. Their contribution to innovation processes has frequently become fragmented, overly risk-averse, or confined to regulatory functions, sometimes even acting as a bottleneck rather than a catalyst. FREIIA was created to help reverse this trend by equipping governments with concrete instruments, governance capacities, and learning mechanisms that enable them to actively steer and accelerate societal innovation. This ambition aligns closely with the vision articulated by Mariana Mazzucato, who argues that governments should function not only as regulators, but also as risk bearers, investors, and mission-driven innovators in pursuit of collective goals such as the Sustainable Development Goals and the European Green Deal.

At the heart of FREIIA lies a governance model that operationalizes these ideas through the metaphor of the **wheelhouse and the rudder**. The wheelhouse represents the Weberian bureaucracy: the formal structures, rules, procedures, and hierarchies that provide stability, predictability, and continuity in public governance. These elements are essential for safeguarding long-term visions, legal certainty, and institutional reliability. At the same time, the rudder symbolizes the Schumpeterian dynamics of innovation: agility, experimentation, learning, and adaptability in response to changing societal conditions. Without a well-functioning rudder, governments risk becoming rigid and unable to respond effectively to emerging challenges and opportunities.

Crucially, FREIIA does not treat stability and innovation as opposing forces. Instead, it emphasizes their complementarity. Much like in music, where drums and bass provide a stable rhythmic foundation that allows other instruments to improvise, the Weberian bureaucratic base enables policy actors to innovate within a secure and coherent framework. When these foundational structures are in place, governments can support experimentation, connect local initiatives to broader programmes, mobilize funding, and scale successful innovations without losing direction or coherence.

This integrated approach is further elaborated in the FREIIA **T-Model**, in which the vertical axis is reshaped into a RUDDER consisting of eight governance roles. Together, these roles translate the abstract concept of dynamic capabilities into practical governmental action. FREIIA thus supports not only external societal innovation, but also continuous institutional learning and self-renewal within government itself. By strengthening strategic capacity, coordination, and reflexivity, the model enables governments to act more resiliently and proactively in the face of complex transitions.

The current rudder roles in the Material Bank

A pre-rudder meeting was held on the 25th of November 2024. It was prepared and facilitated by two AAU interns, with participants from AAU and BOFA. At this meeting the current rudder roles were identified, which can be seen on the table below.

Rudder roles	Roles delegated	Actions example
I Leadership Short term	BOFA	1. BOFA has an ambitious vision of abolishing landfilling and incineration on Bornholm by 2032. 2. BOFA incorporates the SDGs in their ISO 14001 System. 3. BOFA has a project team, used to working with different CE related topics 4. BOFA works on several EU projects where knowledge and research engagement are part of the process.
II.Connector Short term	BOFA/ Fremtidens Byggeri	1. BOFA has collaborations with AAU and CBS, through different projects and several local craftsmen and has actively sought co-creation processes with civil society. Fremtidens byggeri consists of several construction and demolition related local actors on Bornholm. Different parts of the Quadruple/Quintuple helix are represented in this. 2. BOFAs Zero Waste Innovation platform may act as a gathering point for cross-sectoral, integral and interdisciplinary collaboration. Fremtidens Byggeri stimulates a similar collaboration through the creation of networks.
III Facilitator/ Creator Short term	AAU / Fremtidens Byggeri	1. AAU project members and students that can facilitate and organise meetings and initiatives within the partnership. Fremtidens byggeri works for the promotion of sustainable buildings and has an environment which supports experimentation and collaboration. 2. AAU have students and project members who are used to work problem-solution oriented in long term projects and to utilise methods and theories in a systematic way. 3. AAU project members and students may hold a workshop and promote the creation of networks to invite for interaction and partnerships. 4. Fremtidens byggeri pushes the norms on what should be considered "normal" construction and demolition approaches.
IV Provider Medium term	EU / BOFA	1. BOFA has secured initial funding for experimentation through FREIIA and applies for additional funding through Horizon 2. BOFA is used to providing products and materials for reuse, as well as by promoting partnerships.
V Ambassador Medium term	BOFA / Fremtidens Byggeri	1. BOFA has experience in communication waste and circular economy. An example is through their ambitious Zero Waste Bornholm vision. 2. Fremtidens Byggeri and BOFA has both been part of lighthouse projects and a part of marketing them. 3. BOFA and Clean (the Danish Environment and Water Cluster) are collaborating on the project STRIVE to e.g. organise events on circular principle at Denmark's largest political festival.
VI Leverage / Capitalize Medium term	BOFA	1. BOFA experiments with different types of data collection. They currently reflect on how to utilise digital platforms: e.g. Circue and Green dozer, upcycling forum 2. BOFA has created several projects in alignment with the Zero Waste Bornholm vision. 3. BOFA has a project and development team, which amongst others works on FREIIA and other EU projects to promote different kinds of circular innovation

