Alliance of regional innovation ecosystems based on smart sustainable specialisation strategies
ARIES4

ARIES4 Case Book – sustainability in SMEs across Europe

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ARIES4 Case Book – sustainability in SMEs across Europe

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Outline

1 Introduction – Managing Sustainability in SMEs

The ARIES4 project aims to provide a steppingstone to cooperation and knowledge flows between the key actors of smart specialization strategies to secure transition towards strategies in which sustainability is a core factor, the so-called S4+. This revolutionary transition involves a wide span of actors such as HEIs, VET providers, the public sector, the business sector, and the broader society, to ensure the provision of the skills, tools and attitudes required for the evolution from S3 to S4+ (ARIES4, p4). More specifically there is a need for S3 strategists to be informed about guidelines in the design of policies and incentives for other actors in the regional ecosystem during the S4+ rollout. Regional societies need to be informed about the concrete efforts made at regional level towards more sustainable and competitive economies. Also, students' entrepreneurial attitude needs to be attuned to the relevance of smart specialization for regional development and to the challenges and opportunities of the sustainable transition. Lastly, and as the focus of this present deliverable 3.3, Managers of different organizations, particularly SMEs, need to understand what sustainability means, how it shapes their span of action and how they can take advantage of it and improve their international competitiveness.

Extant research shows a tendency to employ quantitative methods to retrieve insight on sustainability related activities and competencies in SMEs. Thus, there is an apparent lack of studies focusing on providing a holistic understanding of the phenomena on at hand. Indeed, there is a need for in-depth insights on how antecedents such as internal capabilities, orientations and individual managers motives influence strategizing and decision-making in relation to sustainability in SMEs (Hannibal & Uzhegova, 202x; Ivanova-Gongne et al., 2022). This case book addresses this gap in research and presents explorative cases of SMEs distributed across the four regions involved in the ARIES4 project. The cases explore what sustainability means, which efforts that have been embraced (and why), the motivations to sustainability activities, their perceived relevance etc. Indeed, existing research acknowledges that sustainability is a multifaceted concept that encompasses technological, cultural, environmental, social, and economic aspects. Each agent of an economy experiences different challenges and demands different solutions when confronting it. Accordingly, a diverse spectrum of stakeholders play key roles in the development of sustainability competences in SMEs. Hence, it is suggested that sustainability activities and competencies in SMEs are closely interlinked with; managers' personal and key partners' beliefs (Bremmers et al., 2007; Russo & Tencati, 2009), Industrial standards, regional differences (Vendrell-Herrero et al., 2017) and strategies, institutional settings (Cheng & Yu, 2008; Kiefhaber et al., 2020), national policies and legislative systems (Drake et al., 2004; Makhmadshoev et al., 2015) as wells as global frameworks (WTO, 2016).

Throughout the case sample the research teams have observed that the motivation for sustainability has been key to competence building and implementation of sustainability related activities. Overall, managers motivations hold a strong if not explanatory power to why SMEs are on a trajectory that involves strategizing and decision-making about sustainability related activities. Often managers are the explanation as to why sustainability efforts have started in the first place in SMEs across the case sample. In this way motivation for sustainability resembles the motivation for internationalization observed in SMEs as this is in many cases driven by individual key managers and their perception of future opportunities. Apart from providing the baseline footing for the self-evaluation tool (Deliverable 3.2 in the ARIES4 project), we hope that the insights from these cases may inspire managers to explore the opportunities of the sustainable transition. In addition, our ambition is that this explorative study will

act as catalyst for future research into sustainability in SME as they are vital in the transition to a greener economy.

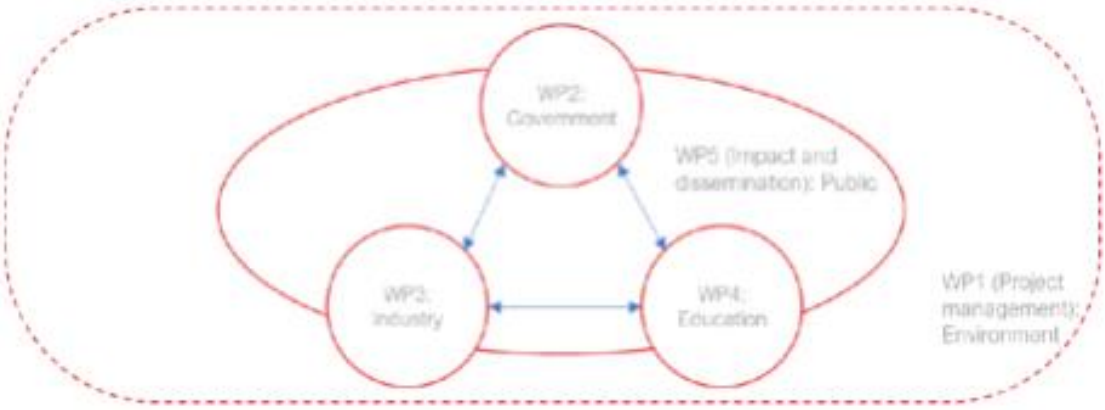
2 Methodology – Explorative cases across four European regions

This section provides a general introduction to the methodological approach of the explorative case studies conducted in the four regions of Gabrovo, Värmland, Navarra, and Southern Denmark.

2.1 Research Approach: WP3 – Explorative SME case studies

The overall ARIES4 project approach is based in a quintuple helix model of open innovation. This incorporates the quadruple helix model, in which university (or, more broadly, education), industry and government interact to foster economic and social innovation, to expand this interaction to the natural environment. While the quadruple helix model encourages the development of a knowledge economy and a knowledge society, the quintuple helix emphasizes the importance of making such developments sustainable and environmentally sensitive. However, this is perceived not as a constraint, but rather as an incentive for innovation and a driver of knowledge production (ARIES4 project description). The five interconnected ARIES4 work packages (see figure 2.1) have been designed to focus on a particular helix while interacting with knowledge and activities in other work packages.

Figure 2.1: Overview of ARIES4 work package in the quintuple helix model.

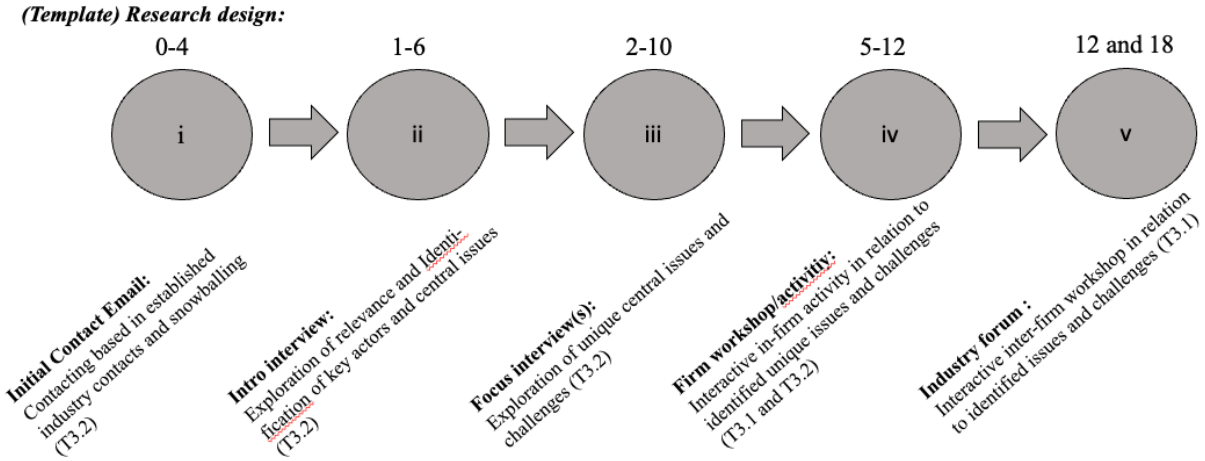


The project aims to help SME managers struggling with the transition towards more sustainable business models through exploring guiding principles of the SME Strategy for a sustainable and digital Europe. There is an insufficient amount of data to gain in-depth understanding of this phenomenon. To address this gap in research and following the general guidelines from seminal authors (Eisenhardt & Graebner, 2007; Yin, 1989), WP3 conducts a series of case studies to explore best practices in SME managers' activities, efforts, and strategies to retain continued competitiveness and growth, whilst responding to increasing environmental pressures and consumer preferences change. Collecting on these, ARIES4 aim to promote new smart sustainable specialization strategies in the European regions (ARIES4 project description p9).

2.2 Research design – Overall framework

The explorative pilot case studies of SMEs situated in the four European region (Värmland, Navarra, Gabrovo, and Southern Denmark) have been conducted over a period of 18 month. Reporting of this part of work package 3 is a deliverable (3.3) of the ARIES4 project. The initial overall research design involved five phases in the data collection; Initial contact to relevant SMEs, introductory interviews follow up interviews, interactive firm activities, and workshops with industry representatives to qualify challenges and potentials (see figure 2.2).

Figure 2.2: Research design overview of data collection

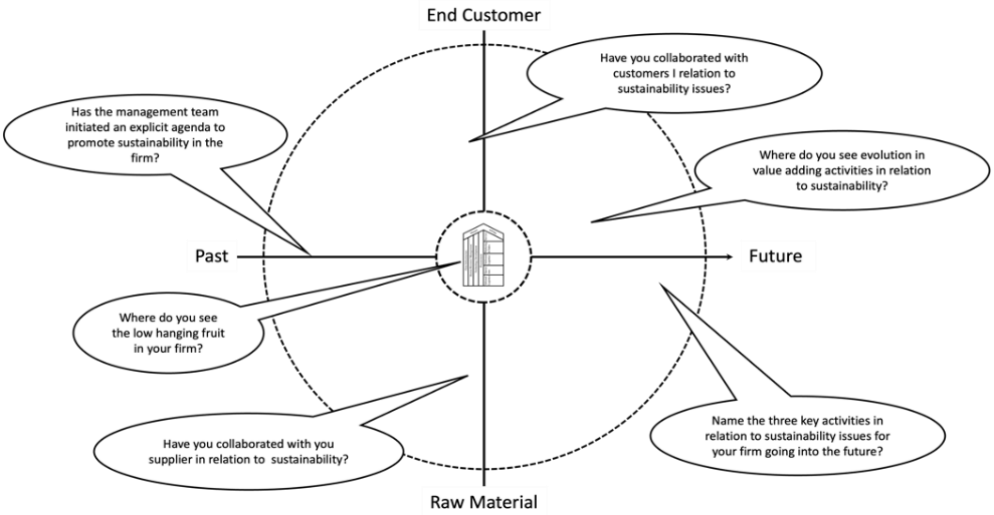


The selection of regional SMEs was motivated by relevance in terms regional smart specialization and sustainability efforts. Thus, the SMEs belong to the same sectors studied in WP2 for each region. Special attention was also paid to the role of digital technologies (IA, big data, IoT, etc.) (see ARIES4 project description).

2.3 Data collection overall considerations

Following the suggestions from seminal researchers (Tellis, 1997; Yin, 1993), archival data was collected in parallel with initial contacting of the SMEs. Web material, financial reports, and other relevant information was collected to form a backdrop of information about the case SME to inform the late analysis of the overall collected data material. Initial discussions revolved around developing a common interview guide and case template. However, as the explorative cases studies progressed, the regional research teams reported distinctive features and elements in connection to the context of the distinct regions, the type of firms, managers motivations, etc. Based in these observations it was agreed to reflect these differences in the case structure. Hence, in these preliminary discussions the regional research teams agreed to use a navigation tool as basis for interviewing (See figure 2.3).

Figure 2.3: Interview navigation tool



The navigation tool guided the interviews to explore past efforts, current state and imagined development of sustainability competences in the case firms whilst framing value chain operation in temporal net. We employed the value chain framework to hone in on sustainability related directly to the SME (Porter, 2001) and inter firm value chain activities (Gereffi et al., 2005) which the SMEs were part of. This acknowledged that sustainability is a multi-faceted concept. Accordingly, a diverse spectrum of stakeholders often plays a key role in the development of sustainability competences in SMEs. Thus, extant research literature suggest that sustainability activities and competencies in SMEs are closely interlinked with; managers' personal and key partners' beliefs (Bremmers et al., 2007; Russo & Tencati, 2009), Industrial standards, regional differences (Vendrell-Herrero et al., 2017) and strategies, institutional settings (Cheng & Yu, 2008; Kiefhaber et al., 2020), national policies and legislative systems (Drake et al., 2004; Makhmadshoev et al., 2015) as well as global frameworks (WTO, 2016). This stresses the importance of a multi-dimensional tool in studying the development sustainability competencies in SMEs across regions and industries run by management teams with different cultural back grounds in diverse political landscapes. In acknowledging these complexities, the research teams have aimed to create a shared referential frame for conducting the open-ended interviewing of SME managers to allow for cross regional comparison while leaving room for exploring regional distinctiveness and particularities in the SMEs in focus and their managers perspectives.

2.4 Case symposium – across regions analysis

In searching for common cross regional themes, a symposium was arranged within the ARIES4 Work Package 3 forum. This aimed to engage ARIES4 regional partners from Navarra, Värmland, Gabrovo, and Southern Denmark in a dialogue to mutually explore and review differences and similarities across the overall case sample. Indeed, cross case analysis provides deeper understanding of the topic in focus through balancing the uniqueness of individual case' with the need for more general understanding of the process going on (Glaser & Strauss, 1967; Miles & Huberman, 1994) across the regional SME. Fundamentally, across case analysis provides a litmus test for whether the findings make sense beyond the particular case whilst it assist in pinpointing diversities and similarities.

The case symposium took place online on September 12th, 10-12 (CET). The symposium participants were tasked with carefully reviewing cases assigned to their respective regional groups. This preparatory step aimed to enable an informed and constructive discussion during the symposium. Thus, before the event, regional partners submitted their cases to the "Case Symposium" folder on the ARIES4 Teams platform. Table 2.1 indicates the specific reviewing task.

Table 2.1: Symposium – Review Order

Regional case sample owner	Regional case reviewer
Spain, Navarra	Denmark, Southern Denmark
Sweden, Värmland	Spain, Navarra
Bulgaria, Gabrova	Sweden, Värmland
Denmark, Southern Denmark	Bulgaria, Gabrova

The cases examined through the symposium were emblematic of the unique regional contexts in which sustainability initiatives were undertaken. Through this interregional lens, the symposium sought to extract in-depth insights to produce a more robust and nuanced input into developing a self-assessment tool (Deliverable 3.2 in ARIES4). The format of the case symposium was deliberately designed to

encourage bilateral reviews, fostering constructive analysis, and shared mutual learning among the regional teams.

The symposium discussions were audio-visually recorded to accurately capture the essence of the dialogues, insights, and perspectives exchanged among the ARIES4 regional partners. Regional partners diligently examined cases from different regions. The insights, observations, and analyses provided by the participants during the session, formed the foundation for fruitful discussions of common themes and regional particularities. Participants paid particular attention to highlighting differences and similarities between the regional cases to allow for understanding the unique regional contexts within which sustainability initiatives were pursued. Subsequently, the symposium recording was partially transcribed whilst aiming to capture all key comments and discussions related to the cases under review. Through a cluster approach (Miles & Huberman, 1994), several themes were formed reflecting the symposium discussion (see table 2.2). Hence collectively, the themes capture the core aspects of the discussion of the explorative cases and the collective insights gained during the symposium. The codes provide exemplars on how the individual themes were represented in the symposium dialogue.

The overall goal was to distilled collective knowledge to form a baseline for a comprehensive and effective self-assessment survey tool. Subsequently, a working document was created in support of opening the initial analytical process for differences in perspective amongst the symposium participants. This approach allowed for extraction of meaningful themes, insights, and coding in the form of a working paper. This text was in circulation on the Teams platform and accessible for all symposium participants to capture additional aspects and bring further insights the initial list of themes. The symposium themes form the backbone of the cross-case discussion section whereas the sections describing each of the four regions use the themes as partial support for the discussions of how sustainability efforts, initiatives and activities are undertaken by the unique case sample in the particular region. Accordingly, the overall process acknowledges the tension between the uniqueness of the individual case and the general understanding attained across the cases (Silverstein, 1988).

Table 2.2: Symposium cross case sustainability themes and codes

Themes	Codes
Sustainability Dimension	Different dimensions of sustainability practices (e.g., environmental, social, economic). Evaluating how companies measure and moderate sustainability outcomes. Considering the economic perspective of sustainability.
Motivations and Goals	Understanding the motivations and goals driving sustainability efforts, considering distinctions for born sustainable and transforming SMEs. Recognizing diverse motivations among managers, particularly in different industries. Management motivations affecting sustainability practices and dimensions. Exploring core values, driving forces, and dreams of the companies regarding sustainability.
Transformational Processes	Understanding the transformational journey towards sustainability goals. Exploring how different goals, including environmental ones or social dimensions, may necessitate distinct approaches and processes for transformation. Analyzing hindrances and opportunities in the transformational process for sustainability goals
Supportive Ecosystems for Sustainability	Understanding the ecosystem and support structures that aid small and medium enterprises in achieving sustainability goals. Examining the role of innovation centers and similar resources in promoting sustainability for organizations, especially smaller cases like Spanish food organizations. Analyzing the involvement of various actors and processes within the ecosystem that contribute to making the company sustainable.
Footprint	Understanding and assessing the overall sustainability impact or ecological footprint of companies. Analyzing how companies consider and manage their sustainability impact, including resource usage and relevant sustainability factors, in their sustainability initiatives
Sustainable Development Goals (SDGs)	Understanding how companies align their goals with Sustainable Development Goals (SDGs). Encouraging companies to justify and explain their selection of SDGs in their development goals.
Legitimacy and Communication	Addressing issues of both formal legitimacy (e.g., regulations, compliance) and informal legitimacy (e.g., industry perceptions, partnerships). Understanding how companies present their sustainability efforts to various stakeholders. Encouraging effective communication of sustainability initiatives within and outside the company.
Industry-Specific Considerations	Analyzing industry differences and their influence on sustainability practices. Recognizing the impact of industry standards and emerging practices on sustainability efforts.
Scalability and Growth	Addressing the challenges of scaling sustainability efforts, especially for small-medium enterprises. Identifying how companies can maintain core values and sustainability efforts as they grow and expand, both locally and internationally. Recognizing the distinction between reaching the industrial scale and focusing on the local market and the implications for sustainability initiatives.
Sustainable Ecosystem Management and Responsible Expansion	Understanding the importance of ecosystem preservation and responsible business expansion. Analyzing strategies to maintain a harmonious balance with existing ecosystems while pursuing growth. Evaluating motives and risk management considerations for international expansion while upholding sustainability principles.
Foreign Ownership and Sustainability	Understanding the influence of foreign ownership on sustainability practices and goals. Exploring complexities in cooperation, aligning social values, and driving forces in companies with foreign ownership.
Capturing Complex Dimensions in Sustainability	Recognizing and addressing challenging dimensions that are crucial in sustainability assessments. Analyzing the interconnection between social dimensions and the driving forces behind sustainability initiatives. Understanding the intricate linkages between various dimensions that are often difficult to quantify but hold significant importance in sustainability evaluations.
Origin of Sustainability Initiatives	Exploring the origin and impetus for sustainability initiatives within companies. Analyzing whether sustainability efforts originate from internal motivations or are influenced by external factors. Understanding the dynamics and variances in sustainability engagement across different industries.
Tradition, Social Emphasis, and Managerial Influence	Understanding how tradition and social aspects influence sustainability approaches in companies. Analyzing the impact of managerial competence and emphasis on standards creation on sustainability initiatives. Exploring the role of tradition and managerial influence in shaping the perception and meaningfulness of sustainability within organizations.
Comparative Analysis	Comparing different cases to extract lessons and best practices for sustainability initiatives. Identifying similarities and differences in sustainability approaches among various companies. For example Gårdarna and Fresh Veggies.

3 Swedish Cases – Sustainability, from the heart - the role of core values

The "Swedish cases" appended to section 1 is extracts from a forthcoming book, ReBus 2.0 – stimulating the transition towards a responsible business practice (Johnson, Gärdt and Östlin (Forthcoming).

3.1 Case selection

The idea behind the selection of Swedish cases is not based on the fact that these companies have a business approach characterized by having high sustainability ambitions. On the contrary, most of them would never describe themselves using such words. Rather, these cases have been selected for this compilation of case studies since they have another key feature that, the Swedes active in work package 3, believe is relevant as a starting point when trying to develop a self-assessment tool for small and medium sized companies: Strong core values utilized to develop a business that makes them *unique*, *different* and *successful*. *Unique* because sustainability to some extent happens to be in their DNA. *Different* in the sense that they always make decisions without compromising with what is *felt to be right*. *Successful*, as they, similar to the leader Sun Tzu (McNeilly, 2003), focus not on becoming profitable but have a broader vision with their value creation. As often is the situation with such leaders, this broader vision of value bestows them profit while focusing on other types of richness. The afore motioned cases:

- Case study of Hilmer Andersson
- Case study of Gårdarna i Värmland
- Case study of Naturbyn in Långserud
- Case study of OK Värmland economic association
- Case study of Guesthouse 11

In the spirit of their core values, the leaders of these companies make decisions that, coincidently, turns them into interesting examples of business' that leads the way towards a more sustainable future. But, and this is important to emphasize, this is, most likely, not how the leaders of these companies would describe their vision and mission. We hope that these case studies may lend us insights on how to support other SME´s in their development/transformation towards becoming more sustainable, and particularly inspire the development of the social dimension (Isaksson et al., 2015),

There is another reason that justify the selection of these five cases. Building on previous work, assessments of conditions and strengths, and extensive dialogue among regional stakeholders, seven smart specialization areas have been identified in Värmland. These thematic areas encompass industries with potential, advanced research, and cluster organizations capable of contributing to mobilization during implementation. Värmland's Smart Specialization areas:

- Forest Based Bioeconomy
- Digital Health Innovation
- Advanced Manufacturing and Complex
- Attraction through Sustainable Place Development
- Sustainable System Solutions with Photovoltaic in Focus
- Food in Sustainable Interaction
- Computer Games and Gamification

Figure 3.1

Forest Based Bioeconomy – Värmland is a leading European environment in forest-based bioeconomy thanks to a strong network of companies, research, and clusters driving innovation and transformation. Cluster organization Paper Province and Sting Bioeconomy support new businesses. Karlstad University and RISE contribute to advanced education, research, and test environments. This collective ecosystem positions Värmland as a leading player in forest-based bioeconomy.

Digital Health Innovation – Focuses on addressing Sweden's and Värmland's health challenges through digital solutions. The goal is to digitize services for efficient disease management and improved health, integrating digital tools across various sectors, from education and psychological support to early detection. Prioritizing gender equality in innovation is a key objective. The global market is expected to reach significant values by 2025, offering potential job opportunities and regional growth. The strategy aims to enhance equitable health and promote societal participation.

Advanced Manufacturing and Complex Systems – The specialization are essential to Värmland's industry, spanning sectors such as green steel, high-strength steel, 3D printing with powder steel, and automation/robotization. This specialization drives the shift towards a more circular and sustainable industry through innovative technologies. Surrounding these sectors are supporting companies and subcontractors of various sizes spread across the region. This specialization propels the transition to a more circular and sustainable industry through new technologies and is part of the broader strategy for industrial transformation in Northern Central Sweden.

Attraction through Sustainable Place Development – Expanding from digitalized experiences, this specialization now includes developing appealing destinations across Värmland. The goal is to deepen previous efforts by involving more stakeholders and organizations. Innovative spaces are created for refining Värmland's natural and cultural heritage, particularly in high-potential areas. Leveraging expertise in Värmland, the aim is to boost tourism and enhance rural community services. Technological

advancements like digitalization and AI support this specialization, focusing on user-driven experiences and value creation.

Sustainable System Solutions with Photovoltaic in Focus – Driven by the Glava Energy Center, this specialization focuses on advancing solar energy and its integration with hydro, wind, and biofuel-based energy production. Emphasizing energy storage, it aims to facilitate greater interaction between energy systems and users in communities, industries, and households. This specialization contributes significantly to Sweden's and the world's shift toward electrification and climate action.

Food in Sustainable Interaction – Centered around Värmland's food industry, this specialization aims to enhance the value chain in food and related sectors. It creates innovative concepts, like home-delivered meal kits or locally sourced subscription meals, emphasizing sustainability. These concepts cater to events where meals matter, such as elderly care or climate-conscious dining. By integrating various strengths, this specialization drives food sector development, supported by Nifa, connecting industry stakeholders and fostering innovation for sustainable growth.

Computer Games and Gamification – Sweden's lucrative gaming industry, totaling 34.7 billion SEK in 2020, outstrips iron ore (28 billion SEK) and pulp (23 billion SEK) exports. Emerging as a central industry, it constitutes one percent of Värmland's employment but grows rapidly, led by The Great Journey (TGJ) within Innovation Park. Utilizing local strengths, it aims to create a competitive gaming hub in Värmland.

The five Swedish cases selected for this compilation of case studies align with four of Värmland's smart specialization areas, as shown in the table below.

Table 3.1: Case overview

Name	OK Värmland	Hilmer Andersson	Guesthouse 11	Gårdarna i Värmland	Naturbyn
Industry	Energy industry	Forestry industry	Tourism industry	Food industy	Tourism industry
Product/service	Main focus on mobility and energy provision.	Sawn, planed, and finger-jointed timber products.	A 10 room guesthouse with restaurant and spa.	Distribution channel for small-scale local food production.	Unique stay in Naturbyn's cottages and experience village
Size (# of employees)	150-170	60	2	2	1
Country	Värmland, Sweden	Värmland, Sweden	Värmland, Sweden	Värmland, Sweden	Värmland, Sweden
Smart specialization	Sustainable System Solutions with Photovoltaic in Focus	Forest Based Bioeconomy	Attraction through Sustainable Place Development	Food in Sustainable Interaction	Attraction through Sustainable Place Development
International activities	The supply of fuel is ensured through the collaboration with the Kuwait organization.	Customers are primarily located in Norway and Sweden, but also across Europe, Northern Africa, North America, as well as in Japan and China.	Mainly foreign guests (France, Belgium and Holland)	Local	Guests arrive from all over the world.

3.2 Method

We have applied a qualitative case study approach (Baskarada, 2014; Yin, 2003) when developing the five cases in table 3.1. Having an hermeneutical approach, we have tried live ourselves *into the situation of the acting persons* (Alvesson & Sköldberg, 2000:54). The case-study approach is very common in exploration of social systems such as institutions and organizations. There will, however, always be biases when lifting them out of their contexts. Case studies try to reduce the bias by obtaining deep insights about a certain situation and how the people involved interpret it. The focus lies on processes rather than results and the purpose is to try to see entities rather than to bring out individual phenomena (Merriam, 1994). It is also important to remember that even if organizations are socially constructed systems, they are parts of a larger societal system. The five Swedish cases has, given this

view, not tried to find a ”true” reality but are instead more about finding a reasonable and hopefully inspiring perception of it (Burr, 2015).

