

Mission-Oriented Research and Innovation

Case study of a potential Nordic mission area:

Sustainable Cities by the Sea



Mobilising the Nordics

Mission group 3

Nordic Digital and Green Transition

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Summary and recommendations

In addressing the grand challenge of Nordic digital and green transition, the mission group behind this case study has chosen 'Sustainable cities by the sea' as a potential Nordic mission area. The mission area has the Horizon Europe programme as the very starting point of exploration and provides linkage to at least three of the five EU missions.

Cities produce about 72 pct. of all global GHG emissions. The majority of the largest and growing cities in the Nordics are located by the sea. They share many characteristics and possibilities, comprising of many complex social and technical systems. This makes them powerful intervention points for the mission-oriented approach and method used in this case study.

The mission-oriented approach rests in the notion that to successfully address grand challenges such as climate change, we need to combine knowledge, skills and resources from different areas of expertise and societal institutions. E.g., research, innovation, financial sector and citizen engagement.

When speaking of being frontrunners in creating climate-neutral cities, some of the Nordic cities appear to be moving in positive directions. The mission group is greatly inspired by the range and scale of existing initiatives and programs already taking up the challenges of green transition. The additional insights, motivation and impetus from this case study is the possibilities in combining digital and green transition activities within the scope of cities by the sea.

In this case study the mission group has utilised the first two steps in the method of mission-oriented innovation to identify and discuss angles of intervention, or interest, and to formulate early sketches of potential missions for the sustainable development of Nordic cities by the seas. Based on the case study the mission group presents a list of recommendations, learnings and possible next steps.

- The potential Nordic mission area 'Sustainable cities by the sea' is a highly relevant area worth pursuing for the Nordics. The array of possible angles presented in the paper can help inspire the formulation of missions and the development of prototypes. Local, regional, national and Nordic levels can all be activated, potentially creating 'rolling snowball' effects, building towards large-scale systemic change impacts from initially small-scale interventions.
- The mission area is aligned with at least three of the five EU Horizon Europe mission areas and has potential for creating strong Nordic impact on the digital and green transition in Europe—there are many other cities by the sea across Europe, of course. Building Nordic Consortia for developing missions, tapping into the Horizon Europe mission areas, holds great potential.
- The seas can be seen as intra-Nordic and serve as a unifying force in the Nordics. This perspective is applicable to other regions and underlines the relevance of the mission area beyond the Nordic perspective, and the potential to inspire (and become inspired by) initiatives like *Bauhaus of the seas*.
- The mission-oriented approach calls for an explorative open-ended mind-set in order to be innovative. A clear framework, mandate and set of processes and tools are equally important for the participants to develop ownership and apply engagement.
- Sharing of learnings and inspirations from existing mission-oriented research and innovation activities in the Nordics holds great potential for Nordic added value.

1. Introduction

As a global community we are facing several grand challenges in securing our livelihood. Crises of climate and biodiversity extinction, social justice, and public health are producing calls for urgent societal changes.

To build a sustainable, equitable and resilient future, we will need *diverse, targeted and mission-oriented research and innovation cultures, embedded within society, exploring and implementing new kinds of policies, practices and infrastructures of everyday life.*

Yet currently our research and innovation systems are often trapped within compartmentalized subsystems, generally too distant from society's 'frontline', with their potential lost within risk-averse policy environments. As such, research and innovation is not producing transformative systemic change that the world desperately needs.

The mission-oriented approach aims precisely at this systemic change and invites societal actors from diverse subsystems into initiating, developing and scaling solutions to complex grand challenges. During three workshops in the Spring of 2021 the mission group presenting this paper has tried out the mission-oriented approach in exploration of a potential Nordic mission area.

This is only a first step or an idea, which has to be taken on board and refined by those who are responsible for making the cities by the sea greener using new instruments or techniques.

