

Documentation Report - InterReg ØKS project:



Collaboration on Green Innovation and Knowledge Based Business Development for African Growth Markets



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Documentation report for the InterReg ØKS bridgebuilding project:

Collaboration on Green Innovation and Knowledge Based Business Development for African Growth Markets.

Partners: Inclusive Business Sweden, Norwegian-African Business Association (NABA) og Access2Innovation.

Implementation period: 1. October 2021 – 31. May 2022.

Purpose of the project: The aim of this bridge-building project has been to bring together knowledge institutions (universities and research institutes), Civil Society Organizations (CSO) and SMEs from the Øresund-Kattegat-Skagerak (ØKS) region to identify frameworks that can ensure innovation-promoting partnerships for the development of sustainable commercial solutions targeted at African markets. This have been done with a focus on existing strengths, within renewable energy & green transitions applied to the agri-business, health, water & sanitation sectors. The bridge-building project has facilitated the exchange of knowledge that will be used to formulate a full-financed InterReg project that will create a coherent innovation ecosystem in the ØKS region, where research-based knowledge is actively brought into play, across national and organizational boundaries, for the benefit of SMEs and university environments throughout the ØKS region.



Collaboration on Green Innovation and Knowledge Based Business Development for African Growth Markets.

This InterReg bridgebuilding project has facilitated knowledge sharing related to partnership-driven innovation and research, between private and public actors in the ØKS region. This work has, among others, been linked to the existing university collaboration under the UN Sustainable Development Solutions Network (SDSN) Northern Europe. The project has focused on the following:

Work Package 1: Consolidation of experiences and best-practice methods to strengthen the collaboration in the ØKS region between SMEs' and knowledge institutions, for the development of innovative solutions targeted at developing markets.

Work Package 2: Development of frameworks for knowledge-based analysis of value-chains and to identify Scandinavian university- and company- strength positions, that enables companies from the ØKS region to develop innovative solutions targeting specific value-chains on the African continent.

Work Package 3: Identification of research-based financing strategies in collaboration with Scandinavian investors (public and private) with the intent to creating a better integrated Nordic financial ecosystem.

The project implementing partners have been:



- **Access2innovation (Denmark):** As a non-profit and member-based organisation, access2innovation aims to strengthen knowledge and development through commercial sustainable solutions targeting developing markets and relief aid. Since 2007 access2innovation has launched more than 70 partnerships targeting market opportunities in Africa (www.access2innovation.com).



- **Inclusive Business Sweden (Sweden):** Inclusive Business Sweden works with the private sector to scale innovative and inclusive business models in developing markets. We deliver direct business services and impact programmes, bringing together private, public and civil society actors locally and globally (www.inclusivebusiness.se).



- **Norway Africa Business Association:** As a non-profit we serve as a platform for members who would like to learn from each other, share experiences, make new connections and inform about matters relevant to their operations in African market (<https://norwegianafrican.no/about-us>)

Collaboration on Green Innovation and Knowledge Based Business Development for African Growth Markets.

Content of this project documentation report:

Chapter 1: Results and conclusions from work-package 1
An analysis of SME/University collaborations and a mapping of strength positions in Scandinavia.

Chapter 2: Results and conclusions from work-package 2
The development of a framework for value-chain analysis on the African continent as well as preliminary results from the analysis.

Chapter 3: Results and conclusions from work-package 3
An analysis of the public and private impact finance landscape in Scandinavia.

Methods for generating new insights into the InterReg ØKS project:

The project partners (Access2innovation, Inclusive Business Sweden and Norwegian-African Business Association), have many year of experience, with regard to supporting Nordic companies develop solutions for the African markets. However, the organization's approach to this has been different and hence, the sheer task of implementing this project has led to much knowledge exchange, making it possible to identify best-practices within different intervention areas.

Throughout the project, the implementing partners has engaged with a range of different public and private stakeholders, which has taken part in generating the knowledge for this project. The following activities and interactions has been conducted:

- Desk research from scientific journals and reports.
- Implementation of 8 thematic workshops with participants (researchers and representatives of SMEs) from Sweden, Denmark and Norway.
- Interviews and dialog with researchers from 9 different Scandinavian Universities and Research Institutes.
- Interviews with representatives from more than 25 Scandinavian SMEs.
- Dialog with 6 Scandinavian civil society organizations.
- Interview and dialog with more than 30 public and private finance institutions.

Work package #1:



An analysis of SME/University collaborations and a mapping of strength positions in Scandinavia

WP 1: Consolidation of experiences and best-practice methods to strengthen ØKS SMEs' collaboration with research institutions (1/5)

In the coming years, the partners of this ØKS-project wants to establish a knowledge-driven ÖKS-based innovation and business development platform, which, based on the latest research, will strengthen the capacity of SMEs in the the ÖKS region to develop sustainable products and business models for the African emerging markets.

The innovation and business development platform must strengthen companies' capacity to apply new technologies, methods and knowledge from research institutions, through **cross-cutting** strategic partnerships between SMEs, NGOs and investors.

The starting point for the bridge-building project was that SMEs in the ÖKS region currently did not have sufficient access to relevant research-based knowledge for the **innovation, development and o/or commercialisation** of in-demand solutions for emerging markets in Africa.

In the ÖKS-based innovation and business development platform, SMEs would have access to relevant technical knowledge and experience from Scandinavian research institutes as well as access to NGOs, investors and sector experts. For the purposes of this report, the term research institutes (RI) includes both universities and separate institutes that conducts peer-reviewed research (e.g. academies, institutes).

One of the objectives of the project's WP1 was to identify 'best-practice' methods, strategies, challenges and opporutnities for the establishment of innovative partnerships between SMEs and research institutions. The methods used to reach this objective were:

1. One to one interviews and conversations with SMEs in the ÖKS region from February to May 2022.
2. Dialogues with **researchers and SMEs in the ÖKS region during the Roundtable on "How to Strengthen University-SMEs' Partnerships for Sustainable Solutions in Africa"**, held in Gothenburg early March 2022.
3. Learnings from interviews/dialogues about **12 case studies of collaborations between Danish SMEs and research institutes, that took part in the project called "Partnership Driven Innovation for the East African Growth Markets' (PIVØ)" led by Access2Innovation.**

RI-SME collaborate in many different ways, having multiple purposes and levels to the collaboration. A framework was required in order to understand the different types of collaboration, and to be able to do an analysis for each type. We borrowed the framework from the different types of collaborations that were seen in the PIVØ project, based on the analysis carried out by Olav Jull Sørensen 'Collaboration between SMEs and Knowledge Institutions: The case of innovative market offers for the East African Market'. This typology shows the value and the purpose behind the KI-SME collaboration. A few other types of collaboration, not included in the PIVØ project was included in the overall analysis.

WP 1: Consolidation of experiences and best-practice methods to strengthen ØKS SMEs' collaboration with research institutions (2/5)

1. Use researchers for actual research:

- a) Outsourced research task: The research/innovation task is outsourced to the RI, i.e. the task is described by company and the RI conduct the needed activity on its own and transfer the results to the company.
- b) Collaborative research task: The research/innovation task is achieved only through close collaboration between the company, where the company delivers 'experience-based-insights' and the RI contributes with 'science-based knowledge'.
- c) Consultation with researchers: The KI is used for consultations, i.e. RIs search for and combine known technology and products to a package and assure that the solutions are well documented and aligned to the market.

2. Use laboratories and/or laboratory personnel:

RIs make their test equipment and laboratory personnel available for the companies, as they do not themselves have the equipment to conduct the test and RIs have the qualified personnel for test design and the implementation of tests and analysis of test results.

3. Engage students in:

- a) Student jobs where students can take on research/innovation tasks from companies as part of a course.
- b) Student projects where students can take a on research/innovation tasks from companies as part of their thesis or internship work and supervised by the company and/or professors.

4. Links with KIs to legitimate the activity vis-a-vis authorities, customers, stakeholders:

Companies often collaborate with KIs to legitimize and validate products, which are in their late stage of development. For example, the test results from RI laboratories are used and presented to authorities and customers to validate the functionality or impacts of their products.

5. Researchers that form part of the company:

There is a strong incentive for researchers to start a company, when researchers own their own research results, as is often the case in Sweden. Here researchers themselves start the innovation and utilisation of own research to develop products and business models.