3.2.1 Deductive, semi-structured data collection

Inspired by the research process suggested by Baskarada (2014) we started planning phase of the data collection in early February 2023 by trying to spark the interest of the broader research group of work package 3, for our idea. In lack of consensus in the international project group of WP3 we were told to continue on our own. The Swedish part of the research group started a discussion process on the development of a semi-structured thematic interview guide suitable for the overall purpose to give directions for creating a self-assessment model that may stimulate SMEs to increase their contribution to a sustainability transition.

This discussion was the starting point not only for the interview guide but also gave us the theoretical foundations for the forthcoming book ReBus 2.0. A reader that may become curious about the theoretical aspects that lay behind the following interview- guide is recommended to read the ReBus 2.0-book. After a thorough discussion, we in April uploaded this interview guide in the virtual workroom of WP3:

- Introduction
  - An overview of the company and the vision of the business.
- The core sustainability idea with the business
  - Describe the company's history, mission, and values.
  - Provide an overview of the company's products or services and target market.
  - Explain the company's current position in the market.
  - What are you proud of? What drives you?
  - How do you create sustainable value?
  - Motivation/willingness and ability to change
    - How do new employees become “calibrated”/learn about company's history, mission, and values?
    - How often is the company and the business performance reassessed from at sustainability point of view?
  - What incentives do the company have for its work with sustainability?
  - How is the company positioned on the market? Does sustainability legitimize your products/services?
  - Do you use sustainability in the market communication? Why?
  - (Governance and performance management will be displayed below)
- Sustainability practices
  - Detail the company's sustainability practices, including environmental, social, and economic initiatives.
  - Explain how these practices have impacted the company's operations, employees, customers, and stakeholders.
  - Provide specific examples of the company's sustainability practices in action.
  - In what way do the company create unique sustainability values?
  - How does sustainability create a favorable competitive situation?
- How are sustainability decisions made?
  - Tell us about a decision that felt good/different/successful?
  - Tell us about something that is completely unthinkable to carry out / a deal you didn't carry out because it didn't feel right.

    - What should we bring with us into the future? What should we leave behind?
- Technology and innovation management
    - Detail the company's use of technology and innovation to support sustainability efforts.
    - Explain how the company has implemented smart and sustainable practices in its operations.
    - Provide specific examples of technology and innovation used by the company.
- Challenges and solutions
    - Identify challenges that the company has faced in implementing its sustainability practices.
    - Laws and regulations
    - Explain how the company has addressed these challenges and any solutions it has implemented.
    - Evaluate the effectiveness of the solutions.
    - Production/value creation contra customers' ability to value capture
- Footprint (social, environmental economic), performance management, governance
    - Are you currently measuring or follow up on how your company is developing in sustainable directions?
    - How do you measure sustainability performance? Why?
    - Where do you find the inspiration use these indicators?
    - Are the indicators useful to validate if the company makes decisions in line with its vision and mission?
    - How do the company affect (become affected) from a sustainability perspective (environment, social, economic)?
    - Elaborate the results of the company's sustainability practices and the impact they have had on the company and its stakeholders.
        - Production
        - Transportation
        - Raw material supply
        - Resources
        - Waste - People, time, energy, excess production.
    - Elaborate the results of the company's sustainability practices and the impact they have had on the company and its stakeholders.
    - Discuss any future plans for the company's sustainability initiatives.
- Final reflection and conclusions
    - Summarize the main points of the case study.
    - Evaluate the company's success in implementing smart and sustainable practices.
    - Reflect on potential strengths short-comings and possible improvements.
    - Are supporting evidence and data being made available?

3.2.2 Data collection, coding and analysis

Due to that the international research group of WP3 didn´t have a joint approach we, in June 2023, started the preparation and collect phases (Baskarada, 2014) by recruiting interviewees in line with the idea presented above. We fortunately managed to recruit more than five companies. Starting in July 2023, we started the coding process and had the luxury to choose among them to pick out the five most suitable for this case book. In late December 2023, the text as it appears in this case book was finalized. Similar to the suggestions of Elliott (2018) , the coding congregated with the themes of the interview guide presented above.

As a parallel input for the case´s we joined the sectorial debate forum at Glava Energy Center in June 2023 and participated in one workshop as facilitators about challenges and future for solar energy industry. Through the workshop, 7 challenges were identified that could be turned into business opportunities:

- Technically
- Sustainable production
- Business models
- Regulations
- Leadership
- Infrastructure
- Recruitment/Competence

These challenges need further investigation for us to truly understand which factors can be understood as critical to developing a sustainable, regionally robust energy system. There is a pattern among the participants in the workshop that suggests that the entrepreneurial side feels that politicians and public officials through their policies and regulations make it difficult or prevent the emergence of a sustainable energy system, while the public side finds it difficult to trust.

The workshop was followed up with a panel discussion about seeking solutions critical to developing a sustainable, regionally robust energy system at the local and regional level. Åsa Johansson (S), chairman of the regional board in Region Värmland, Anders Björbole, project manager at Coompanion Värmland, Anna Hedberg, regional manager of Swedish business, Maria Falkevik, process manager of the County Administrative Board Värmland and Anders Norrby, CEO of Teknik i Väst participated in the panel discussion. Two of the case studies was recruited during the sectorial debate forum.

3.2.3 Cross-case analysis

The analysis of the cases has together with the case studies collected by the international research group of WP3 resulted in a cross-cases analysis (Baskarada, 2014) that will be presented towards the end of the case book. The table below indicates a second level coding (Williams & Moser, 2019), done in order to converge with the various approaches of the international research group of WP3.

Table 3.2: Second-level coding of the Swedish cases.

Theme (Sweden)	Codes
1. Introduction	An overview of the company and the vision of the business.

Theme (Sweden)	Codes
2. The core sustainability idea with the business	Describes the company's history, mission, and values. Provides an overview of the company's products or services and target market. Explains the company's current position in the market. What they are proud of. What drives them. How they create sustainable value Motivation/willingness and ability to change How new employees become "calibrated"/learn about the company's history, mission, and values. How often the company and the business performance reassessed from at sustainability point of view.

Theme (Sweden)	Codes
3. What incentives do the company have for its work with sustainability?	How the company are positioned on the market. How sustainability legitimize their products/services. If they use sustainability in the market communication, how?

Theme (Sweden)	Codes
4. Sustainability practices	Details of the company's sustainability practices, including environmental, social, and economic initiatives. Explains how these practices have impacted the company's operations, employees, customers, and stakeholders. Provides specific examples of the company's sustainability practices in action. In this way the company create unique sustainability values. Sustainability creates a favorable competitive situation like this.

Theme (Sweden)	Codes
5. How are sustainability decisions made?	Story about a decision that felt good/different/successful for them. This proposal was completely unthinkable to carry out / a deal they didn't carry out because it didn't feel right. What should they bring with them into the future What should they leave behind

Theme (Sweden)	Codes
6. Technology and innovation management	Detail the company's use of technology and innovation to support sustainability efforts. Explain how the company has implemented smart and sustainable practices in its operations. Provides specific examples of technology and innovation used by the company.

Theme (Sweden)	Codes
7. Challenges and solutions	Identified challenges that the company has faced in implementing its sustainability practices. Laws and regulations Explains how the company has addressed these challenges and any solutions they have implemented. Evaluates the effectiveness of the solutions. Production/value creation contra customers' ability to value capture

Theme (Sweden)	Codes
8. Footprint (social, environmental economic), performance management, governance	The current measures or follow up on how they are developing in sustainable directions Where they find the inspiration to use these indicators How useful are the indicators to validate if the company makes decisions in line with its vision and mission How the company affect (become affected) from a sustainability perspective (environment, social, economic) The results of the company's sustainability practices and the impact they have had on the company and its stakeholders. Future plans for the company's sustainability initiatives.

Theme (Sweden)	Codes
9. Final reflection and conclusions	Summarize the main points of the case study. Evaluates the company's success in implementing smart and sustainable practices. Reflects on potential strengths short-comings and possible improvements. Any supporting evidence and data being made available

Theme	Codes
Origin of Sustainability Initiatives	Exploring the origin and impetus for sustainability initiatives within companies. Analyzing whether sustainability efforts originate from internal motivations or are influenced by external factors. Understanding the dynamics and variances in sustainability engagement across different industries.

Theme	Codes
Supportive Ecosystems for Sustainability	Understanding the ecosystem and support structures that aid small and medium enterprises in achieving sustainability goals. Examining the role of innovation centers and similar resources in promoting sustainability for organizations, especially smaller cases like Spanish food organizations. Analyzing the involvement of various actors and processes within the ecosystem that contribute to making the company sustainable.

Theme	Codes
Foreign Ownership and Sustainability	Understanding the influence of foreign ownership on sustainability practices and goals. Exploring complexities in cooperation, aligning social values, and driving forces in companies with foreign ownership.

Theme	Codes
Industry-Specific Considerations	Analyzing industry differences and their influence on sustainability practices. Recognizing the impact of industry standards and emerging practices on sustainability efforts.

Theme	Codes
Motivations and Goals	Understanding the motivations and goals driving sustainability efforts, considering distinctions for born sustainable and transforming SMEs. Recognizing diverse motivations among managers, particularly in different industries. Management motivations affecting sustainability practices and dimensions. Exploring core values, driving forces, and dreams of the companies regarding sustainability.

Theme	Codes
Sustainable Ecosystem Management and Responsible Expansion	Understanding the importance of ecosystem preservation and responsible business expansion. Analyzing strategies to maintain a harmonious balance with existing ecosystems while pursuing growth. Evaluating motives and risk management considerations for international expansion while upholding sustainability principles.

Theme	Codes
Capturing Complex Dimensions in Sustainability	Recognizing and addressing challenging dimensions that are crucial in sustainability assessments. Analyzing the interconnection between social dimensions and the driving forces behind sustainability initiatives. Understanding the intricate linkages between various dimensions that are often difficult to quantify but hold significant importance in sustainability evaluations.

Theme	Codes
Transformational Processes	Understanding the transformational journey towards sustainability goals. Exploring how different goals, including environmental ones or social dimensions, may necessitate distinct approaches and processes for transformation. Analyzing hindrances and opportunities in the transformational process for sustainability goals

Theme	Codes
Sustainability Dimensions	Different dimensions of sustainability practices (e.g., environmental, social, economic). Evaluating how companies measure and moderate sustainability outcomes. Considering the economic perspective of sustainability.

Theme	Codes
Legitimacy and Communication	Addressing issues of both formal legitimacy (e.g., regulations, compliance) and informal legitimacy (e.g., industry perceptions, partnerships). Understanding how companies present their sustainability efforts to various stakeholders. Encouraging effective communication of sustainability initiatives within and outside the company.

Theme	Codes
Scalability and Growth	Addressing the challenges of scaling sustainability efforts, especially for small-medium enterprises. Identifying how companies can maintain core values and sustainability efforts as they grow and expand, both locally and internationally. Recognizing the distinction between reaching the industrial scale and focusing on the local market and the implications for sustainability initiatives.

Theme	Codes
Sustainable Development Goals (SDGs)	Understanding how companies align their goals with Sustainable Development Goals (SDGs). Encouraging companies to justify and explain their selection of SDGs in their development goals.

3.3 CASE: Hilmer Andersson

Kari Andersson, VD, och Nils Andersson, Produktionschef, was interviewed by
Mikael Johnson, Karlstad University
Lisa Gärdt, Glava Energy Center
Fredrik Östlin, Karlstad University

Introduction

In Lässerud, western Värmland, the company Hilmer Andersson Ltd has been running a sawmill and planing mill for four generations. It is Värmland's last privately owned sawmill and planing mill. High-quality forest raw material, sawn timber, is obtained from fellings locally, from the Värmland forests. Other smaller sawmills have been bought up by large companies such as Stora Enso, Nordic Paper and Billerud Korsnäs, Moelven. Large-scale bulk production is contrasted with the flexibility that characterizes Hilmer Andersson's business. Flexibility and our ability to quickly perceive and adapt to unique customer needs is our main competitive advantage, says CEO, Kari Andersson. Everyone in the company understands that flexibility is what makes us successful.

Hilmer Andersson's customers are mainly industrial companies and house construction production around the world, but the company also runs its own local building materials trade, Hilmer Bygg & Trä Ltd. There is thus a clear connection between the local and the global. Sawn, planed and finger-jointed wooden products are the company's specialty. The finger joint technique increases the degree of utilization of the forest raw material and this in turn increases profitability at the same time as the climate footprint can be limited.

The company CEO tells us that, we have always updated our production facility frequently to reach a high capacity and high quality of the goods produced. With responsibility for continuity, local anchoring and faith in the future, the business aims to provide for future generations. The tradition and proficiency are not only with the owner family, but also among the generations of employees. This creates team spirit and a common professional pride, a sense of quality and a shared responsibility for the company's future, says Kari Andersson.

The company has around sixty employees, but employs another thirty people in the local community by hiring local contractors who carry out, among other things, work in the forest with timber transport and in the sawmill's own garage. Kari Andersson is aware of how important the company is in the local community. When asked why Hilmer Andersson is so successful, she answers after a moment of reflection: Why are we successful, because we feel a responsibility and we take a responsibility. When the company is doing well, our employees and their families are doing well.

The core sustainability idea with the business

The company was founded in the 1920s. Mr. Hilmer Andersson from Lässerud then had his first sawmill built, which over the years would develop into one of the largest privately owned sawmills in Värmland. Professional pride and an uncompromising sense of quality marked and still mark the company. This has built a solid foundation for the company, which today is run by the fourth generation of the Hilmer Andersson family. The company's CEO, Kari Andersson, tells us that the company is important in the local community and that not only the owner's family got their livelihood through the sawmill, but in many cases four generations of employees have also contributed to running and developing the company. Hilmer Andersson ensured regrowth, for generations the owner family and but also employees have driven the company forward in the same forward-looking spirit.

The company's CEO, Kari Andersson, tells us that when the Paris Agreement[1] came in 2015, we went from being a mossy, gray sawmill industry to becoming a green industry. For us it has been obvious all along, we try to make as much as possible from a natural raw material and there can be nothing more sustainable than that, then you can develop it forever.

In Värmland, the biological and climatic conditions are extremely good for spruce, which gives us a first-class, renewable forest resource to manage. We do this with the greatest respect and responsibility at all levels, says Kari Andersson. We carefully select the most skilled contractors in the forest, we update our sawmill equipment and we adapt to the market's expectations. Taken together, this is the key to securing long-term survival in a tough industry.

There are three Andersson siblings who work together in the company and use each other's strengths to ensure that the sawmill is relevant and together focus on creating and running a long-term profitable business, but not at any cost. Their common core values help them make responsible decisions. There are two things about the company that are particularly important to them, which characterize the company's long-termism and ability to be current both today and tomorrow:

1. Self-determination, that it is the Andersson siblings who make the strategic decisions that are important for the future.

Flexibility, that it is their adaptability and ability to quickly change when business opportunities arise, which is their main competitive advantage over *large-scale competitors.* The flexibility is about deals that are now and not later. The focus on flexibility strengthens the ability to create security for the company, employees and the local community.

In order for them to be relevant today and in the future, they must be open, flexible and follow the market. Their entire business concept is based on being flexible and willing to change. *It is development or liquidation that applies to us*, states the company's CEO. When their father ran the company, the children learned early on that in order to get employment in the company, it was a expected that they should acquire a proper education. All siblings have a civil engineering education and their respective educational focus has resulted in different key functions within the company. One sibling, Nils, focuses on optimizing the operations, creating efficiency in the production. He is constantly in search for new ways to create value for customers. The second sibling runs the building materials trade and thereby gets valuable input from the market on how their products are received and leads that can develop them. The third sibling, Kari, is the company's CEO and sales manager, looking after the business and thus has a good insight into what is going on at the market. The siblings meet often to discuss how production and market challenges can be coordinated. These short decision paths are the key to success in value-driven companies.

Kari Andersson is also something of an ambassador for small businesses in Värmland. In that role, she wants to influence the view of the forest as a sustainable, renewable resource. She believes that Värmland's forestry is an asset for the green transition. *Let Värmland's forest industry be the engine of the green transition*, she says*. But for the forest to be able to contribute in an effective way, a holistic view and understanding of how the forest ecosystem works, how the forest resource can be used in a long-term sustainable way, is needed*, she continues. They use the entire forest raw material and make

use of residual products in all processing steps. To secure the supply of energy, the company invests in the power grid infrastructure and renewable energy.

The social dimension of sustainability is evident in that the company is an important employer with responsibility for local jobs, and has been so for three generations. Another social challenge is linked to the fact that they operate in a municipality with one of the lowest levels of education in Sweden. To secure the company's skills needs, they invest in employees with the right attitude. Nils Andersson says that *there are few things that make him as happy and proud as when employees come up with ideas or suggestions that contribute to running or developing the business.* The company culture is characterized by the fact that it is natural, obvious and welcome to get involved, to take responsibility. It is clear in the recruitment process that employees must be flexible and have the ability to adopt at short notice in order to fit in with the company.

What incentives do the company have for its work with sustainability?
Since Hilmer Andersson conducts business in Sweden, adheres to laws and regulations (performance declarations, manufacturing certificates, ISPM[2] certificates, third-party audited sustainability reports, NTR certification, PEPC[3] certification, PROSILVA[4] certification, etc.), Karin Andersson believes that it guarantees that the company utilize the forest raw material in a sustainable way. Against the background of these certifications, the company's CEO believes that they have acquired legitimacy to claim that *the business is actively working to contribute to a sustainable transformation with regard to all three dimensions*.

The commercial drivers are central, the company has to be profitable. They have a clear sense of responsibility for employees and local society. This means they balance profitability with social responsibilities. They try to take control of the transformation and lead the development in a direction that benefits them both in short- and long-term. During the past 10-year period, the company have invested SEK 900 million to streamline, become more efficient and to restructure the business. It has contributed positively to the creation of more than just monetary success. The social and environmental aspects are also important in the company and the way they distribute profits is an indicator of doing the right things, being relevant today and to continue being relevant tomorrow, even as society transforms.

Going through their sustainability report, it contains the following points:

- Environment
- Social responsibility and human rights
- Anti-corruption
- Personnel

On the surface, it may look like the sustainability report is imposed and with a low level of ambition, but the fact is that with the integrity and the core values with which the owners govern and operate the business, it becomes clear that a deeper and more developed report is not needed, according to them. Making a sustainability report contributes to analyze decisions, processes and actions in a more systematic way, to understand challenges and opportunities in creating more sustainability values in the business and to set out a clearer, more sustainable direction for the business. The owners' core values and integrity guide their decision-making. Since these values, among other things, are linked to the forest's ability to contribute to the green transition, the sustainability report is not that relevant for their internal use. However, the external value the ability to communicate their sustainability work, is

significant. Here we see that there is an opportunity to develop sustainability reporting within the company. Maybe CSRD[5] can be a way to increase the level of ambition?

Sustainability practices

The environmental dimension:

- The company's basic assumption is that the forest is a renewable, green resource that, if managed correctly, can drive a green transition. But in order for the forest to be able to contribute effectively, a holistic view and understanding of how the ecosystem works, how the forest resource can be utilized in a sustainable way is needed.
- The company uses the entire forest raw material, including all the residual products throughout the entire process, which is a way of limiting the eco-footprint.

The social dimension:

- The company is a major employer in the local community and has contributed to the livelihood of families for three generations.
- The company operates in a municipality with a very low level of education. Finding labor with the right skills is a challenge. Hilmer Andersson takes great responsibility and invests in improving the staff's skills.
- Responsibility for the local community in several ways.
- The well-being of the staff end owners and having time for recovery for everyone in the company is a key issue.

The economic dimension:

- The business is profitable. The company continuously reinvests in environmental and social improvement activities. Long-term profitability needs satisfied, loyal customers. Profit is proof that customers and suppliers believe that the company is doing the right things.
- Investments in infrastructure and renewable energy such as solar energy, hydrogen plants, wind turbines.

The way the resources are allocated is a strength with the company. In this, their core values and vision of the company, their way of running the company, lead the way to their success. Profitability is important but not at any cost. The pride in their family business and the successes make give them the strength to continue running the company. Many have offered to buy the company but for generations they have always declined. They want to continue running the company to make their dreams come true, but it is also about fthe sense of responsibility and care for the local community.

Ever since we were kids, we have been taught that we are important to the local society is important to us. We want Lässerud and its surroundings to prosper, for people to want to live here and for young people to enjoy themselves. For purely personal reasons, we would like there to be a spirit of the future and a positive atmosphere across the board, says Kari Andersson. In case of slow sales, the company chooses not to lay off staff. Instead, they tidy and maintain the facility, train staff and further develop the production facility. The company priorities the employees' long-term well-being and unique competences.

Within the company, sustainability seems to be a way to create compliance, flexibility and the quest for efficiency. Flexibility is about stimulating the ability to change and the willingness to adapt with customers and to follow market fluctuations.

How are sustainability decisions made?
The social responsibility of the company management for its company, employees, subcontractors, partners and the local community, is always present. All decisions, big or small, are made with a focus on profitability but with a great sense of responsibility. "Profitability, but not at any cost," could describe Hilmer Andersson's decision-making process. It becomes clear that the sense of responsibility and the core values are always present.

With this in mind, it becomes evident that there are some decisions that would be impossible. Repeatedly, the owners of the company they have received offers to sell to larger actors within the industry. But *it's completely unimaginable*, says Kari Andersson and continues, *there are generations of employees and their families, the whole community that in one way or another has a relationship with the company. It would be impossible for us.* The owner has thus chosen to develop the company to become an actor that must stand for something different, that distinguish itself from the bigger competitors.

Investing in bulk sales with low quality is unthinkable to us, says Nils Andersson. We are too small and the risk becomes too great. In that segment, the competition from larger players is tough. The demand for high production volumes and the price pressure would risk our long-term survival.
Instead, the decisions are characterized by a long-term perspective, responsibility that spans over several generations and a curiosity about both new business opportunities and technological development. *Many times, it comes before short-term profits, if the choice has to be made*, says the company's CEO.

When we ask in-depth questions about long-termism and thinking about the future, Kari Andersson tells us that her father and grandfather, i.e. the company's former CEOs, died prematurely and an explanation is linked to work-related stress. *We need to learn to deal with stress by taking responsibility for our own recovery and that of our employees*, she notes. *Their father and grandfather belonged to another time, when people didn't think like that. The company did well under their leadership but they paid a heavy price in lost health.*

Technology and Innovation Management
While the competitors have become increasingly larger and their business model focuses on volume production, Hilmer Andersson has chosen a different path. *Although our technological development pays efforts in increasing the production volume, our main focus is to broaden our range while remaining flexible. All in all, this is our way of combining efficiency with increased customer satisfaction and effectiveness*, says Nils Andersson. Based on their decision-making process, it becomes clear that innovations and technological development focus on flexibility, risk minimization, improvements in safety and working environment, but also energy efficiency and a desire to secure access to energy and preferably green energy.

The company has always and frequently updated the production facility. This has been about reaching a high production capacity, but above all to ensure that the lumber produced are of high, competitive quality. It is clear that the quality criteria are not only technical or functional. Equally important are emotional and social aspects. Today, Hilmer Andersson can be described as a flat organization. The Andersson siblings have purposefully eliminated hierarchies and authoritarian leadership. *We have strived for a flat organization and stimulates team spirit. We have a completely different leadership style*

than our predecessors have had, no bad word about father and grandfather, but they ran the company in a different time and for a different generation. In order to secure the future, we have thought that the prosperity should not depend on us (the Andersson siblings). *The company has to manage even without us. Then there is no one who does it with as much passion as we do, but no one is indispensable and it has been important, for us, to build an organization that will last in the long term*, says Kari Andersson.

Challenges and solutions

There are a number of challenges for the company. One challenge is linked to securing the availability of energy and grid capacity. In Värmland and especially in western Värmland, there are limitations in terms of power grid capacity. Without getting stuck into technical reasons, it is unsafe to invest in renewable energy due to the grid capacity problem.

If we for while ignore the problem of power grid capacity, there are completely different challenges for a sawmill that wants to invest in renewable energy, such as wind turbines. Obtaining permission to build, for example, wind turbines is a time-consuming and difficult process with an uncertain outcome. Since there is often resistance among residents who believe that wind turbines are disturbing, ugly and pollute the surroundings, those who want to invest in renewable energy can count on delays. *You can expect that a building permit will be appealed, which leads to years of delays*, says Nils Andersson.

Another challenge is that the company has difficulties in recruiting staff with the right skills. It is important for us to communicate the employee values that characterize the company, it is a flat organization that offers great opportunities for personal development, says Kari Andersson. Equality and a good employee climate are central success factors.

Nils Andersson, the production manager, says that the feeling of winning, when things go well for us, is what makes it fun - when we make good results! I can also feel even more satisfied when an employee in production, to whom you have tried to explain things, actually understands and performs them himself, or comes up with suggestions for development or change. That makes me very proud and happy. A flat organization has clear strengths but also some weaknesses. The fewer of middle managers a company has, the greater responsibility is placed on the top management team. Permit processes, audits and things they perceive as bureaucracy become the responsibility of a few people. Kari and Nils Andersson believe that *expectations and the legacy of previous generations can sometimes be heavy for a few people to bear.* At the same time as they want to develop a company that is not completely dependent on a few people, there is a lot of responsibility, organizational culture and driving forces that are connected to the Andersson siblings who own the company. *If we disappear, what will happen to the company*, thinks Nils Andersson?

Another challenge is linked to local access to forest raw materials, timber. *Here, relations with local forest owners are important, but the challenge is that people have a sentimental view of the forest*, says Kari Andersson. She broadens the problem by stating that *the debate about seeing the forest as a resource, a raw material is a polarized debate that creates uncertainty about the future. Political decisions that are sometimes based on irrational or emotional grounds can affect, or make their business more difficult.* Access to local timber is a success issue. They feel that their industry is heavily regulated. It is often difficult to get support in their decision-making process. Consulting the County Administrative Board or supervisory authorities sometimes feels frustrating. It is difficult to get clear answers to concrete questions, says Kari Andersson. This feels frustrating and takes time from more important issues. An example concerns the requirements for sustainability reporting. Having a responsible commitment to sustainability is a matter of course for us, but the work with sustainability reporting is

time-consuming. Sometimes it feels like the requirements from certifications and various sustainability standards lead away from increased sustainability, notes Kari Andersson.

