

Facilitating Resilience Empowered by Island's Innovation Approaches (FREIIA)

– a user friendly, community based and action oriented new governance of innovation model for an accelerated advancement of the EU Circular Economy Transition.

1. The need for a new Governance of Sustainable Innovation Model

NS's communities face major challenges in the coming decades, in our urgently needed attempts to achieve the UN Sustainable Development Goals (SDGs), the EU grand societal challenges (GSCs), including a Circular Economy (CE) and the need for systems, regions and people to build up resilience, anticipating shocks and disasters. Departing from a regional perspective, the FREIIA-project will stimulate joint initiatives and leadership of local communities and their municipalities, with co-involvement of all partners from the Quintuple Helix, to give a highly impactful boost to the development and acceleration of the local/regional C E.

Innovations are central to the EUGSCs. Innovation policy, nowadays modernized and comprehensively expressed as 'mission-oriented, multilevel innovation governance', is increasingly focused on sustainability transitions, i.e. the change towards a more sustainable and inclusive society. In the innovation literature however, governance of innovation models are predominantly focused on fundamental R&D and high-tech as point of departure. These models tend to be top-down and academic oriented, with little or modest understanding of (the practice-based 'secrets' of) bottom-up initiatives, joint community leadership and co-involvement from the local/regional perspective, that depart from an applied and social approach (rather than from new technology development). Therefore, the FREIIA-project starts from the belief that existing governance of innovation models, in view of substantially contributing to the grand transitions, have a restricted value and are hardly applicable or effective in the many European regions outside the city and industry conglomerates.

In addition, the grand transitions require the input and availability of easy-to-apply new skills and bottom-up governance models for strategic innovation action planning, with a leading role for skilled local/regional government and community based "transitioners". Therefore, the objective of the FREIIA-project is to create a skills, resources, competences, capabilities and structures that support the public sector in becoming effective, and successful in transformative policies and in building resilience, with a focus on the GSCs/ SDGs.

To this end, FREIIA develops a necessary, design thinking-based and practice-oriented governance framework, taking into account easy application and fast diffusion in and beyond regional European areas: the Governance of Innovation Intervention Learning Model. The basis for this new transition approach consists of: (WP1) the TIPPING mechanism for the creative design of a collection of potential CE-innovation projects; (WP2) the 'Rudder method', an expert-based tool for the governance of sustainable innovations, interventions and learning, with strategic innovation action plans as result; (WP3) relevant physical and digital contributions (network, new ideas, expertise etc.) of 'critical friends' from outside the region, which can significantly increase the local innovation potential; and (WP4) likewise, the systematic, intensive and unorthodox contribution of young professionals and student teams from sustainable design, entrepreneurial and governance disciplines, who give the innovation process a sometimes out-of-the-box but unique, refreshing and relevant boost. Finally, the establishment of an excellent supportive program on digitization and communication is considered essential for the ultimate success of the FREIIA project.

The outputs of the FREIIA-project are multifold, but the main results will be: (a) a new Governance of Innovation Intervention Learning Model for a creative, easy, and thus efficient adoption of the EU's GSCs, in particular the Circular Economy, as well as the potential of a self-sustaining recurrent innovation process; (b) 10 Strategic Innovation Action Plans with follow-up programs and projects ready for take-off; (c) digital learning materials to promote the outcomes efficiently amongst a large European group of local community and municipality leaders and their Quintuple partners; (d) a pioneering cohort of first applicants of the FREIIA approach, including ca. 200 local/regional government and community 'transitioners', ca. 100 involved university staff members, ca. 200 other members of the Quintuple Helix and approx. 250 students from six higher education institutes and countries; and (e) the exploration and deepening of crucial scientific questions on and challenges in sustainable transitions, amongst others aimed at local governance of sustainable innovation, community-municipality cooperation models, the role of critical friends and benchmarking, as well as young professionals and students' design and entrepreneurship (4 PhD dissertations).

2. Islands as Sources of Inspiration for Transitions

Distributed across the North Sea (NS), islands share various specific challenges with respect to their development, ranging from population decline caused by a lack of job opportunities, particularly for young and talented people and the impact of climate change to energy dependence. At the same time, certain aspects of islands' geographic specificity may be regarded as opportunities: they range from natural assets, unique biodiversity, reliance on own resources (e.g. the potential for renewable energy production and a circular economy), intensive involvement of the local communities and an appealing climate for tourism.