WP 1: Consolidation of experiences and best-practice methods to strengthen ØKS SMEs' collaboration with research institutions (3/5)

Types of Collaborations	Challenges	Solutions
<p>1. Use researchers for actual research</p>	<ul style="list-style-type: none"> • Many SMEs are sceptical or negative about working with universities (while they are more positive and open to work with separate RIs). • In PIVØ the research capacity/capability of the RIs was little used. • Relatively small projects provide no room for larger research projects and PhD-projects. Thus, smaller projects are not highly attractive. • <u>Communication / match making Barriers:</u> <ul style="list-style-type: none"> • Difficult to match the right research capabilities with SMEs. • RI-SME communication was in certain projects 'bumpy' due to language/cultural differences between business and academia. • <u>Organisational/Structural Barriers:</u> <ul style="list-style-type: none"> • Stage of involvement. Often to late involvement of researchers. • Different admin procedures between RI and companies. • Complex and bureaucratic RI structures vs agile SMEs i.e. often leads to different expectation with regard to time-alignments. • RI have limited flexibility to take in small projects. When this occurs it is often based on personal relations to specific researchers. • Different methods: innovation based on the scientific methods vs. practice and experience based knowledge creation. • <u>Value and Incentive Barriers:</u> <ul style="list-style-type: none"> • Diverging objectives i.e. Companies want products/solutions and universities want to publish papers 	<ul style="list-style-type: none"> • The PIVØ Program shows, that there can be many benefits from collaboration between the two rationales of practice-based knowledge and science-based knowledge. However, incentives and objectives must be clearly stated from the onset of the collaboration. • Prospects in supporting the SMEs and RI to apply for joint grants and funding, where objectives and roles can merge. • Support in building bridges between different public and private funding mechanisms. • Facilitate the identification of the right type of SME-RI partnerships. • Facilitate SME-RI communication, alignment and agreements. • Developing crash course that builds the capabilities for successful RI/SME partnerships. • Involving RIs from the very beginning of the product development process to build solutions embedded in scientific knowledge to secure the expected impacts / customer satisfaction.

WP 1: Consolidation of experiences and best-practice methods to strengthen ØKS SMEs' collaboration with research institutions (4/5)

Types of Collaborations	Challenges	Solutions
2. Use laboratories and/or laboratory personnel	<ul style="list-style-type: none"> • SME are often unawareness of university facilities. • SMEs often need support to design the right type of tests. • Some SME do not have internal capacities to analyse and understand test results. 	<ul style="list-style-type: none"> • Support existing labs (as well as incubators and hubs) in developing research capabilities tailored to African contexts. • Thematic seminars focused on addressing specific challenges.
3. Use students in jobs or projects	<ul style="list-style-type: none"> • Short term engagement, often lack continuation of work after the student has finished. • Research projects sometimes outside of the scope for use by companies. • Supply driven information generation rather than demand driven. • Disconnect between what is expected from the university and what is useful for the company. • Requires interest from supervisor (both company and university) • Steep learning curve for students, but with adequate support often leads to valuable inputs. • Field work often produces better/higher quality research compared to desk work. • Difficult to time as theses programs all start at the same time. • High cost for students to go do field-work and requirements for universities to deal with safety issues. 	<ul style="list-style-type: none"> • Support SMEs and students develop mutually beneficial collaborations. • Identify and select students and define clear objectives (in line with the company's business). Clearly communicate needs and expectations. • Integrate students in the company and defining working structures (contacts, timeframes expected deliverables, etc.) • Crash course for students and SME to learn about Africa and about agile innovation tools (i.e. design thinking, user-based innovation, theory of change, etc.) • Establish better contacts with universities that can linked-up to student communities. • Create a project bank for information sharing to allow continuity of work after student graduation • Recruit African students already in the Nordics and link Nordic students to African researchers.

WP 1: Consolidation of experiences and best-practice methods to strengthen ØKS SMEs' collaboration with research institutions (5/5)

Types of Collaborations	Challenges	Solutions
4. Links with KIs to legitimate the activity vis-a-vis authorities, customers, stakeholders	<ul style="list-style-type: none"> • Universities are often hesitant towards legitimising products as it resembles consultancy work, which they can often not engage in. • Universities often lack the full picture of potential products impacts on developing markets and hence, are hesitant to legitimise. 	<ul style="list-style-type: none"> • Link product development to research capacities at an earlier stage of the product/company development.
5. Researchers that form part of the company	<ul style="list-style-type: none"> • rResearcher often does not have external funds and hence, can not work on their business ideas as part of their day-to-day research. • Researcher often use their spare time to develop and identify funding for their business ideas. • Many entrepreneurial researchers see the university itself as a barrier, because the main roles are to teach and research (not innovation/entrepreneurship). 	<ul style="list-style-type: none"> • Gain support from students in applying for small grants from the university/innovation office to utilise/validate the researcher's innovation. • Business support and business development training for researchers. • Support researchers in creating the right team for their business (i.e integrate people with businesses skills)










WP1: Research Strengths in the ÖKS region

One of the objectives of the project's WP1 was to identify specific research strength positions within the ÖKS region, especially the research strength positions that match the needs, challenges and opportunities in Africa. Identification of the research strength positions will support the overall aim of increasing growth and jobs in the ÖKS region, by connecting research universities/institutions and SMEs within the identified positions of strength in Scandinavia to the growing demand for innovative and commercially sustainable green solutions in Africa.

There main methods used to reach this objective were:

1. Dialogues with researchers in the ÖKS region during the Roundtable on “How to Strengthen University-SMEs' Partnerships for Sustainable Solutions in Africa“, held in Gothenburg early March 2022.
2. Literature review

At the start of the project, we had already identified several areas that based on experience we knew had great potential for innovation in Africa: renewable energy, green transition, agri-food, health and water and sanitation. Furthermore, the list in annex 1 shows all the research strengths per country and per RI as well as the relevant Nordic programs, collaborations or clusters that can be aligned and/or leveraged towards the innovation and business development platform and those that could serve as a connection point to Africa.

Research Strengths	Regional research strengths (in the ÖKS regions)	Relevant Nordic projects, programmes or collaborations (mainly those which connect to Africa)
Renewable energy		
Green transition (circular economy, waste, sustainable industry /cities/mobility etc.)		
Agri-food		
Health		
Water and sanitation		

In conclusion, the research areas that were aligned with the ÖKS research strengths and activities where: renewable energy, Agri-food and Health. It is important for the project to the innovation and business development platform to leverage and align the identified Nordic projects, programmes or collaborations, specially those which have a connection to Africa, in order to avoid the mistake of creating innovative solutions that are completely disconnected from the African context.

Annex 1: Regional research strength (in the ÖKS regions)

Research Strengths	Sweden	Denmark	Norway
Regional research strengths (in the ÖKS regions)	<ul style="list-style-type: none"> • Sustainable industry • Health and life science • Food • Renewable energy • Advanced and biobased materials • Innovative, future mobility • The hospitality and tourism sector and the culture and creative industries • Intelligent systems • Innovative business development • Tech • Smart sustainable cities • Cross-sectoral areas: Digitalisation, Circular business models and Electrification 	<ul style="list-style-type: none"> • Life Science (somatic) and welfare technologies. • Energy-technology and renewable energy. • Climate and environment. • Bio- and environmental- science • Digital technologies • Food science and bio resources. • Maritime and logistics. • Construction and sustainable building technologies. • Design and furniture. • Finance and fintech technologies. • Robot and drone technologies. • Sound technologies. 	<ul style="list-style-type: none"> • Renewable Energy (solar, hydro and wind) • Agriculture (Agritech, food processing and farming) • Aquaculture • Fishery (seafood) • Maritime, Shipping (shipbuilding) • Forestry (paper) • Medical (optical, technical, medical apparatus) • Mining (iron, steel, aluminium, nickel) • Oil and Gas (petrochemicals, natural/liqu gas and other liquids)

Annex 2: Scandinavian university strength positions

Research Strengths	Sweden	Denmark	Norway
Nordic university strength positions	<ul style="list-style-type: none"> • Chalmers University of Technology: Energy, Health Engineering, Information and Communication Technology, Materials Science, Nano, Production and Transport • Gothenburg University: Sustainability and the environment, Health and medicine, Culture and languages, Information technology and science, Society and economics and Education and learning • Universities Skåne-regionen*: Agriculture and food, Life science, Physics, Climate, Environment and energy, Chemistry, Materials, Technology and Computer science. * Lund University, Malmö University, Slu Alnarp, Kristianstad University, Ace and World Maritime University 	<ul style="list-style-type: none"> • Danish Technical University (DTU): Aquatic resources, , bio-engineering, building and building materials, data and electro-technologies, energy -conversion and -storage, food science and chemistry, mechanical engineering....etc. • Copenhagen University (KU): Life science, business, bio science, welfare science, environmental management, renewable energy and climate change.....etc. • Aalborg University (AAU): information technology and it-design, life science, entrepreneurship sustainability and circular economy, environmental science, various technical sciences. • Copenhagen Business School (CBS): finance and fintech, entrepreneurship, and all other parts of business management. 	<ul style="list-style-type: none"> • <u>University of Oslo (UiO)</u>: Digital health: includes upstream data through Health information system platforms (HISP), Sensor developments, Big Data and machine learning, as well as Digital Health Promotion (DHP) and community involvement. • <u>Norway Business School (BI)</u>: Business development, sustainability and supply chain management. • <u>Norwegian University of Life Sciences (NMBU)</u>: Climate Change, Agriculture and Development, Environmental Governance, The Rights, Accountability and Power in Development, Conflict, Human Security and Development. • <u>University of South-Eastern Norway</u>: profession- and business-focused educational programmes, research and knowledge dissemination to high international standards.