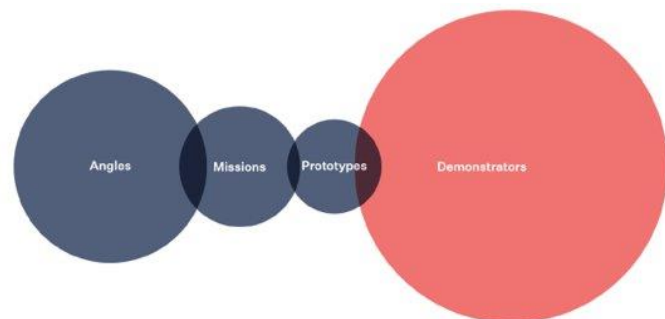
2. The mission-oriented approach

Societal missions are emerging as mechanisms to direct multi-stakeholder innovation towards a common understanding of how to solve our urgent grand challenges in the best possible way. A mission approach aims to create transformative change by breaking down high-level grand challenges into more granular components until concrete actions can be developed. This is done by identifying opportunities to address grand challenges, proposing innovations that can help overcome these challenges and outlining an approach to prototype, test, co-ordinate, learn from, and scale these innovations. The concept of mission-oriented research and innovation rests in the notion that to address grand challenges such as climate change successfully, we need to combine knowledge, skills and resources from different areas of expertise and societal institutions. This requires a shared ambition and route to walk. In other words; a common mission. The Swedish governmental agency Vinnova is among the front-runners in mission-oriented research and innovation in Europe. Inspired by Professor Mariana Mazzucato's work for the European Commission, Vinnova define missions as; *bold, inspirational, with societal relevance. They indicate a clear direction, ideally targeted and measurable, with ambitious innovation actions. They are delivered through multiple top-down and bottom-up activities, and co-created via cross-disciplinary, cross-sectoral and multi-level relationships*¹.

The method

Inspired by the work and method design of Vinnova the mission group worked with the first two steps of a four-step process of mission-oriented innovation. The steps—Angles, Missions, Prototypes and Demonstrators—are briefly defined below:

Step 1: Angles are input and output factors for a mission area. They are intervention points, or key leverage points within systems. By discussing, mapping and selecting viable angles it is possible to understand, identify and frame intervention points within complex systems to address grand challenges.



Step 2: Missions are statements of shared ambitions, focussing in on particular angles in order to transform systems. As the vehicle for engagement, missions inspire us into action, enabling us to coordinate multiple projects at local, national and international levels.

Step 3: Prototypes are the mission's innovation being tested in reality. They are learning experiments, testing multiple interventions under the mission. They provide a platform for learning and testing, as well as flushing out insights into behaviour change and policy.

Step 4: Demonstrators aim to inspire large-scale systemic change. As prototypes develop into plausible interventions, they can be combined to produce a system demonstrator. This is a tangible example of systemic change in action, demonstrating and motivating

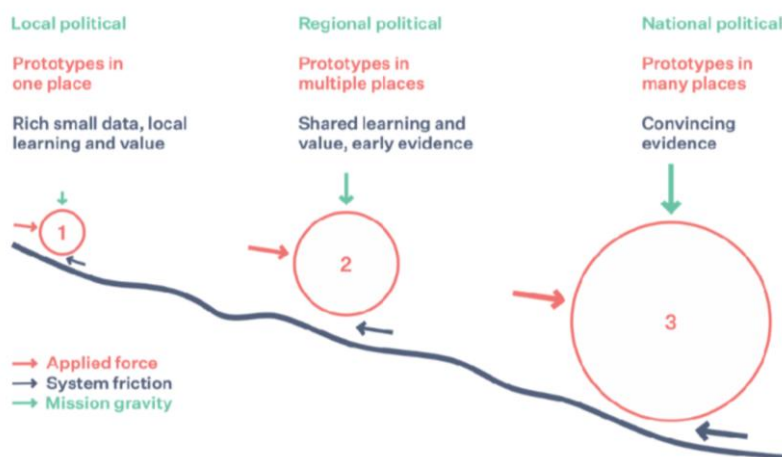
¹ Mazzucato, M. (2018), Missions: Mission-Oriented Research & Innovation in the European Union. European Commission.

change, and providing insights into what can be replicated, scaled and translated elsewhere. The six essential qualities of a successful prototypes and demonstrators are: mission-oriented, demand-led, place-based, iterative, holistic and grounded in citizen perspectives.

In section 4 of the report the group's work of mapping angles and possible mission statements for the theme *Cities by the Sea* is presented.

The snowball dynamic

As the four steps of the mission-oriented innovation are initiated, meaningful and tangible action can kickstart a dynamic process - a snowball effect - scaling the mission from local to regional and eventually (inter)national level.



As these are innovation processes, they are difficult to plan and target when, how and where the scaling will take place. They are not predict-and-plan processes and cultures; they will evolve over time, requiring engagement and learning. Nevertheless, this approach has potential for systems change, and by using structures drawn from social movements and tech-inspired platform strategies, a mission can be designed to generate huge impact over time.