As a consequence of the uncertain supply of energy, but despite the problems with network capacity, Hilmer Andersson has invested in a solar cell plant, which captures our curiosity. Nils Andersson answers, somewhat surprisingly, that *the solar park may not be an investment in green energy at all, but rather a symbolic act that is more connected to their social responsibility. The ground, a southern slope, is actually to be regarded as an impediment. It was not productive forest land*, reasons Nils Andersson, *so in that sense the solar park was still a good solution.*

Footprint (social, environmental economic), performance management, governance

For a small or medium-sized company, with a fairly flat organizational structure, it is difficult to concretize the business's consequences, its environmental and social footprints in clear measures. Ensuring these requires a management capacity, a middle management level, which only large companies have the conditions to have. Still, it seems as Hilmer Andersson has a good overview of the resource usage and the efficiency focus means having good enough control and a smaller number of important key indicators, but perhaps not in terms of an advanced and far-reaching battery of indicators. Instead, they rely on their feel for the production process. During the interview it nevertheless becomes clear that Nils Andersson has complete control over the company's energy consumption. Here we get fast and reliable answers. Likewise, when it comes to financial ratios, that they do profitable business. As argued above, the ability to produce high-quality lumber is important, increasing the volume is also central, but only as long as there are buyers for the goods. There is thus no goal in itself to increase production, to have high growth. *Quality should always come before quantity!*

When it comes to external collaborations, Hilmer Andersson insists that their subcontractors follow the requirements set by certification bodies. Through continuous follow-ups, it is ensured that they use the timber material in a sustainable way. Despite this, the continuous improvement work continues. The driving force is the owners' responsibility for the company's social, environmental and financial consequences.

Final reflection and conclusions

The third generation Andersson runs a business that is financially stable, successful and continuously modernized but still continues to invest in the company with a strong focus on the social dimension. The well-being of the owners, employees, and local community is important to them. Kari Andersson comes back to *We should not work ourselves to death but take advantage of the good things in life*. Time for recovery and caring for each other has become a way forward, a way to future-proof the company.

Their father and grandfather have transmitted the feeling for the local society, shaped the siblings' character and developed a modern, entrepreneurial and flat company culture. All in all, this guarantees continued success with the company and a prosperous local economy. But in the role of company leader, courageous leadership is required, to dare to make decisions that lead to a more sustainable future. Through hard, purposeful work, guided by their unique core values, the Andersson's has acquired resources, courage and opportunities.

3.4 CASE: Gårdarna in Värmland

Mikael Johnson, Karlstad University
Lisa Gärdt, Glava Energy Center
Fredrik Östlin, Karlstad University

Gårdarna i Värmland, https://www.gardarnaivarmland.se/

Introduction
Kristina Ahlstedt Karlsson owns the farm Ruds Gård, Kil, Värmland. The farm has several focuses with its production: the forest, plant breeding, meat production (lamb), and accommodation/hospitality. The origin of this case study is that Kristina searched for ways to increase the profitability with the farm's production.

With the help of, among other things, project support within locally led development funds like *Leader & the European Agricultural Fund for Rural Development* and the project *Cold and freezer rooms with processing capacity*, Ruds Gård has invested in a refrigerated container. This increased the cooling capacity in turn opened up to further processing of the farm own meat production but also, if we take the liberty of simplifying things, that Rud's farm could increase its cooperation with other farms in Värmland that had the same needs. Ruds gård has a sales premises that is rented out to the company Gårdarna i Värmland. The company Gårdarna i Värmland has three partners, Kristina is one of them. Both further processing of locally produced meat from a long line of farms in Värmland takes place in the premises. But the premises also houses a farm shop that sells local produced goods (meat, fish, honey, flour, butter, cheese, lamb skins, etc.). The goods can also be ordered and purchased via the company's website. Gårdarna i Värmland can be understood as a cluster collaboration between many farms is growing.

From the Gårdarna i Värmland website:
We are the Gårdarna I Värmland - You will find us in the "Gårdsbutikerna" on your computer sitting at your home - for those who want to shop from our farms and know more about them. Our Värmland farms like to cooperate and want to give you an authentic Värmland feel and taste!

Shopping locally produced goods from Gårdarna i Värmland, benefits our farms and rural businesses, who through our cooperation avoid middlemen and we can develop our own concepts according to your wishes.

Gylteruds Kolbruk - Forshaga
J J Praliner - Mangskog
Toveruds Mathantverk - Säffle
Västanås Gård i Kristinehamn
Västra Ämterviks Bryggeri
Enbackens Musteri - Munkfors
Smedstad Fårgård, Kil
Höglunda, Kil
Wermlands Skogsförråd - Kil
Ljusåsens Ost - Vike - Kristinehamn
Lakene Ostgård - Hagfors
Ruds Gård, Kil

Sörby Gård, Kil
Naturpralinen
Wermlands Bovete
Skårebols Lantbruk, Kil
Sörgården, Kil
Aplung Lantbruk AB, Västra Ämtervik
Torfolk Gård - Hagfors
Högåsen, Kil
Björkeholms Qvarn
Fagerås Kvarn, Kil
Kristina Blakstad®
Fagerås Nötkött, Kil
Klevane Örtagård
Grön Gryning
Jonstorps Gård, Kil
Åneholms Gård
Grinnemo Hallon & Honung AB - Gräsmark
Sölje Herrgård & Sölje Gård
Västanå Gård - Kristinehamn
Gustava Lax - Hagfors
Värmlands Brygghus - Kristinehamn
Toveruds Mathantveerk - Säffle
Värmlands Boxen - Karlstad
Nedre Femtå Qvarn
Stöpafors Kvarn - Stöpafors
L8s lokalproducerade isunne
Ljusåsens Ost - Kristinehamn
Värmlands Chips - Brunskog
Prästgårds Produkter - Frykerud

Kristina says that by joining forces on marketing, deliveries and sales, the idea is that farmers in Värmland will increase the profitability with their production, while at the same time being able to a greater extent focus on developing and securing the production quality of their farms.

The core sustainability idea with the business

Ruds gård is an actor with several production lines. Based on the challenge to increase the profitability in the production, Gårdarna i Värmland was formed as an initiative to facilitate or share resources related to sales, meat processing, storage & logistics and marketing with other small-scale, local producers. Gårdarna i Värmland are a distribution channel for small-scale local production: The business includes farm shop, warehouse, logistics, a business system adapted to the purpose. The company can be seen as a meeting place for local businesses, local resturants and smiliar, and private customers who value local, sustainable food production. The common denominator for the local poducenters is that they see the value in how Gårdarna i Värmland markets and sells their goods.

For entrepreneurs who want to avoid tying up their food production to more conventional food trade, there are other ways to sell locally produced goods. One way is something called a *REKO ring*. It is a way for buyers and sellers to buy locally produced food without any intermediaries. Buyers and sellers get in touch with each other via a special Facebook group for the locality in question. The unique thing about

Gårdarna i Värmland is the breadth of the range of local goods on offer, and that marketing, distribution and sales are coordinated.

Kristina is proud of her farm and that Gårdarna i Värmland contributes to strengthening the living conditions of so many small business owners and farmers. Together, they can show cusomter the unique values found in the countryside. Showcasing the good life in the countryside as well as the quality of the crops and small-scale production is important for Gårdarna i Värmland. The cluster of farmers and small-scale food producers uses resource efficiency, local production and small scale to create sustainable values. These values are clearly linked to each farm's unique resources, ability and capacity. Together, the cluster's local food producers represent a more sustainable way of life. Through the trading platform, an opportunity to capitalize on the resources and values of the farms has been created. This in turn opens for people to live a good life in the countryside.

The business is characterized by a high ability of adaption. Everything that can create better conditions for living a good life in the countryside, they are willing to change (make more efficient, automate, digitize). At the same time, there are some challenges linked to transferring the understanding, knowledge, relationships and the way to create unique customer values in what Kristina has built together with all the producers. The outside observer notes that although each food producer is given the opportunity to position their unique values through their own websites, which are linked to the Gårdarna i Värmland website, there is more to develop in that area. It is about showing customers more clearly what their consumption of locally produced goods contributes to, the quality of the goods, the good life in the countryside and a more resource-efficient food production, and a transformation towards a more sustainable society. When the business grows and needs to be shared with more companies, completely different challenges arise that involve different path choices, desires and pre-understandings. The Gårdarna i Värmland have recently merged and now have three co-owners.

What incentives do the company have for its work with sustainability?
The broad product catalog gives the business a unique position for locally produced goods. It is almost possible for a household to do its weekly grocery shopping at Gårdarna i Värmland. What is unique is also the opportunity for the business to highlight both environmental and social values. By producing, selling, consuming and marketing local products, you contribute to a deeper understanding of a transition to a more sustainable society. Customers' increased knowledge of the craftsmanship that is carried out to produce these products contributes in a positive way to the behavioral change required for a sustainable transformation. The marketing does not use the concept of sustainability. Instead, the local and social values are emphasized. But an outside observer believes that there is still more to do. Rather, the Farms in Värmland tend not to utilize the full potential of local and social values. In the sales premises, there is often a lack of a clear connection to these values.

Sustainability practices
A decisive decision for Kristina, Ruds gård and Gårdarna i Värmland was to avoid to market their products in the larger, conventional grocery stores. Kristina believes that the producers who are connected to Gårdarna i Värmland are too small. They simply does not have the production capacity required to compete with the major food producers while maintaining quality and good food craftsmanship. But above all, Kristina believes that locally produced food will not be properly positioned and valued when competing with the range of products from all over the world. Further, that the small producers often do not have the capacity to deliver larger volumes. Rather, Gårdarna i Värmland sees that it better and

more profitable to sell the locally produced goods via smaller farm shops and/or directly to the end customer.
Gårdarna i Värmland is a way to ensure a good life in the countryside. That idea permeates the entire business. It is precisely this that customers appreciate and consume. Customers are willing to pay to support sustainable values, quality and experiences.

Economic values:

- Local business operations
- Possibility of increased profitability.
- Shared costs (logistics, marketing, sales).

Environmental values:

- Coordination of transports.
- Uses natural resources in a resource-efficient manner.

Social values:

- Ensures a good life in the countryside.
- The trading platform creates opportunities for the local producers to meet, which stimulates the exchange of experience and knowledge transfer between them.
- Creates local jobs.
- Promotes local food production, which strengthens local resilience.

The Gårdarna i Värmland have, as previously mentioned, undergone a merger with two other companies. This was necessary to bring in new skills and create the opportunity to scale up the business. The advantages with the merger can be described as a tipping point where the company now have the resources and competence to broaden the business, strengthen the position at the local market. In a way, this means a return to the way people used to live by strengthening the local level of self-sufficiency. This increases resilience in a often unsustainable consumer society. The merger was at the same time a big and difficult decision because with it comes new challenges when several strong wills must come together. Now three co-owners must make decisions together.

Technology and innovation management
The trading platform that Gårdarna i Värmland developed for digital sales, ordering, and stocking that is integrated with accounting and logistics systems simplifies and creates conditions for transparency towards producers. There are obvious challenges linked to developing and streamlining a business based on distributing and selling locally and small-scale produced goods. There is a risk that the image of genuine and unique food craft will change as the business grows and expands. The key to managing this is to clarify the core of the business ie. to convey knowledge and understanding of how the social and environmental benefits of local, small-scale production works.

Societal development has, for long, been in the direction of large scale with few actors. This, in turn, has created regulations and a bureaucracy which is actually well-intentioned while also creating difficulties for small-scale producers to get their production approved. It takes quite a lot of resources, capital and persistence for a small-scale food producer to adapt its operations to current regulations. This limits small-scale producers' opportunities to develop their businesses on their own. Kristina has had resources and the courage to invest in combination with the fact that she also, successfully, has sought public funds to develop her business.

Footprint (social, environmental economic), performance management, governance

The local market is dependent on the business being able to position environmental and social values. Whoever succeeds in this can motivate customers to pay a higher price for sustainably produced goods. The follow-up that is carried out is linked to the economic development. Kristina has a financial advisor who helps her make commercial decisions about the business. When it comes to social and environmental decisions, it is gut feeling and common sense rather than clear indicators that provide a basis for decisions.

Final reflection and conclusions

Kristina owns an agricultural farm property. She wants to use the farm and its various resources as efficiently as possible to build a good life in the countryside. The solution she chose is to collaborate with others on the biggest challenges (marketing, farm shop, warehouse, logistics, business systems) with the business to gain profitability with her own business. Cooperation is a key success factor for all of them. The Gårdarna i Värmland have created a local market for small-scale locally produced goods. There are many challenges in producing and creating value on the farm and this is every farmer's everyday struggle, but what is different with this case study is that Kristina has realized that there is scaling benefits with sharing costs for sales, marketing, logistics, etc. The outcomes are more robust and profitable, sustainable business. An outside observer of the business can argue that there is more for Gårdarna i Värmlnad to do to strengthen the attractiveness of the goods and producers among customers on the local market. The good life in the countryside, the environmental and social values can be clarified further and be more prominent in the marketing.

3.5 CASE: Naturbyn i Långserud

Mikael Johnson, Karlstad University
Lisa Gärdt, Glava Energy Center
Fredrik Östlin, Karlstad University

https://www.naturbyn.se/naturbyn-videos/

Introduction:
Naturbyn is a micro-enterprise run by its founder and owner, Thomas Pettersson. Sometimes the company hire people for shorter periods, but most of the time Thomas runs the business all by himself. The business idea is about offering guests a unique stay in Naturbyn's cottages and experience village. Naturbyn is well hidden on a forest slope among heavy firs and pines next to a quiet bay in Lake Eldan in Värmland. By the country road there is no clear signage showing the way. Nothing that disclose what is hidden in the dense forest. Only the guest who, via the website, has booked a stay, will fins the way there. The business has its origins in Thomas wanting to create a place where he himself wanted to just rest, slow down, experience and have the opportunity for mindfulness reflections.

The core sustainability idea with the business
Giving guests the opportunity to feel inner peace and experience the simple things in life are central parts of the stay. Development, growth and profit must not disturb either Thomas nor the guests' sence of inner peace and freedom! Thomas wants to be in control and does not make any changes that could risk the equilibrium, the inner peace and the feeling of freedom.

The business started in 1998. The only driving force was a search for "Experiences back to basic" in a place where Thomas himself *would like to be*. So there was no deeper thought than that - *a place where he himself wants to go, but on nature's terms*. When the business one-day ends, Thomas wants nature to, slowly but surely, be able to take back and restore the place to the way it once was, i.e. buildings and everything that has been built up to be Naturnbyn's signature should be able to decay and return to the cycle of nature. To make this possible, Thomas has built everything himself from the materials that were on hand at the site, things such as stoves, furnitures (those that he were not able to craft by himself), kerosene lamps, etc. have been bought locally, second hand or in some way could be connected to a careful use of resources. Naturbyn can be defined as an experience of respect and resourcefulness. Initially, the company had focused on corporate events and private, but larger gatherings, larger parties such as family reunions, bachelor parties etc. Thomas thought after a while that such guests and activities were indeed profitable, but the pressures, both on the facility but above all socially: Thomas did not enjoy large, sometimes loud, parties. The essence of the experience was missed by these guests and it disturbed Thomas' own inner peace with the place. He sums it up with the words *Nature should last and I should think it's fun. Large groups generate more money but at the same time greater wear and tear and more work. It wasn't worth it*.

Gradually, the business has developed to focus on a completely different target group: private individuals, preferably couples, who visit the Naturbyn to experience inner peace on nature's terms. Those who book a stay via Naturbyn's website must stay at least two nights and have about ten simple wooden cabins, with a slightly different characters, to choose from. All cabins have a double bed, simple furnitures, a wood burning stove and oil lamps. Some are regular cabins that are built directly on the ground, some are built on rafts that float on the lake (you have to paddle out by canoe) and some cabins

are built like treehouses, a little way up from the ground. The sanitary facility is also very simple and back to basic. The shower, for example, is a bucket with holes in the bottom. There is a wood-fired sauna. Cooking takes place over an open fire. There is no electricity and therefore no wifi, there is hardly any mobile phone coverage in the dense forest. Everything that makes up the Naturbyn facilities is built on site, by hand by Thomas himself. It is assumed that construction work is also part of his own mindfulness process.

Visit Värmland has described Naturbyn like this:
In a time of globalisation, digitalisation, stress and flight shame on the agenda, Naturbyn in Långserud has created a product that provides contrast, tranquility and sustainability. In a new-thinking and innovative way, a stripped-down nature experience is delivered without frills where the visitor can be one with nature. Experiences, activities and accommodation are permeated by nature and both economic, social and environmental sustainability. Through the attractiveness that Naturbyn has created both with a long-term perspective and renewal in mind, visitors are attracted from near and far. Naturbyn is one of Värmland's most unique and attractive visitor destinations.

Thomas explains that Naturbyn's sustainability values are about using the resources available on site, the forest, the water and nature. Buildings should not rot but be able to fall into disrepair when operations cease. He reflects in this further by saying that: I have no long-term plan, I have no loans and when I leave the place, everything will go back to nature! Naturbyn rarely hire extra employees, but when the need arises, only those who understand the place, the business and the mindfulness concept that may come into question are hired.

What incentives do the company have for its work with sustainability?
As a concept, Naturbyn is about safeguarding the balance between economic, ecological and social interests. The long-term plan is for everything to return to the cycle of nature and the change process is more about maintaining this balance, and to adapt everything to the stipulations of nature and the climate. It is these values that are highlighted in the marketing. Those interested can find evidence for this by examining the web site of Naturbyn: https://www.naturbyn.se/naturbyn-videos/

Sustainability practices
Naturbyn protects the facility and nature. The activities can not jeopardize the condition of the nature. It has to be given time to recover. Thomas's love for the forest clearing protects the place. It is this love that also guarantees the quality of the guests' experience: *People should feel comfortable here,* Thomas says with a thoughtful smile and continues with *the bank is constantly asking how I should develop, but I don't know if I want to.*
The website, and what previous guests tell their friends (word of mouth), is what captures the interest of the target audience. He steers towards customers who are able to appreciate the experience, those who probably have the same core values and view about life and nature as Thomas. The company's business, the offer to guests, is about giving them the opportunity to feel inner peace and experience the simple things in life and to do it on nature's terms. This means that Naturbyn:

- Opted out of the comforts that characterize modern man's everyday life
- There is no electricity, TV or wifi
- No large groups, loud parties such as bachelor parties
- No large tour operators that book visits etc.
- Try to buy locally produced and used when possible.

- Not wanting to offer plastic for camping guests, campers, etc.
- No day guests, you must stay at least two nights.

Naturbyn wants guests to feel inner peace, to have a mindfulness experiences. For Thomas, it is also about mindfulness, but at the same time that the business and the need for profitability must be balanced with social and environmental values. Thomas says that *that balance must never be jeopardized*.

How are Sustainability decisions made?
Drivkraften handlar om att göra lustfyllda och kreativa saker utifrån sina hållbara värderingar,
The core with the concept is about doing pleasurable and creative things based on one's sustainability values, and the search for inner peace. This and the freedom to do what he wants defines Thomas' feeling with the business.

Events, large scale activities and too many bookings wear on the facility and but also on Thomas' ability to deliver memorable experiences to the guests. *This must be avoided, it isn't worth the money,* says Thomas. For Thomas and Naturbyn's future, three things are significant:

- To maintain inner peace, the feeling of being satisfied with life and what I have."
- The balance between economic, social and environmental values must not be disturbed
- When the activity ceases, buildings and everything that makes up the Nature Village must be able to be broken down, returning to the cycle.

Technology and innovation management
The unique thing about Naturbyn is to avoid overexploiting the place. All activities must take place on nature's terms. This is the innovative thing about Naturbyn: *We must never compromise with the inner feeling, nor with nature*, says Thomas. The outside observer of Naturbyn thinks that the innovative thing is also daring to stick to the inner feeling and basic idea that once shaped the business, that Thomas allows himself to be satisfied with what he has, and that it is precisely this that creates the success and the appreciation of the guests. Thomas tells us that there is a couple from New Zealand who have returned to the Naturbyn several times and that by the way, there are many others too", he concludes with a gentle smile.

Footprint (social, environmental economic), performance management, governance
Similar to many other micro-enterprises, there is no advanced management model or clear indicators. It is Thomas' gut feeling and ongoing assessment of the status of wear and tear etc. that governs how many guests the Naturbyn can accommodate.

Final reflection and conclusions
Oren Lyons[6], Faithkeeper of the Onondaga Nation, explain that the *Seventh Generation philosophy* intensifies the bond of community, promotes stability, and provides concrete values with which each person can test his or her everyday actions. Although this is practice has ancient traditions, it is not frozen in the past. Instead, this philosophy strengthens the ability to adapt to dramatic change and to be self-sufficient while being equally focused on the security of future generations. The *Seven Generation Principle* is an Indigenous Concept, to think of the 7th generation coming after you in your words, work and actions, and to remember the seventh generation who came before you, is truly synonymous with being resourceful and mindful. We do not claim that Thomas has been inspired by

Oren Lyon. But the way Thomas has organized and maintain his business, Naturbyn, has strong similarities with the native Americans *Seven Generation Principle*.

Naturbyn is run in a resource-efficient, mindful manner. Every business decision is made listening to his heart, to the love Thomas feel for the forest clearing. Profit is important to Thomas but not at the expense jeopardizing the eco-system upon which Naturbyn is dependent. Thomas consider profit to be a facilitator of a meaningful, happy life. The key take-away from the interview with Thomas, from the afternoon-visit to Naturbyn, is that there is greatness and admirability in feeling of being content. Having found inner peace, being satisfied and content is a unique feeling is today's society. It brings great happiness to a person that feels at ease with having found a meaningful, sustainable and good life. Especially so as today's society is focused on growth, becoming more, bigger, better, etc. How can we build together, the true meaning of development, sustainable and being content with what we have? What does it mean to run a resourceful, sustainable business?

3.6 CASE: OK Värmland economic association

Interviewed by:
Mikael Johnson, Karlstad University
Lisa Gärdt, Glava Energy Center
Fredrik Östlin, Karlstad University

Stefan Särnehed- OK Värmland ekonomisk förening https://www.okvarmland.se

Introduction

OK Värmland is a regional cooperative organization that is part of a national network of OK cooperatives. In total, there are six regional cooperatives that come together under the OK umbrella. OK Värmland's organizational form is an economic association with a main focus on mobility and energy provission. The core of the cooperative is, just like for ordinary companies, to offer attractive goods and services. The business depends on ensuring profitability. The profit is needed to have the ability to allow the business to develop as the needs of the members and the community change. Note that for cooperative organization part of the profit can also be distributed among its members.

OK Värmland is an idea-, or values-driven organization that contributes to economic and social wealth for both its members and society at large. OK Värmland has in 2023 around 75,000 members distributed all over Värmland. The core of the business is the sale of fuel and offering charging infrastructure, car-washing stations, groceries, fast food, and package delivery. There are 30 gas stations of which 16 are manned. Their vision is that the whole of Värmland should prosper and live.

The core sustainability idea with the business

OKQ8 Scandinavia is 50% owned by OK and 50% by Kuwait Petroleum International. Their vision is to, together with their members and customers, participate in and influence the entire society's transition towards a fossil-free future. The supply of fuel is ensured through the collaboration with the Kuwait organization, even though it can be imagined that there would be some challenges for an values-driven actor to collaborate with a commercial actor from the international market, but this is how the organization has waorked since 1999. Today, OK's membership is over 1 million. Stefan Särnehed says that:

Our purpose has always been the same, to provide products and services for motorists at the best possible price. Today, we cannot contribute as much with fuel price levels as we could in 1927. Instead, the emphasis is on providing products and services in as many, urban as well as rural, locations as is economically possible. This is based on the cooperative principles including social responsibility.

OK Värmland has 30 stations, of which 16 are manned, offering service in the form of fuel/charging infrastructure, washing stations, groceries, fast food, parcel delivery, etc. OK Värmland's mission from its members is to conduct business throughout Värmland in a profitable and efficient manner.
Stefan explains that, our way of looking at profitability means that we must have a station network that generates profit that creates the conditions for investments, returns and consolidation, i.e. a profit that gives us the opportunity to remain in existence in the long term. If you disregard OK Värmland's values driven mission, there is nothing that differentiates them from other competitors on the market in terms of the offerings. However, OK claims that they have always been the first to sell various forms of environmental fuels. In recent years, the car washing market has also grown as people become aware

of the environmental impact of washing the car on the street. It is clear that they drive social and environmental issues and do so within the framework of the business' financial conditions.

Despite the collaboration with Kuwait Pertoleum International, OK Värmland has managed to maintain its cooperative principles where social and environmental values are put at the center. Despite the fact that only a handful of gas stations are profitable, 30 stations are kept running in order for the whole of Värmland to prosper and live. OK Värmland is willing to change its operations in order to maintain its relevance among the members and in the community. The fact is that the number of members increased with about 10,000 members in 2022. This is a clear indication that many people consider OK's activities to be relevant to them. At the same time, OK is well aware that the basis for their business is unsustainable as they offer fuel, tobacco, fast food, sweets/soft drinks/ice cream. *Should any member, at an annual general meeting, in 2023, suggest that we start selling something like that, I think it would not be approved by the annual general meeting*, reflects Stefan. *There is a strong motivation to reconsider all parts of the business to make it better, more sustainable, to better match the members' needs and expectations*, says Stefan.

OKQ8 has engaged in dialogue with 5,000 customers, members, interest organizations, suppliers to better understand the expectations and areas where these stakeholders want to see changes or development. The stakeholder dialogue provided the insights that in addition to cleaner energy and reduction of greenhouse gas emissions, our goals and activities will include, among other things, sustainable water usage, biodiversity, good working conditions. This harmonizes with the UN's sustainability goals and helps OKQ8 to prioritize investments but also to measure results and that the change process leads in the right direction. There is, thus, a high willingness to change, to adapt. OKQ8 are aware that the industry and their entire range urgently need to change. They actively search for innovative solutions. An example of this is development projects where, quite innovatively, they want to focus on people's travel needs, rather the ownership of and the fuel for vehicles. *We must help people to travel and we must dare to look at it in new ways*, says Stefan

At management level, there is a mission to communicate the current situation and OK's future goals through employee dialogues. They work actively with diversity and equality issues and have issued policies and other governing documents. Although the sustainability reporting model is quite simple, and not third-party audited, there is an approach at OK Värmland to sustainability report its operations. The sustainability report is made in the same document as the annual report. Despite its simplicity, it seems to provide support for OK Värmland to reconsider its role and function in society in relation to the vision and sustainable development in general.

How are sustainability decisions made?

For OK Värmland, their change process is about continuing to be relevant to its members and remaining, long term. OK Värmland is clearly driven by its core values and the cooperative principles, which directs their way of acting to do good for the members in Värmland. The proof of its relevance is that the number of members increased dramatically in 2022 and this in a time that is characterized by postmodern individualism.

OK Värmland works with a range of sustainability issues and tries to communicate this to its members and society in general in different ways. These examples of conversion work actually concern all parts of the business:

- Service and customer service
- Local business operations
- Fuel
- Energy efficiency improvement
- Production of own renewable energy
- Food and beverage selection
- Ways of working
- Efforts to promote good working conditions for the employees.

Sustainability practices

Our single biggest impact on the environment is through the fuel products we sell, says Stefan. With that insight comes the responsibility to enable members, customers and consumers to change towards more sustainable mobility. The climate goals are ambitious, in 2030 we shall be climate neutral in our own operations, where distribution, energy usage, and travel account for the largest shares. In 2045, the entire value chain must be climate neutral, and this means that greenhouse gas emissions from the customer's use of our products and services are also taken into account.