Annex 3: Relevant Nordic programs, collaborations or clusters

Research Strengths	Sweden	Denmark	Norway
<p>Relevant Nordic programs, collaborations or clusters (including those which connect to Africa)</p>	<ul style="list-style-type: none"> • <u>Nordic Center for Sustainable Healthcare</u> which hosts the <u>Nordic Research Network for Sustainable Healthcare</u> • <u>Maritime Cluster</u> in Västra Götalandsregionen • <u>Blue Food</u> – a centre that focuses on producing healthy and sustainable sea food in Sweden • <u>Chalmers group on Nutrition in low-income countries</u> • <u>Gothenburg University Consortium for Advanced Research Training in Africa (CARTA)</u> • <u>Global Sustainable Futures</u> which holds a project called the Sweden-East Africa University Network (SWEAFUN). Focus areas Food and Nutritional Health, Air Quality and Transport, Sustainable Energy Innovations and Data Driven ICT 	<ul style="list-style-type: none"> • <u>Building Stronger Universities</u> is a capacity building program between Aalborg University (AAL) and Copenhagen University (KU) and a number of universities in developing countries. Program include: <ul style="list-style-type: none"> • KNUST Ghana health and agri-culture • Gulu University (Uganda) E-learning & Circular economy • Sokine University (Tanzania) • Danida Fellowship Centre supports sustainable development and equal opportunities through training and learning programs. (https://dfcentre.com). • De Frie Forskningsmidler supports research with an international perspective. • Global Development is a research network at KU coordinating all research activities, across faculties, associated with developing countries. 	<ul style="list-style-type: none"> • <u>The Norwegian Partnership Programme for Global Academic Cooperation (NORPART)</u>. Provides funding for projects. Funded projects in Ethiopi and Tanzania. • <u>Research Council of Norway</u>. Research funding. • Norwegian Centre for International Cooperation in Education (SIU) • The Directorate for Higher Education and Skills (<u>DiKu</u>). The directorate shall contribute to enhance the quality of education and skills, strengthen international collaboration. • <u>The SUSTAIN Project</u>: Schools strive to improve the quality of education and research in the fields of supply chain management (SCM) and sustainable business development. Cooperation with Ethiopian and Tanzanian universities.

Annex 3: Relevant Nordic programs, collaborations or clusters (continued)

Research Strengths	Sweden	Denmark	Norway
<p>Relevant Nordic programs, collaborations or clusters (including those which connect to Africa)</p>	<ul style="list-style-type: none"> • <u>.Environment for Development (EfD)</u> A global network of research centers, including in Sweden and Eastern African countries, that work in the areas of Blue Resources for Development and Inclusive Green Transformations, among others. • <u>Icipe</u>, African organisation which hosts the <u>BioInnovate Africa</u> that funds researchers in East Africa to develop bio- and agri- innovations. Funded by the Swedish international Development Agency- Sida. • <u>The Social Innovation in Health Initiative</u> in Uganda and Malawi. Funded by Sida. • <u>Swedish Leadership for Sustainable Development</u> Funded by Sida and includes 20 companies and selected expert organisations. 		<ul style="list-style-type: none"> • <u>Building knowledge for sustainable biodiversity conservation, from virtual learning to hands- on experience (BIOCOVE)</u>. Collaboration with several universities in Eastern Africa. Discipline areas: Biological sciences. • <u>Developing Education with Input from Coordinated research students (DEDICATED)</u>. Cooperation with universities in Mozambique, Tanzania and Ethiopia. Discipline areas: Information, computer and communication technology • <u>Enhancing Ethics and Integrity Capacity in Medical Research and Clinical Practice (ETHIMED)</u>. Cooperation with universities in Rwanda and Tanzania. Discipline areas: Health sciences Philosophy.

Work Package #2:



The development of a framework for value-chain analysis on the African continent as well as preliminary results from the analysis.

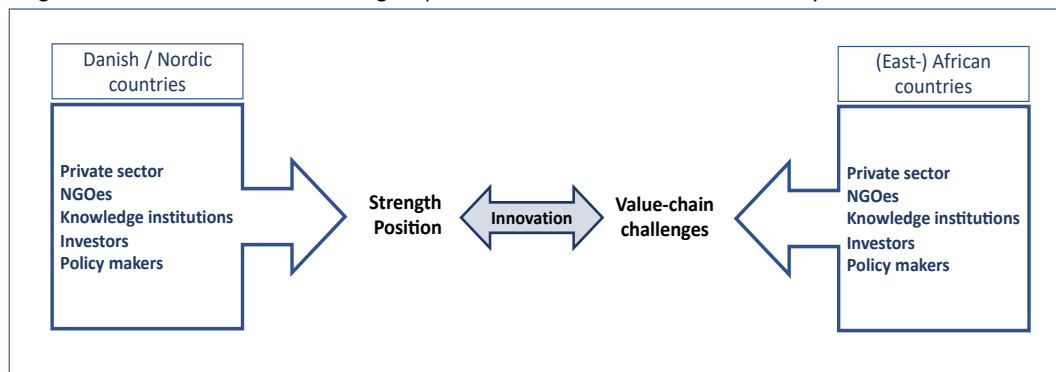
Developing a framework for Value-chain analysis (1/5)

The process of identifying business opportunities.

The following section presents a framework for how to map, analyze and operationalize value-chains for African markets, with the ultimate objective of identifying solid and sustainable business opportunities. The first part presents the framework and the second part the initial findings from analysis the aquaculture, grain and health value chains in Uganda and Kenya.

Figure 1 below illustrates the relation between the identification of value-chains challenges in East Africa, and the strength positions possessed by the various stakeholders engaged. In the space between the challenges and the strengths is where the innovation occurs and hence, the business opportunities arise.

Figure 1: Link between strength positions and value chain analysis



Getting to understand the value-chains.

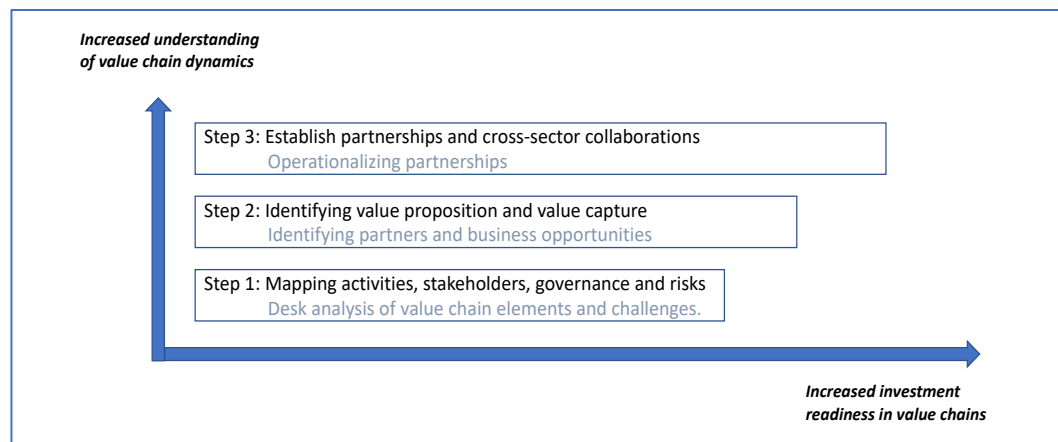
This outcomes of this work-package has been based on dialogs around partnership driven business development, where the knowledge and interests of multiple public and private stakeholders have been integrated. For the Scandinavian companies this means generating income and creating jobs - for our NGO partners it means supporting the livelihoods of the organization's beneficiaries - and for the university partners it means sharing and generating research findings that catalyzes positive societal impact. Each of these stakeholder have contributed with knowledge that sheds light onto best-practices for value-chain analysis and hence the identification of business opportunities for Scandinavian SMEs that has a positive impact for African societies.