In the past, innovation policy has proven to support islands in coping with these challenges and has let them tap into new horizons. A strong evidence base for this is provided in the pioneering programs like the Energy Autonomy of Samsø (DK), the ZeroWaste Lighthouse of Bornholm (DK) and the frontrunning nature education role of various NS National Island Parks, including Marine Parks.

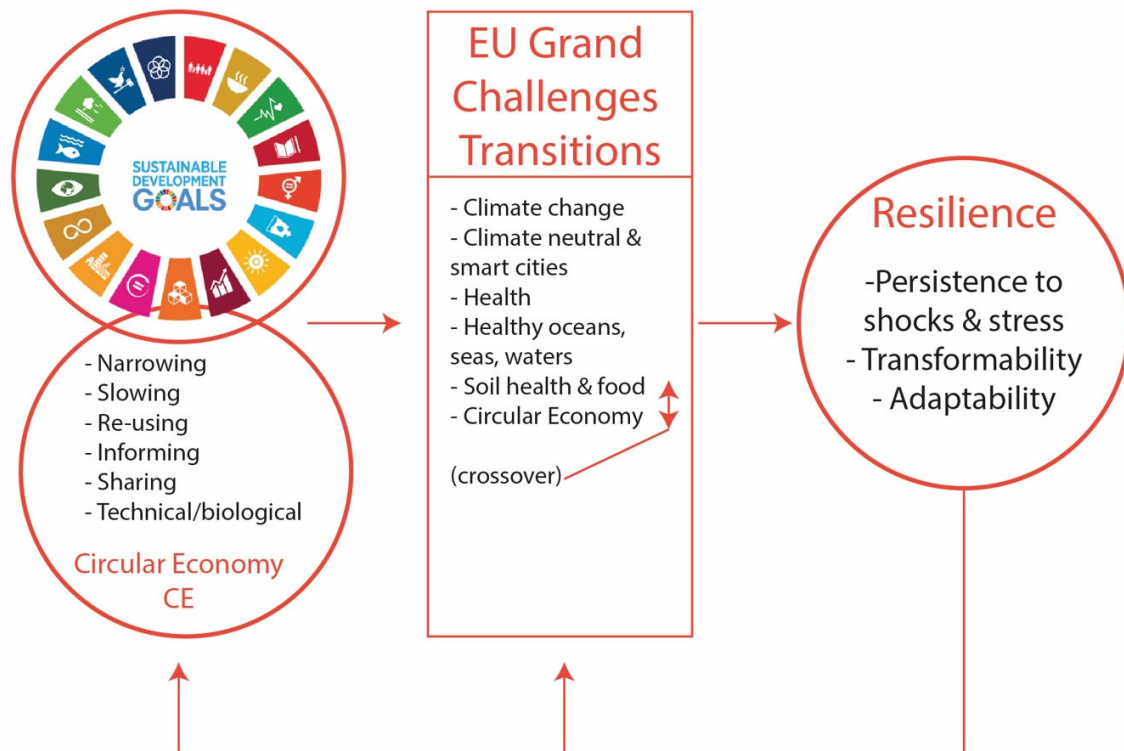
Particularly, NS islands -and their national parks- are well-positioned to apply, accommodate and communicate these transitions via their capabilities for bottom-up initiatives, smart connections with the coastal mainland/ urban centres, digitization and the islands' sense of community. Along that line, various NS-islands have demonstrated to act as special places for so called "spark type innovations": forced by the special circumstances, e.g. isolation and unique nature assets, -applied-innovations emerge as 'sparks', offering modest implementation possibilities on the islands themselves but with great potential for the mainland. These islands -each in a different, special way- have proven to be a fruitful basis for the engagement in sustainable innovation best practices, also making monitoring and progress over time quite visible and applying practical innovation tools, such as benchmarking. They have demonstrated to be well-positioned to set relevant and highly visible first steps for the grand transitions, with an applied and social perspective as focus.