Systems change is not only about changing the nodes of a system; it is also about changing the relationship between them. e. g. the interplay of research and innovation. Sometimes it is the synergies themselves rather than the specific solutions that contribute the most to systems change. The complexity and dynamism of social systems mean that their transformation requires interventions at multiple levels at the same time. By orchestrating a portfolio of experiments that act on multiple levels of the system at once, demonstrators allow you to work with this dynamism, rather than against it. The process relies on real-world engagement with complexity, and stewardship, taking responsibility for innovation actions, and guiding interventions towards the mission's north star, taking constant 'compass readings' based on insights derived from prototypes and demonstrators, and course-correcting accordingly. This enables a richer connection between bottom-up and top-down activities in the systems.

3. The missions in Horizon Europe

Horizon Europe will incorporate research and innovation missions to increase the effectiveness of funding by pursuing clearly defined targets. The EU missions are commitments to solve some of the greatest challenges facing our world and will contribute to the goals of the European Green Deal, Europe's Beating Cancer Plan as well as the UN Sustainable Development Goals. EU missions will be:

- Be bold, inspirational and widely relevant to society
- Clearly framed: targeted, measurable and time-bound
- Establish impact-driven but realistic goals
- Mobilising resources on EU-, national and local levels
- Linking activities across different disciplines and different types of R&I
- Making it easier for citizens to understand the value of investments in R&I

Each mission operates as a portfolio of actions such as; research projects, policy measures or even legislative initiatives to achieve a measurable goal that could not be achieved through individual actions. Five EU mission areas have been identified, each with a dedicated mission board and assembly which will help specify, design and implement missions within each area.



The three EU mission areas relevant to the theme 'Sustainable cities by the sea' are: i) Adaptation to climate change including societal transformation, ii) Climate-neutral and smart cities, iii) Healthy oceans, seas, coastal and inland waters. Please see overview presentation of each area below.



Adaptation to climate change, incl. societal transformation

Climate adaptation is the process of adjustment to actual or expected climate and its effects. Missions in this area will help maximize the impact of EU's support to research and innovation and demonstrate its relevance for society and citizens. The focus will be solutions and preparedness for the impact of climate change to protect lives and assets. It will include behavioural changes and social aspects by addressing new communities beyond usual stakeholders, which help lead to a societal transformation. Citizen engagement is a key component in defining the concrete steps to implement the mission.

Proposed mission: A Climate Resilient Europe - Prepare Europe for climate disruptions and accelerate the transformation to a climate resilient and just Europe by 2030

Targets by 2030: Prepare Europe to deal with climate disruptions, accelerate the transition to a healthy and prosperous future within safe planetary boundaries and scale up solutions for resilience that will trigger transformations in society.



Climate-neutral and smart cities

More than half of the world's population lives in urban areas. This is expected to reach 80% by 2050. Cities and metropolitan areas are centres of economic activity, knowledge generation, innovation and new technologies. Cities influence the quality of life of its inhabitants and are major contributors to global challenges.

Missions in this area will help us meet the goals and targets set out by international policy frameworks such as the COP21 Paris Agreement, the SDGs (notably SDG11), the Urban Agenda for the EU and the Habitat III New Urban Agenda as cities play a key role in all of them.

Proposed mission: [100 Climate-Neutral Cities by 2030 - by and for the citizens](#)

Targets by 2030: Support, promote and showcase 100 European cities in their systemic transformation towards climate neutrality by 2030 and turn these cities into innovation hubs for all cities, benefiting quality of life and sustainability in Europe.



Healthy oceans, seas, coastal- and inland waters

Healthy oceans, seas, coastal and inland waters are vital for our societies and the future of our planet. They are the source of life on Earth, our planet's life-support system and home to great biodiversity. They supply food, freshwater, renewable energy and provide benefits associated with our well-being, cultural values, tourism, trade, and transport.