The understanding of sector specific African value-chains is generated through a 3-step process that gradually dives deeper into the understanding of the value-chains as illustrated in Figure 2 and 3. Each step generates a deeper understanding of the different elements (activities, stakeholders, and processes) that governs the value-chain and hence, the potential business opportunities in the value-chain. This does not only include a description of the activities but also an identification of the challenges in the value-chains and the potential solutions that our partners can contribute with.

Developing a framework for Value-chain analysis (2/5)

At this initial level of the analysis, the value chains are not described from the perspective of up-/down-stream supply and distribution channels of individual companies. Rather, the value chains are analyzed from a societal perspective, where the roles of both public, private, and civil society stakeholders are analyzed. As the mapping and analysis progress, the risk of pursuing unsustainable business opportunities diminish, as more information is generated about the activities, stakeholders and governance and hence challenges and opportunities for Scandinavian SMEs are understood.

Figure 2: Steps in the value-chain analysis and commercial investment readiness



Step 1 – value chain mapping

Purpose and Method: The purpose of step 1 is to provide a first mapping of a value-chain, which is sufficiently deep to identify challenges and opportunities in the African setting. This serves as a foundation for identifying a relevant network of SMEs, NGOs and knowledge institution, who wish to engage in the development of the solutions. This part of the value-chain mapping is based on desk-research, where both the value chain elements (activities) and the challenges are described, based on information available in scientific articles and reports. This includes information about stakeholder active in the value chain, the governance between these stakeholders as well as the associated risks.

Activities: This is a description of the concrete activities occurring in each of the value chain elements (Figure 3 - horizontal column), including how each activity contributes and adds value to the shaping of the product. Each activity may require inputs that are material or non-material. The mapping of the activities also includes as initial assessment of challenges and an initial assessment of how new products, technologies or business models may improve the effectiveness, efficiency, or product-value in the value chain (vertical column).

Developing a framework for Value-chain analysis (3/5)

Each of the value chain activities will also be analyzed in terms of environmental and social sustainability incl. the efficiency and effectiveness by which resources are utilized in the value-chain. This includes identification of potential products and services that can increase the efficiency of resource use – incl. circular economy systems and the potential conversion to renewable energy.

Stakeholders: Most value-chains are influenced by a number of private, public as well as civil society stakeholders. This part of the mapping identifies such stakeholders and describe how they affect the value-chain. This can be through primary product inputs (mainly private stakeholders), or through support services (by private and public stakeholders), or it can be knowledge institutions that provides information or know-how that supports innovation into the value chain. The capabilities of each stakeholder is also analyzed.

Governance and Partnerships: Governance refers to the dynamics and interactions that exists between stakeholders in the value-chain. This includes an understanding of the nature of the partnerships in the value-chain for example in terms of strategic value, transparency, contractual relations and so forth. Ultimately this will also tell something about the potential entrance barriers, for danish companies, into the market.

Value Chain Risks: This part of the analysis identifies different types of risk associated with the value chain. This can be technology or business-related risks incl. institutional risks among the stakeholders engaged in the value chain. However, it can also refer to macro-oriented socio-political risks or risks related to ineffective regulatory structures and systems. Such risks may also be associated with poor standards in terms of Responsible Business Conducts eg .violations of labor rights, environmental standards or corruption.

Step 2 – value chain analysis (partner identification):

Purpose and Method: This part of the analysis digs one step ‘deeper’ into the understanding of the value chains, by engaging directly with stakeholders in the value-chain to identify concrete interventions and business opportunities for the partners. This includes the identification of Scandinavian stakeholders, who wish to pursue the identified opportunities in the value-chain, but also specific on-site interviews with various private, public and civil society stakeholders influencing the ‘local’ value chain.

Value Propositions: This part of the mapping identifies the ‘potential value’ that different innovations and/or technologies may have on the value-chain and how well they address the identified challenges. This relates to the economic/resource efficiencies and effectiveness of the value chain and how different stakeholders in the value-chain may benefit from the

Developing a framework for Value-chain analysis (4/5)

introduction of a new product, service or business model into the value chain. The analysis of potential new business models and their linkages to the governance dynamics of the value-chain is central to this part of the analysis.

Value Capture: This part of the analysis seeks to understand and quantify cash flows in the value-chain, with the purpose of identifying possibilities for value capture (profit generation) in the value-chain. This includes product offering and an identification of unique selling points in comparison to existing competitor in the value-chain.

Step 3 – value chain implementation (partnership establishment):

Purpose and Method: This part of the value-chain analysis is the first step in operationalizing actual partnerships for commercial activities into the value-chain. Based on information from step 1 and 2 in the analysis concrete partnership agreements will be formulated with relevant stakeholders.

Establish partnerships: This part explores opportunities for collaboration with existing stakeholders in the value-chain, taking into consideration the capability and risk analysis associated with these stakeholders.

This process includes the formulation of partnership agreements with selected stakeholder, which clearly outlines objectives, division of responsibilities, revenue sharing/streams, legal agreements etc.

Cross-sector collaborations: A central part of the InterReg ØKS project has been to explore opportunities for collaborations on innovation across organizational boundaries and sectors. This includes partnerships with non-commercial actors such as civil society organizations and knowledge institutions.

The overall framework: The connection between local value-chains, strength positions of the grand challenge partners and sustainability.

Figure 3 provides a matrix of the value-chain framework and highlights the linkages between strength positions (identified in WP1) and the understanding of the different elements and challenges in the value-chains and the possibility for applying sustainable technologies and business models that fits into the value-chains.

At the center of the framework is the ‘value-chain elements’ and the ‘value-chain challenges’. **The value-chain elements** describe the different steps in the value-chains (as outlined above) from the initial input of raw materials to consumer practices at the other end of the value chain. Each element consists of a number of activities in which various stakeholders are involved.

Developing a framework for Value-chain analysis (5/5)

The **value-chain challenges** describe different types of constraints that exists in the value chain. Some of these challenges link to technological inputs (products and services) that makes the value chain function.

However, the challenges can also be associated with institutional or collaborative dysfunctionalities in the value-chains, which the SME needs to be aware of and in some cases certain product or business model may address.

The **value-chain solutions** describe the specific steps required for identifying viable business opportunities in the value chain as outlined in step 3 above.

See List of potential Scandinavian SME-partners in Annex 4, 5 and 6

Figure 3: Framework for matching value-chain mapping with strength positions and sustainability

Specific Value chain: eg aquaculture sector in Uganda					Circular value chains												
					Energy optimization & Reduced climate footprint							Possible / Not possible	Possible / Not possible	Possible / Not possible	Possible / Not possible	Possible / Not possible	Possible / Not possible
					Social and other SDG impacts							Possible / Not possible	Possible / Not possible	Possible / Not possible	Possible / Not possible	Possible / Not possible	Possible / Not possible
												↓	↓	↓	↓	↓	↓
Strength positions				↓	Value chain challenges / Value chain description →	Raw materials input	Pre-production	Production	Processing	Distribution (market)	Consumption practices						
Nordic university strength position	SME strength position	Internationals development strategy focus	Public financing opportunities														
Yes / No	Yes / No	Yes / No	Yes / No	→	STEP 1A: Activities												
Yes / No	Yes / No	Yes / No	Yes / No	→	Energy and other raw material inputs												
Yes / No	Yes / No	Yes / No	Yes / No	→	Cooling / Storage												
Yes / No	Yes / No	Yes / No	Yes / No	→	Transport / Logistics												
Yes / No	Yes / No	Yes / No	Yes / No	→	Information technology /traceability												
Yes / No	Yes / No	Yes / No	Yes / No	→	Financial transaction systems												
Yes / No	Yes / No	Yes / No	Yes / No	→	STEP 1B Stakeholders												
Yes / No	Yes / No	Yes / No	Yes / No	→	Management and capabilities												
Yes / No	Yes / No	Yes / No	Yes / No	→	Inadequate capital basis												
Yes / No	Yes / No	Yes / No	Yes / No	→	STEP 1C: Governance												
Yes / No	Yes / No	Yes / No	Yes / No	→	Sector support from public/private institutions												
Yes / No	Yes / No	Yes / No	Yes / No	→	Ineffective institutional interactions												
Yes / No	Yes / No	Yes / No	Yes / No	→	STEP 1D: Risk assessment												
Yes / No	Yes / No	Yes / No	Yes / No	→	Institutional risks (eg. Corruption)												
					↓	Value Chain Solutions											
						STEP 2A: Value propositions / value capture											
						Identification of unique selling points											
						Quantification of potential value capture											
						Identification of circular resource flows											
						STEP 3A - Partnership identification											
						Identify up-/down-stream value chain partners											
						Identify cross-sector partnerships											

The annual demand for fish for human consumption and trade is predicted to increase from the present 870.000 ton to 1.700.000 ton by 2025. The Ugandan Government suggests aquaculture to supply more than 1.000.000 ton annually, increasing overall supply from aquaculture from the current 24% to 58% by 2025.