Environmental:

- Service and customer service.
- Reduce energy consumption.
- Increase the share of renewable energy (solar cell investments and hydrogen plants).
- Charging infrastructure
- Improve the laundry hallsRenewable fuels.
- Replacement of treatment plants at all stations.
- Promote sustainable water use.

Social:

- Creates jobs.
- Promotes service in rural areas.
- The social dimension is extensive. Stefan explains that, OK Värmland engages in cooperative development through a collaboration with Värmland Cooperation, which is a collaboration between the established cooperative organizations: HSB, Riksbyggen, Coop Värmland, Folksam, LRF, Fonus, Länsförsäkringar, and Coompanion. We engage primarily through advocacy work to improve the opportunity for cooperative work. This takes place through meetings with politicians, both locally and nationally.
- We award various scholarships to cooperatives or people who have made an impact within the cooperative in various ways.
- We support Ung Företagsamhet (UF) by being involved in their activities. We are also involved in their development. We are, among other things, behind what is called the "next step" which aims to help the UF companies that have the conditions to start "real" companies. The idea is to support the administrative obstacles that exist. The goal is that in this way at least 10 new companies will be created each year.
- Supporting sports associations is very important to us. Sport creates community and well-being, which in itself provides a good basis for the development of Värmland. We primarily prioritize youth and women's sports.

- Although we support mostly locally, in 2022 we have also chosen to support Ukraine in various ways in its struggle to win the war against Russia.
- A well-developed leadership is the basis for good finances, knowledgeable, healthy and committed personnel.

Economic:

- Profitability is a tool for the whole of Värmland to prosper and thrive. But more important, profit is a means of achieving social and environmental benefit and contributing to the vision.

OK Värmland realizes that their business idea is fundamentally unsustainable. Based on this insight, it is a matter of course to work with transition towards a more sustainable society. All possibilities are being explored.

How are sustainability decisions made?

Despite various challenges, OK Värmland has maintained a good anchorage in the local community. They have, for example, managed to maintain an independent cooperative operation despite being forced to enter into a cooperation with a commercial, international company to ensure the availability of fuel. The collaboration added a new dimension to the business which is not based on the cooperative principles and was thus a risk-taking. During a ten-year period, the members have not received any refund. All profits have been reinvested in other ventures to ensure the cooperative's relevance in the future. For OK Värmlands, it is almost unthinkable to close a station even if it is unprofitable. Admittedly, it is important that the business as a whole is profitable, but given the social consequences in the local community if a station is shut down, such a decision is very difficult.

The future is uncertain and members' needs are constantly changing. This means that OK Värmland's offer to members constantly needs to be reconsidered. A prerequisite for this is to maintain openness and curiosity towards new solutions.

Technology and innovation management

Selling fuel is a business that is heavily regulated and requires a various permits. It takes a lot of resources to manage this. The cooperation strives to become more resourceful, above all on the energy side where they aim to reduce their energy comsumption with 20%. OK Värmland is also reconsidering staffing and opening hours for its stations. All such changes must be combined with sales campaigns and adjustments to prices and offers.

In 2023, OK Värmland together with LBC and Karlstad Energi has formed a new company which has been named Laddbolaget i Värmland AB. The company will establish charging stations for heavy traffic in Värmland. Stefan tells us that *we ourselves have formed a company named Reload in Värmland AB. The company must establish chargers for passenger cars in places where the opportunity is given. The first project involves building a charging park with space for approx. 40 vehicles at Bergvik Köpcenter*. OK Värmalnd's stations will gradually be equipped with superchargers in collaboration with OKQ8. Planning is underway to also build two hydrogen plants. Construction will start at the end of 2023 and is expected to be completed in 2024. The project is carried out in collaboration with Everfuel and takes place in Karlstad and Torsby.

OK Värmland is looking for ways to remain relevant in a future where urbanization, travel habits and transport needs are changing. It is a challenge to convey the cooperative driving forces in a society that

is becoming increasingly individualistic. As an actor, they have been active and curiously tried new solutions to stimulate a transition to a more sustainable society, but the question is whether the members, in general, perceive it? How can OK Värmland position the cooperative community in a more modern way so that they can get more power behind their transformative ideas? What does cooperative mean in 2023? What does cooperative mean in sparsely populated, rural and urban areas? Sustainability reporting is a tool for driving a transition towards a more sustainable society, clarifying the effects of the work, but how is the reporting used in the business?

Footprint (social, environmental economic), performance management, governance
OK Värmland has as one section in its annual report about sustainability, but the question is how the content supports their work and how it helps them to reconsider the foundations of their business. The societal challenge is not about fuel, but about the fact that we travel unsustainably. How can OK Värmland be an actor that helps its members travel less and less?

Sustainability documentation:

- Creates jobs.
- 100% sustainably grown coffee from Starbucks.
- Energy consumption distributed per station.
- Biological sevage management. Water usage?
- Employee satisfaction index (based on survey with questions about work situation and leadership)
- Employees commitment (if you find the work meaningful)
- Sustainable work/life balance among employees (relationship between work and private life)
- Development opportunities
- Leadership (Clear expectations from manager, feedback, support and encouragement)
- Collaborative climate (the team helps and supports each other)
- Strategy into action (How well do we work together towards set goals).
- Abusive discrimination and harassment.
- Sick leave
- Equality (proportion of women in management positions in relation to men)
- Cooperation between the established cooperative companies, HSB, Riksbyggen, Coop Värmland, Folksam, LRF, Fonus, Länsförsäkringar, OK Värmland and Coompanion.
- They have a code of conduct on bribery and corruption.
- Membership (Membership days with great offers?)

Final reflection and conclusions
Cooperation combines democracy with business development and social responsibility. The unique thing about the cooperative form of organization is that each member, just like in an ordinary association, has a vote regardless of the invested capital, and that the cooperative is open to everyone. A cooperative's main driving force is member benefit, that is to meet the economic, social or cultural needs of members, and where profit is seen as a means and not as an end. Cooperation is said to rest on seven basic principles:

- Voluntary and open membership
- Democratic member control
- Members' financial participation

- Independence and autonomy
- Education, practice and information
- Cooperation between cooperatives
- Social considerations

The cooperation OK Värmland was founded in 1927, at a time when the challenges of our unsustainable use of resources were not so obvious. At that time, the main problem for OK Värmland was that fuel was considered too expensive. By cooperating, the cooperation could influence the pricing. Today we understand better. We are fast approaching a tipping point, when it is too late to change the way we consume our natural resources. This cannot be solved with spending more money, only with resourcefulness. OK Värmland is actively looking for ways to change its operations, review its role in society. The solution is not so simple. We should not only find a more environmentally friendly fuel. Many environmental scientists believe that the solution is also about us wasting natural resources, that we travel too much.

As an societal actor, OK Värmland have been persistent and curiously tried new solutions to stimulate a transition to a more sustainable society, but the question is whether members in general perceive this as relevant? How can OK Värmland position the cooperative community in a modern way so that they can get more power behind the transformative idea? What does cooperation mean in 2023? What does cooperation in sparsely populated, rural and urban areas mean?

3.7 CASE: Guesthouse 11

Mikael Johnson, Karlstad University
Lisa Gärdt, Glava Energy Center
Fredrik Östlin, Karlstad University

Name of company: Muijs, Michel sole proprietorship
Link to website: https://elevenarvika.se

Introduction: An overview of the company and the vision of the business.
A Dutch couple, Brenda Oudendijk and Michel Muijs, moved to Värmland. He previously ran, in the Netherlands, a successful construction company but lived a routinized and stressful life. Brenda and Michel's dream of a life with less stress and a higher quality of life made them move to Jössefors outside Arvika. A building was for sale, a 100 years old former schoolhouse. In the building, they saw the opportunity to realize their dream of a different, better life. They bought the former school building in 2006. For two years they spent all their time renovating the formerly stately school building by the beach at Lake Glafsfjord. They have done all the renovations on their own with a resourceful approach to preserve the character of the house. Through the renovation, they created a guesthouse that is imbued with their hospitality, care and resourceful approach that is rooted in their core values of a more sustainable society. Today they offer 33 beds in ten guest rooms, all with private shower and toilet.

The core sustainability idea with the business
There are several different guesthouses in different places in Sweden. The common denominator is nature experiences, sustainable tourism and small-scale business. Guesthouse Eleven is located in a 100-year-old former school in the picturesque village of Jössefors just outside Arvika. Here you can enjoy scenic surroundings and beautiful lake views. Michel and Brenda dreamed of running a business that they themselves enjoyed. They have traveled around the world and been inspired by guesthouses they visited. Based on their travel experiences and the dream of a life with high quality of life, they wanted to create a guesthouse that they themselves could imagine staying in/visiting. Alongside the 10 rooms, they run a restaurant (breakfast, lunch and dinner). In the large charming garden, there is a spa and a playground for the children.

Guesthouse Eleven's main target group is foreign guests who are looking for unique Värmland experiences. The hotel has collaborations with several international travel agencies that offer package tours for travelers from mainly France, Belgium and Holland. In addition to accommodation, the hotel offers several different experience themes (cycling, hiking, fishing, beaver and moose safaris, geocaching, canoeing/paddling and treasure hunting for children) where the unique common denominator is Värmland's nature. Guesthouse Eleven has the option of being open all year round, but Brenda and Michel have chosen to be open only 6-7 months a year. This is to be able to maintain the quality and guest experience that is Guesthouse Eleven's signature. Guesthouse Eleven has a customer satisfaction index on www.booking.se of 9.1 (out of 10). Other nearby hotels have the customer satisfaction index of 7.5. We conclude that Guesthouse Eleven is very successful in delivering memorable customer experiences.

At the same time, there are also other reasons why the hotel is closed during the winter months. It is then that Brenda and Michel have their recovery period. Michel tells us that, *in order to be able to work 16-18 hours a day, 7 days a week when the hotel is open, we have to enjoy ourselves, feel good, want to take care of our guests. During the winter, when we are closed, we recharge our batteries and get new*

energy through our travels around the world. This is the time when they have the opportunity to travel, experience, gather inspiration and live a good life. For them, freedom, being able to travel and choose what they want to do during the winter, means quality of life. They live a good life.

Brenda and Michel take pride in the fact that, in the development of the business, they have taken the time to plan and invest in solutions that they think are smart, resourceful and sustainable. They have carefully considered the consequences of their decisions and found cost-effective, unique and resourceful solutions that are balanced against the ability to continue delivering memorable experiences to their guests. Resourcefulness permeates everything. To a large extent, the renovation has been carried out by using recycled building materials. To save electricity there are motion detectors that control the lights in common areas, energy-saving showers, the menu is based on local ingredients, the range of vegetarian dishes is clearly positioned, food waste is monitored, etc. Previously, a conventional breakfast buffet was served, but it turned out that food waste was close to 40%. To solve the wastage problem, a day before, the guest has to its breakfast menu for the following day. The breakfast is then served on a plate when the guest is sat down at breakfast table. This change is perceived by the guests as old-fashioned, first-class customer service, while food waste from breakfast is now less than 5%. Brenda and Michel are also proud that they invested in locally produced and seasonal commodities (moose meat, seasonal vegetables, beer, etc.) and can offer a varied and largely vegetarian menu. It is an ongoing process where they are continuously looking for efficiency and savings measures that are linked to their resource-efficient, quality-conscious and guest-focused approach.

Through this approach and the desire to create a business balnace economic profitability with environmental and/or social benefits, the hotel gives a clear impression of responsibility and sustainability. The hotel has some seasonal employees. There are usually university students from different countries as seasonal workers at Guesthose Eleven. During an initial period, they let new empoyees work closely toghetern with Brenda and Michel, trying to show the employees how do, solving different situations to create high level of customer satisfaction. *The design of the business and how it is communicated also means that you attract a certain type of staff who like nature experiences and the small-scale*, says Michel.

What incentives do the company have for its work with sustainability?
Sustainability is an obvious part of and a common thread in the business for those who want to see it, but it is not something that they actually use in their marketing communication. After our visit, they have actually added texts about sustainability to their website[7]. There is more to read in the website but here is a quick summary:

The small changes we can make to fight global warming together
As a hotel we would like not only just to provide enjoyable experiences but we also like to contribute to positive social development by leaving our foot print as small as possible. We want to meet – or exceed – our guest's expectations in a sustainable way.
Though environmentalism often seems expensive, some solutions are not, as a lot of changes simply just take some adjustments, staff training, and guest awareness to be successful. These are some fairly simple changes we as hotelliers and you as guest can start making that will have big impacts:

- No more unnecessary cleaning
- Eliminate Single-Use Toiletries
- Install a pentry with fridge and water refill / coffee stations
- Reuse and Recycle to reduce waste

- Dramatically Reduce Food Waste
- Add More Meatless Options to the Menu
- Include More Locally Sourced Options
- Use less energi witthout adventuring the customer experience

In addition to this, Brenda and Michel also mention the following efforts:

- Careful renovation with careful investment choices.
- Investment in nature experiences with minimal impact on the environment.
- Job opportunities.
- Sustainable working conditions for the owners.
- Sustainable waste management.

Sustainability practices
The resource-efficient basic approach and the search for things that can contribute in a positive way in several areas is particularly remarkable from a business development point of view. By cooperating with local suppliers and actors, this strengthens their market position, makes their offer more unique while also strengthening the local economy and the attractiveness of getting others to work with them. Their willingness to collaborate with other local actors to create value for guests and at the same time contribute to strengthening the local and circular economy. The cooperation with local suppliers and actors creates a local marketplace, an experience-based local business life, in an otherwise increasingly depopulated area. It gives them the opportunity to offer a unique guest experience combined with being able to keep costs down.

For their own part, Brenda and Michel have formed a business that is profitable enough that they only need to work 6-7 months a year, admittedly many working hours per day and seven days a week, but it gives them the opportunity to live a good life that includes work for a certain period but which also creates opportunities for the family to travel and experience other places around the world.

How are sustainability decisions made?
During the first operating years, when their children still were young and in schoolage, they were open all year round. Michel says that *this was a difficult years*. *In the long run, it would not have been possible to have it that way. We have also demolished a small hostel in the nearby town of Arvika. But it became too much for us and quite soon we realized that a good life in Jössefors is about achieving a more long-term balance between work and leisure*. When the children got older and schooling no longer set the agenda for them, Brenda and Michel decided not to be open all year round. *It was a necessity in order not to lose our dream of a good life. We work hard when we work and then we need five months off to be able to recover, spend time with the family and find new inspiration and development ideas to run the hotel for another season*, says Brenda.

Today, the hotel is fully booked during the open months and Michel says that we could be profitable in being open all year round, but that would also mean that our *desire to run the hotel in the ways we do, with the level of quality with customer experiences we want to maintain, in the long run would be impossible.* They have chosen to remove various activities when they could not ensure that activities could carried out in a satisfactory manner. Where there was a risk of not delivering an experience that strengthens customer satisfaction, they have chosen to back off. One such example concerns beaver and moose safaris. They have tried to find a local actor who wants to undertake the activities, but it has

been difficult. Michel believes that previously, annually, *we sold at least 250 beaver and moose safari activities at the price of SEK 800 (approx. €65-70). A safari activity takes 4 hours including a coffee break. It is sad that there is no local operator who can think of transporting the guests 4-5 evenings a week.* For them, canceling the safari activities is about trying to maintain the level of service and quality of the guests' experiences. Daring to opt out of things that are not in line with their values and maintaining good relations with customers but also with the local market are other examples of how they make decisions related to sustainability.

Technology and innovation management
For Guesthouse Eleven, it is not the technology that is unique. What is innovative and different about their business is the social values that Brenda and Michel build into the human encounter and their quality and service-focused approach to both guests and partners.

They monitor resource consumption in different ways (energy, water, food). But has no advanced performance management system to support decision-making. Nevertheless, they have a constant search for ways to streamline and optimize their value creation. Brenda and Michel are commercially driven, *but that must never come at the expense of the guests' experiences*, they say.

Challenges and solutions
One challenge they mention is that it is costly to change to a more sustainable business. Investments in more environmentally friendly heating, solar cell installations, charging stations for electric cars are examples of costs that are relevant but which at the same time drive up room prices. This is a difficult balancing act, says Michel and continues by saying that they have chosen to try to identify opportunities for change that are smaller and easier to implement but which have a great effect from a sustainability perspective. Then time and profitability over time can become a way to acquire resources for more costly, large investments. Their recipe for success is about creating a high degree of customer satisfaction but at the same time running a business that is resource- and cost-efficient.

Another challenge is that it can be difficult to know in advance what is the most sustainable solution. *You are faced with so many different options*, says Michel. Still other challenges have been to ensure the availability of locally produced commodities but also to develop collaborations with other local actors (on for instance guest experience-activities). They have a few but important travel agencies that they work with and if they *disappear* it could have big consequences for them.

Footprint (social, environmental economic), performance management, governance
Like most small businesses, Guesthouse Eleven does not have a comprehensive performance management system or a structured work linked to universal indicators. Despite this, the owners, Brenda and Michel, are very aware of how they use their resources, what effect they achieve through their use of resources. In addition, they are constantly looking for ways to further streamline their operations, but *this must constantly be set against our ability to create high customer satisfaction*, says Michel a little thoughtfully. Guesthouse Eleven operates in an experiential tourism segment that attracts a certain target group. They know their target group very well and *it is important that guests continue to give us high customer experience ratings for the hotel's quality, hospitality and service level*, says Brenda.

The decision to hire local suppliers creates added value for their own business and guests but also for the local economy. *We are creating more jobs in Jössefors and the surrounding area*, reflects Michel.

Brenda and Michel are aware that their business is in no way climate neutral but express a willingness to invest in renewable energy solutions but otherwise continue to be curious and constantly look for new solutions that can reduce the business's eco-footprint.

Final reflection and conclusions

Guesthouse Eleven is a unique tourist destination that has been shaped by Brenda and Michel's core values and dream of a familial and cordial hotel with a consistent focus on delivering unique guest experiences of the highest quality. The business is going well, it is fully booked and the guests appreciate how the business creates memorable experiences with social and environmental characteristics to them. Overall, this gives Brenda and Michel the opportunity to live a good life with a balance between work and time where the family can recover. A challenge that not only Guesthouse Eleven highlights is that it is difficult to do a more comprehensive analysis of the connections between cause and effect, how to get the greatest possible transformational effects regarding sustainability with the limited funds that a company has. Doing life cycle analyzes is a way of trying to create an overall picture of a decision's long-term effects linked to, for example, sustainable development.

Sustainability is a complex concept. Some effects appear quite fast, others after a while, still other effects come perhaps several generations later. Some decisions may seem beneficial but prove ineffective, or even devastating, over time. An example could be the question of which fuel that offers the most sustainable future. Those who have more carefully analyzed the present options may come to the conclusion that there are no alternatives that are transformative enough to solve the fuel issue in the long term, but rather may think that the problem is more complex than the choice of fuel, that the problem, instead, is that we travel too much, buy single items shipped across the globe to be delivered overnight to our doors. The researchers Isaksson et al. (2015) reflected on these problems and argued that each decision creates different types of value but also different types of harm: Value/Harm. These two value concepts must be properly analyzed. Advantages must be weighed against disadvantages in a more structured manner.

Brenda and Michel try to handle this challenge by letting both heart and brain guide what the hand does. *We invest in what feels right*, says Michel, *and sometimes it turns out right, sometimes not so well*. Within the hospitality industry, statistics are collected on the number of guest nights and customer satisfaction, but this is not good enough data. It is almost impossible to read sustainability into this. When our self-assessment tool is to be designed, it is our opinion to also include the entrepreneur's will orientation in the self-assessment tool.

Footnotes:

[1] The Paris Agreement stipulates that the global temperature increase must be kept well below 2 °C and that efforts must be made to limit it to 1.5 °C. This is mainly by reducing emissions of greenhouse gases.

[2] International Standards For Phytosanitary Measures No. 15 (ISPM 15) is an International Phytosanitary Measure developed by the International Plant Protection Convention (IPPC) that directly addresses the need to treat wood materials of a thickness greater than 6mm, used to ship products between countries. Its main purpose is to prevent the international transport and spread of disease and insects that could negatively affect plants or ecosystems.

[3] PEFC (Programme for the Endorsement of Forest Certification) is a non-profit organization that promote long-term sustainability with forestry.

[4] The forestry certification Prosilva AB connects forest owners and forest contractors to a so-called group certificates . Prosilva takes responsibility for the group meeting the requirements set by the standards and also provides training

[5] On 5 January 2023, the Corporate Sustainability Reporting Directive (CSRD) entered into force. This new directive modernizes and strengthens the rules concerning the social and environmental information that companies have to report. https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en

[6] https://www.earthisland.org/journal/index.php/magazine/entry/oren_lyons_onondaga/

[7] https://www.elevenarvika.se/eng/sustainability.html

4 Bulgarian Cases – Gabrovo

The gross domestic product (GDP) of Gabrovo District reached BGN 1.7 billion in 2021, which represents 16.5% of the GDP of the entire North Central Region in Bulgaria. Gabrovo is among the most heavily industrialized districts in Bulgaria. Industry accounts for nearly 40% of the district's gross value added in 2021, compared to the national average of 23.8%. Gabrovo has the most pronounced industrial profile relative to other large economies in the North Central Region - industry in Ruse and Veliko Tarnovo represents 29% and 23% of gross value added in 2021 respectively.

The pandemic and the economic recession in 2020 are taking their toll on Gabrovo's economy, interrupting a relatively long period of economic boom. In 2021, however, there is a recovery as the performance of the whole region improves and Gabrovo's economy returns to growth. The district is compact, with the municipalities of Gabrovo and Sevlievo closely linked and accounting for over 90% of the economy of the entire district. The strong industry of Gabrovo and Sevlievo makes the region one of the important economic centres in Bulgaria. In 2021, the total output of the enterprises in Gabrovo Municipality reached BGN 1.3 billion. After a decline of nearly 4% in 2020, the output of local companies grew by 16% in 2021. The structure of the local economy is very different from that of the country, with industry taking a leading role. Manufacturing companies account for 60% of Gabrovo's economic output, while the national share of industry is 33%. A 2021 census shows that Gabrovo municipality has nearly 52 thousand inhabitants. The educational structure of the population is very good in comparison. Nearly 29% of the population aged 7 and over has a university degree, which is above the national average. Another 54% have secondary education. The census shows that the share of the employed population aged 15-64 is 70% compared to 63% for the country.

The Technical University - Gabrovo is the key educational institution in the city. The university attracts young people, prepares strong technical staff for the local economy and plays a leading role in R&D, including creating an environment for smart specialization of the industry in Gabrovo. In 2020, the high-tech park at TU-Gabrovo open its doors. A total of 3 335 students are studying at the Technical University of Gabrovo in 2022. 2,857 students are studying technical specialties (over 85% of all students), with mechanical engineering and electrical engineering, electronics and automation being the leading specialties.

The active work of the Gabrovo Municipality, the good coordination between the Technical University - Gabrovo and the large manufacturing enterprises, as well as the accumulation of investments in research and development, determine the path to smart specialization of the local economy. In 2022, Gabrovo Municipality officially adopted a Smart Specialisation Strategy for Gabrovo Municipality with a 10-year horizon. A strategic goal for Gabrovo Municipality is to develop a strong economy based on science and innovation. There are three main directions in the field of economy: Industry and Innovation - promoting the development of the local economy, with a focus on high-tech manufacturing and knowledge-intensive services, investment in technical and business infrastructure and improving the environment for innovation:

- Science and Education - cooperation between local businesses and educational institutions, with a focus on training and attracting personnel, investment in scientific infrastructure and technology transfer.
- Digitalisation - digital transformation of industry, development of Gabrovo as a smart city, improving management processes and strengthening partnerships with citizens and businesses.

The 3 companies of the case studies are typical representatives of Gabrovo economy and the Smart Specialisation Strategy (S3) of Gabrovo Municipality: Mechatronics, ICT and circular economy.
Furthermore, they are from the category SMEs and small-mid caps – most of the companies in Gabrovo municipality are such size.

Manufacturing represents around 60% of Gabrovo economy. Most of the industrial companies in Gabrovo are in machinery and metal products, rubber and plastics and also textile and clothing. However, the focus of the local S3 is on machinery, metal products and plastics. In addition, the S3 is focused on the growing digital sector and ICT companies. Thus, the three companies in the case studies cover the various aspects of local S3. Some of the companies are with foreign capital (the region is attractive for foreign investors due to innovation activities and good specialists). The 3 companies below are a representative sample of the companies in Gabrovo and in line with local S3 strategy.

4.1 CASE: Mechatronica

Mechatronica (www.kombis.net) is a 62 year old innovative Bulgarian-Swiss joint stock company with approximately 90 employees. It is a world leading manufacturing company for unique packaging machines. The main customer group is cosmetics and oral care packaging businesses. The main products are laminated tube making machines. But the company offers special automatic solutions for assembly processes as well. Mechatronica is an associated partner in the project ARIES4.

The everyday activities of the company are managed by a Chief Executive Officer (CEO) who is a member of the Board of Directors (BoD), which consists of 4 representatives of the main shareholders. The CEO manages the company working together with the chiefs of the 3 main departments: Engineering, Production and Financial.

Mechatronica JSC is a machine factory established as a state company in 1961. It has been privatized during the mass privatization at the dawn of the democratic changes that took place in Bulgaria. The main activity of the company has been kept after the privatization, only the manufactured products have been changed. Due to the destroyed markets the company, based on the previous knowledge and experience of the employees, started development of new machines – for the packaging business. Recently, the company receives a lot for inquiries for special automated solutions for different assembly processes. The company is the first in the world that created, manufactured and old machines from the type FFS (Form, Fill and Seal) for producing, filling, and scaling laminated tube with paste products.

Mechatronica company is a typical representative of one of the three main focuses of the S3 in Bulgaria and the NUTS3 regions BG322. BG322 is a less developed region as per the classification of the regions on the basis of the GDP per capita and NUTS2 region BG32 is an emerging innovator as per the EU Innovation scoreboard. It is a company that develops, manufactures, and sells unique automatic machines/lines for packaging or assembly. The above classifications are very important as they influence the development of the single legal entities, particularly Mechatronica. The company holds the rights of several EU patents and one in China. The company has been awarded the prize “The innovative company of the year” for 2012 in Bulgaria and the same year its CEO has been awarded with the prize “Innovator of the year” by the Bulgarian Patent Office. But being a part of a region and a whole country which are emerging innovators, it is very difficult to survive and continue to be very innovative alone. Mechatronics requires complex (multi-disciplinary) knowledge, experience, quality and speed of supplying with parts and modules and last but not least – the image of the country. The image and traditions of the country as a leader in a S3 focus is important for the single producers how they are accepted by the clients at global level. These are some of the difficulties, the company faces in R&D development and selling its product (especially to get the customer’s trust when they see “Made in Bulgaria”). One major problem is with the people’s knowledge and qualification – to become a good engineer, several years of practice is needed. To have a reliable mechatronic product – the parts and modules that are bought by the company should be of good quality and reliable as well. Recently the company faces big problem with the deliveries of electronic parts – long delivery terms, high prices. For this reason a lot of cash resources are blocked as non-finished products (waiting for electronic components). On the other side, a lot of paper work is needed for the machines export as for many countries there are restrictions for which permission from the Ministry of economy should be obtained. The permission is needed not only for the export of the machines, but for a single spare part as well.