Therefore, it is extremely fruitful to learn, in a transnational setting, from the special, pioneering experiences of each of such islands and their regions, with a view on future, common action innovation plans to be jointly developed. In addition, based on previous study results, it has become clear that additional opportunities within the governance innovation approach should be explored, through new ways of tourist involvement and partners from coastal region/mainland (figuring as 'critical friends') and young entrepreneurs for sustainable new ventures. New ways of durable international cooperation, like

between all involved islands communities and their surrounding regions, in special joint governance of innovation processes and structures, will be key for the development of the FREIIA model for revolving transition innovation process for EU-regions.

3. Concepts and Notions

In the FREIIA project description often is referred to the notions: Sustainable Development Goals, Grand Societal Challenges, Circular Economy, Transitions and Resilience. As is indicated in Figure 1, we envisage the following content and relationships, when we refer to these terms.



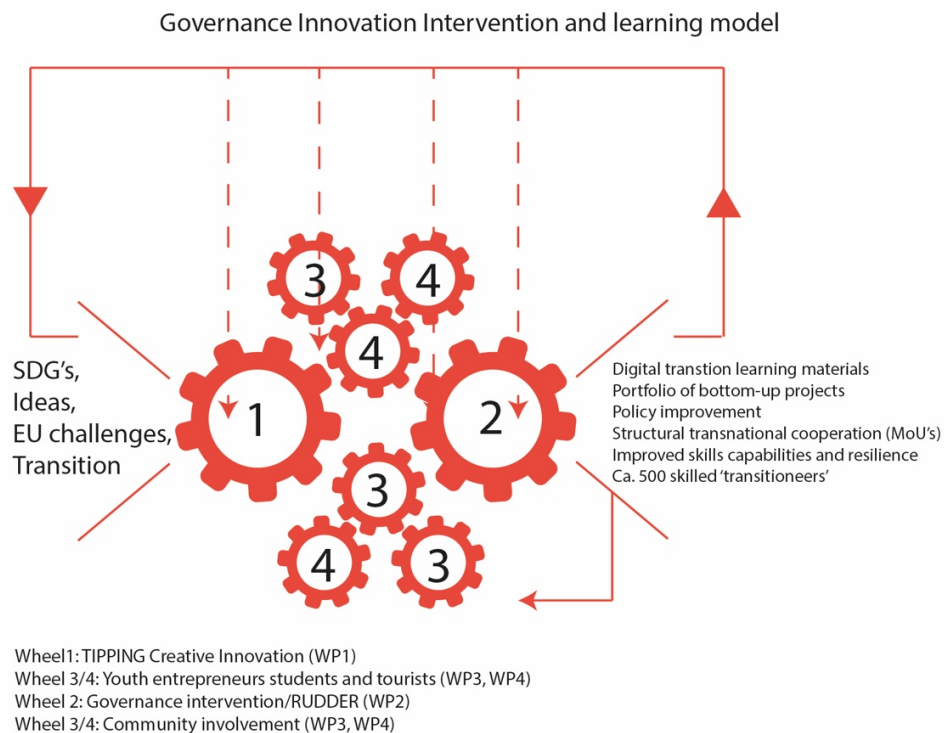
The UN SDGs are widely accepted as the standard sustainability goals for the future, facing the major problems inherent with our crossing of planetary boundaries and other serious issues the world faces today. The SDGs involve a comprehensive, holistic approach, with not only 'classic' environmental aspects but also global values, like poverty, inequality, cultural values and gender issues. Already many companies, governments, NGOs and other actors are bringing them into practice. However, when formulating the SDGs, less attention has been given to resources minimization, human rights in relation to product life cycles and to circular strategies. Therefore, today usually the Circular Economy concept is complementing the SDG framework, by stressing the need to narrow, slow and reuse material- and product fluxes, by providing transparent data along the life cycle of products/materials for the facilitation of ecodesign, where a distinction is made between technical and biological product cycles. Also, in the policy of the EU, having announced several GSCs for which great Transitions are needed in the next 20-25 years, the Circular Economy concept has been added, also including the energy transition and social change aspects as important elements.