Green Aquaculture Hub

Conclusions from the Aquaculture value-chain analysis

Value Chain Challenges:

Fry/fingerlings survival rate - is very low and current capacities to produce high-quality fingerlings is low.

Fish quality – varies a lot, and rumors circulate that some aquaculture fish has a bad smell and poor texture.

Technology challenges – poor infrastructure and capacities to promote new aquaculture technologies as well as poor access to financing mechanisms that supports the sector, especially small-scale farmers.

Environment / Sanitation – Little focus on the environmental downsides associated with fish farming as well as food health standards for fish products (eg. transport and storage).

Production loss – predators (otters, snakes and birds), disease, transport and storage.

Electricity consistency - Many fish farmers experience unstable (or total lack) of electricity to keep water pump running and air pumps for fingerlings production.

Fish feed quality and prices – Poor and instable supply of fish feeds, as well as high prices on feeds, challenges the economic viability of many, especially small fish farms.

No traceability - fish processors and exporters lack valuable information/infrastructure to access fish farmers.

Stakeholders and governance challenges:

Business development services - Absent or weak public business development services e.g., farm management advice, technology and access to finance.

Low or no profit - Low profitability in the sector due to poor farm management and limited access to aquaculture technologies (incl. capital to invest in farms).

Inadequate technical advice - especially during pond construction and generally poor farm management due to limited extension services at the district and sub county level.

Market challenges - Most farmers do not have access to information on fish prices, market channels, marketing strategies or how to add value to their products in general – incl. fish processing.

Finance challenges – Most fish farmers do not have access start-up capital, and when they get access to finance loans are expensive with short repayments periods.

According to a survey from World Bank (2019), 75% of the population in Uganda lives in rural areas, and according to “*National Survey and Segmentation of Smallholder Households in Uganda*” (CGAP 2016), 80% of rural households are involved in agricultural activities and 83% of these activities include production of grain.

Green Grain Hubs

Conclusions from the grain value-chain analysis

Value Chain Challenges:

Drying technologies – Existing grain drying technologies are not appropriate for rural areas in terms of affordability and manageability.

Other agricultural technologies – Other agricultural technologies, such as cleaning- and treatment of grain for producing seed, are not available in rural areas.

Logistic – Haulage is a major problem due to lack of transport and poor roads.

Storage for in-and out flow – Often farmers do not have an aggregation centre with basic infrastructure such as warehouses and silos at their disposal.

Lack of grid connection – Part of Uganda has not yet been electrified, and in many areas there is only 2-phase power. Also the power supply is often not stable.

Lack of alternative power supply – Off grid solutions are often based on sun-energy, which is an unstable power supply during times with cloudy weather. Thus solutions based on the utilization of biowaste has to be developed.

Market access - Lack of digital solutions makes it difficult for farmers to bypass middlemen and connect directly with off-takers for processing and export.

Processing plants - There are only few processing plants such as grain- and feed mills in rural areas.

Stakeholders and governance challenges:

Business administration-and development – Little or no understanding of basic business principles in rural communities. Not only among farmers; but also within cooperatives, who often only register cash in and out.

Access to finance – Poor understanding of basic business principles makes it difficult to access finance on reasonable conditions. Also many farmers and cooperatives are not able to provide sufficient collateral when applying for loans.

Low income – Many smallholder farmers live below the poverty line, earning less than USD 2,5 per day and cannot afford any investment on their own; but need to be organised in cooperatives

Lack of appropriate agricultural practices - The agricultural advisory- and extension system is almost none existing in many regions in Uganda. Thus yield is in general too low.

Market challenges – Due to lack of transport, small volume and often urgent need of liquidity most farmers in rural areas depend on middlemen, who collect the crop on site and pay cash on delivery; but at a very reduced price.

Approximately half of Africa's citizens (48%) - some 615 million people – have no access to the healthcare they need, the continent's quality of health services is generally poor and the family planning needs of half the continent's women and girls are unmet.

Pro-poor Health clinics.



Conclusions from the health care value-chain analysis

Value Chain Challenges:

Lack of access to solutions that can **hinder the spread of transmittable diseases**.

Lack of access to **low-cost health care solutions**, which is of a quality that enables accurate diagnostics and treatment.

Lack of sanitation solution, which limits the spread of transmittable diseases such as cholera and diarrhea.

Lack of equipment to diagnose non-communicable diseases (NCDs).

Lack of access to **emergency (ambulance) services** in remote rural areas.

Lack of access to **tele-medicine**.

Lack of access to and use of **App-based health advice** to rural populations and rural health-center staff.

Lack of **early warning systems** for the spread of epidemic diseases.

Stakeholders and governance challenges:

Lack of access to **fundamental health care services** for especially poor rural populations. This includes lack of access to healthcare facilities and information.

Lack of trained nurses and doctors, with access to equipment to treat patients.

Lack of access to **digital health solutions** that can improve the coordination and knowledge sharing among health care workers.

Lack of access to off-grid electricity solutions that also minimise the carbon footprint of health care services.

Work Package #3



An analysis of the public and private impact finance landscape in Scandinavia

Creating a Scandinavian Financial Ecosystem

Introduction.

The objective of **analyzing the Scandinavian financial ecosystem** has been to understand the needs and challenges, and subsequently developing a proposal for an ecosystem of linked financial initiatives, where Scandinavian and international **impact investors** in combination with public grants can engage, blend and syndicate financing.

Purpose.

Through identifying research-based financing strategies in collaboration with Scandinavian investors (public and private), and dialogue with SME's the analysis uncovers some of the challenges with the current financial instruments in the Scandinavian financial ecosystem. The results concluding in recommendations on how to bridge the gap in the financial ecosystem.

Analysis.

The structure regarding phases, stages and content is inspired by work from OECD, designed by access2innovation and hands-on experience from the workshops implemented as part of this work package. Each instrument has been evaluated according to its ability to provide smart money, consisting of funding/financing for:

- Technical feasibility, -test, -demonstration, -and scaling
- Business feasibility, -development, -verification, -and penetration
- Partnership identification, -development, -verification, -and engagement

The instruments has been be categorized under the following stages:

Early phase: Idea development: Companies at this stage seek to raise grants to qualify an idea or business opportunity, and conceptually develop an initial solution, that needs to be further detailed.

Early phase: Proof of concept: Companies are here seeking to raise initial funds consisting mostly of grants and to a very limited extent debt or equity. At this stage, companies in collaboration with partners are building and testing prototypes but are not able to prove a sale or market traction.

Early phase: Proof of Business: Companies at this stage are aiming to achieve first sales after having completed a successful prototyping and tests. At this stage, they tend to be in transition from grants and pre-revenue to a revenue stage and looking for debt and/or equity

Expansion phase: Scaling: This stage relates to companies who have a solution that is fully developed and with a documented sales record, and clearly defined estimates and strategies for sales expansion.

The Scandinavian Public Financial Ecosystem

Instrument	Idea Development			Proof of concept			Proof of business			Scalability		
	Technological Feasibility	Business Feasibility	Partnership Identification	Technological Testing	Business Development	Partnership Development	Technological Demonstration	Business Verification	Partnership Verification	Technological Scalability	Business Penetration	Partnership Involvement
SCANDINAVIAN PUBLIC GRANT FUNDING												
Nordic Climate Facility							x	x	x	x	x	x
Nordic Development Fund	x										x	x
Nefco				x	x		x	x		x	x	
Nopef					x	x	x	x				
DANISH PUBLIC GRANT FUNDING												
Innobooster	x			x								
MUDP				x		x	x					
EUDP				x		x	x					
Strategic Partnership Agreement			(x)			(x)						
Danida Innovation & Business Explorer					x	x						
DMDP - (DGBP)							(x)	(x)				
P4G							(x)	(x)				
IFU SME Facility								x			x	
The Danish Growth Fund					x			x		x	x	
DK Export Credit Agency										x	x	
IFU Classic										x	x	
SDG Investment Fund										x	x	
NORWEGIAN PUBLIC GRANT FUNDING												
Innovation Norway	x			x					x		x	x
Norad			(x)			(x)						
Eksfin											(x)	
Enova										x	x	
Research Council of Norway				(x)			(x)			(x)		
SIVA				x	x	x	x	x	x	x	x	x
SWEDISH PUBLIC GRANT FUNDING												
Tillväxtverket	x	x		x	x		x	x		x	x	
VINNOVA	x	x		x	x							
Västra Götalandregionen	x	x	x					(x)	(x)		(x)	(x)
Skåne regionen								(x)	(x)		(x)	(x)
Swedfund									x		x	x
EKN											x	x
x = funding/ investments to companies	Granting entity lacking developing country expertise, experience and connections											
(x) = funding to partners supporting companies	Granting entity having developing country expertise, experience and connections											

Step 1 – Scandinavian Financial instruments analysis

To understand the needs and challenges faced by Scandinavian SME's, this project undertook an analysis of the Scandinavian public financial ecosystem, where the financial instruments at first appears to fulfill the needs. However, a deeper analysis revealed that many of these grants are not suited for developing markets as can not be characterized as "smart money".