Regarding the 4th “S” – sustainability – the company is aware of its importance because to build knowledge, expertise and traditions in mechatronics, the company needs to be sustainable as this

process takes time (years). For Mechatronica JSC “sustainability” means to take care and motivate its employees (to secure good working conditions, to upgrade their knowledge and qualifications, to secure their upskilling). The most valuable assets for the company are its employees. During the most difficult times of its history – the democratic changes in 1990 (and the next 5-10 years) when the existing market collapsed, the most important for the survival of the company was to keep the employees (specialists), because they keep the knowledge for technologies. Mechatronica is actively involved in the VET and internship programs, but still the contact and joint work with the town’s Technical University is not at good level – at the R&D field. For more than 10 years the company uses thermo-pumps with additional solar panels for heating and cooling of the working premises and for hot water for the workers. The company focuses to increase its digital maturity level.

Quality, speed and Innovation are the driving forces of the company. With more than 20 years of experience in this packaging machines industry, Mechatronica’s team is confident that know how to offer the best solution to the clients. Mechatronica always keeps up with the latest trends and technologies on the market, so that it can deliver a high-end product at a competitive price. The main key activity for Mechatronica is constant innovation. Everything starts with the idea that is given an image by highly skilled team of engineers which if focused on the development and improvement of the products and services. The process continues with in-house rapid prototyping and quick manufacture using modern CNC machines and is followed by precise assembly and testing of the ready machines. For the future, the focus will be on sustainability and digitisation as well. The company has proven dedication to SDG 9: Industry, innovation and infrastructure.

4.2 CASE:STS Pack Holding Ltd

STS Pack Holding Ltd (https://www.stspackbg.com) is a Bulgarian company specialised in the manufacture of flexible packaging, especially laminated tubes. The number of the employees is with approx. 60 employees. The main customer group is from the following industries: oral care, cosmetics, pharmacy, food and chemical. The everyday activities of the company are managed by a CEO. The CEO manages the company working together with the production manager, logistics manager and CFO (chief accountant).

The STS Pack Holding Ltd has been established in March 2003 as a private manufacturing company. Initially there have been 5 BG shareholders, but in 2022 the ownership has been changed to 90% for four BG shareholders and 10% for a European shareholder. The change in the ownership was done with the idea the production capacity to be increased, because of the drastic supply chains in Europe and on global level and for easier implementation and investment in innovation ideas concerning digitisation and circular economy. But at the same time the company management is aware that its most valuable assets are people (employees) and that's why it invests in improving their qualification and involves them in different innovative projects for technological modernisation, energy efficiency, introduction of digital technologies in the production process for capacity increase.

It started with semi-automatic machines bought by a local manufacturer. At present the company has several fully automatic machines and keeps 3-4 semi-automatic machines. There are 2 production facilities as one of them is fully dedicated to the pharmaceutical business (plastic pallets, plastic boxes, strict monitoring of the parameters of the environment, etc.). The commissioning, servicing and usage of the fully automatic machines requires up-skilling and up-grading the knowledge of the company's technicians and operators which is done on a regular basis. This adds sustainability to the company's operations.

The company imports one of the main materials used – laminated foil, mainly from China. There are other suppliers from Germany, India and Indonesia. There is no a Bulgarian supplier of laminated foil. For the plastic caps and shoulders there is one main foreign supplier – from Slovenia. There are a lot of small Bulgarian suppliers of caps and shoulders. This fact is very good for the company as there is a big variety of these parts and it is not necessary to buy and put in stock plastic parts as the suppliers are next door.

The company uses hybrid business model in its work, having clients from different types of industries, own store houses and complex approaches to clients. Innovation is the way to go when the company's team talks about sustainability. STS Pack Holding Ltd is dedicated to implementing innovative sustainable ideas while staying responsive to current and future market needs. The company has long-term clients and partners from all around the world and has always valued the relationship with its international customers. The company team is the happiest when its clients are satisfied with the final product. Innovation is a key part of achieving sustainability goals. It can come in the form of product or process innovation. The company management is aware that innovations accelerate and even revolutionize environmental sustainability initiatives.

The company is very concerned and deeply involved in sustainability with different initiatives and process changes. Sustainability is very important for the company and for this reason it tries to add value to its products and to offer new features to the products the customer order. One of it is the temper

evidence of the tubes – offered in 2 ways – with Al membrane and with shrinkable foil of the cap. It added to its machine park an automatic labeling machine.

The company contributes to the circular economy with the implementation of a 3D printer which can use re-granulated Post Industrial Recyclable Material (PIRM) to manufacture new high-added value products (cascade funding project in DIH-WORLD). STS Pack Holding is not only ISO 9001:2015 registered, but ISO 50001:2018 for energy management and the new machines that it invests in are with energy efficient modules. The recent health and political issues have influence on the company's operations especially the restrictions for export to Russia (which is traditionally big market for the company). This lead especially to filing more documents, waiting for permissions from the Ministry, etc. which results in some delays at the beginning and optimization of production planning. The SDGs that the company is focused on are SDG9: Industry, Innovation and Infrastructure and SDG12: Responsible consumption and production. It is a typical representative of the circularity from the Smart specialization strategy in the Gabrovo region.

4.3 CASE: Senstate Technologies SC

Senstate Technologies SC (www.senstate.com) is a 21 years old technological company with own R&D software and hardware teams. The company develops next generation IoT data-driven applications and hardware devices for collecting sensory data and broadcasting information through secured communication channels. The company's team is not big (consists of 7 employees) but it has vast expertise in fields such as signal processing, environmental sensing, edge computing, distributed systems, AI, BigData and Cloud. Senstate Technologies is an associated partner in the project ARIES4 and is a typical representative of the ICT sector from the Smart specialisation strategy.

The company has rich experience in building environmental data acquisition solutions for several municipalities in Bulgaria, human-technology interaction solutions in the field of environmental and climate action in schools and universities, real-time work environment reporting solutions for manufacturing companies as part of their Industry 4.0 transition processes and more. The company also has experience in integrating external components, creating API interfaces and documenting projects by various world standards.

The company was founded in 2002 as a software developing company. Its main activities at that time encompassed the development and integration of various types of software solutions and software products; trading with computers and electronics equipment, and also performing different consulting services in the field of electronics. In 2019 the focus of the company shifted towards building environmental solutions including the development of software and hardware components for monitoring the environment. The company structure also change at that time attracting 3 more investors which are in the Board of Directors. The last couple of years the company asserted its environmental monitoring products on the Bulgarian market, helping dozens of municipalities, schools and universities to monitor their surrounding environments in real-time and take faster and more informed decisions.

The company's CEO and members are very active and non-stop participate in projects, seminars and events. In 2020, Senstate Technologies won a monetary prize from the Gabrovo Innovation Camp for the development of three smart bin products which were then integrated in different locations around the city to improve the waste management system. At present the company has implemented its solutions in more than 10 cities in the country and has established partnership with system integrators from Malta and Greece. Senstate strives for global recognition in the future and widening its network of international partnerships. The solutions Senstate offers are based on next generation apps and advanced hardware systems that allow businesses and governments to collect environmental sensory data in big, fast and real-time manner with the purpose of data analysis, prediction and data driven decisions for the most impactful environmental degradation sources, such as air pollution, water pollution and traffic. The company offers its solutions mainly to municipalities, environmental organizations, schools and universities. The solution consists of hardware – a station with sensors inside to detect the environmental pollutants, such as particulate matter, and software which is cloud-based and presents the data readings from the sensors in real time, and then also stores it for further analysis. In 2022 Senstate announced their partnership with The Big Data for Smart Society Institute (Gate). The partnership will support the mission of IDSA(The International Data Spaces Association) to push further the ideas of data-centricity and data economy in the world of digitalization of industries and societies.

The company uses hybrid business models such as software as a service (SaaS) and product as a service (PaaS) as a revenue generation approaches. In the future (starting this year – 2023) the company plans

to transition into a climate knowledge platform with data as a service (DaaS). The missions of the company is to design and build integrated environmental solutions that empower citizens, enterprices and organizations to be more efficient and sustainable in the world of digitalization of societies and industries. The strategy of the company is to establish a well-developed solution integration partners network across the EU.

Sustainability and preserving the environment clean is very important for the company. For this reason, the company believes that one of the most important steps in the green transition is the education of our society and presenting the environmental data in a more comprehensive way. This is why Senstate has developed an interactive map to show the live data readings taken from the monitoring stations. Moreover, in the schools, they offer interactive screens presenting a set of interesting and educational facts regarding the pollutants in our environment, what causes them and what we can do to prevent pollution. By integrating such solutions, cities contribute to achieving the goal of this generation which aims to track the environmental pollution and inform authorities and regulators in a collaborative way, for the deep problems the world is facing with the balance of humans and nature.

As many modern and high-tech companies nowadays, the future goals of the company include sustainability and digitisation. Senstate Technologies has proven commitment to the Sustainable Development Goals (SDG). The developed solutions by the company fully align and maximize contribution to at least four of the goals, namely SDG 3: Good Health and Well Being and SDG 6: Clean Water and Sanitation, SDG 11: Sustainable Cities and Communities, SDG 13: Climate Action.

4.4 Cross case observations

Table 3.1 provides an overview of the three case SMEs from the Gabrovo region. Adding to the S3 priorities, there has been studied the activities of the case companies, related to sustainability – the 4th "S". First, It has been observed that sustainability is not a one-man show, meaning that the efforts of a single company in this field without the support at regional, national or global level are useless. Furthermore, sustainable initiatives and engagement of the companies are obligatory if they are export oriented. Secondly, On the other hand, the main objective of every single company is profit. Thus, here comes the question: Do we put a sign for equality between profit and sustainability?

Table 4.1: Case overview

Name	Mechatronica JSC	STS Pack Holding Ltd	Senstate Technologies SC
Industry	Machine building	manufacturing	Software and hardware
Product/service	High-tech: Packaging machines and machines for automation of assembly processes	Flexible packaging (laminated tubes)	High-tech: IoT data driven applications and hardware devices
Size (# of employees)	90	60	7
Country	Gabrovo, Bulgaria	Gabrovo, Bulgaria	Gabrovo, Bulgaria
Explicit SDG involvement	SDG: 9 Continuous innovation; IP rights protection through patents	SDG: 9 and 12 Offering new packages with new materials and less plastic	SDG: 3, 6, 11, 13
International activities	More than 95% of production is exported; among the 3 world famous machine manufacturers of such type of machines	Clients – mainly European; suppliers – European and Asian	Collaboration with foreign universities in innovative projects

Below are described some examples for sustainable related practices of the above companies, that show that profitability and sustainability can go hand in hand supporting each other. Companies cannot focus on all the 17 SDGs. They focus on 1 or 2 but as the SDGs are connected working in one field of SDG means that this work influences the other as well.

Let us start with the 1st example: Mechatronica. It defines its focus on SDG 9 Industry, innovation and infrastructure, because it has embraces innovation as its safety road to be among the first 3 world known flexible packaging machine producers and to keep this position. But the company also supports its employees for lifelong learning; offers internships; empowers women-engineers; creates and offers high-qualified job opportunities; creates machines in a way – the adjustment times to be shorter and in this way to save (not to waste) material; does re-engineering of used machines; heats and cools its premises using thermo-pumps; uses solar panels to support the work of the thermo-pumps. Even with the selling its machines all over the world, it creates a multinational and multi-religious peaceful working environment. So, it is seen that SDG9 influences also, SDGs 4, 5, 8, 12, 13 and 16.

STS Pack Holding has defined its focus on SDGs 9 and 12. As it is a flexible packaging manufacturer (laminated tubes) company's focus is on lessening the plastic wastage during production; to make tubes with less plastic material and to re-use the Post-industrial recyclable material (PIRM) implementing 3D printing in its production to achieve circular process – this is an innovation trend as the company is striving to design and 3D print new high-added value products (such as robot grippers, for example) from

PIRM. Everyone can find connections to other SDGs. And the 3rd company Senstate: it is a high tech software and hardware company, focused in SDGs 3, 6, 11 and 13. But its main focus is Climate as the company has specialized in software systems and hardware devices to protect the environment as well as to make cities smarter. The company works for fully integrated digital environment and offers solutions for air quality, water quality, traffic intelligence, parks and green areas, public infrastructure and garbage and waste management.

The examples of S3 show that the future of the companies is adding the 4th "S" for Sustainability as they already practice the sustainability related practices. The objective to begin these practices for the different company is different, but for sure the managing staff accepts them as part of the main activity of the business.

5 Spanish Cases – Navarra

The smart specialization strategies mark a progression in innovation and competitiveness policies across Europe. Certain regions are incorporating sustainability as the fourth element ("S") into their strategies. These Smart Specialization Strategies for Sustainability (S4) aim to enhance sustainability by leveraging innovation, striving for a sustainable recovery aligned with climate change objectives. They serve as a mechanism to navigate the post-pandemic economy, aiding companies in adaptation while capitalizing on emerging opportunities in this altered landscape. Ultimately, their aim is to contribute to the broader ambition of achieving a climate-neutral Europe by 2050.
While the adoption of S4 remains optional, Navarra has chosen to overhaul its strategy, placing a stronger emphasis on integrating sustainability across all aspects of its operations, considering it a fundamental territorial objective. The sectors prioritised in the S4 strategy in Navarre include: Healthy and sustainable food, and among its lines of work is Recovery of by-products and waste to produce new products, either end products or ingredients, which is aligned with the work of the first case study company, MOA Foodtech. Electric and connected mobility. And within this theme is Energy storage systems (batteries), which is the product of the second company analysed, BeePlanet.

This section presents two notable case studies in Navarra, Spain, each aligning with the region's Smart Specialization Strategy (S4). The first is MOA FoodTech, an innovative enterprise in the fermented protein sector, showcasing a "born sustainable" business approach. MOA FoodTech is recognized for its integration of sustainability across its operations, from production to corporate management, making it a noteworthy example in the realm of sustainable food innovation. The second case, BeePlanet, delves into the strategic Green Energy sector, focusing on recycling and repurposing electric vehicle batteries. This approach underscores a commitment to the circular economy and environmental stewardship, responding to the increasing demand for sustainable solutions in renewable energy. BeePlanet navigates unique challenges in industrialization and regulatory adaptation, demonstrating how sustainability practices can be incorporated into diverse industrial sectors.

Together, these cases offer insights into how businesses in Navarra are championing sustainability, adapting to evolving markets, and contributing to broader environmental and economic objectives.

Table 4.1 Case overview:

Name	MOA	BeePlanet
Industry	Food	
Product/service	Alternative sources of protein through fermentation process	Second-life battery, energy storage systems
Size (#employees)	10	42
Country	Spain	Spain
Explicit SDG involvement	n/a	6,7,9,11,12
International activities	Work with international companies Planning on scale to international market	Consortium with a Korean firm Activity in France (partnership with Sirea)

5.1 CASE: Green by Design - MOA FoodTech and the Fermented Protein Revolution in Navarre

Abstract

The case of MOA FoodTech highlights its approach as a sustainable start-up and its alignment with the Navarra Smart Specialization Strategy. Focusing on fermented protein production, the company illustrates how innovation can drive sustainability in the agri-food industry. This integrated sustainability approach encompasses not only environmental aspects but also social and governance considerations, solidifying MOA FoodTech's position in the market and preparing it for long-term sustainable growth. However, MOA FoodTech also faces significant challenges, especially in its transition to industrialization and uncertainties surrounding future regulations. These challenges underscore the importance of a flexible and proactive strategy to adapt to an ever-changing business environment. The support from key stakeholders such as CEIN and universities has been crucial in overcoming these hurdles, providing resources and strategic guidance. The MOA FoodTech case offers valuable insights into the challenges and opportunities of corporate sustainability, serving as a relevant case study to understand the interplay between innovation, sustainability, and regulation in the contemporary business landscape

Introduction

In a business landscape where sustainability has become an imperative, the case of MOA FoodTech emerges as a distinctive example of a "born sustainable" company in the Navarra region in the S4 prioritised sector of Healthy and Sustainable Food. This case study not only illustrates the evolution of a small business (SME) with an inherent focus on sustainability, but also reflects the regional commitment to and promotion of responsible and sustainable business practices.

MOA FoodTech represents a business model that is intrinsically aligned with the objectives of the European project ARIES4, whose central purpose is to promote social responsibility and the transition towards more sustainable business models. Unlike other cases presented in the book, which describe the transition of businesses towards sustainable practices, MOA FoodTech, as well as the other case in the Navarra region (BeePlanet) are distinguished by having integrated sustainability from their conception. This initial orientation towards sustainability offers a unique perspective in the field of SMEs, highlighting how internal capabilities, managerial vision and individual motivations can significantly influence strategy and decision-making related to responsible business practices. The MOA FoodTech case shares with the other presented cases the emphasis on how a SME can adopt a multidimensional approach to sustainability, encompassing not only environmental aspects but also social and governance considerations. This holistic approach is crucial, considering that sustainability in SMEs is closely linked to managers' personal beliefs, industry standards, regional disparities, institutional setups, national legislative systems, as well as global frameworks.

By exploring the case of MOA FoodTech, this study aims not only to provide a comprehensive understanding of a company born with a sustainable commitment, but also to illustrate how the Navarra region has created a favourable ecosystem for the birth and growth of such initiatives. In the case, we first provide an introduction to the protein fermentation sector, followed by an overview of the company and its history. In section four, we specifically focus on the objectives associated with the project, beginning with a description of the company's sustainability approach and the factors that have contributed to it and its sustainability practices.

Foodtech sector and fermentation

The term foodtech, a blend of 'food' and 'technology,' refers to the convergence of the food industry with the technology and innovation sector. Faced with insufficient resources to feed a growing

population and changing consumption habits (increased awareness of the planet's impact, increase in the number of vegetarians and vegans, etc.), the foodtech industry emerges as an alternative to meet new consumption trends and needs not addressed by the traditional food industry. This sector is undergoing a transition towards a new way of food production, aiming for more sustainable, healthy, safe, and accessible food. One way to achieve this is through fermentation processes. Through this method, a variety of microorganisms transform agri-food by-products and waste into a high-value protein ingredient that is reintroduced into the industry and society. The global fermentation industry, focused on non-animal alternatives to conventional proteins, has developed strongly in recent years and continued to break new ground in 2022. Scientific breakthroughs, new products and prototypes, manufacturing facilities and partnerships enabled the world to offer more meat, seafood, eggs and dairy products made using microorganisms, a technology inspired by nature poised to transform the future of food. The number of companies involved in alternative protein fermentation rose to 136, an increase of 12% over the number of known companies in 2021.

In Spain, the foodtech sector is experiencing considerable growth and is becoming increasingly active in terms of innovation and development. This growth can be seen in the creation of start-ups - such as MOA FoodTech - that are emerging with innovative propositions, ranging from companies that focus on alternative food production to those that focus on grocery delivery and supply chain optimisation. The emergence of such companies is a response to the growing demand for alternatives to traditional meat, such as plant-based or cell-grown products and alternatives to allergens, which is growing in Spain, as well as an increased awareness of the impact of the food industry on the environment. Thus, the Spanish fermentation sector is constantly evolving, with a diverse ecosystem of startups, growing investments and a greater awareness of the importance of sustainability and innovation in the food industry, although still far from the situation of the sector in other countries, where these practices are more developed.

One of the most critical factors in this sector is regulation. Specific regulations can vary significantly from country to country or region to region, and it's crucial for foodtech companies to be aware of relevant regulations affecting their operations to ensure compliance and operate legally and ethically. Foodtech companies are subject to food regulations covering production, labelling, storage, distribution, and marketing. Within the European Union, notable regulations include Regulation (EC) 178/2002, outlining the principles and general requirements of food law. Another significant EU regulation is Regulation (EU) 2015/2283, which governs novel foods. These 'novel foods' are those not consumed in Europe before 1997. To be considered as such, they must undergo stringent food safety measures for the European Parliament and the Commission to approve them as suitable for consumption. This process, aimed primarily at ensuring food safety in the EU, can somewhat burden foodtech companies, as the approval process for a food to be recognized as a novel food takes between 2 to 3 years, incurring additional costs for the companies

MOA FoodTech

MOA Foodtech was founded in 2020 with the idea of establishing a more sustainable alternative for food production. Its founders, Bosco Emparanza, Susana Sánchez and José María Elorza, realised that the current food production system is completely unsustainable, inefficient and polluting, therefore, and taking into account their studies - Bosco is a biochemist, Susana is a biologist and José María has a degree in law and finance - they decided to found a B2B platform of healthy and sustainable ingredients obtained from the valorisation of food by-products through fermentation processes optimised with their own Artificial Intelligence tool.

With these computational tools MOA chooses the right microorganism for the by-product, saving research time. The result is a microbial biomass with high nutritional value and technological properties. It contains all essential amino acids, is easily digestible and has no allergenic potential. The ingredient has excellent functional properties and high nutritional value. This makes it suitable for a wide variety of applications, such as meat analogues, sauces, bread, cheese of vegetable origin, etc. They also provide consultancy services to other companies that want to revalue their products, through a study and technology transfer. The beginnings were fraught with challenges, from the context in which the company emerged, right in the year of the Pandemic, to the lack of awareness about sustainability in the sector, along with difficulties in attracting financing and scalability issues. Although, as noted in the previous section, there has been an increase in the creation of companies in this sector lately, the situation was vastly different when MOA was established, leading to several obstacles in the company's consolidation and promotion. The specialized equipment required for the work has a high cost.

To finance the project, the partners first resorted to personal capital and later sought other forms of financing. Since the beginning, they have used challenges, fairs and pilots to promote themselves and thus make themselves known and attract capital and new business opportunities. To date, they have less than 25% investors and their investors include: Viscofan[1], Banco Sabadell[2], SODENA[3], Eatable Ventures[4], Clave Capital[5] and Big Idea Ventures[6]. It is also noteworthy that MOA has obtained funding from institutions at different levels, from aid for the creation and consolidation of innovative technology-based companies from the Government of Navarra to co-financing from the European Regional Development Fund (ERDF).Another difficulty related to the aforementioned cost of the equipment was finding the necessary space and material to carry out the production process and research tasks. Faced with this obstacle, MOA obtained the help of the European Business and Innovation Centre of Navarra (CEIN), which provided a space in its facilities and gave MOA access to the necessary machinery to begin its work. However, CEIN's support does not stop at the use of material, but also offers them help to establish and consolidate their business model, as well as offering them different courses and training, including training in sustainability with the Sustainn consultancy firm, which was essential to lay the foundations for sustainable practices in the company. Another obstacle, which is also shared by the rest of the companies in the sector, is the problem with scalability; there is a bottleneck, there are a lot of difficulties to be able to move to a large-scale production process. In the beginning, they tried to work with brewing and vinegar companies because they also carry out a fermentation process similar to the one used in MOA, but it didn't work out. Little by little they are increasing the scale, and in February/March next year they will launch their first product on the market. First it will be on the national market, as the tonnes produced will not be many, but once it increases, they will move on to the international market, as foreign demand has reached them.

The company currently has 13 employees. It should be noted that its staff is aged between 23 and 40, which makes it a young workforce, with a multidisciplinary team that combines skills and training in different areas: biology, microbiology, bioinformatics, innovation of nutritional processes etc.. It is in this multidisciplinary, which is reflected in the training and specialisation of each of the three partners, that the company's decision-making model resides. Each partner oversees his or her area of expertise; however, strategic decisions are agreed and reached among the three partners. The way in which decisions are made has also changed over time as the company has grown, and decisions are now made with more information and considering risks and contingency plans.MOA's work and determination to remain in the sector and to be a foodtech benchmark can be seen in the awards and recognitions it has received since its creation, among which the following stand out:

- AseBio-PwC
- EmprendeXXI FoodTech Startup Forum 2022
- Winners of the Santander X global challenge 'Food for the Future'.
- Winners of Scale it up! Büehler Innovation Challenge 2022

Sustainability and business model

MOA Foodtech's business model is based on the development of food ingredients from by-products of the agri-food industry, using a fermentation process. This approach promotes the circular economy, integrating sustainability at the core of its operations. Thus, MOA emerges from its origin with sustainability as an integral part of its business model, with the main objective of creating a more sustainable food chain. Its ingredients are applicable in a variety of products, such as meat and dairy analogues, sausages, snacks, and in traditional meat products that seek to be improved or enriched. MOA is a B2B platform that provides its products and services directly to other companies rather than to the end consumer.

MOA's business model includes several key components:

- Innovative Ingredient Development: MOA specialises in transforming by-products into valuable ingredients through fermentation. This process contributes to reducing waste in the food industry and improves the overall efficiency of the sector by contributing to the circular economy.
- Consultancy and Technology Services: In addition to developing its own products, MOA offers services to other companies interested in revaluing their by-products. This includes studies to determine how they can be revalued, and the technology transfer needed to implement these processes.
- Collaborations and Joint Projects: MOA works with different actors in the food industry, including large companies such as Barilla, to develop specific food applications using its ingredients. These collaborations allow MOA to expand its reach and apply its innovations in a broader context.
- Focus on Sustainability: MOA not only pursues sustainability through its processes and products, but also in its industrial operation. This includes plans to use renewable energy and production methods that minimise environmental impact.
- Growth and Scalability Strategy: MOA is in the process of transitioning from the development phase to industrialisation. This involves scaling up their production and starting to generate sales of their ingredients. They are also exploring the use of idle capacity facilities to produce their ingredients, reflecting their commitment to resource efficiency.

Initially, MOA Foodtech associated sustainability mainly with environmental impact, focusing on the revalorisation of by-products and the reduction of CO_2 emissions. In this sense, they are re-evaluating their Life Cycle Assessment, with a broader perspective. However, over time, they have broadened their definition of sustainability to include aspects of governance and social responsibility. This implies a wider consideration of sustainability practices that encompass not only environmental impact, but also social equity and responsible corporate management. Key to this is the sustainability training they are receiving with the support of CEIN and the consultancy Sustainn.

Sustainability is a crucial component in MOA Foodtech's value chain, especially when it comes to its customer relationships. Many companies, in their quest to align themselves with more sustainable and responsible practices, actively seek suppliers that are not only sustainability certified, but also contribute additional value through their sustainable practices. Also from a market perspective, consumers are more concerned about the provenance of products and ingredients: they look more closely at the label. This puts MOA Foodtech in an advantageous position, as its commitment to sustainability not only enhances its environmental profile, but also strengthens its attractiveness and relationships with customers who value and prioritise sustainability in their supply chains. Nowadays, MOA Foodtech has a significant competitive advantage thanks to its focus on sustainability and innovation. However, they still face the challenge of materialising the leap towards industrialisation and scalability of their processes. They are actively working on scaling up their business model and expect to fully launch their industrialised process in 2024, marking a crucial step in their evolution and ability to serve a wider market. In its search for industrialisation and scalability partners, MOA Foodtech not only focuses on technical and commercial capacity, but also places great importance on these potential partners sharing and aligning with its sustainability approach.