Missions will be a powerful tool to raise awareness among citizens of the importance of healthy oceans, seas, coastal- and inland waters, and help develop solutions on:

- Systemic solutions for the prevention, reduction, mitigation and removal of marine pollution, incl. plastics
- Transition to a circular and blue economy
- Adaption to and mitigation of pollution and climate change in the ocean
- Sustainable use and management of ocean resources
- Development of new materials incl. biodegradable plastic substitutes, new feed and food
- Urban, coastal and maritime spatial planning
- Ocean governance and ocean economics applied to maritime activities

Proposed mission: [Mission Starfish 2030: Restore our Ocean and Waters](#)

Targets by 2030: Cleaning marine and fresh waters, restoring degraded ecosystems and habitats, decarbonising the blue economy in order to sustainably harness the essential goods and services they provide.

4. Mission-oriented research and innovation at Nordic level

The Nordic countries share a vast amount of socio-economic and cultural characteristics and have a long tradition for regional co-operation, as well as similar cultures, climates, land- and seascapes and shared histories. The barriers for understanding each other are few and it is often uncomplicated to establish collaborations and partnerships within the Nordic region. Official platforms like The Nordic Council of Ministers and Nordforsk, coexist with a myriad of official and unofficial co-operation platforms among different societal institutions and actors.

The mission group behind this report is an example of an unofficial platform for a Nordic co-operation exploring the method of mission-oriented innovation.

Forming a Nordic Consortia for developing missions tapping into the Horizon Europe mission areas holds great potential. Due to the often uncomplicated collaboration among societal actors, the Nordic region has the advantage of speed and can become a front-runner in presenting missions, applying for EU funding and creating impact fast.

Points of attention

Working mission-oriented means engaging societal actors at different levels. Citizens, companies and local-, regional and national government must all be engaged in the full process of exploring angles, missions, prototypes and demonstrators. The method challenges the traditional way of engaging societal actors, for example by public hearings. New ways of working with especially citizens and other societal actors must be developed and accepted by e.g., politicians to reduce systemic friction.

Another point of attention is the balance of Nordic collaboration and (healthy) competition between the Nordic countries. Much is alike among the Nordic countries, but not everything. E.g. access to energy sources and natural resources varies greatly between the Nordic countries. Nordic collaboration on missions can be challenged when the starting point and interests of the countries are too divergent. Developing national or local missions can in some cases be more meaningful and lead to a competitive scenario among missions.

This calls for attention to not only creating joint Nordic missions, but also shared learning on applying the approach of mission-oriented innovation among the Nordic countries.

5. 'Sustainable cities by the sea' - a potential Nordic mission area for further exploration

Why "Sustainable cities by the sea"?

In addressing the grand challenge of Nordic digital and green transition the mission group behind this paper has chosen 'Sustainable cities by the sea' as a potential Nordic mission area. The theme fits the objectives of the Green Deal and has the Horizon Europe programme as the very starting point of exploration. Thus, the theme aligns with at least three of the Horizon Europe mission areas (presented in section 3) making the relevance of our suggested theme clear. Also, by having "Sustainable cities by the sea" as an intervening point we can apply a systemic perspective across the EU mission areas where both climate adaptation, societal transformation, oceans and seas, climate-neutral cities and smart technologies are addressed simultaneously.

Natural entities and intervening points

Cities produce about 72 pct. of all global GHG emissions, and they are growing fast. In Europe, it is estimated that by 2050 almost 85 pct. of Europeans will be living in cities. Therefore, the climate change must be tackled by cities and their inhabitants. They *have* to find solutions and rapid ways of transformation.

The mission-oriented approach involves setting ambitious objectives and developing solutions and transformations to reach these objectives. 41 pct. of the EU population live in coastal regions - the majority concentrated in urban areas along the coast. Several capitals and important major cities in the Nordic countries, are located on the vast Nordic coastlines and connecting waterways.

Cities by the sea are thus natural entities and intervening points for a Nordic mission area. In a global perspective, the EU coastline is 68,000 km long – more than three times longer than the coastline of the United States and almost twice the length of the Russian. Many of the major cities in the Southern part of Europe are located by the sea which underlines the relevance of the mission area beyond the Nordic perspective. An interesting Portuguese initiative in this regard is *Bauhaus of the seas* – a design movement proposing a continental mobilisation around the first and most decisive global natural space: the sea.

Furthermore, cities, and seas, are complex systems involving people, authorities, investors, universities, regions etc. They are well-defined administrative, economic, legal, innovative, political and geographic bodies making the mission-oriented method a great fit.