Rudder roles	Roles delegated	Actions example
VII Network Orbiting Long term	Fremtidens Byggeri / BOFA	- Both Fremtidens Byggeri and BOFA contains of stakeholders in different networks and connects the networks to strengthening them. - BOFA are used to building bridges for knowledge sharing both locally, nationally and internationally e.g. with FREIIA.
VIII Procurement Trendsetter Long term	BOFA	BOFA are used to engage innovators in early stages and secure them in the further process

The Fixer: The fixer is an addition to the eight roles aims to ensure the project support from the local government. At the moment it is assessed that there is no actor in the role of the fixer.

The future rudder roles and action plan for the Material Bank

The rudder workshop for the material bank was held on 2 December 2024 at BOFA's Affaldstårn. At the workshop there was +30 participants with various backgrounds all related to the construction and demolition sector. The workshop was facilitated by two AAU interns. The workshop resulted in a project description / vision and an action plan with the rudder roles clarified for each action. More information about the workshop can be seen in the semester project by the AAU interns (*Promoting Circular Innovation on Islands*)

The project description / vision

During the workshop, the participants' visions for the material bank were noted and processed in discussions for the material bank's design. The vision with the most votes was selected, which resulted in the concept of a Resource Recovery and Learning Centre. This vision has been compiled into a project description. The centre will perform the following functions:

- A physical warehouse where the materials can be stored safely. At the same time, there will eventually be facilities to clean and prepare the materials ready for reuse.
- It must contain a selection of recycled materials that are easy to pick up and use. There should be "enough" materials that it makes sense to collect the materials for recycling.
- It should be connected to a centre for learning and education. This means organizing events to raise awareness about these recycled materials and the importance of using recycled materials for public institutions, businesses and citizens.
- Spread knowledge about the problems with current practices in construction and other dissemination of knowledge about the material bank. This can be done on existing platforms such as Folkemødet, Facebook groups etc.
- A project organization must be created with the important actors that promote networking and the value chain. They must organize meetings that preserve the network and secure the value chain.
- The centre must create documentation and qualification of the materials. This creates certainty about the use of the materials, while documentation can also be used to influence politics and regulations in construction.

The action plan

The action plan is constructed based on the functions and actions that the participants have discussed during the workshop. It is desired that a project organization should be formed first and foremost and then review the action plan, change, add and decide who and when to perform the actions. Yet AAU and BOFA has suggested who could take the role of the actions and which rudder role it relates to.

Short term actions

What?	How?	When?	Who?	Effect
Create a project organisation	BOFA can initiate the formation of a network based on the workshop participants. It can also reach out to more people to ensure a wide range of expertise from Bornholm and include local politicians. This can be based on the Future of Construction network (Fremtidens Byggeri).		BOFA and Fremtidens Byggeri This organisation will form the leadership , with 'soul in the game', that assemble skilled people. They also facilitate the collaborative spaces going forward.	With a project organization in place, it can continue to work on the action plan and create action on the material bank. the material bank. In addition, the project organization can assign roles.
Revisit the project in detail to reach consensus	The project organization can take the project description created during the workshop and agree on the final project description and vision for the material bank.		BOFA and the project organisation The concept must be collaboratively developed to ensure alignment with sustainability goals and an agreement in the organisation. BOFA and the Danish Crafts Association have been identified as potential drivers to steer the project in this direction and thereby be part of the leadership , ensuring inclusivity.	Once consensus has been reached on the project, it will be possible to use this project description going forward and act on it. This can also be used to apply for funding.
Gain support from the municipality by ensuring alignment with municipal goals	Get buy-in from the municipality by creating a plan for how the project aligns with current municipal goals.		BOFA and Fremtidens Byggeri BOFA has connections to the local politicians at the island and Mikael is a part of it himself. Thereby they can ensure connection and alignment with	When the municipality agrees, it will be possible to take more actions. In this way, the municipality can also help create more action in the project.