Resilience refers here to a concept that links ecological and social systems, since people and nature are interdependent systems. Resilience indicates the persistence to sudden change such as shocks and stress a system experiences. This persistence is dependent on two capabilities: (1) adaptability (the capacity of actors in the system to influence resilience, for instance via learning and co-creation) and (2) transformability (the capacity to build a fundamentally new system, for instance via innovation and new structures). As illustrated in Figure 1, by working and planning on the realization of the SDGs and EU's SGCs via actively engaging in Transitions, the Resilience of a system or region/place can be increased, creating a prepared mindset and pro-active organizational power. Therefore, disruptive shocks or stress related to the SDGs/CE or from other origin are supposed to be anticipated better more consciously and better prepared, leading to a more elaborate and effective palette of possible solutions.

In the FREIIA project we want to contribute to the achievement of the SDGs and the broader defined CE-goals of the EU, by creating and testing a practice-based Governance of Innovation Learning Model model that increases the resilience of local and regional systems and in this way facilitates and accelerates the transition process towards sustainability/circularity, with a view of gradually building up durable bottom-up capacities to deal with next element of the GSCs and similar endeavours.

4. The FREIIA Process

The FREIIA research and design process is shown in Figure 2.



In essence the new FREIIA approach consists of a system of simple tools (engines + wheels), that in close cooperation with each other aim to model and transfer the pioneering islands' experiences and lessons to a larger group of potential 'transitioneers'. With the SDGs/EU's GSCs/the Circular Economy as inputs, the new model produces ultimately (1) a Portfolio of bottom-up innovation projects; (2) an improved Governance of Innovation model for widespread application; (3) Improved transition skills and

capabilities for stronger resilience; (4) A pioneering group of ca. 500 skilled 'transitioners' and 'co-transitioners'; (5) Digital Transition Learning Materials; and (6) Structural new transnational cooperation for the transitions.

In the Tools development and validation, a large number of well-prepared, intensive inter-islands', interregional and transnational Workshops and Benchmark Studies are the creative heart of the FREIIA-project. The joint experiences during and lessons from these workshops will be continuously fed into the research and design process, so that accumulative knowledge-building takes place. Well supervised student contributions form an important cornerstone in the creation and testing of the FREIIA-framework: next to 4 reflective-practice based PhD dissertations, ca. 30 MSc theses, 30 BSc publications, 15 novel sustainable product design concepts, ca. 25 other student team reports and 10 new sustainable business proposals are expected to support the process.

In each WP, with the frontrunning transition islands in mind, new methods and tools will be developed and/or finetuned that contribute to the process: WP1 with the TIPPING mechanism for creative innovation ideas formulation; WP2 with the Rudder method for advanced governance innovation and strategic action plan development; and WP3 & WP4 contributing with methods and tools to enrich the process with new ways of critical friends input (tourists), from student entrepreneurs curricula and young professionals and from a partner-based, mutual inspiring cooperation between local communities and municipalities/regional authorities.

5. Background to the Work Packages

WP1 TIPPING Mechanism

WP1, concerning the first step of the Governance model, the Innovation Mechanism, is building further on the TIPPING Wheel, as developed in the Islands-of-Innovation project. Various aspects of TIPPING require optimisation and improvement, as indicated in Figure 3:

- The -facilitating of- the contribution of student entrepreneurs and pro-active tourists & residents;
- The SDGs and the Circular Economy to be more explicit as starting points;
- The need to link the -creative ideas oriented- TIPPING Wheel to the next phase within the Governance model approach: this requires amongst others a Mission orientation and Multilevel design thinking from the start of the creative process;
- Linking the crucial workshop events and benchmark studies more systematically in advance to innovation students' studies and curricula from the regional higher education institutes;
- More attention -during the process- for opportunities of structural ongoing cooperation (universities, communities, business, NGOs) endorsed by MoUs;
- Improved digitization of the approach, increasing its easy and widespread communication possibilities.