Smart money – refers to the capabilities behind the money, such as investor's experience, expertise and connections" (OECD 2015)

Early phase: Idea development: The analysis shows that start-ups and SMEs at this stage experience that there is a certain amount of grants available, however, find it difficult to identify capital sources that are applicable in developing countries. This is partly due to the companies' work in uncertain and less mature markets where investors deem the risks to high. Moreover, these markets often involve unforeseen expenses that demands more flexible and long-term fund periods.

SME needs: There is a need for 'smart-money' at this stage, where investors understands risks and provides terms suitable for developing markets.

The Scandinavian Public Financial Ecosystem

Instrument	Idea Development			Proof of concept			Proof of business			Scalability		
	Technological Feasibility	Business Feasibility	Partnership Identification	Technological Testing	Business Development	Partnership Development	Technological Demonstration	Business Verification	Partnership Verification	Technological Scalability	Business Penetration	Partnership Involvement
SCANDINAVIAN PUBLIC GRANT FUNDING												
Nordic Climate Facility							x	x	x	x	x	x
Nordic Development Fund	x										x	x
Nefco				x	x		x	x		x	x	
Nopef					x	x	x	x				
DANISH PUBLIC GRANT FUNDING												
Inno booster												
MUDP												
EUDP												
Strategic Partnership Agreement			(x)			(x)						
Danida Innovation & Business Explorer					x	x						
DMDP - (DGBP)							(x)	(x)				
P4G							(x)	(x)				
IFU SME Facility								x			x	
The Danish Growth Fund								x				
DK Export Credit Agency												
IFU Classic										x	x	
SDG Investment Fund										x	x	
NORWEGIAN PUBLIC GRANT FUNDING												
Innovation Norway									x			x
Norad			(x)			(x)						
Eksfin											(x)	
Enova												
Research Council of Norway				(x)			(x)			(x)		
SIVA												
SWEDISH PUBLIC GRANT FUNDING												
Tillväxtverket												
VINNOVA												
Västra Götalandregionen								(x)	(x)		(x)	(x)
Skåne regionen								(x)	(x)		(x)	(x)
Swedfund									x		x	x
EKN											x	x
x = funding/ investments to companies	(x) illustrates that money are directed towards developing markets - but with no money available for company partners											
(x) = funding to partners supporting companies	Granting entity having developing country expertise, experience and connections											

Step 1 – Scandinavian Financial instruments analysis

This figure highlights the finance instruments that is available to Scandinavian SME and where there is a focus on financing the development of solutions towards developing markets.

Comparing this figure to the figure above, we see that many of the finance instruments for early-stage development of products and business models targeting developing countries, is simply not available.

The (X) marks finance instruments for co-creation of solutions with public and civil society partners. However, these money can not be channeled to company partners.

Creating a Scandinavian Financial Ecosystem

Early phase: Proof of concept: There is a lack of smart money for testing and demonstrating solutions in developing markets as grants can often not be used for activities in developing countries. Moreover, company margins are typically initially lower and the timeframe for profitability longer, means that companies are seeking 'patient' money especially for test and demonstration.

SME needs: Capital that allows for market assessments, testing of product in developing market, as well as collaborations with partners in developing countries.

Early phase: Proof of Business: Scandinavian companies, especially early-stage companies, find it difficult to attract money for demonstrations of solutions or the bridge finance needed for the first sales. Limited sales track-record, in combination with the uncertainty associated with developing markets, leaves many investors and public grant mechanisms out. In addition, local firms/customers often lack access to capital, that enables them to invest in or buy the needed solutions.

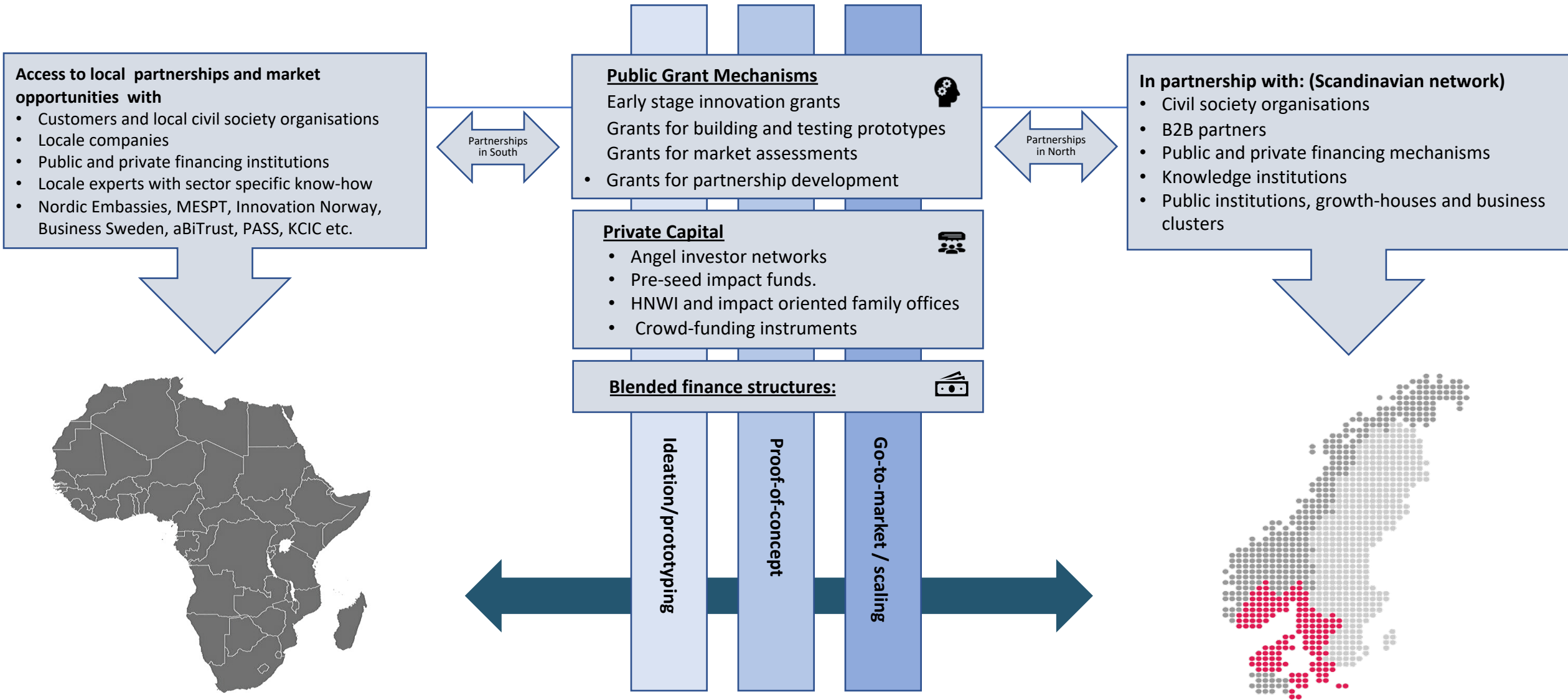
SME needs: Availability of export credits / bridge finance to achieve first sales, which will ease the chance of getting private capital onboard. Investor with high-risk appetite and knowledge of developing country being ideal.

Expansion phase /Scaling: The SMEs at this point potentially face less challenges, however, there is still a lack of private capital (angels, pre-seed, venture capital) with an appetite and understanding for developing markets.

SME needs: Access to export credit and bridge finance as well as capital for the expansion of operational activities in the market. This includes blended finance and access to network (B2B and Government) to gain traction and scaling of their solutions and operations.