What?	How?	When?	Who?	Effect
			the municipality. Besides they can be the ambassador for the project, to gain support from the municipality. Also, the Leverage/Capitalize is important to insure that the project is integrated into existing programs and policies.	
Map the stakeholders	Map the stakeholders from the workshop, among others, and create an overview of the value chain. Also map their resources and current work on the topic.		BOFA and support from e.g. AAU students Mapping the stakeholders needs people with a great network and collecting knowledge and materials from the stakeholders. Systematic methods and techniques by a provider can secure a suitable facilitation of the stakeholder mapping.	Mapping makes it easier to create more networking and action and eventually develop a business model for the material bank.
Investigate the possibility of digitizing the material bank.	When exploring how to digitize the material bank, existing platforms can be used.		BOFA and project organisation Leverage / Capitalize has the role of utilise digital platforms.	With digitization, partnerships and action can already be created, even if the physical material bank has not yet been created.
Determine location	When determining the location, you can use already existing locations such as the recycling centre in Aakirkeby. Or is there another more suitable location available.		BOFA and project organisation Finding a location for storage of the products needs a facilitator , to set up the space for conversations about locations and to locate the location on their own property.	Having a physical location with a roof where materials can be placed safely will create the opportunity to collect materials and symbolize the start of the material bank.
Select material types for the material bank	The types of materials that can be used in a material bank must be determined. Materials that are		BOFA and support from e.g. AAU students and the project organisation	Once the materials are determined, it is possible to start collecting materials for the material bank.

What?	How?	When?	Who?	Effect
	"easier" to recycle and readily available can be used here.		Selecting the most relevant material types, requires a mapping of products and knowledge on relevant best practices. That could again be done by the networker or provider to collect knowledge and analyse it.	

Long term actions

What?	How?	When?	Who?	Effect
Find similar project examples for inspiration	Research what examples already exist for "material banks". This can be both national and international.		BOFA, AAU, VCØB It relates to the provider's role, facilitating systemic methods and sharing best practices.	By mapping the good examples from other places, parts of these examples can be included in the material bank on Bornholm.
Awareness campaign and communication strategy	An information campaign must be carried out especially on Bornholm, reaching out to companies, institutions and citizens.		The project organisation The connector has to create the bridge between all actor groups including the companies, institutions and citizens. The ambassador may spearhead a showcasing of opportunities the material bank may bring.	Creating awareness of the material bank will create opportunities for expansion of the material bank.
Explore the possibility of forming a private for-profit company	Investigate what a business model could look like for the material bank in the long term, so that it can remain when project funds expire. Should it be private for-profit or municipal?		The project organisation The leader and connector must explore how a for-profit company can be established and if it should be. Here all the actors from the project organisation must be included.	Once a business model is decided, it will be possible for the material bank to stay and run independently of funding.

What?	How?	When?	Who?	Effect
Invite more people to the consortium	Consider how the network can be expanded to make sense nationally and possibly internationally.		BOFA and the project organisation The networker needs to investigate who could be invited to the consortium. BOFA has a great network both nationally and internationally.	Inviting players from other parts of Denmark and possibly Europe will allow experience to be shared and create greater opportunities for the material bank to remain and develop.
Lobby for Bornholm to achieve test island status and national political influence	Contacts must be made and opportunities investigated for Bornholm to become a test island. At the same time, we also need to investigate which policies and regulations should be changed to create better opportunities for the existence of material banks.		BOFA and Mikael Benzon The Procurement Trendsetter and the ambassador are important roles for gaining national political influence. They can motivate politicians to make better procurement politics and raise awareness on the material banks opportunities.	Once Bornholm has shown that the material bank works, further development of the material bank should be considered. This can happen if Bornholm is approved as a test island, which is allowed to test things that are otherwise not possible according to the regulations. At the same time, they can also gain greater political influence nationally by demonstrating the positive aspects of the material bank.

Reference list

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