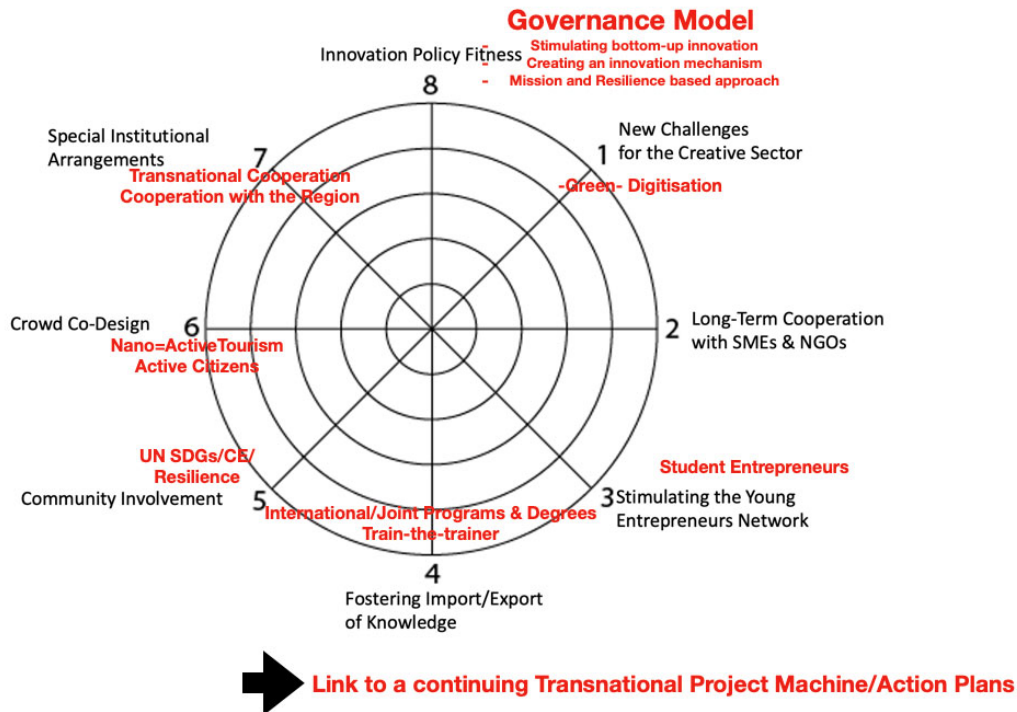


Figure 3: TIPPING Wheel and improvement requirements, to be realized in the FREIIA project (in Red)

WP2 Advanced Governance

Advanced innovation governance encompasses not only the policies and institutional frameworks, but also the interplay between the various stakeholders and actors that together determine the priorities, strategies, activities and outcomes of sustainable innovation. This has catalysed business as well as public organizations to include users and citizens in the innovation process – thus inviting them to be co-creators in the sustainable innovation system.

Innovation governance requires advanced and non-orthodox coordination and integration across sectors, areas, levels of government and various stakeholder groups. Hence, advanced governance structures demand both vertical and horizontal coordination to manage this boundary interaction across levels and groups of stakeholders.

In this work package we aim to embrace and enhance cross-boundary interaction for sustainable innovation. More specifically we shall:

- Provide independent participatory research and student engagements in response to concerns experienced by local business, public and civil society;
- Design and cultivate unorthodox collaboration and coordination structures through generative and work-integrated learning approaches;

- Support vertical and horizontal integration through inclusive and dynamic exploration;
- Encourage and equip talents, students, business and public actors to innovate on sustainability;
- Communicate lessons and share practices for the development of the Rudder method with strategic innovation action plans as result.

WP3 Engaging Tourists in Island Innovation

Typically, tourists are 'mere consumers' of the unique island experiences. They come and they go and generally they are not seriously committed as citizens to the island and island community. They may cherish the island experience in their heart, while they are not visiting it, but they are in no way actively involved with the island governance and the nature-based innovation challenges that islands are working on. This Work Package aims to experiment with changing that situation and engage tourists in island innovation using online connectivity as the main worker bee. It aims to perform experiments that via digital connectivity (Greenmapper platform) structurally improve tourist (=critical friends') participation in island nature-based innovation processes. The **objective** of WP3 is: **To engage the wider online tourism community in the innovation process for ten (5 times 2) island innovations.** For these innovations (in areas such as circular economy, tourism, housing, schools, food resilience, circular design of tourist souvenirs, etc.) we test three types of tourist engagement: 1. Can tourists share ideas and be creative co-creators in the innovations? 2. Are tourists willing to support in physical terms, via helping, or testing products? 3. Are tourists willing to give donations for innovations on islands?