The seas separate and unify the Nordic countries

The Nordic countries are characterized by being both separated and unified by the seas surrounding them – The Baltic Sea, the Greater North Sea, the Atlantic, the Norwegian Sea and the Barents Sea. There are several maritime boundaries in the seas shared by the Nordic countries. This means that all Nordic countries have access to the other Nordic countries by sea. The seas can thus be seen as intra-Nordic; connecting the Nordics rather than separating countries and regions, hence sea and lake waterways are a unifying force in the Nordics. In a sense, by focusing on the seas, we focus on our connected

environment, bound together in our shared space, rather than remaining within our artificial land-based boundaries.

The seas and transportation by sea as part of our common history

The Nordic countries have the seas as a key part of their history – outlining a common Nordic history of ‘life at sea’. This includes areas like transportation, fishing, tourism, trade, ports etc. In addition, sharing a common Nordic history points to a shared Nordic identity, societal development, culture and way of life, which strengthens possibilities for Nordic mission-oriented collaboration. In sum, sharing the same Nordic historical past by the sea has significance for how we interpret the present day and potentials for where to head together in the future.

Many cities do ambitious sustainability work

When speaking of being frontrunners in creating climate-neutral cities, some of the Nordic cities lead the way towards a healthier and more sustainable future. The Nordic capitals all have carbon-neutrality goals: Helsinki’s in 2035, Reykjavik in 2040, Oslo in 2030, Stockholm in 2040 and Copenhagen in 2025. The capitals and other major cities are taking ambitious steps and actions towards sustainable development and are regarded as key actors in the green transition in the Nordics. Many cities also already collaborate with each other on this issue by platforms like the C40 network.

This case study is greatly inspired by exiting initiatives and programs already exploring the challenges of green transition for example the Swedish innovation program Viable Cities, whose mission is to achieve climate-neutral cities by 2030 with a good life for everyone within planetary boundaries. The cities should strive for it through four approaches: i) A new way of governance, ii) cities being by- and for citizens, iii) a new way of funding and financing climate investment and iv) a new way of working with cities i.e. Climate City Contract. Nine of the major Swedish cities have joined the program and another 11 are likely to join this year.

Reinforcing existing networks and exploring potentials for scaling

Since many networks, actions and initiatives are already in progress, it is important and relevant to build on, reinforce and align with those existing actors and networks in order to make the most impact in the suggested mission areas and enhance collaboration broadly. This can also help incorporating the many different, specific contexts that should be considered locally, regionally and nationally.

Hence the fact that the Nordic countries and cities have many things in common both culturally, societally, historically, economically, politically, etc. the mission group sees a significant potential for scaling initiatives and prototypes across the Nordic cities. This aligns with the mission-oriented innovation approach.