Scandinavian Public Grant Funding (conclusion): There is a lack of grant finance in the early stages, in particular 'smart money' where investors contribute with knowledge and networks relevant to developing market contexts. This includes money for demonstration of solutions in developing markets. We also see that the grants available at different company development stages, do not connect well to each other, and many early-stage companies are left in the 'valley-of-death' between having achieve proof-of-concept and proof-of-sale. Finally, early stage companies report that there is a need for an entity, that coordinates and facilitates the search for the right public/private capital and that facilitates blended finance instruments at different business development stages.

Creating a Scandinavian /African Financial Ecosystem



Conclusion: Creating a Scandinavian Financial Ecosystem



Suggestions from SMEs to ease their access to public and private impact finance in Scandinavia:

- **Create a platform** where Scandinavian SMEs can get an easy accessible overview of the grant finance available and the criteria associated with these finance mechanisms.
- **Create a Network** where, especially early stage companies, can exchange information and building capabilities in attracting early stage finance (eg. support to pitch development).
- **Access to experts and mentors** such as angel investors or mentor entrepreneurs who can support the SME in their finance journey.
- **Create a deal-book** that investors can access to match-up impact investor with companies.
- **Establish partnerships with impact investor networks** to avoid that Africa oriented businesses waste time pitching to investors, who are not interested in the risks associated with developing markets.
- Build the knowledge required to **design blended finance structures**, which are tailored to different company development stages.
- **Identity African finance mechanisms**, both public and private, which can support Scandinavian SMEs in their 'go-to-market' journey.

Annex : Potential partners for the Aquacultures value-chain

Aquaculture in Uganda: Inviting the private sector to develop environmentally friendly aquaculture parks.								
Innovatum Science Park	Sverige	Science Park	The Maritime Cluster West Sweden is a collaborative		2015	Bergslagsgatan 2, Göteborg, Sweden	Maritime sector	Sweden
Blue Foods	Sverige	Research Center	Blue Food is a centre where 70 companies and organisations	2-10 employees	2021		Aquaculture	Sweden
The Social Innovation in Health	Sverige	Network	The Social Innovation in Health Initiative (SIHI) is a global	2-10 employees	2014		Health	Global
Environment for Lake Tana	Sverige	Network	Blue RforD is a global collaborative research program	51-200	2007 (EfD)	Vasagatan 1, Göteborg, Västra Götaland	Environment / Aquaculture	Global
Swedish Algae Factory	Sverige	Company	Lake Tana invests in aquaculture in Ethiopia. The objective is to establish a sustainable		2011	Göteborg, Västra Götaland Sweden	Aquaculture	Sweden / Ethiopia
PondFish and Greens	Sverige	Company	They produce uniquely functional materials that are good for the environment	11-50 employees	2014	Stena Center 1B 412 92, Göteborg, Västra Götaland	Materials / Energy	Sweden
StadsJord	Sverige	Company	The company conducts aquaponics, extensive fish and vegetable production	2	2018	Garverivägen 9F 448 31, Floda, Västra Götaland	Aquaponics / Agriculture	Sweden
DTU	Denmark	University	Technical knowledge					
CBS	Denmark	University	Business knowledge					
Aller Aqua	Denmark	Company	Fish feed	60	2007	Allervej 130, 6070 Christiansfeld	Agriculture	
Gsol	Denmark	Company	PV solutions for off grid	14	2016	Finlandsvej 12, 5700 Svendborg	Energy	
Alpha Aqua	Denmark	Company	Recirculating Aquaculture System using foodgrade PP for sustainable	20	2017	Læssevejen 2, 6700 Esbjerg	Aquaponics / Agriculture	
DanChurchAid	Denmark	NGO	Local knowledge					
DI	Denmark	Organisation						
Landbrug&Fødevarer	Denmark	NGO						
Aqua Unique AS	Norge	Company	With over 30 years of experience in Advanced Water Treatment	25	1990	Gjellebekkstubben 10, N-3420 Lierskogen	Water purification	Uganda
Norges Sjømatråd AS	Norge	Organisation	The Norwegian Seafood Council works together with the Norwegian	73	1991	Stortorget 1, 9291 Tromsø	Association of commerce for the fishermen	N/A
Golden Tilapia Farmers of Ghana	Norge	Company	Our production facilities (Hatchery & Grow Out) are located at	NA	2012	Unit 1, Adom plaza, near Special Ice Water Factory, Madina-Oyarifa Highway Accra	Fish farming	Ghana

Annex 5: Potential partners for the Grain-value-chain

Name of organisation	Country	Website	Type of organisation (company, research)	Short description	No. Of employees	Registration year	Location of main office / place of registration	Sector (i.e. agriculture, health, energy, transport, etc.)	Market (i.e. Suecia, Africa, on donde)
Green Grains in Uganda: Inviting the private sector with appropriate and affordable technologies for drying and storage in rural areas and (off-grid) green energy solutions for drying, processing, and transport.									
Hidden in Grains	Sverige		Company	Hidden in Grains (HiG) has developed new and tasty whole grain products	2	2016	Norra Langgatan 82 A392 31 Kalmar	Agriculture	Sweden
Olsaro	Sverige		Company	OlsAro is well under way to develop a wheat that is tolerant to drought	1	2013	Erik Dahlbergsgatan 11a, 2 Vå 411 26, Göteborg	Agriculture	Sweden
Trine	Sverige		Company	Trine makes it easy for people to invest in solar energy in emerging markets	7	2015	Kungstorget 7 TR2, 411 17 Göteborg, Sweden	Energy	South East Asia and Latin America
Bomill	Sverige		Company	BoMill sells and manufactures grain quality sorting machines	12-20	2001	Gottorpsvägen 58, SE-218 45 VintrieSweden	Agriculture	Sweden
Biofrigas	Sverige		Company	Biofrigas offers a unique technology that makes it possible to store grain for long periods	2-10	2012	Mässans Gata 10 412 51, Göteborg, Västra Götaland	Energy	Sweden
Make it Green	Sverige		Company	Development of sustainable solutions for clean energy, water and food	1	2017	HASSELGATAN 18512 52 SvenljungaVästra Götaland	Energy / Water / Food	Sweden
Samster	Sverige		Company	Solar technology company focusing on hybrid technology and rural electrification	10	2013	Faktorvägen 12434 37 Kungsbacka	Energy	Sweden
TracTechnology	Sverige		Company	TracTechnology is a provider of food safety technology and meat inspection solutions	5	2002	Kyrkogatan 7 511 54, Kinna, Västra Götaland	Agriculture / Food	Sweden
Vultus	Sverige		Company	Vultus eliminates waste in farming by offering satellite based precision farming solutions	2-10	2016	Scheelevägen 15, Lund, Skåne County SE	Agriculture	Sweden
Bioab Innovation	Sverige		Company	Bio-innovation to turn waste into fertilizer	0	2018	Skåne	Energy/Agriculture/Humanitarian	Developing markets
DTU	Denmark		University	Technical knowledge					
CBS	Denmark		University	Business knowledge					
BM Silo	Denmark		Company	Drying silos for grain usable in rural villages	43	1978	Morrevej 7, 7500 Holstebro	Agriculture	
Engsko	Denmark		Company	Milling equipment for whole grain flour og various crops and products	6	1946	Tronholmen 10E, 8960 Randers SØ	Agriculture	
Gl. Buurholt	Denmark		Company	Seed cleaning systems	9	2015	Buurholtvej 11, 9700 Brønderslev	Agriculture	
C.F. Nielsen	Denmark		Company	High grade brequitting machines from 150kg/h to 2000kg/h	31	1998	Solbjergvej 19, 9574 Bælum	Agriculture/Energy	
MASH Makes	Denmark		Company	Pyrolysis equipment for biochar and biooil production based on agricultural waste	7	2015	Fruebjergvej 3, 2100 København Ø	Agriculture/Energy	
SolarVenti	Denmark		Company	Small scale solar dryers for fruit, spices, vegetables and small grains	10	1979	Fabriksvej 8, 8881 Thorsø	Energy	
Soilsence	Denmark		Company	MESH based low cost soil sensors for water content and nutrient levels	7	2019	Vester Voldgade 94 B, 1552 København V	Agriculture	
Gsol Energy	Denmark		Company	PV solutions for off grid	14	2016	Finlandsvej 12, 5700 Svendborg	Energy	
Jamii	Denmark		Company	Digital platform providing credit worthiness of rural customers	5	2018	Vesterbrogade 26, 1620 København V	Financing	
NordicWing	Denmark		Company	Dronesetup for survey of lands	10	2018	Hangarvej 21, 3500 Værløse	Agriculture	
Robotto	Denmark		Company	Dronesetup for survey of wildlife preventing destruction of crops	5	2019	Niels Jernes Vej 10, 9220 Aalborg Øst	Agriculture	
DanChurchAid	Denmark		NGO						
DI	Denmark		Organisation						
Landbrug&Fødevarer	Denmark		Organisation						
DIEH	Denmark		NGO						
Caritas	Denmark		NGO						
Yara	Norge		Company	in collaboration with customers and partners, Yara grows knowledg	12883	1905	Drammensveien 131, 0277 Oslo - Norway	Fertiliser	Pan Africa
Kverneland	Norge		Company	The company provides Agricultural Implement Technology through	2550	1879	Plogfabrikkevegen 1, NO-4353 Klepp Stasjon	Machinery medium/large scale	Pan Africa
BAMA	Norge		Company	Bama-Gruppen AS is Norway's largest private distributor of fr	1700	1886	Nedre Kalbakkevei 40, 1081 Oslo, Norge	Retail - fruit and vegetables	Pan Africa
Brynild Gruppen	Norge		Company	Brynild Gruppen AS is one of the larger Norwegian family-own	2000	1895	Mosseveien 1, 1610 Fredrikstad, Norge	Retail - nut production	East Africa and Mozambique
Farm for the future Tanzania	Norge		Company	Our mission is to increase the productivity of farming in Tanzania	45	2018	POPO Box 181, Mazombe, Iringa, Tanzania	Farming	Tanzania
GPS Food Group AS	Norge		Company	GPS Food Group is a global manufacturing business providing	44	2013	Professor Birkelands vei 28, 1081 Oslo	Global trading of meat	South Africa
N2-Applied	Norge		Company	N2 Applied provides a solution which answers the needs farm	50	2010	Dronning Eufemias gate 20, 0191 Oslo, Norge	Crop protection and fertiliser	Kenya
BioChos	Norge		Company	BioCHOS is developing plant protection products containing ar	6	2013	Inkubator Ås, PO box 19, NO-1431 Aas, Norway	Crop protection and fertiliser	Kenya
Farmforce	Norge		Company	Farmforce is a mobile service that links smallholder farmers t	50	2012	Filipstad Brygge 1, 0252 Oslo, Norge	Smart farming	East Africa
7Sense	Norge		Company	7Sense Products - delivers smart condition monitoring systems to selected professional markets.	31	2012	Moloveien 14, 3187 Horten, Norge	Smart farming	East Africa
Nofence	Norge		Company	The people at Nofence work to develop technology that makes	27	2011	Evjevegen 8, 6631 Batnfjordssøra, Norge	Smart farming	East Africa
SpermVital	Norge		Company	The idea behind the SpermVital technology is to extend the lif	11	2008	Holsetgata 22, 2317 Hamar, Norge	Genetics	East Africa
Patogen	Norge		Company	Providing expertise and high quality data to generate sustaina	10	2005	Rasmus Rønnebergs gate 21, 6002 Ålesund	Genetics	East Africa
Soil Stream International	Norge		Company	Clean soil no chemicals	18	2016	Borgeskoen 15, 3160 Stokke, Norway	Machinery	East Africa