Sustainable practices

At MOA Foodtech, sustainability is managed in a pragmatic and flexible way. They do not have a formal sustainability plan, although they have developed a set of practices and indicators that guide their actions in this area. This pragmatic approach is reflected in the collaborative decision-making between the three partners, emphasising a shared, albeit lighter, commitment to sustainability that is naturally integrated into the company's culture and daily operations.

I

n the environmental pillar, MOA Foodtech demonstrates its commitment to the environment by adopting and monitoring several key indicators. The company is not only assessing CO2 emissions, water footprint and land use, but also considers its Life Cycle Assessment. This effort is part of its strategy to continuously improve the environmental impact of its processes. When entering the industrialisation phase, MOA Foodtech will have to optimise its production processes, implementing the use of renewable energies and production methods that have a lower environmental impact. Particularly important for the reduction of CO2 emissions will be the search for more environmentally friendly drying methods. In addition, the company carries out responsible waste management and recycling practices, both in its laboratories and in its operating environment, reaffirming its commitment to the preservation of the environment and the promotion of a sustainable culture inside and outside the organisation.

In the social pillar, MOA Foodtech adopts a proactive and conscious approach, although not formally structured. Even though the company does not have a written equality and work-life balance plan, these practices are implicit in its organisational culture. This pragmatic approach reflects MOA Foodtech's commitment to creating an equitable work environment and promoting the well-being of its employees. The company understands the importance of work-life balance and actively promotes gender equality and inclusion in its workplace.

In the economic and governance pillar, MOA Foodtech integrates sustainable practices into its business model and organisational structure. Economically, the company has established a robust business model that includes the revaluation and sale of by-products, as well as the development and licensing of microorganisms to enhance the value of these by-products. This strategy not only drives its economic growth, but also strengthens its position in the market as an innovative and sustainable company. In terms of governance, MOA Foodtech focuses on maintaining high standards of transparency and

accountability. The company uses specific platforms to communicate its sustainable practices to customers, thus ensuring traceability and transparency in its operations. MOA Foodtech also pays attention to the security of its data and processes through cybersecurity measures, such as the use of Onedrive and Microsoft with dual authentication, reflecting its commitment to protecting the information of both the company and its partners and customers. These governance and economic practices show how MOA Foodtech balances economic viability with corporate responsibility, ensuring the company's long-term sustainability in a constantly evolving business environment.

The role of technology and innovation in sustainability and MOA Foodtech's business project
The paradigm of sustainability, technology, and innovation is crucial for understanding the sustainable development of industries. In this context, technology plays a fundamental role. Innovation at MOA is manifested through the protection and licensing of strains and microorganisms via patents, a process currently in the data acceptance phase. This marks a significant milestone and highlights the synergy between sustainability, innovation, and technology.
The protection of the process and its licensing reflects the company's commitment to sustainability and underscores the need for new technologies or developments to enhance these objectives.

Among the set of technologies used, the significance of ICT (Information and Communication Technologies) stands out as an innovative agent in the production process and product design. At the core of MOA's technological strategy lies automation, robotization, and digitalization. These elements have revolutionized their operational model, generating significant efficiencies in the fermentation process. The use of machine learning to identify values and indicators in this process has accelerated product development from 9 months to just 2-3 months. This innovation is based on a self-learning algorithm using Artificial Intelligence, a result of collaboration with a research centre in Catalonia, showcasing the importance of interdisciplinary partnerships. This case reflects how technology can directly influence sustainability, although its impact on the three pillars or axes of sustainability has not been fully identified. While some advancements may have positive environmental impacts, it is crucial to understand that innovation can also arise in other aspects.

The role of technology wouldn't be feasible without the recruitment and retention of talent within the company's human resources. The need for specific training, including the handling of sophisticated machinery and advanced data processing, counterbalances the role of technology. Throughout this process, it has been necessary to recruit and train individuals for novel and specific processes. In the words of the R&D director (Susana Sánchez, June 2023), “it's a company in the food sector with pharmaceutical technology”. Despite technological successes, MOA identifies that the bottleneck doesn't lie within the technology itself but in production. This recognition suggests that while technology can be a catalyst for sustainability, efficiency and production optimization are equally relevant aspects to ensure success in the innovation/technology/sustainability triangle. This is an example of symbiosis among the three areas. The ability to license strains and microorganisms, combined with the implementation of other technologies, reflects a balanced approach towards business excellence.

Stakeholders’ role
CEIN is a European Business and Innovation Centre linked to the Navarra region. These centres are structures specially designed to foster the creation of innovative small and medium-sized enterprises and thus contribute to local economic development. CEIN's contribution has been essential in the development and consolidation of entrepreneurial activity, by providing a favourable environment during the first years of the company's existence, from its creation. CEIN not only offers facilities and

infrastructures but is also actively involved in the process of business gestation and identification of the business model. MOA has participated actively and collaboratively in these stages, for example, in the Entrepreneurial Boost programme, in which training sessions were offered that have been essential for the identification of the business model.

A second area of collaboration is the role in the comprehensive training of entrepreneurs. With an approach based on people management and leadership, the incubator not only focuses on the technical side of business, but also provides the management skills needed to sustain the business. This holistic approach is manifested in initiatives such as partner alignment courses and human resources programmes, which enhance entrepreneurs' ability to lead teams and efficiently manage available resources. A palpable example of the efficiency of CEIN as a shared space is the collaboration between MOA and another start-up installed in the same space. CEIN's influence has been decisive in promoting the installation of the company in Pamplona and its surroundings instead of Madrid, its place of origin. This geographical mobility highlights the attraction and added value generated in regional development, becoming a central element in strategic decision-making in emerging businesses. Ultimately, the connection of companies with CEIN not only translates into tangible benefits, such as facilities and advice on business plans, but also generates a network of strategic relationships. Collaboration with projects such as Innovarse (developed by the Government of Navarra) underlines the interconnection between incubators, start-ups and government initiatives, creating an ecosystem conducive to entrepreneurial growth and innovation in the region.

The relationship between the University and the business sector is one of the key aspects in the development of public policies to favour the transfer of research and development processes to the sector. In this context, one of the outstanding collaboration projects was an R&D initiative that involved both parties and was executed through the Office for the Transfer of Research Results (OTRI). This project allowed the sharing of human resources and facilities, generating a mutually beneficial interaction. It is also remarkable that MOA has done transfer projects with UPNA (Public University of Navarra) with grants from the Government of Navarra. The connection between MOA and the University was generated on the basis of a master's programme in Food, which allowed a student to carry out an internship and a master's thesis on a collaborative topic, requiring specific technical skills and the use of specialised machinery. The process included negotiating costs and collaborative agreements to maximise efficiency and ensure MOA's autonomy in the future. Although the term sustainability was not a central theme at the time, the experience highlights the importance of integrating sustainability-based considerations from the early stages of product development. The difference in regulation and expertise in these terms of collaboration differs from country to country, for example, in the Netherlands with a closer collaboration and embedded in the university itself, which favours collaboration.

MOA has also collaborated with the CNTA (National Centre for Technology and Food), which indicates the openness in the concept of collaborative networks with the different agents of regional and/or sectoral development. Finally, the importance of proximity and cultural commonalities in collaboration in these processes should be noted. Knowledge between professionals and researchers, alumni networks in companies, facilitate sustained collaboration. These profiles are aware of the university's capabilities and play a fundamental role in this process.Another essential stakeholder in this process is the consultancy firms in the process of definition and growth, in this case a sustained collaboration over time with the company Sustainn[7], whose objective is the Circular Economy and Sustainability. This consultancy firm has provided not only advanced knowledge in sustainability, but also participates in training processes that enable the implementation of a sustainable business model. As a result of this

collaboration, MOA has been able to identify its business sustainability model and has received a detailed action plan with measurable indicators. In-depth reflection on the various dimensions of sustainability and the elaboration of a strategic roadmap have been some of the key tools provided and customised by the consultancy, boosting the company's long-term vision. The collaboration with Sustainn goes beyond sustainability consultancy, as it has also facilitated networking opportunities with other companies. This connection with the business network broadens MOA's horizons, allowing interactions and mutual learning that strengthen its position in the market and provide valuable insights.

In addition, it accompanies them in the process of searching for financing modalities and fundraising rounds, an aspect that goes beyond mere sustainability consultancy. In addition to Sustainn, and in this process of collaborative opening, MOA has sought synergies with other entities such as AINIA[8] and the University of Vigo[9] in a European project. The collaboration has transcended borders, with a kick-off in Poland. These partnerships demonstrate the diversity of connections that an emerging company can establish to boost its technological and strategic development.

Financing: shareholders, financing rounds, role of public administrations

Currently, MOA is immersed in a funding round aimed at advancing towards industrial production. This crucial phase of the growth process has involved the participation of various investors, starting with the three founding partners and expanding to include family and friends. Among the external investors, notable names include Viscofan, Banco Sabadell, Eatable Adventures, Clave Capital and Sodena. The latest additions correspond to international expansion by involving a venture capital firm based in New York, Big Idea Ventures9 reflecting MOA's appeal and its potential to attract attention from global investors.

In addition to the funding round, MOA has sought financial support from various government bodies and specific programs. They have received investment and R&D aid, as well as funds for hiring technologists. Participation in a NEOTEC[10] project aimed at young companies under 3 years old reflects MOA's commitment to business development and attracting specialized talent. This initiative has allowed the incorporation of a doctor and chemical engineer, demonstrating the diversity of profiles contributing to the company's success. In parallel with the fundraising rounds, MOA has taken steps to protect its intellectual property. With a pending patent awaiting a response, they have completed the copyright registration for their computational code and are establishing trade secrets to safeguard the process. Furthermore, in this process, collaboration with the Catalan company, Delvy[11], has been crucial, highlighting the importance of strategic alliances in today's business environment. This comprehensive approach to intellectual property protection showcases MOA's strategic vision to ensure sustainability and exclusivity of its innovations.

Conclusions

The case of MOA foodtech stands out as a model of a 'born sustainable' company closely aligned with Navarra's Smart Specialization Strategy (S4). Through its innovation in fermented protein production, MOA has set a milestone in the agri-food industry and sustainability, key pillars of the S4. This approach not only reflects an environmental commitment from its inception but also positions the company within a broader concept of sustainability. MOA foodtech excels in the innovative production of fermented proteins, paving a new path in the food sector towards sustainability. This specialization reflects a successful fusion of advanced technology and ecological practices, demonstrating that innovation can coexist with respect for the environment.

MOA foodtech integrates responsible practices into its business model and daily operations. The company has addressed environmental aspects such as reducing CO2 emissions and land-use efficiency, while also incorporating principles of social equity and responsible governance into its organizational culture. These sustainable practices, coupled with its focus on innovation and technology, have strengthened its position in the market and laid the groundwork for long-term sustainable growth in an ever-evolving business environment. The success of MOA foodtech has been significantly driven by the support of key stakeholders, especially CEIN and collaborating universities. These institutions have been instrumental not only in providing resources and structure but also in enriching the technical and business foundation of the company. The synergy between MOA foodtech, educational institutions, and the business community in Navarra has created a favourable ecosystem that has catalysed innovation, talent development, and sustainable growth for the company. One of the most significant challenges facing MOA Foodtech is its transition to the industrialization phase. This step represents a challenge with uncertainties, from scaling production to adapting supply chains and logistics. Additionally, although currently their products are not classified as 'novel foods' and therefore not subject to the stricter regulations of such products, the company must remain vigilant about potential changes in food regulations. Future regulations could significantly impact its operations and market strategy.

In conclusion, the case of MOA foodtech illustrates the challenges and opportunities inherent in integrating sustainable practices into the food industry. Their experience provides a relevant case study to understand the dynamics of innovation and sustainability in today's business landscape.

Footnotes:

[1] https://www.viscofan.com/es/

[2] https://www.bancsabadell.com/bsnacional/es/particulares/

[3] https://sodena.com/

[4] https://eatableadventures.com/

[5] https://clave.capital/

[6] https://bigideaventures.com/

[7] https://www.wearesustainn.com/

[8] https://www.ainia.es/

[9] https://www.uvigo.gal/es

[10] https://programa-neotec.es/

[11] https://delvy.es/

5.2 CASE: Be Planet, sustainability as a business in BeePlanet

Abstract
This case presents a comprehensive analysis of BeePlanet, an innovative company in Navarra that recycles electric car batteries, giving them a second life. Like MOA Foodtech, BeePlanet aligns with Navarra's S4 smart specialisation strategy, focusing on the Green Energy sector. Through its unique business model, BeePlanet not only contributes to the circular economy, but also demonstrates a sustainable and responsible approach towards the environment and society. The company has established strategic partnerships with key stakeholders, including universities and other entities, to drive its growth and development. However, it faces significant challenges, especially related to the industrialisation of its processes and the potential impact of future regulations. This case highlights the importance of innovation and collaboration in the transition to more sustainable and environmentally friendly business practices.

Introduction
Within the framework of the Smart Specialisation Strategy (S4) of Navarra, the case of BeePlanet stands out for its innovative contribution to the Green Energy sector. Dedicated to the recycling and reuse of electric vehicle batteries, BeePlanet not only addresses a crucial sustainability challenge in the modern era, but also positions itself as a key player in the promotion of the circular economy. This Navarre-based company reflects an exceptional commitment to responsible environmental management, transforming a global problem - the fate of electric car batteries - into an opportunity for sustainable development. By facing specific challenges such as the scalability of its business model and adapting to an evolving regulatory framework, BeePlanet exemplifies how innovation and adaptability are fundamental for companies seeking to lead the way towards a cleaner and more efficient energy transition.

From reading this case, it is possible to identify how it is possible to move towards the circular economy without an excessively rigid implementation of a model that, in this case, is generating the creation of a, possibly, new sector of industrial activity. The belief in the relevance of sustainability and the industrial experience of the founding partners has acted as a catalyst both in the generation of the idea and in its development. BeePlanet represents a valuable case study for understanding how entrepreneurial initiatives can be aligned with regional sustainability strategies, thus contributing to wider economic and environmental objectives in Navarra.

Industrial sector
The energy and the automotive sectors are sectors that have traditionally had few points in common, but which nowadays have many interrelationships due to the ecological transition. If we focus on the first of these, the energy sector, the paradigm’s shift and the existing transition from fossil fuels to renewable, less polluting energies is evident. There is, at all levels, a great awareness of the advantages of renewable energies and green electricity sources over fossil fuels. This awareness is reflected in regulation; the energy sector is a regulated sector with frequent changes, but this also entails a certain degree of uncertainty as many companies in the sector do not know how this change will be translated into reality, nor the time horizon of its mutation.

The automotive sector is undergoing a transformation, and, in recent years, we are witnessing a boom in the manufacture and sale of electric vehicles. In 2014, fewer than 450,000 such vehicles were registered in use worldwide, however, nine years later, the figure is already approaching 20 million units. This is expected to continue to trend upwards in the coming decades, especially in view of the national and European restrictions being put in place as a result of the enactment of the European Parliament's

agreement to ban sales of new cars with a combustion engine that use petrol or diesel as an energy source by 2025 and to prohibit their use by 2050.

BeePlanet sits in between the two sectors and is dedicated to giving a second life to automotive electric batteries. The idea was pioneering in its origins, but more and more companies are reusing batteries, and it could become an industry in its own right in the future. Currently the number of used batteries is not remarkably high, but the evolution of the number of electric vehicles indicates that the number of batteries will grow exponentially in the near future. This boom will occur in parallel with the boom in electric mobility, as it is necessary to consider that the average lifetime of a battery in an electric vehicle is currently between 5 and 7 years. After these years, batteries do not become useless, but lose a percentage of useful charge that makes them insufficient to power a vehicle, but they still have various possibilities of use. If the aim is to make the automotive sector a sustainable sector, the work of companies like BeePlanet is essential, as they give these batteries a new use.

Two major problems hindering the work with second-life batteries are the lack of traceability and the absence of common standards. A common regulation is a necessity, and work is underway. In a few years' time - 2027/28 - second-life batteries will have to be labelled with a carbon footprint impact label for the entire value chain. Although this regulation may seem limiting for the manufacturers of second-life batteries, it is necessary because all companies in the sector will work under the same standards. Europe is trying to promote this type of companies to make the continent a benchmark in the recycling and reuse of batteries and not to fall behind other major competitors, mainly Asian. As a result, investments are being made in the creation of gigafactories, especially in Germany and other countries in the northern region. Currently, the most relevant European company in the sector is a Swedish company (NorthVolt[1]).

The evolution of the sector is immersed in a real revolution that can affect the organisation of the actors and their definition of their business model. Traditionally, companies size their business activity to ensure the efficient use of resources. However, the renewable energy sector is over-producing, and this is a consequence of the current cost structure. Now, it is cheaper to invest in production than in storage. This is going to be a key issue for BeePlanet, as companies are investing for all production capacity as if there were no storage. This makes storage more expensive, which compromises companies whose goal is storage. Although in the words of university researchers, "*it is not clear that the future will go in that direction*". The role of battery storage and, in particular, second-life storage is to bridge the gap between renewables and consumption. The question is how big this gap will be. If the gap is large, there will be a large market for storage, but if the gap is small, there will be less of a market. For example, if large automobile companies opt for massive installation of photovoltaic panels, they will generate all the energy and storage will not be required. This evolution in the medium and long term will significantly condition the future of companies involved in second-life battery storage, and this will be a critical point for the survival and growth of BeePlanet.

BeePlanet Factory

BeePlanet Factory is a name with a double meaning, as on the one hand it is a declaration of intent to commit to the planet "Be Planet" - as well as a tribute to a small creature "Bee" - which represents the concepts of energy storage and circular economy like no other. The story begins in 2018 when three engineers, Jon Asín, Agustín Idareta and Carlos Llonis were determined to leave a better future, creating a sustainable energy model for the planet. Both Carlos Llonis (Truck and Wheel[2]) and Agustín Idareta (TRW[3] purchasing and logistics department) had extensive professional experience as automotive

engineers. Jon Asín also added to his knowledge of the automotive sector (TRW), experience in the ICT and renewable energy sectors. For 10 years he was in charge of developing the electric mobility business line at Ingeteam[4], positioning this company as one of the leading brands in this activity. This experience led to the pioneering idea of giving a second life to electric car batteries. The initially informal conversations between these three engineers led to the decision to found the company. In the case of Jon and Agustín, they left their jobs to take up the positions of CEO and COO respectively at BeePlanet. Carlos Llonis continues to embark on this adventure as Chief Strategy Officer, combining his position as President and CEO of Truck and Wheel. Carlos Pueyo, a physicist by profession, also joined the company as CTO.

With this background, BeePlanet was created with the aim of designing and manufacturing sustainable storage systems based on second-life batteries from electric vehicles. Its mission and vision are to create a sustainable energy model by being a benchmark in the integrated management of second-life batteries from electric vehicles. Its activity consists of reinventing batteries. Through research, analysis, development, and implementation of different applications, they reintroduce batteries from discarded electronic vehicles into the market. Their team oversees the entire process, from the extraction of the battery until it is placed in a second application. These batteries keep a high storage capacity intact (90%-70%) and offer high performance, making them perfectly functional for other uses, such as stationary energy storage.

The beginnings were not easy, although they received significant support from various parties. They were given a place in the CEIN innovation incubator and recently moved to their own headquarters in Orkoien (Navarra-Spain). The company currently has a staff of 42 workers, which continues to grow. Growth has been exponential, as shown by the evolution of its business figures. Their income in 2018 was 122,700 euros, in 2020 it tripled with a value of more than 360,000 euros and in 2021, almost 862,000 euros. They have already created their own headquarters in Orkoien, occupying their own industrial premises. Based on these figures, we can see how, from the beginning, they have been increasing their business volume, and year after year BeePlanet is consolidating its position in the sector and expanding its market, participating in different projects (national and international) and in different consortiums. BeePlanet also acts as a facilitator of change by connecting companies in projects involving strategic collaborations linked to energy storage and electric mobility.

Sustainability and business model

Sustainability is in Beeplanet's DNA and in the philosophy of its founders. The founders came up with a holistic idea of the concept of sustainability that included everything that had an impact on the planet, through the recycling of electric batteries. There was also much discussion about the importance of sustainability as a business model, which meant keeping economic criteria in mind. The foundations they laid at the time are still very much in place. In their idea of sustainability, it is considered that, although the origin is the environmental aspect, this should not be at odds with the economic aspect, i.e. with the development of a business model that makes business creation and development possible. This is how Carlos Pueyo defines the philosophy of sustainability. "*We are circular natives, and we were born sustainable and environmental sustainability is our essence, but also economic criteria are present in all our activities*". This idea was much discussed in the early days and is still valid today. BeePlanet manufactures energy storage systems by reusing lithium-ion batteries from electric vehicles. These batteries can be used in photovoltaic, wind and off-grid installations. They started with a 4kWh supply but can now offer +1MWh capacity, which allows them to develop applications for the residential,

commercial, and industrial sectors, primary sector, and construction. Thus, they offer two types of battery systems:

- The Home ESS system is a sustainable energy storage system prepared for self-consumption photovoltaic installations. They are suitable for single-family homes, small businesses, or off-grid installations (such as mountain lodges and the agricultural sector). With each Home ESS, up to 4200 kg of CO2 equivalent can be avoided.
- The Power ESS container system is a storage system with a capacity ranging from 46 kWh to 1 MWh for the commercial, industrial, primary and construction sectors. It is prepared for integration in photovoltaic and wind power plants. The batteries are grouped into replaceable functional units, so that the second life of the equipment has no end. The CO2 reduction to the atmosphere of BeePlanet Factory batteries is 70% compared to new batteries.

As can be seen in the description of their business model, all the activities they carry out contribute to environmental sustainability. The reuse of materials (e.g. electric batteries) and their incorporation into a production process is a boost to sustainability and the objective of their business model. But sustainability permeates all the company's activities. Designing a product with end-of-life and end-of-life disposal in mind is also sustainability. Finally, making a product available to the market that has been designed, engineered, and manufactured according to sustainable criteria raises awareness about the proper use of resources and therefore sustainability. In the beginning, sustainability was seen as a business opportunity, to create a brand. The origin of the concept of sustainability at the time of its foundation was novel (we must not forget that it started operating in 2018) and, in fact, when the financing rounds began, the concept of sustainability seemed in the words of Carlos Pueyo a nice idea. However, he also states that "*customers don't really buy from you because you are nice, but because your batteries are reliable and perform well*". There was a time, in the second or third year of the company's operation, when sustainability was presented as another value proposition, but not the first, not the second, but seen as an add-on.

They are clear about their values, as well as their vision and mission, and this philosophy that they have had since the beginning is still present when it comes to making decisions. Thus, these criteria are transferred to one part of their value chain, the suppliers, and to the customers. In the case of suppliers, they have never used batteries from China to develop their products, even though it would not change their value and they have had the opportunity to do so. They prefer to rely on local suppliers. Such decisions also have an impact on their own employees who also work in the company because of the values that the company upholds. On the customer side, and considering sustainability criteria, they are modifying their business idea with regard to exports. Thus, for example, in the French market they are entering through the sale of electronic components (BMS), which is where they generate the most value for others to work on integration in the cabinet and battery passport[5], i.e. the final product is produced locally. In other countries they are considering a matrix approach.

However, a different element is the use of sustainability requirements when selecting suppliers or having their customers require them to do so. In this respect, they have not yet bothered to pass their environmental commitment backwards (suppliers), although this is something they will probably have to develop, because of the forthcoming requirement for batteries to specify the carbon footprint impact of the entire value chain. Their purchasing department will have to prepare for that. Regarding customers, although some companies ask them for requirements such as product carbon footprint or improvement plans on critical raw material management, this is not something that can be generalised

or that has a real impact as a purchasing model for their products. The most relevant factor is price and the impact of economies of scale. Their business is valued based on €/kilowatt hour, i.e. how much their product costs according to the quantity they sell. Volume is particularly important in their business and in their case, they cannot compete with companies that may be manufacturing with a magnitude of 100,000 units more than them.

Scalability is therefore the most important challenge BeePlanet faces today. It is clear to them that if they do not grow, they will not survive. But scalability has a risk given that the market is highly atomised and there is a lot of competition from the Asian market. Some of their competitors are Chinese companies such as BYD[6] and Huawei[7], European companies such as Fluence[8] or SMA[9] and Spanish companies such as CEGASA[10]. Thus, an important milestone has been the agreement reached with SungEel HiTech[11] and other key Spanish (Medenasa[12], Truck&Wheel-TW Group and the support of Sodena[13]) and Korean (Samsung C&T[14]) players to collaborate in the reuse and recycling of lithium-ion batteries from electric vehicles. They have formed a consortium that will materialise in 2025 with the creation of a new company called BeeCycle, to build a 10,000 TPY black mass plant. The company will be located in Caparroso (Navarra) and will employ 60-70 people to process all those batteries that have reached the end of their useful life or scrap from the manufacture of cells. Also, as mentioned above, there are other alternatives to address international markets that do not involve internal growth.

Sustainability practices and footprint

BeePlanet was born sustainable, but its vision of sustainability has also evolved. When asked whether one is born sustainable or becomes sustainable, BeePlanet considers that, although they were born sustainable, the company can also become sustainable. This may explain the change in their concept of sustainability, which has matured. From an initial vision focused on environmental sustainability as a business model, they have evolved to a broader concept that includes governance and social aspects. Training has been key in this evolution, and although they consider these two aspects the most difficult to identify and materialise, especially the social aspect, they are developing within their organisation. The Sustainn[15] consultancy firm has played an especially significant role in this evolution and has supported them throughout this process. Thus, in addition to Environmental Sustainability as a business model, they have been adding the other two pillars of sustainability, economic and environmental.

Under the InnovaRSE[16] seal, the model promoted by the Government of Navarra[17] to foster and promote Social Responsibility in Navarra, and which includes the three pillars of Sustainability (Environmental, Economic and Social), they carried out an initial CSR diagnosis in 2021. This diagnosis has provided them with a system for proposing areas for improvement that cover the triple dimension of sustainability and continuous improvement in these areas. The diagnosis included a set of indicators to assess Beeplanet's level of performance in the three dimensions, using both quantitative and qualitative criteria. This assessment allows them to identify good practices and areas for improvement in the Economic, Environmental and Social dimensions (both internal and external) which enables them to establish an Action Plan. In 2023 they have been awarded a Diploma for having completed the first Improvement Cycle.