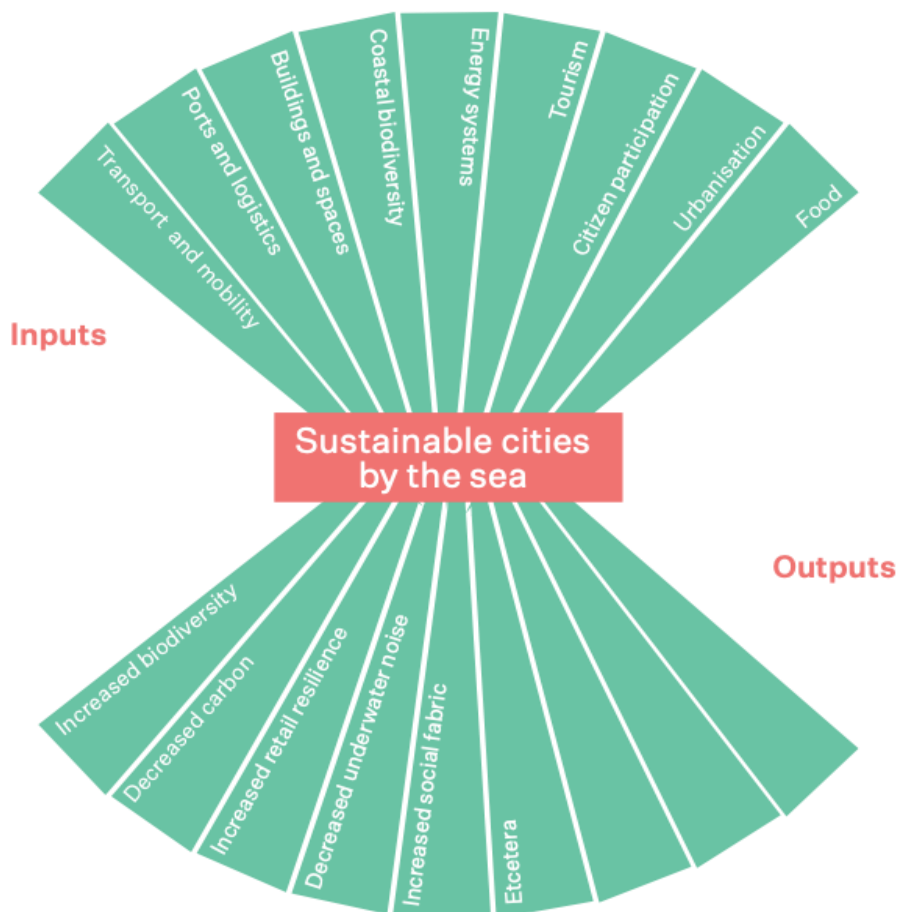
The Baltics

The Baltic countries share the seas and a great part of the characteristics is common to the Nordics. The mission group sees potential in including the Baltics in developing regional missions and demonstrators.

Potential angles on 'Sustainable cities by the sea'

The following nine angles on the challenge of 'sustainable cities by the sea' have been selected and discussed by the mission group. Please see model 1. All these angles include technical/scientific and cultural aspects. This diverse, multidisciplinary perspective calls for the mission-oriented approach, where many kinds of actors and especially citizens will be involved in design and delivery. The selected angles are presented in detail below. Please note that the specific outputs have not been identified so far.

Model 1: Potential angles for the mission area



Transport and mobility

Possible foci for transportation and mobility for 'Sustainable cities by the sea' are forms of *cruising* and the *fleet itself*. New, more sustainable ways of maritime traveling and transporting between and in the Nordics cities and city areas are crucial in reducing GHG emissions. Perhaps, *sustainable cruising* could become a possibility in the future? This could in general help re-establish a good, sustainable way of traveling, working and living together across the Nordics – both for the Nordic people and the many tourist cruise ships visiting the major Nordic cities. Both technical and behavioural issues are taken into account, since *sustainable cruising* will affect the citizens' way of life and the tourism industry, and will require new forms of fleet—the boats, ships and other aspects of maritime infrastructure that support people-based mobility in Nordic seas.

Ports and logistics

As the point of passage for people, goods, and various transport modes, ports play a major role in the success of sustainable development. Ports are both inter-connection points in the transport networks, but also major multimodal nodes and commercial sites, linking maritime transport with other transport modes, hinterland connections and integrated with cities. Green ports, as hubs for sustainable mobility have great potential to drive the transition to GHG neutral shipping and wider sustainable multimodal mobility. River and maritime transport account for approx. 90 pct. of global trade and 2,5 pct. of global GHG emissions and experience continuous growth. Furthermore, the usage of the areas around city ports is transforming to a high-class living and working areas – thus a question that involves the interest of the citizens.

Buildings and spaces

The built environment has a significant impact on many sectors of the economy, on local jobs and quality of life. Since cities are expanding, there is a need to address that the building sector is the single largest energy consumer in the EU accounting for about 50 pct. of all material consumption, responsible for over 35 pct. of the EU's total waste generation and estimated at 5-12 pct. of total national GHG emissions. 'Sustainable cities by the sea' must address these challenges.

An example of a current EU Horizon funded initiative is the [BUILD UPON² project](#). It is a group of 24 European cities testing how holistic benefits of renovation can contribute to fighting climate change. The cities join forces with national governments and industry to decarbonise their existing building stock by 2050. New European Bauhaus is another example of bringing expertise from science, art, design, architecture and engineering to promote sustainability, inclusion and aesthetics in the built environment.

Spaces are also a relevant angle since the use of them is a dilemma between exclusivity-sociality, thus also a question that includes the citizens. An example of this is ports changing from open transport areas to closed/private living and working areas. *What should our spaces be used for and for whom?*

Coastal biodiversity

The ecosystems of Europe's coastal areas and seas have been significantly altered by centuries of human exploitation. The seas have become busier places, driven by a combination of technological advances and society's increasing demand for food, energy and other resources. Human activities are often concentrated in coastal regions least able to assimilate them and where the adverse effects are most apparent. The main threats to the European coastal areas are water pollution and eutrophication, loss of biological diversity, urban development, landscape deterioration and coastal erosion. Thus, *coastal biodiversity* is an angle that involves both the *Nordic cities by the sea* and the *natural environment* as two different complex systems. The question is how they can be structured and combined in a way that ensures and recreates a rich coastal biodiversity. An example is the [SmartSea project](#) aiming to provide science-based guidance and innovations to sustainable use of Finland's marine resources.