Annex 6: Potential partners for the Health-value-chain

Healthcare Clinics in Kenya: Inviting the private sector to test and verify new health care solutions based on needs identified together with local communities and anchored in county government priorities.								
Business Region Gothenburg	Sverige	Non-profit organisation	is a wholly owned, non-profit subsidiary of Göteborgs Stadshus AB, which in turn is wholly owned by the City of Gothenburg. BRG works for increased employment and sustainable growth in the Gothenburg region. BGR leads the health cluster.	79 employees	1991	ÖSTRA HAMNGATAN 5, 411 10 Göteborg, Västra Götalands län	Health and other sectors	Sweden
AstraZeneca	Sverige	Company	The BioVentureHub provides emerging companies and academic groups a unique opportunity to co-locate and interact with AstraZeneca experts, and with each other, to advance life science, health care and the wellbeing of patients.	2-10 employees	2014	Pepparredsleden 1 431 83 Mölndal Sweden	Life Science / Health	Sweden
Nordic Center for Sustainable Healthcare	Sverige	Network	NCSH is a cross-sectoral network for stakeholders sharing the goal of a more sustainable healthcare sector. It hosts the Research Network for Sustainable Healthcare.	2-10 employees	2015	Södra Promenaden 51, Malmö, Sweden	Health	Scandinavia and Northern Europe (mainly but not exclusively)
Sahlgrenska Science Park	Sverige	Science Park	Sahlgrenska Science Park is an inclusive open arena for the new world of life science, focusing on innovation and business acceleration.	11-50 employees	1997	Medicinaregatan 8A, Göteborg, Sweden	Life Science	Sweden
Globhe	Sverige	Company	GLOBHE is a global drone service provider. It uses drones glob	11-50	2014	Askrikegatan 11, Stockholm, Stockholm County 115 57, SE		Sweden
1928 Diagnostics	Sverige	Company	1928 Diagnostics offers a bioinformatics analytics platform fo	11-50	2014	Arvid Hedvalls Backe 4SE-411 33 Gothenburg	Health	Sweden
Byon 8	Sverige	Company	BYON8 tries to improve health care through digital solutions.	11-50	2017	Frejgatan 13114 79, Stockholm, Sweden	Health	Sweden
Addressya	Sverige	Company	Addressya app allows individuals to register a complete, preci	11-50	2017	Regeringsgatan 82, Stockholm, Stockholm 11139, SE		Sweden
SpacerPad	Sverige	Company	Spacerpad is an affordable and reusable sanitary pad	1-10	2019	401 23, Göteborg, Västra Götaland Sweden		Sweden
Herbox	Sverige	Company	Dispenser of woman menstrual products	0 employees	2021	Norra Ågatan 34, 431 35 Mölndal	Health	
Gynius	Sverige	Company	Gynius was created in Sweden with the vision of improving w	11-50 employees	2017	Järnbrotts Prästväg 2, 421 47 Göteborg, Swed	Health	Sweden
Biomedical Science Sweden	Sverige	Company	Biomedicals have developed an antibiotic free way to diminis	0 employees	2020	MEDICINAREGATAN 8, 413 90 Göteborg, Väs	Health	Sweden
Gnosco	Sverige	Company	Gnosco provides products and services for imroved healthcare	2-10 employees	2014	Kungsgatan 4, 411 19 Gothenburg, Sweden	Health	Sweden, UK, France, I
KU	Denmark	University	Technical knowledge					
DTU	Denmark	University	Technical knowledge					
CBS	Denmark	University	Business knowledge					
4lifesolutions	Denmark	Company	Water cleaning bags for safer water production without use o	13	2018	Fruebjergvej 3, 2100 København Ø	Energy/Health	
ByNis	Denmark	Company	PV solar cooker for reduction of smoke in rural homes	1	2018	Præstehaven 23, 8210 Aarhus V	Energy/Health	
GlobeHousing	Denmark	Company	Low cost modular housing concept for rural areas, eg. Health i	2	2015	Kovangen 616, 3480 Fredensborg	Housing, clinics	
Gsol Energy	Denmark	Company	PV solutions for off grid	14	2016	Finlandsvej 12, 5700 Støvring	Energy	
EnviClean	Denmark	Company	Waste water treatment systems	2	2008	Skodshøj 16, 9530 Støvring	Wastewater	
DMS Africa	Denmark	Company	Middleclass modular housing systems eg. Health clinics	1 (3)	2009	Hækken 7, 9310 Vodskov	Housing, clinics	
Pesitho	Denmark	Company	PV solar cooker for reduction of smoke in rural homes	7	2018	Fynsgade 30 A, 7400 Herning	Energy/Health	
Ideaal	Denmark	Company	Designcompany, designing solutions for eg. health sector	3	2009	Møllegade 11 A, 9000 Aalborg		
Red Cross	Denmark	NGO	Local knowledge					
Den evangelisk lutherske kir	Norge	NGO	Haydom Lutheran Hospital (HLH) is a hospital owned and oper	502	1955	Sinsenveien 25, 0572 Oslo, Norway	Hospital	Tanzania
Mnazi Mmoja Hospital (MMH) in Zanzibar	Norge	NGO	Haukeland University Hospital (HUH) is collaborating with Mnazi Mmoja Hospital (MMH) in Zanzib			Mnazi Mmoja Hospital, Stone Town-Vuga Str	Hospital	Zanzibar
Laerdal	Norge	NGO	Laerdal is a company that develops products and programs fo	1700	1940	Tanke Svilands gate 30, 4002 Stavanger,	Medical Equipment	