With some of our partners, we will compare the tourist-fan commitment that is initiated via online participation with the tourist commitment for innovation participation while they are on vacation. Through learning from these experiments, we discover desirable practices and contribute to making the large tourist fan-base a part of the strong project machine and transnational cooperative governance model for sustainable innovation on islands. We involve and empower tourists as stakeholders in the innovation process and its supporting governance model.

In this Work Package -like in the other ones- a substantial number of students is involved. However, students are often participating mainly in a part of the programme. For instance, in this WP there will be PhD student involved. In addition, to allow learning of students across different levels we organise a Winterschool on Schiermonnikoog island (NL) in which all students from all levels can participate.

WP4 Fostering Student -sustainable- Entrepreneurship

Many young people from small local communities, like islands, leave their birthplace looking for education and new opportunities elsewhere. As the number of inhabitants decreases in these small communities, jobs and income are reduced to critical levels. The mobility of the younger generation is therefore depleting these small communities of initiative, new ideas and knowledge.

This project will bring young professionals, student groups, from different universities in the project back to these communities, introducing with them new knowledge, ideas, initiatives and a large network. The goal in FREIIA is to create new ventures, knowledge and opportunities for these communities through a strict knowledge-based program involving over 150 students.

The students will investigate and exploit several tools and methods in this program. One interesting tool is the UNIC method, which was created to help companies and organizations to innovate product development. Four dimensions are developed and presented where "believe" is how the island

community or one of its companies perceives itself, "is" becomes a more objective description after analyses, "should" is the desired state that is set as a goal for change and "became" is the achieved and measured change.

This method can be applied through student-led processes for society or businesses on the islands, where they interview residents / employees and analyze documents and websites. The goal is to create change processes on the islands led by young people in dialogue with the islanders, to develop a governance that focuses on circular and sustainable development.

The project will visit 5 islands with 5 different student groups consisting of ca 30 international students each, with diverse knowledge and background, creating maximum possibility for developing new ideas/ventures. All groups will then meet to present in plenum and further enhance their ideas/ventures. This will increase cross border cooperation, sharing of knowledge and expand the European network for students, young professionals and island inhabitants.

A PhD student will follow and guide this part of WP4 and the results from this will be the basis for a PhD thesis in operational entrepreneurship.

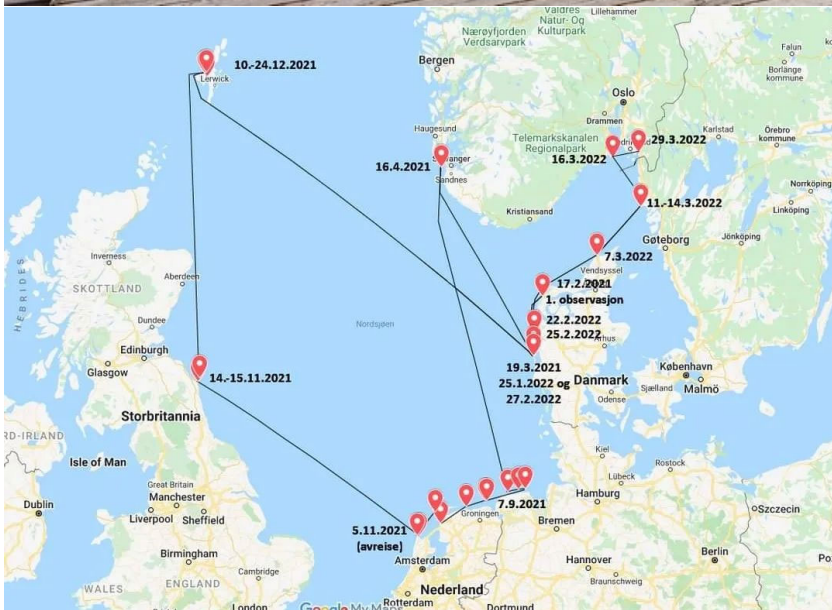
Another part of WP4 will be focused on the question: how to develop successful models for co-development of special brands and promotion of sustainable/circular products and services, (a) regional: between islands and their coastal areas; and (b) interregional/international: mutually between the FREIIA Islands and their regions? Likewise, here a PhD will co-supervise the involved MSc students.