Energy systems

The energy demand has traditionally been much larger than the energy supply in cities, and perhaps especially cities by the sea, where ready access to fossil fuel shipments has been possible. Energy from the sea has for a long time been related to oil and gas

extraction and transmission from other areas. Now however, the sea could play a crucial role in supplying new forms of sustainable energy generation and storage. In a future sustainable Nordic region, a large share of the energy will come from *off-shore energy infrastructures*, e.g. off-shore wind parks and tidal power as well as off-shore energy-transmission lines from renewable energy areas.

Connecting the energy systems in the cities (for example connecting heat, electricity and transport fuels) is a way to make sure that the cities can become sustainable using the most available green energy source. Electrification of other energy sectors will increase the electricity demand and thereby the importance of a closed connection to the sustainable energy at sea. *New sustainable energy sources* from the sea, e.g. bioenergy via algae and equivalent, are also worth exploring. Energy from the sea can presents risk and challenges for both coastal and marine biodiversity.

Tourism

Major challenges for *sustainable tourism* include preserving natural and cultural resources, limiting negative impacts at tourist destinations, promoting wellbeing of the local community, limiting environmental impact of tourism-related transport etc. A lot of tourism in the Nordics happens or passes through cities by the sea. There is often a substantial amount of transport and consumption related to tourism, as why there is a high potential for organizing it in a new way that incorporates climate- and environmental issues. There is a need for developing more *sustainable and local tourism* and the Nordic cities by the sea are key platforms and players. What could "*tourism in the Nordics*" look like in a local and sustainable way that increases local tourism but does not increase incoming airborne tourism from all over the world? Also, it is an angle that have both *local-, national-, Nordic and international aspects*.

Democracy and citizen engagement

If the citizens are not involved and engaged as *co-owners and co-actors of the transition*, there will be no real green transition or sustainable development in cities by the sea, or anywhere. To be able to address and change how we arrange and live our lives in new ways are at the core of the sustainability challenges. Thus, finding new and better ways of engaging citizens is key to ensure sustainable development.

Another democratic aspect could be the question of *local economies*. How can this be organized in a way that enhances attention to democracy and work against inequality? It is also a democratic aspect that cities and regions by the sea might be as potent or even more potent than the states in addressing the different crises.

Urbanization

One of the global megatrends; more and more people will be living in the major cities. In the Nordics many of the growing cities are by the sea. This development has many consequences incl. potentials and challenges and the *regional role of the cities will increase*. How should *cities develop sustainably* when more and more people will be living there, and how do we manage to keep and strengthen the *rural-urban connection and interaction*? Equally, there are interesting emerging counter-movements, around forms of so-called 'de-urbanisation', into areas surrounding cities. The urban development model of the last few decades is being questioned, to some extent. Either way, looking at cities

and city regions provides the opportunity to approach urban environments as the complex systems they are.

Food

Cities are key parts of the food systems, since a major part of the produced food ends up in cities or runs through it. Sustainable, healthy and fair food systems are the focus of [The Farm-to-Fork strategy](#), which is part of the EU's Green Deal. How can *cities contribute to the Nordic's and EU's nutrition, climate and social targets*, and does the strategy go far enough for the Europeans city-dwellers? The link between rural producers and urban consumers is central, and an important focus area is to re-vitalize the *city's link with rural areas*.

Copenhagen is a frontrunner in promoting healthy food practices contributing to the city's overall goal of climate-neutrality by 2025. The aim is to ensure nutritious and sustainable food, e.g. organic school meals and to cut food emissions by 25 pct. by 2025. Another example is the [Food Trails](#) project, which translates the Milan Urban Food Policy Pact's collective commitment to sustainable food systems. 11 European cities, with universities and stakeholders, will co-design pilot actions as leverage points for FOOD 2030 urban food policies development, involving also 21 worldwide follower cities.

Examples of potential missions

Assessing these angles, and the various outcomes that could be combined by consolidated systemic approaches, the following missions begin to emerge. Each of these draws together multiple of these angles, with each mission acting as a kind of 'umbrella' over numerous projects within them:



Zero-carbon, sustainable cruising in the Nordics

incl. green maritime transport, tourism economy and ports.