This process has led it to define a Sustainability Policy, approved in July 2023, with which it seeks to establish principles and make commitments in sustainability in relation to its stakeholders. It includes four basic commitments:

- Good Governance
- Circular economy and environmental impacts

- Diversity
- Cooperation and collaboration

In the different dimensions, the main practices developed by BeePlanet and their measurement indicators are:

Economic dimension
Despite being a young organisation, they consider that they have developed good practices in this area. They are signatories of the UN[18] pact, they have a quality management system, they develop continuous measurement and actions to improve productivity and efficiency, a system for handling privileged information. In addition, their good practices also include Research and Development, digital transformation, product certification and the process of external communication of CSR, for which they have carried out a very exhaustive study of stakeholders. On the other hand, the organisation has shown great interest in establishing a code of conduct that is known to its stakeholders and ensures their ethical compliance in relation to the organisation.

Environmental dimension
This is the area that has been the most developed and has had the strongest presence since the beginning. The organisation is very aware and has a clear objective regarding its footprint on the planet. They maintain a firm commitment to work along these lines. As good practices, they establish the analysis and reduction of life cycle impacts, the promotion of the circular economy and the environmental management system. Areas for improvement include the Environmental Policy, the decarbonisation and zero CO2 strategy, sustainable design, and life cycle sustainability analysis. They have ISO 14001 certification as a tool that allows them to develop a systematic way of working on sustainability. It also has the seal of CO2[19] footprint and reductions of the Ministry 2021-2022 and the commitment to reduce kw/hour per kw/h generated.

Social dimension
They consider that this dimension has an internal and an external dimension. It is the most difficult to value and make tangible. *Internally*, There is an important sensitivity to caring for people, which they develop through a humanistic management model that is perfectly reflected in the corporate culture. They are very aware of the concept of emotional salary as a way of attracting and retaining talent. They include in these as good practices the transfer of knowledge and the polyvalence plan, job stability and job protection, professional development, the working environment, or the registered equality plan. They also include in their policies the reconciliation of work and personal life, protocols against harassment at work and LGTB (in process) and are working on the implementation of actions of the communication plan. This sensitivity is also reflected in the implementation of various recreational and festive activities. For example, the Wake-up box in which healthy food products are available for employees in the company or participating in sports activities.

On the *external* dimension, sectoral alliances and relations with public administrations are considered as good practices. The relationships established and the importance of generating a collaborative and cooperative ecosystem are noteworthy. As areas for improvement, participation in social projects is considered.

Sustainable development goals

Finally, regarding the SDGs, BeePlanet's website indicates that it complies with 5 of the 17 SDGs, although no measurement indicators are established. The role of technology and innovation in sustainability and in BeePlanet's business project

The relationship between technology and innovation is embedded in BeePlanet's own business design based on sustainability. This vision recognises that sustainability is not only an environmental responsibility, but also a driver for innovation. ICTs play a key role in this respect. The company recognises that, without these technologies, the significant changes that have been implemented in the sector would not be possible. Technology is seen as indispensable in both internal processes and in the creation of sustainable products, and innovation is seen as an essential component behind any change towards sustainability. In the initial stages of collaboration with the university[20], the latter has provided key infrastructure and facilities in the university's laboratories. In these facilities, technological improvements related to storage and second-life batteries have been tested. Although these results did not have direct business applications in these initial stages, it highlights the importance of foresight research, which is essential for the continued development of the company.

Throughout the life of the company and as a result of different collaborations, the company has developed its own technology to be able to carry out all its functions, including:

- Methodology for second-life batteries: State of Health (SOH), an analysis system that allows predicting their performance and ageing according to the application.
- Firmware: specific firmware to address the reuse of second-life batteries.
- Footprint reduction: they have a design that maximises efficiency in the use of materials by extending their useful life throughout their life cycle.
- Bee_BMS, Bee_Cloud, Client Area, and Bee_EMS

Human Resources Management is based on attracting and retaining talent. BeePlanet faces challenges in terms of specific training in sustainability. Despite having staff trained in sustainability, the company faces a lack of training in its workforce, beyond the personal interest of some employees who have already trained or worked in sustainability. HR training remains essential for the company, but they face difficulties in finding specific offers in such a specialised sector. To address these constraints, BeePlanet has opted for tailor-made training and online courses from European universities, highlighting the diversity of approaches taken to ensure its staff are trained in sustainability issues. Ultimately, technology and innovation emerge as key drivers of sustainability in BeePlanet's strategy, from technological changes to the training of its human resources and strategic collaboration with the university.

The company considers that a critical point is the talent drain. Difficulties in training and the specific nature of the technology mean that it requires a major effort to retain and/or replace people. As it is such a new product, it is not easy to find suitable training profiles on the market. Throughout the interviews with the company, it has been stated that the difficulty is not only the technical profile, but also the conviction and alignment with the values of sustainability. According to Carlos Pueyo "*sustainability is in our DNA and we have not found any cracks in this approach*".

Stakeholders' role

CEIN[21] have played a key role in the solid development and rooting of BeePlanet as a sustainable company. From the beginning, CEIN has been the place where the founding partners built the

foundations of their company. Initially, it allowed the first business idea to take shape, and thanks to the knowledge and experience of the partners, they quickly evolved and moved into the new building BeePlanet now occupies. CEIN, in this context, was not only a physical space, but an enabling environment that catalysed the reflection and organisation of the business model.

In the CEIN ecosystem, BeePlanet was able to reflect on and structure its business model, always focused on the central concept of sustainability: reusing electric vehicle batteries to contribute to improving the planet. This leitmotif became the cornerstone of its business identity, and CEIN played a crucial role in providing the necessary support to consolidate these principles. The incubator not only facilitated the creation process, but also provided the company with the first essential structural elements on which to build and grow. The experience of the entrepreneurs, who, with an extensive background in the business world, decided to venture into the creation of a company in which they had to assume a variety of responsibilities, highlights the versatility and continuous learning that characterise the CEIN incubator environment. The transition from being experts in the business world to creators of a new company emphasises the value of having an incubation environment that supports and guides entrepreneurs in the process of business development and growth.

The collaboration between BeePlanet and the university came about as a result of BeePlanet's initiative, specifically from Jon, who was involved in GTA, an electric vehicle research group. At that time, strategic GN projects were aligned, and BeePlanet's project was a perfect fit for the call. Simultaneously, ENERcluster[22] was established, initially focused on wind energy and now with a more generic approach. BeePlanet was involved globally in this project and then developed a specific package in collaboration with the university.

In the initial stages, the company had a business idea without a concrete product. The university played a key role in characterising the product and studying the potential of second-life batteries. Sodena funding facilitated the start of the project, and the collaboration with Nissan's division in France provided the necessary raw material (Nissan Leaf batteries). The university's crucial role was to characterise the product and offer options, especially in a context of significant technological uncertainty. Batteries from electric vehicles presented uncertainties about their behaviour in specific situations, and the university played an essential role in addressing these uncertainties, highlighting BeePlanet's bold commitment to this business model.

Within the framework of the strategic project, BeePlanet supplied second-life battery cells, while UPNA conducted tests in the laboratory. Despite dysfunctions in the allocation of the amortisation allowance due to the amortisation periods of the equipment, the direct collaboration ensured that the tests remained at UPNA[23]. The collaboration with the university was not only limited to the research and technological development phase. BeePlanet was able to hire a person to do a doctoral thesis, which is evidence of the knowledge transfer and the close relationship between the company and academia. The collaboration also extended to joint projects, including a patent at the end of the process.

Geographical proximity facilitated knowledge of the industrial fabric, allowing BeePlanet to rely on powerful people at the university. The BeePlanet partners, driven by their business idea, hired specialised personnel from the UPNA in areas such as mechanics, electricity, and electronics.

Although the experience was a success, in subsequent attempts to repeat the collaboration in joint projects, they encountered obstacles due to BeePlanet's growth. Nevertheless, the company continued

to expand with other initiatives, such as the installation of photovoltaic systems at the university and on the villavesa (city bus). In a relatively brief time from the start of the project in 2018 to its expected completion in 2024, BeePlanet went from trials to a full range of products. This rapid development highlights the company's agility and adaptability. In terms of competition with Asia, BeePlanet acknowledges the challenge, but points to the exponential technological advance in battery storage capacity as a positive point. In addition, the advantage of not being totally dependent on Asia is seen as a crucial aspect. The company has a joint patent (European PCT) that reflects its commitment to innovation.

From almost the first days of its creation, BeePlanet recognised the fundamental importance of consultancy in understanding and implementing sustainability in its business model. The collaboration with the consultancy firm Sustainn, initiated after its time at the CEIN incubator, proved essential to convey the message of sustainability and build a brand aligned with its values. BeePlanet, aware of the need to incorporate sustainability into its external projection and sales strategies, sought the consultancy's expertise to fill the knowledge gap on how to articulate this message effectively.

The consultancy played a key role in providing direction and guidance to BeePlanet in the development of both products and the company itself. It not only provided knowledge on the principles of sustainability, but also helped to build a coherent approach to communication and sales strategies. For BeePlanet, which already had an unclouded vision of its objectives, the consultancy acted as an expert guide, giving them the tools and the right words to express their values effectively.

Moreover, the consultancy was not only a strategic partner in terms of knowledge, but also contributed to financing their services through grants from the Government of Navarra. This financial collaboration underlines the importance BeePlanet attaches to consultancy in building and executing its sustainable business model. Ultimately, the consultancy not only provided expertise, but also contributed to BeePlanet's continued viability and success by ensuring that its sustainability efforts were effectively integrated into all facets of its business.

Financing: shareholders, financing rounds, role of public administration

Funding represents a constant challenge for companies like BeePlanet, which are looking to build and expand their sustainable business model. The various forms of access to finance are clouded by uncertainty and caution among entrepreneurs about losing control. This reflexive fear about where funding is coming from becomes a crucial component in financial decision-making. In this context, it is essential to understand how BeePlanet deals with these financing problems and how the support of public administrations plays a vital role in its business trajectory.

One of the main difficulties BeePlanet faces in relation to financing is the natural reluctance of entrepreneurs to give up control over their business. This fear of losing autonomy influences decisions about who will finance the project. Deep reflection on where the funding comes from has become inherent in BeePlanet's strategy, highlighting the importance that entrepreneurs attach to aligning values and objectives with potential funders. The need to maintain the vision and sustainable principles of the company during funding has led to careful consideration of the source of funds. Access to finance is crucial to BeePlanet's growth, and in this respect, public administrations have played a significant role in its business model. Government support, especially in the form of grants and subsidies, has provided critical financial backing. In particular, Government support has paved the way to address the reluctance of entrepreneurs to lose control by providing a source of funding aligned with the company's values and

objectives. This financial support has not only contributed to BeePlanet's economic viability but has also strengthened its position as a sustainable business by ensuring that funding sources are aligned with its principles.

BeePlanet's business model is shaped by the complex dynamic between the search for funding and the reluctance to lose control. While funding issues can be an obstacle, the company has managed to navigate these challenges with the strategic support of public administrations. This support not only provides crucial financial resources, but also validates and strengthens BeePlanet's commitment to sustainability. The interplay between funding challenges and government support underscores the complexity of the sustainable business ecosystem and highlights the importance of strategic partnerships with public administrations for the continued success and growth of companies like BeePlanet.

Conclusions

BeePlanet, with its innovative approach in the Green Energy sector, is closely aligned with Navarra's Smart Specialisation Strategy (S4). The company has adopted a business model that not only contributes to the circular economy, but also promotes efficient environmental management by recycling and reusing electric vehicle batteries. This sustainable practice underlines BeePlanet's commitment to the environment and resource efficiency. Sustainability is at the heart of BeePlanet. Since the emergence of the company, they have worked for a change in the model of product manufacturing, opting for a model based on the reuse of raw materials. In this way, their business model is based on effective sustainability and circular economy. They are also aware of the importance of the value chain in their sector and are committed to working with local suppliers and minimising the impact of their products at all stages of the product, even if this results in higher costs.

BeePlanet's business model, focused on battery reuse, presents unique challenges, especially in scalability to meet a growing market and adapting to a constantly evolving regulatory framework. The company's ability to innovate and adapt its model in response to these challenges is crucial to its continued success in the competitive renewable energy sector. BeePlanet positions itself as a company with values, a mission and vision that are considered in all phases of the company's activity. They are the basis for decision-making and have a corporate culture that is shared by all employees. In addition to the importance of sustainability and generating a positive impact on society, BeePlanet also has a very humanistic vision, and consequently attaches significant importance to its staff and to retaining talent. Beyond its environmental impact, BeePlanet also implements sustainable practices in social and economic aspects. This includes promoting local employment, collaborating with communities, and contributing to regional economic development. Its holistic approach to sustainability demonstrates how companies can balance environmental responsibility with social well-being and economic growth.

Support and collaboration with stakeholders, including investors, educational institutions, and government agencies, has been critical to BeePlanet's development and success. These relationships have provided not only financial and material resources, but also knowledge and strategic guidance.
BeePlanet offers a valuable case study for understanding how the integration of sustainable practices and the use of advanced technology can drive business growth in the renewable energy field. The lessons learned and strategies adopted by BeePlanet provide useful guides for other companies seeking a similar path in sustainability and innovation. In short, BeePlanet demonstrates how one company can contribute significantly to regional and global sustainability goals, serving as an inspiring example for the green energy industry and beyond.

Footnotes

[1] https://northvolt.com/

[2] https://tw-group.com/

[3] https://www.trwaftermarket.com/es/

[4] https://www.ingeteam.com/

[5] This is an electronic registry based on blockchain technology included in the device. It is an open access passport designed to meet EU requirements and future battery regulations. It serves to record and share information on battery lifecycle, chemistry and performance details, as well as sustainability data. This will allow companies to track all relevant ESG metrics, carbon emissions data and recycled content. It will enable original equipment manufacturers (OEMs) and battery producers to collect and exchange critical electric vehicle battery data.

[6] https://www.byd.com/es-es

[7] https://www.huawei.com/en/

[8] https://fluenceenergy.com/

[9] https://www.sma.de/

[10] https://www.cegasa.com/

[11] https://www.sungeelht.com/en

[12] https://medenasaonline.com/

[13] https://sodena.com/

[14] https://www.samsungcnt.com/eng/index.do

[15] https://www.wearesustainn.com/

[16]https://innovarsenavarra.es/

[17] https://www.navarra.es/es/inicio

[18] https://www.pactomundial.org/quienes-somos/

[19] https://www.miteco.gob.es/es/cambio-climatico/temas/registro-huella.html

[20] https://www.unavarra.es/portadan

[21] https://www.cein.es/

[22] https://www.enercluster.com/

[23] https://www.unavarra.es/portada

6 Danish Cases

Southern Denmark: A contextual overview

Southern Denmark is a dynamic region characterized by diversity. It uniquely blends urban centers, landscapes, and cultural and industrial aspects. Icons like Legoland, Hans Christian Andersen, Danfoss, and historical landmarks add depth to the region's narrative, enriching its cultural and industrial fabric.

Southern Denmark – demography

Demographics play a crucial role in shaping the region's sustainability landscape. From 2012 to 2022, Southern Denmark experienced a modest 2.2% population increase. Energy consumption per citizen is considered to be a key metric reflecting the region's commitment to environmental awareness. From Fredericia to Nyborg, Tønder to Billund, the diverse energy consumption spectrum mirrors each locality's unique characteristics. Notably, Southern Denmark sets a benchmark for sustainable energy practices with an average of 112 gigajoules. Examining the workforce and education landscape is vital to shaping the region's sustainable future. After completing secondary education, individuals follow diverse educational paths that impact their roles in the region's economic and environmental development. High school graduates predominantly stay in Southern Denmark, with 54% choosing to continue their journey within the region. College or university graduates also remain significant, even when exploring opportunities outside the region. Notably, 63% of vocational education graduates stay in the region, showcasing a commitment to nurturing and utilizing local skills. These educational paths show that the region carefully handles its workforce while staying committed to sustainable practices. The observed educational choices reveal how gaining knowledge is closely connected to the region's social and economic structure.

Nurturing Innovation: Firm Size and Start-ups

In the economic scene, Southern Denmark thrives, with 99% of businesses being Small and Medium Enterprises (SMEs). This dominance drives innovation, adaptability, and collaboration, defining the region's economic strength. Start-ups in the area represent regional growth and innovation, indicating Southern Denmark's resilience in the changing economic environment. From 2018 to 2020, the region saw a steady increase in start-ups. This upward trend reflects the lively entrepreneurial ecosystem and highlights the region's commitment to dynamic economic settings. Compared to other key regions in Denmark, Southern Denmark boasts 6,173 start-ups in 2020, reinforcing its position as a major player in the national entrepreneurial scene.

Industry Sectors and National Overview

When we examine Denmark's economic sectors, Southern Denmark stands out for its diversity. The region outperforms others in primary industries and the industrial sector, demonstrating a significant industrial presence. While Denmark's utility sector has a modest contribution overall, Southern Denmark is slightly more engaged, emphasizing its commitment to this industry. The region strategically focuses on construction and installation, aligning with its commitment to enhancing physical foundations. Despite the Capitol Area leading in service industries, Southern Denmark maintains a substantial presence, reflecting a varied economic profile. This underscores the region's multifaceted economic story. In summary, Southern Denmark is a distinctive and versatile player in Denmark's economic realm, excelling in primary industries, utilities, construction, and services. This sets the stage for a detailed exploration of sustainability practices. The industrial sector takes the lead, representing 53% of the workforce engaged in green goods and services. This highlights the region's strong commitment to industrial sustainability. Additionally, the construction and installation sector contribute significantly at 16%, highlighting Syddanmark's dedication to sustainable infrastructure development. Diverse roles in

agriculture, knowledge services, and waste management further enrich the region's employment landscape.
National Overview of Green Employment:

Smart Specializations in Southern Denmark: Robots & Drone Technology
Southern Denmark, notably represented by the global leader Universal Robots with a commanding 71% market share in collaborative robots, stands out in Robots and Drone Technology, showcasing its pivotal role in sector innovation. Understanding the roles of "producers" and "integrators" is crucial in Robots and Drone Technology. Producers focus on creating robotic and drone technologies, while integrators synthesize components to craft comprehensive solutions. Southern Denmark's employment landscape underscores its substantial contributions to both aspects. Southern Denmark as a key player in both producing and integrating robotic and drone technologies, contributing significantly to advancements in this cutting-edge industry.

Smart Specializations in Southern Denmark: Life Science & Welfare Technology
Southern Denmark plays a key role in Life Science and Welfare Technology, with impressive export prowess totaling 152 billion in 2020, constituting 21.5% of the national total and showcasing a threefold increase in the past 12 years. The region's Life Science industries are characterized by a significant presence of small-sized enterprises, particularly in the medical industry, highlighting their meaningful contribution to the sector's richness and diversity. Examining Pharmaceuticals and Biotech (Lægemiddel og Biotek) and Medical Devices (Medico) sub-sectors, the breakdown for Pharmaceuticals & Biotech includes 488 firms with 0-9 employees, 95 with 10-49 employees, 39 with 50-249 employees, and nine with over 250 employees. In Medical Devices, there are 693 firms with 0-9 employees, 123 with 10-49 employees, 27 with 50-249 employees, and ten with over 250 employees. These figures provide insights into the diverse employment landscape, emphasizing the prevalence of firms of various sizes in each sub-sector and highlighting the enduring significance of small and medium-sized enterprises in shaping the Life Science and Welfare Technology sector in Southern Denmark.

Smart Specializations in Southern Denmark: Food & Bio Resources
Southern Denmark significantly contributes to the national Food & Bio Resources sector, with exports totaling an impressive 164 billion in 2018, equivalent to 24% of the national total. Despite economic strength, the region experiences a decline in the number of firms. Southern Denmark and North Jutland lead nationally in Food and Bio Resources. Key municipalities like Odense, Vejle, and Esbjerg play crucial roles, hosting diverse jobs across the sector's value chain, from primary production to final processing:

- **Primary Sector (32%):** Emphasizing sustainable sourcing, this sector encompasses agriculture and raw material extraction, showcasing the region's commitment to foundational production.
- **Processing (29%):** With almost a third of jobs dedicated to processing, Southern Denmark exhibits robust manufacturing capabilities in transforming raw materials into finished products.
- **Support (32%):** The significant allocation to support functions highlights services enhancing the production cycle, contributing to a well-rounded ecosystem supporting the industry.
- **Service (23%):** Covering distribution, marketing, and retail, this sector, while slightly smaller, underscores the region's attention to the final stages of the value chain and consumer-facing aspects.

Smart Specializations in Southern Denmark: Tourism - Sustainable Allure

Southern Denmark beckons global tourists, contributing 4.6% of national exports in 2017. Its diverse attractions include the Vadehavet national park for nature enthusiasts, rich historical narratives, Hans Christian Andersen's legacy, and the joy of Legoland. Notably, the region embraces green and sustainable tourism, aligning with global trends. This commitment, especially in meeting and conference accommodations, positions Southern Denmark as an eco-conscious and forward-thinking destination. Catering to modern travelers and event organizers, the region's emphasis on sustainability enhances its overall appeal.

Overall case considerations

The sample cases have been chosen based on their relevance in representing the industrial demography of southern Denmark this coincide with the regional smart specialization. The below table 6.1 present and overview of the regional case sample. This is followed by a case text about the individual case. The section is concluded with a discussion of cross case Themes in relation to sustainability efforts, goals and activities in the case SMEs.

Table 6.1: case overview

Name	Fresh Veggies	Halvø Kværne	Vandret	Livslinjen
Industry	Food & beverage	Tourism	Cleantech	Automation
Product/service	Sale of horticultural products	Summer houses and event facilities (rent)	Vertical and hydroponic farming systems	Automated swab robot
Size (# employees)	25 employees	4 employees	2 employees	3 employees
Country	Denmark	Denmark	Denmark	Denmark
Explicit SDG involvement	N/A	N/A	N/A	SDG3 (Ensure healthy lives and promote well-being for all at all ages)
International activities	Export activities (Germany and Sweden)	N/A	Sourcing activities (Europe and Asia)	N/A
Main sustainability challenge(s)	Introduction of shared sustainability standards; integrating sustainability data in their strategy	Connecting sustainability to the company's value proposition	Legitimization of vertical farming (vs. fx organic agriculture); accumulation of outdated technology (LED lights)	Ensuring demand flow to fulfill the company's mission; integrating environmental sustainability in the company's strategy

6.1 CASE: Fresh Veggies – lobbying and marketing for sustainability

Fresh Veggies (FV) is a SME located on the island of Funen in the Southern Denmark Region. FV sells horticultural products on commission on behalf of 25 local farmers. The company counts 25 employees divided into four different functions: sales, product, administration, and support (including quality control and business development).

FV was founded in 1929 as an association of farmers selling fruit, vegetables, and flowers at auction on the market square. Following the growth and success of the first years, FV began to acquire its own sales and storage buildings, and to organize support activities such as sorting, packing, and warehousing of product. In 1978 FV was split in two product divisions: fruit-vegetables and flowers. In 1994, the two divisions were then juridically separated into two different firms, and FV was born as the company we know today. In 2014, FV finally sold all its buildings (except the main office) and dropped all support activities after years of gradual phasing out.
Today, FV's organizational form is that of a cooperative owned 100% by the farmers. Its core activity is the sale of produce cultivated by 25 local farmers from which it takes a 2.5% commission per sale. On top of that, FV also offers support activities to the farmers to ensure they obtain and maintain the necessary quality certifications and standards. FV's main market is Denmark, where it holds a market share corresponding to 35%-40% of the total sales volume. The company also has some export activities in foreign markets, especially in Germany and Sweden, but no import activities. Its yearly turnover in 2021 amounted to 1.1 billion Danish crowns.

Management of Fresh Veggies
Jan is CEO of FV and has an educational background as an agronomist and a bachelor's degree in business administration. Before joining FV in 2013, Jan has held different managing positions in companies within and outside Denmark. Close to Jan in the organizational structure is Lene, who functions as FV's business developer. Lene has a background in Danish and philosophy and, like Jan, a bachelor's degree in business administration. Lene joined FV in 2019 and, before that, she worked in sales and customer insights for some of Denmark's biggest retailers. Finally, Julie is the quality manager and PO coordinator of the company. Educated in physics and chemistry, Julie worked in different food companies around Denmark in the quality control area.
Fresh Veggies sustainability: activities and concerns

FV does not have a clear overarching sustainability strategy, but is involved in different sustainability-related activities. In the upstream supply chain, FV provides technical assistance to its suppliers to ensure their compliance with shared European sustainability standards on…. In some areas, FV even imposes its own and stricter standards to the farmers in their network. For instance, the company requires its suppliers to maintain pesticides levels to 1/3 of what required by the common EU standard.

Downstream, FV collaborates with food retailers to map the sustainability of the supply chain which they are part of – for example by measuring the CO2 emissions related to the production and transportation of the products in its range. The company has also a plan for becoming CO2 neutral by 2030. This goal will be achieved primarily by switching the company transportation fleet to electric vehicles. Finally, FV is also collecting customer data about Danish consumers' attitudes and perceptions of sustainable food products to better understand how to market their products.

Despite FV's good intentions, the company is consciously facing some challenges in connection with their current sustainability activities. For what concerns the upstream activities, the company's main

challenge regards the introduction of shared standards. While FV's own sustainability standards are in some cases stricter than those established by the European Union (for example, in the case of pesticides), the company does not know how to capitalize on this situation because, being a small company, FV is unable to impose its own standard at an international level. Furthermore, as there is no unified certification system, bigger corporations simply introduce their own standards and, by virtue of their higher competitive power, impose them on the market. This is an unfortunate situation for a small company like FV, whose interests and initiatives are overlooked. In this regard, FV's CEO believes that FV should engage in strategic partnerships with Europe's biggest exporter (located in the Netherlands) to increase their lobbying power in the European market and, thus, their chances to impose their own standards on competitors.

Concerning the downstream activities, FV's main challenge is the lack of a broader marketing strategy in relation to sustainability. FV's management believes that the company's CO2-emission measurements should be used to gain an advantage over their competitors. However, they are unsure as to how these measurements could and should enter the company's value proposition. So far, the management has thought about including these measurements on the packaging of their products for promoting their sustainability efforts to the final customer. Similarly, the management team has thought about using the collected customer data for promotional activities, yet they lack a coherent plan for treating these data and using them to shape their marketing strategy more broadly.

Two main sustainability challenges

In summary, FV is dealing with two main sustainability challenges. The first regards the introduction of shared sustainability standards on the cultivation of horticultural products at the European level. FV believes that clear shared standards would help the company gain a competitive advantage, as it is already imposing standards onto their suppliers which are stricter than those effective at the EU level. At the same time, FV is aware that to ensure that the new standards are beneficial to its business, it must increase its bargaining power to affect regulation within the industry. Thus, a first question related to the present case is: how can FV increase its bargaining power to ensure that its interests are represented in the formulation of shared European standards?