The results, including improved methods and tools for stimulating student sustainable entrepreneurship will become important new cornerstones of the Governance of Innovation Intervention Learning Model.

Furthermore, digitization of materials and methods & tools, cross border exchange and hybrid communication will be elementary building blocks of this WP.

6. FREIIA – The birth of an Acronym

The acronym FREIIA (Facilitating Resilience Empowered by Island Innovation Approaches) has not been selected by coincidence for this project. During the creation phase of the project proposal, a special nature phenomenon took place: a Walrus, rare for the Southern part of the Northsea visited us, and literally crossed/toured around a majority of the islands & regions involved in the project: from Schiermonnikoog (NL), the German Westcoast, the Aalborg region (DK), Koster islands (SE), to Östfold (Norway). See the map and her picture. Therefore, after such a special 'sign', and with the consent of our French partners Islands (du Ponant) and Bornholm that still are expecting a visit, we decided to select FREIIA -that's her name- as title and 'mascotte' for our project!



7. List of References

Andersson G. & B. Gitle Hauge (2016). The Political Construction of the Inspiria Science Center. In: *Systematic practice and action research*.

Ballas, D. & M. Tranmer (2021). Happy People or Happy Places? A Multilevel Modeling Approach to the Analysis of Happiness and Well-Being. In: *International Regional Sciences Review*.

Brezet, J.C. & S. Tijmsa; N. Belmane (2019). The TIPPING Guide. EU Islands-of-Innovation. Province of Fryslan.

Brigand, L. (2019). Analyzing and Producing Television Reports; A study of the Îles du Ponant that analyses how the audiovisual sector may contribute to Island Studies and Island Development. In: *Shima*.

Christensen, D. et al (2021). Circular Economy in Denmark: Bornholm's Vision to achieve 100% Reuse and Recycling. In: *Circular Economy: Recent Trends in Global Perspective*. Springer.

Geels, F. (2011). The multi-level perspective on sustainability transitions.

Ellen Mac Arthur Foundation (2013). Towards the Circular Economy.

European Commission (2018). Mission- Oriented Research & Innovation in the European Union.

European Commission (2021). Transforming the EU's Blue Economy for a Sustainable Future.

Johansson, A. et al & L. Gustavsson (2016). Manufacturing System Design for Business Value, a Holistic Design Approach. 26th CIRP Design Conference.

Loorbach, D. et al (2017). Sustainability Transition Research: Transforming Science and Practice for Societal Change.

Mazzucato, M. (2018). The Entrepreneurial State. Debunking public versus private sector myths.

OECD (2021). The Design and Implementation of Mission-Oriented Innovation Policies.

Raworth, K. (2017). A Doughnut for the Anthropocene: humanity's compass in the 21st century. In: The Lancet Planetary Health.

Kristensen, H. & M. Mosgaard; A. Remmen (2021). Integrating circular principles in environmental management systems. In: *Journal of Cleaner Production*.

Rockstrom et al (2009). Exploring the safe operating space for humanity. In: *Ecology and Society*.

Roggema, R. & T. Vermeend; W. Timmermans (2012). Transition and transformation. In: *Swarming landscapes*.

Rotmans, J. & D. Loorbach (2009). Complexity and Transition Management. In: *Journal of Industrial Ecology*.

Smidt, H. (2012). Education as Transformation – Transforming European Higher Education. Book Chapter.

Tiba, S. & F. van Rijnsoever; M. Hekkert (2020). The lighthouse effect: How successful entrepreneurs influence the sustainability-orientation of entrepreneurial ecosystems. In: *Journal of Cleaner Production*.

Samsø Energy Academy (2017). HERE – a guide for local pioneer communities.

Sarasvathy, S. D. (2018). Effectuation: Elements of Entrepreneurial Expertise. Edward Elgar Publications.

Meijles, E.W. et al & F.J. Sijtsma (2021). Tracked to protect – Spatiotemporal dynamics of recreational boating in sensitive marine natural areas. In: *Applied Geography*.

United Nations (2015). Transforming Our World: the 2030 Agenda for the Sustainable Development Goals.

Walsh, C. (2021). Transcending land-sea dichotomies through strategic spatial planning. In: *Regional studies*.