Putting nature back into the sustainable cities by the sea

incl. regenerative bio-diversity planning integrated in urban development, waterfront environment and spatial planning.



Zero-carbon, pollution free Nordic fleet

incl. green maritime transport, sustainable energy, logistics and mobility networks.



Rural-urban interaction in sustainable cities by the sea

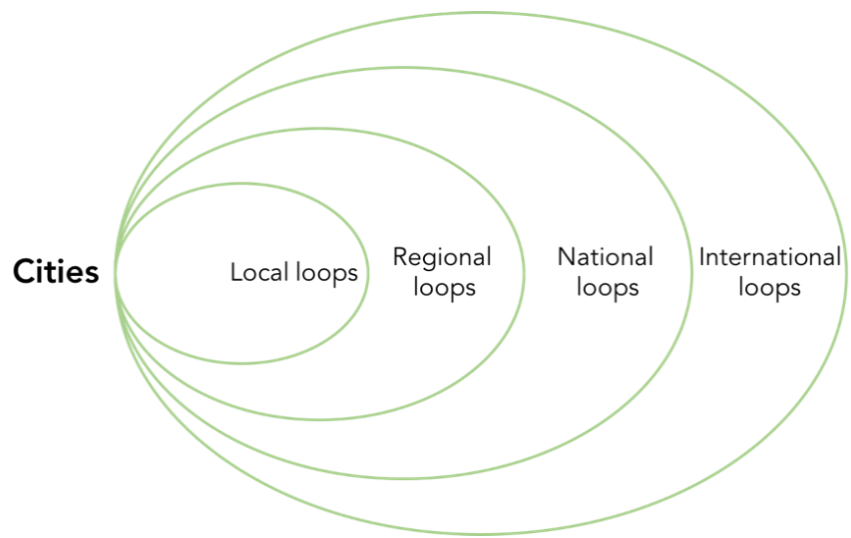
incl. citizen engagement and local and regional loops of e.g. food and economy.

It is important to add that these headlines are only examples serving as inspiration. Clear and specific target objectives with a timeline should be added in order to keep the mission science based. This duality keeps the mission improbable *and* possible.

Another point is that they are applicable to an eco-system approach:

Local loops could be food and economy, regional loop could be rural-urban interaction and national/international loops could be fleet, green maritime transportation and tourism.

For example the effects of changing ports from transport to living/working areas can lead to relocation of ports out from the city centres. This local/regional change can affect the tourism industry, freight transport (by land and sea) and hereby create regional-, national and even international changes.



6. Recommendations, learnings and possible next steps

This paper is submitted to the steering committee of Mobilising the Nordics at NordForsk by June 2021. NordForsk can initiate follow up activities in collaboration with national and Nordic institutions. To pave the way for this, the mission group presents a list of recommendations, learnings and possible next steps:

- The potential Nordic mission area 'Sustainable cities by the sea' is a highly relevant theme worth pursuing for the Nordics. The array of possible angles presented in the paper can help inspire the formulation of missions and the development of prototypes. Local, regional, national and Nordic levels can be activated potentially creating snowball effects, building towards large-scale systemic change impacts from initially small-scale interventions.
- The mission area is aligned with at least three of the five EU Horizon Europe mission areas and has potential for creating strong Nordic impact on the digital and green transition in Europe - there are many other cities by the sea across Europe. Building Nordic Consortia for developing missions tapping into the Horizon Europe mission areas holds great potential.
- The seas can be seen as intra-Nordic - connecting the Nordics rather than separating countries and regions. Hence sea and lake waterways are a unifying force in the Nordics. This perspective is applicable to other regions and underlines the relevance of the mission area also beyond the Nordic perspective and the potential to inspire (and become inspired by) initiatives like *Bauhaus of the seas*.
- A key finding and learning working with the mission-oriented approach is that the explorative open-ended mind-set is important to be innovative. A clear framework,

mandate and set of processes and tools is equally important for the participants to develop ownership and apply engagement.

- Sharing learning and inspirations from existing mission-oriented research and innovation activities in the Nordics hold great potential for Nordic added value. To further explore the potential of the mission-oriented approach Nordforsk could initiate a process to harvest and develop further learning and inspiration from existing mission-oriented research and innovation activities in the Nordics.

Appendix 1

Members of the mission group:

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