FV's second challenge relates to the absence of a coherent integration of sustainability considerations in their marketing strategy. While FV is in the process of collecting data about the CO2 emissions of products in their portfolio, and insights about consumer attitudes about the sustainability of horticultural products, the company lacks a coherent plan for how to integrate these data into their overall marketing strategy. So far, discussions have been limited to abstract considerations of mobilizing that data for promotional activities. Hence, the second question for this case is: how can FV make use of the collected sustainability data to inform their marketing strategy and increase customer value?

6.2 CASE: Halvø Kværne - blending nature and culture for a sustainable holiday experience

Halvø Kværne is a micro-firm providing luxury summer houses and event facilities on a peaceful coastal area in the Southern part of the island of Funen in Denmark. The company is run by Helle and Carsten with the help of two employees on a flex job contract. Halvø Kværne was founded towards the end of 2019, when Helle and Carsten bought the coastal ground which lies next to their property. The property is characterized by a historical landmark (a windmill) dating back to 1843. Right after purchasing the land, the two founders hired a construction company to build eight luxury summer cottages and two depots equipped with different facilities. They also started to renovate the old windmill that looms over this property but had to set the project temporarily on hold for financial reasons. All of the company's initial activities have been self-financed by the owners.

Halvø Kværne business revolves around renting out event facilities and summer cottages for weddings, birthdays, etc. Specifically, the company owns two large locales equipped with facilities such as an industrial kitchen, a hall, toilets, and some spare rooms. And eight cottages of 55m2 with a large family room with big patio windows overlooking the nearby bay, a kitchenette, a separate bedroom, and a separate bathroom. The cottages are made of tree and furnished following Nordic design principles. They can host up to four guests and can be accessed electronically through a one-time code that is generated and sent to the customer at the moment of booking. They are grouped in units of two, and for some of them it is possible to have connecting doors. Pets are allowed in the cottages.

The rental of cottages provides the main source of revenue for the company. The basic price includes only the rental of the space. However, bed linens, towels, and breakfast can be purchased for an extra fee. Around 75% of the guests staying at the cottages come from abroad, primarily from Germany and Holland. A secondary source of revenue provides then from the rental of the event facilities. In this case, Halvø Kværne only provides the locales and some basic amenities (such as kitchen tools), but no form of catering. Finally, it should be noted that while Halvø Kværne is open year-round, rental requests (both for the cottages and event facilities) take place mostly during the summer season.
Management

As mentioned, Halvø Kværne is owned and led by Helle and Carsten. Helle (who is on early retirement) functions as business developer and daily operation manager, while Carsten (who also owns another company) oversees some of the operations (such as building and renovating). Furthermore, the company also employs two local inhabitants on a flex job contract who take care of the daily operations (such as preparing the rooms and cleaning).

Designing a sustainable holiday experience
Halvø Kværne does not have a clear sustainability strategy, although it has implemented some measures to make the customer's experience more sustainable. For instance, all the buildings on the premises are made of tree and are heated using geothermal energy. All faucets are equipped with water-saving systems. EV charger stations are installed on the parking lot. Waste recycling is implemented. Furthermore, the owners also planted a birch forest on the premises and made a deal with a nearby hotel to jointly wash lines and towels.

In addition to these measures, Halvø Kværne would like to offer a more holistic, authentic, and distinctly sustainable holiday experience. Even though because of the lack of resources and competences no actual plans have been made yet, Helle has some thoughts on how to expand Halvø Kværne's offer. She would like to include some activities and events as part of the company's offer (possibly in partnership

with other local companies) coupling the beautiful natural surroundings with some form of cultural knowledge – such as mushroom gathering, fishing, birds watching, etc. In this connection, Helle also envisions to turn the windmill present in the area into a “dark sky room”, where people can go and watch the stars immersed in a low light pollution surrounding. Furthermore, Helle is thinking about expanding Halvø Kværne’s offer to include culinary experiences and products, such as a restaurant that would serve dishes made of local (and possibly homegrown) and organic food items.

Sustainability challenges

Overall, Halvø Kværne is dealing with one main sustainability challenge. The challenge regards specifically how to connect sustainability more directly to company’s value proposition. In the owners’ vision, this could be done by expanding their offer to include touristic activities directly connected to the local territory. However, as a micro-firm, the company lacks the necessary marketing competences to effectively expand their offer in this sense. Therefore, the main question connected to this case is: how can Halvø Kværne expand its value proposition to offer their existing and projected customers a more distinctly sustainable experience?

6.3 CASE: Vandret - vertical farming for environmental sustainability

Vandret is a Danish start-up that develops custom-made systems for vertical and hydroponic cultivation of herbs, vegetables, flowers, and other greenery. The company is owned and run by two graduate product development engineers, who are what remains of the original group of four founders. Ida functions as CEO of the company, while Jesper, who also has knowledge of mechanical and electric engineering, functions as CTO. The company has in the recent past also had a part-time employee who worked as a gardener and has ongoing collaborative projects with university students. The company headquarter is in the rural area on the island of Funen, where it shares a plant with another small firm producing organic vegetables. The plant (originally, a tractor mechanic's shop) functions both as shopfloor and office.

Vandret was officially born in December 2020 out of a wish of the two founders to do something that could create a positive impact on the environment by reducing maritime pollution. The idea of implementing something related to hydroponic cultivation was the result of Jesper's occasional encounter with this practice. Since its inception, the company has been funded through personal financial resources (around €30k), grants and start-up competition prizes. Recently, a group of private investors decided to support Vandret's activities with a substantial sum (around €70k).

As a start-up company, Vandret has so far been barely profitable. Its main revenue comes from the production of vertical farming equipment, which is tailored according to the customers' need. Ida and Jesper consciously decided to focus on small custom-made solutions – instead of standardized products – as part of their emergent business model. Up until now, Vandret has sold its vertical farms on an *una tantum* fee. However, the two founders have recently agreed on a leasing scheme with a new customer. Going forward, a leasing scheme will be introduced aiming for improved revenue streams and environmental considerations as farming structures could be reworked and reused, once a client's leasing contract expires. The founders strategize to expand their offer to maintenance, supervision, and consultancy services for an extra fee based on a subscription model.

Vandret does not produce the components constituting the hydroponic systems. They only assemble them. LED-lights are the core technological component in Vandret's products and are sourced globally (especially China and Asia more in general). Other components (e.g. stands and pots) are sourced locally by suppliers based on the Funen island. Vandret is currently providing their vertical farming solutions to two customers: a high-end restaurant located in Copenhagen, and the canteen of an educational institution. Currently, Vandret is producing a system for a new customer – a greenhouse. The founders are aiming to get a wider customer base within the horticultural industry because of its mass-use of farming equipment. According to Ida, greenhouses could greatly benefit from the implementation of Vandret's vertical farming solutions, which would allow them to cut their energy by 80%.

Definition of the problem

Vandret was born with environmental sustainability in mind, as the two founders decided to become entrepreneurs to make a positive environmental impact by reducing water pollution. Indeed Vandret's vertical farming structures allow to optimize the use of resources necessary for horticultural production (such as soil, nutrients, water, electricity). As closed systems, they also allow to minimize water and nutrients wastages, as these can be recovered and reused throughout the whole horticultural cycle. However, looking ahead Vandret is facing a few challenges. Firstly, Vandret is still only a start-up. If the company wants to pursue its vision to make a positive impact on the environment, it will have to gather a larger customer-base within the horticultural industry (as acknowledge by the founders). To win

customers over, the founders believe that it would be a good idea to work more closely with greenhouses to help them develop their products. For this reason, they are currently testing a system for algorithmic plant-growth forecasting. If tests prove successful, the plan is to roll this system out on their products to start collecting a database of different crops growth data. Secondly, while vertical farming solutions are superior to organic farming methods (which are much less effective in terms of product-per-m2), organic agri- and horti-culture seems to be growing trends, supported by powerful actors at the institutional level. This means that vertically farmed crops may face the competition of organic crops in the customer market. Thirdly, Vandret is also facing a sustainability concern at a more practical level. At the current pace of technological development, LED-lights become 5% more energy-efficient every year. This means that, if leasing turns out to be the most profitable payment model, Vandret may have a waste problem in the future with accumulated, used, and energy-inefficient LEDs.

Sustainability challenges

Considering the information presented above, Vandret is dealing with two main sustainability-related challenges. The first regards a potential market expansion. In order to make a positive environmental impact (and so fulfil the founders' vision), Vandret must grow their customer base, gathering new customers in the horticultural and maybe even the agricultural industry. A key factor to consider in this connection is the risk of the whole vertical farming idea to be outcompeted by existing organic production trends. Thus, the main question connected to this case is: what kind of strategy can Vandret adopt to expand their customer base? And how should Vandret positions its products and services to convince potential customers to choose vertical farming solutions, instead of investing in organic methods and techniques?

A second challenge is related to a more practical issue of dealing with the potential accumulation of LED lights. What could Vandret do about this issue? How could design the leasing, or take-back scheme in their business model so as to avoid finding themselves with too many unused and unusable LEDs (which represent a pollution problem in themselves and a potential damage for Vandret sustainability image)?

6.4 CASE: Livslinjen - improving global health

Livslinjen is a startup operating in the automation industry, specializing in the development of medical equipment. The company is a collaborative venture involving the University of Southern Denmark, a Swedish foundation, and a robotics startup accelerator. It is managed by three people: Jane, serving as the general manager with a background in Product Development and Innovation Engineering; Albert, a robotic engineer overseeing the technical aspects of product development; and Martin, with a background in biochemistry and molecular biology, ensuring quality control in compliance with existing regulations. Situated in Odense, the company is conveniently located near the university and the robotic industrial district.

Livslinjen was established by two tech entrepreneurs and investors with the aim of contributing to the fight against the COVID-19 crisis. In April 2020, they enlisted a team of researchers from the nearby university to create an automated swab robot. The goal was to minimize the risk of infection for healthcare staff and patients while also improving the quality of test results. Since its inception, the company has secured financial backing from both its ownership team and the Danish state's investment fund. Livslinjen currently focuses on developing its flagship product, an automated swab robot called CAROB MMS T1 (referred to simply as CAROB from now on). Although the product is still in the prototype stage, the company anticipates production costs to be around 100,000 DKK per unit, with a projected selling price of 250,000 DKK per unit. However, the primary business model is expected to revolve around leasing solutions. Livslinjen aims to bring the product to market within a timeframe of 2-3 years.

The company is actively working on tailoring its value proposition to meet the needs of different customer segments, distinguishing between public and private entities. Their main target customer groups include both private and public hospitals and healthcare facilities. The company also aims to serve critical infrastructure providers, including airports. According to the general manager, CAROB adds significant value to healthcare provider's test offer by ensuring superior test quality. It achieves this by consistently executing testing procedures, thereby reducing the likelihood of false negatives. CAROB also contributes to health benefits by minimizing infection risks for healthcare workers through the elimination of human intervention in swab tests. Finally, another notable strength of CAROB lies in its ability to enhance the flexibility of testing offers, allowing for 24/7 testing.
Livslinjen is also working on expanding its product offering by developing an AI-powered troubleshooting solution, as well as a complementary machine capable of unwrapping sterile cotton swabs and mounting them on CAROB testing arm. These solutions will enable a full automation of the swabbing process, further cutting the costs and risks connected to human-operated testing.

Livslinjen's sustainability goals
As previously mentioned, Livslinjen was founded with the purpose of mitigating health risks linked to the COVID-19 pandemic. Overall, the company's vision aligns with the promotion of global health, which is part of the UN Sustainable Development Goals. CAROB is indeed intended to contribute to worldwide population health by reducing infection spread, accelerating responses to health crises, and enhancing the accessibility of testing facilities. Livsljnen's offering also addresses environmental sustainability concerns. By minimizing human intervention, CAROB helps saving disposable equipment used during swab tests to protect human operators, such as gloves, masks, and aprons. Additionally, driven by a personal interest for environmental sustainability, Livsljnen's employees are actively exploring solutions to reduce CAROB's environmental impact. Their robotic engineer, Albert, is developing a solution for recycling the robot's interchangeable parts – such as the magnet connecting the swab to the machine's arm. This will enable Livsljnen to save precious materials.

CAROB was also initially conceptualized to address social implications related to its production. The founder's original intention was to empower (emerging) countries by allowing them to produce the robot domestically. This approach aimed to support local economies and minimize production costs, thereby preventing an adverse impact on the final product price. However, this initial plan proved unfeasible due to logistical challenges and, more importantly, regulatory limitations. Medical equipment producers are indeed required to obtain governmental authorization to operate.

Integrating automation and sustainability

The company faces two sustainability challenges, with the primary one revolving around market dynamics in the medical industry. Livslinjen's ability to successfully realize its vision of improving global health is in fact impeded by the existing regulative structure of the medical equipment business. As witnessed during the recent COVID-19 pandemic, testing demand is directly tied to governmental requirements. Consequently, the company's own sustainability is highly uncertain, relying on the anticipation of government's future regulations in connection with possible disease outbreaks. In this context, the question for Livsljnien is: what strategic initiatives can the company undertake to ensure a more stable demand flow, which enables them to fulfill their vision of enhancing global health? In this regard, it is crucial to note that the company's robot can be utilized for other medical purposes – including testing for minor viral infections, such as the flu, and even collecting swab DNA samples.

The second challenge concerns the inclusion of environmental sustainability into the company's strategy. As mentioned earlier, Livslinjen's consideration of environmental sustainability issues is primarily driven by employees' personal interest, lacking a coherent integration into the company's strategy. A related problem regards the fact that the medical industry, which most of Livslinjen's target customers belong to, is primarily focused on ensuring hygiene and minimizing costs. From this standpoint, Livslinjen's current environmental sustainability efforts – such as the designing a recycling solution for the robot's interchangeable parts – may not provide tangible value to their offer (in fact, in light of hygiene concerns, recycling robot parts could even be met with disapproval). The question then becomes: how can Livslinjen seamlessly integrate environmental sustainability concerns into their company's strategy? And how can they integrated environmental sustainability concerns with financial and health considerations in their value proposition to offer added value to their customers?

6.5 Cross case discussions

The following section provides insight on some of the themes that the SME managers found relevant In relation to sustainability activities, strategies and goals during the interviews.'

Sustainability definition and assessment

Examples from the Danish cases show that companies competing in different industries define and assess sustainability in different ways. For instance, companies within the food industry, such as FV, are mainly concerned with the introduction of standards limiting the level of chemicals in food production. The cleantech industry views instead sustainability mainly through the lens of resource optimization. Vandret's business concept is indeed based on the idea that vertical farming provides a controlled environment that makes it possible to optimize the amounts of soil, nutrients, water, and electricity necessary to cultivate crops. Finally, we noticed that Danish companies within the touristic industry adopted more holistic and less "technical" definitions of sustainability. For example, while Halvø Kværne ensures that their touristic facilities are equipped with the necessary energy-optimization devices (such water-saving faucets, EV charging stations, geothermal heating), they also focus on merging natural (e.g. pristine landscape) and cultural (e.g. local foods) elements in the "sustainable experience" offered to their customers.

Sustainability drivers

We found that sustainability definitions and related goals within Danish firms across the different industries are influenced by some key drivers. We found that, in smaller firms, the founders' personal motivations and goals represent driving force towards sustainability. For instance, the cleantech Vandret (a start-up comprising the two founders and, occasionally, a part-time employee) is driven by the two founders' vision to create a positive impact on the environment by reducing water pollution. Similarly, the holiday destination Halvø Kværne was a born out of the interest of her founder to preserve the local environmental and cultural landscape.

The clear influence of internal sustainability drivers become more ambiguous in bigger firms. In medium-sized companies such as FV, for instance, the main sustainability drivers seem to come from pressures imposed by the external environment, such as competitors within the industry. Indeed, one of the main challenges for FV is how to transform their sustainability standards into a competitive advantage. In this sense, FV's main sustainability driver is the establishment of legitimacy within the industry. This is reflected in FV's CEO's goal to engage in strategic partnerships with Europe's biggest agricultural food exporter (located in the Netherlands) to increase their lobbying power in the European market and, thus, their chances to impose their own standards on competitors.

However, external drivers are also present in smaller companies. While strongly motivated by the founders' vision, Vandret is also dependent on general trends within an adjacent industry, that is the food industry in which their customers are located. For instance, while according to Vandret's founders vertical farming solutions are superior to organic farming methods (which are much less effective in terms of product-per-m2), organic agri- and horti-culture are growing trends supported by powerful actors at the institutional level. As Vandret's founders acknowledge, these trends and actors may influence the direction of sustainability transitions within the agricultural industry, shifting customers' and producers' preferences towards the cultivation of organic (rather than vertically-farmed) crops.

Transformational Processes

We found that Danish SMEs sustainability transitions present some challenges related the firm transformational processes required by such transitions. For some firms, these challenges concern a responsible expansion, that is ensuring economic growth while preserving the surrounding ecosystem. For the medium-sized company FV, responsible expansion means reaching carbon neutrality in connection with their core business activities – that is, food transport. For this reason, the company decided to switch the entire company transportation fleet to electric vehicles. For what concerns start-ups, we noticed that the idea of responsible expansion is usually already integrated in the company's original business model. For these smaller and younger companies, the transformational processes related to sustainability transitions are then proactive rather than adaptive. For instance, the founder of the tourist residence Halvø Kværne planted a birch forest on the residence premises to promote natural development in the area, while expanding the company's sustainable experience offer. The cleantech start-up Vandret, instead, is considering take-back schemes to ensure the recycling or, at worst, the responsible disposal of the LED components present in their vertical farms.

7 Discussion and overall themes

This section present themes discuss during the case symposium (see method section for details). Thus it provides insights on a number of cross case thematics for SME managers across the entire case sample. The presentation should not be as a final set of theme but instead inspire discussions of how the found thematic might relate to other cases or context and their level of relevance. The aim is to have these consideration to motivate spawning of novel topics and recasting of the themes in this section to fuel the development of sustainability competencies and activities in SMEs across Europe and advance knowledge responsible business practice in SMEs.

7.1 Dimensions of Sustainability

The theme of "Sustainability Dimensions" represent the multifaceted aspects of sustainability practices adopted by companies. SME manager across the cases referred to this throughout the interviews pointing to the environmental, social, and economic dimensions of sustainability. All three dimension have impact on how companies measure, moderate, and strive to improve their sustainability outcomes. However the weight varies from SME to SME. In all, this theme provides insights into the approach that companies take to address sustainability challenges. Thus, The Sustainability Dimensions theme uncovers the diverse sustainability practices embraced by European SMEs. These practices are not just about environmental, social, or economic aspects, which are widely recognized. Instead, this theme focuses on how different companies in various regions prioritize and emphasize particular dimensions of sustainability. These varying emphases stem from a multitude of factors, including industry standards and requirements, the motivations and aspirations of business owners, and distinct business objectives. For instance, some companies may focus on localization and strengthening the local community, making them more inclined to prioritize the social dimensions of sustainability. In contrast, companies targeting international expansion may adopt an approach influenced by global market standards and requirements, significantly impacting their sustainability strategies. During the symposium these tendencies were observed in comparing the Swedish and Spanish cases.

7.2 Complex dimensions in sustainability

This theme focuses on aspects of sustainability that are not easy to measure. For instance the social dimensions which is in particular focus in some of the Swedish cases. These complexities go beyond traditional sustainability considerations and demand a deeper comprehension of their interconnected nature. Based on the symposium discussions, the multifaceted dimensions of sustainability often pose significant challenges in measurement and quantification. Accordingly, it is important to highlight these complex aspects and their critical role in sustainability assessments. Social dimensions within sustainability encompass various factors. These aspects are interconnected and influence one another in a complex way. The Swedish team in particular pointed out the challenge in measuring social sustainability practices, highlighting the complexity of assessing factors which can be subjective and context dependent.

7.3 Footprint

Footprint denotes sustainability impact, encompassing a company's overall influence on various sustainability dimensions. It explores how companies assess and manage their sustainability impact. Its relevance is underscored by the diverse regional practices discussed during the symposium. Throughout the symposium discussions, we observed SME managers' varying priorities of sustainability dimensions across the different regions. The Spanish researchers highlighted the contrasting approaches in the Swedish and Spanish cases. The Swedish companies emphasize social responsibilities and values,

incorporating specific indicators into their sustainability practices. Notably, Swedish cases have introduced the concept of "footprint," whereas the Spanish cases have not considered it. This divergence highlights the importance of integrating the idea of "footprint" into sustainability assessments, especially in regions where it has not been a focal point. This theme offers a framework to explore how companies interpret and adopt the concept of "footprint" in their sustainability initiatives, irrespective of the explicit use of the term "ecological footprint".

7.4 Origin of sustainability initiatives

Origin of sustainability initiatives signifies the roots of sustainability initiatives. It indicates a common observation amongst the research teams on the importance of reflecting on the internal and external drivers shaping companies' commitment to sustainability. It seeks to unravel the complex interplay between intrinsic motivations from leading managers and external influences from a broad array stakeholders driving sustainability efforts. The cases indicate that the origin of sustainability initiatives significantly influences their depth and longevity. Intrinsic motivation often times is the initiator to sustainability efforts and is an important driver depth and longevity the responsible business practices. This theme requires further exploration. For instance it would be interesting to achieve insights into whether sustainability is an intrinsic value cultivated within companies or a response to external demands. It offers a lens to identify the diverse dynamics at play in different industries, contributing to a nuanced understanding of the forces shaping sustainability efforts.

7.5 Motivation and Goals

The theme motivation and goals emphasizes the web of motivations and goals that propel sustainability initiatives within companies. The sample cases provides evidence of the unique approaches observed in born sustainable SMEs and those undergoing transformative processes, indicating motivations of managers across different industries. Motivation and goals are at the heart of sustainable practices. This theme invites an exploration of the multiple aspects driving sustainability efforts, considering the distinctions between inherently sustainable SMEs and those in the process of transformation. In viewing the cases across the regions core values, driving forces, and the dreams of lead managers shape the nature of sustainability practices.

7.6 Foreign Ownership and Sustainability

This theme highlights the dynamics of foreign ownership and its influence on sustainability practices and objectives. The symposium discussions highlighted the complexities tied to cooperation, alignment of social values, and the driving forces within companies owned by foreign entities. Indeed, foreign ownership has the potential to shape a company's sustainability landscape. As evident from our symposium discussion, the interplay between domestic and foreign interests can introduce complexities in how companies prioritize sustainability practices and goals. In the case of the Swedish cooperative, foreign ownership in the gasoline supply sector led to considerations regarding aligning social values and navigating diverse driving forces. While the cooperative focused on rural and urban well-being, the foreign company favoured profit maximization. This theme provides a platform to dig deeper into the complex relationship between ownership and sustainability, offering valuable insights into the challenges and opportunities in this context. The cases and in particular a couple of the Swedish cases show evidence to the fact that local ownership is an important factor forming a red thread connecting between local ownership and sustainability and in particular social sustainability.

7.7 Industry Specific Dimensions

This theme represent the strong focus on sustainability measurements in specific industries. The discussion during the symposium highlighted the question of how industries shape sustainability practices. The specific dimension driving sustainability strategies are diligently tailored to meet the distinct requirements of different industries. There is a need of understanding the relationship between sustainability practices and the specific requirements of diverse industries. As discussed in the symposium, industry-specific standards are pivotal in shaping sustainability framework, perspectives, activities, strategies etc.. With the food industry serving as a prime example, the emergence of rigorous food standards has ushered in new challenges and opportunities for sustainability. In the case of the Spanish food industry, obtaining approval from global food agencies is a requisite, underlining the importance of aligning with industry-specific sustainability dimensions.

7.8 Supportive Ecosystems for Sustainability

"Supportive Ecosystems for Sustainability" denotes the collaborative environments and support structures that bolster the ability of small and medium enterprises (SMEs) toward sustainability. The research teams have observed that often times a symbiotic relationships and structures is in place or is emerging which underpin the sustainability efforts of SMEs . During the symposium the researchers discussed the accessibility of innovation centres for smaller entities, in particularly Spanish food organizations, underscores the pivotal role of these ecosystems in nurturing sustainability. These discussions highlighted how innovation centres and similar resources serve as key catalysts for sustainable practices, especially in smaller SMEs.

7.9 Legitimacy and Communication

Legitimacy—formal and informal—essential for guiding sustainability practices. Legitimacy is tightly inwoven with effective communication surrounding sustainability initiatives, both within the organizational domain and in interactions with external stakeholders. The emergence of this theme is grounded in recognizing the vital role that legitimacy and communication play in shaping the sustainability narrative for businesses. Some of the case SMEs explicitly use the SDG framework to scaffold formal legitimacy to their sustainability effort whilst other (inadvertently?) base their legitimacy in other elements of the firm. In both cases, legitimacy and communication play pivotal roles in shaping the narrative of sustainability for businesses. During the symposium discussion, the Swedish team highlighted the challenge traditional businesses such as gas stations face in positioning themselves as sustainable entities, emphasizing the need for legitimacy support. To develop insights further there is a need of a distinction between formal and informal legitimacy, which requires understanding how companies garner support for their sustainability endeavours.

7.10 Sustainable Development Goals

This theme denotes on the strategic alignment of companies with Sustainable Development Goals (SDGs), identifying how organizations integrate these global objectives into their development goals. The focus is on encouraging companies to not only adopt SDGs but also provide justifications and explanations for their specific selections. The emergence of this theme is rooted in the recognition that a thoughtful selection and alignment with SDGs can be a catalyst for comprehensive sustainability initiatives. Sustainable Development Goals (SDGs) have become a guiding framework for organizations aiming to contribute to global sustainability. Mikael's insight underscores the need for companies to justify and explain their chosen SDGs, fostering a deeper understanding of the complexities involved in sustainable development. Fredrik adds that an assessment tool can serve as a roadmap, enhancing

comprehension and highlighting the impact of SDGs in the daily activities of companies or research projects. This theme prompts a critical examination of how companies navigate and integrate SDGs, emphasizing the importance of purposeful goal selection in fostering sustainable practices. The SDGs was not explicitly mentioned by any of the Swedish company and was not implemented in the interview guide. The Swedish team observed that this popularized international language, that the SDGs can be seen as, is not used in the companies on a daily basis or in their communications, although many of them are indeed sustainability frontrunners. Consequently, There is a hidden potential for the companies and the regions in really understanding and communicate sustainability in SME´s and in sustainable regional ecosystem. This might be explained through a lack of knowledge of the SDG framework and/or how SME´s relates to them and the goal conflicts that comes along with it. These conflicts are handled on a daily basis in the SMEs. However they might be identified or perceived as - a SDG goal conflict. To support SMEs' further on to be future safe/sustainable there is a need of making them aware of the SDGs and support them in understanding them and their relation to them and the goal conflicts, that SME managers' already are handling every day in their businesses.

7.11 Transformational Processes

The theme "Transformational Processes" represents approaches companies undertake in achieving sustainability goals. It explores the diverse methods and challenges associated with pursuing various sustainability objectives. This theme highlights the process companies go through to meet sustainability goals. Specifically, it examines how different types of goals, for example those pertaining to the environment, demand unique strategies. By analyzing the obstacles and opportunities in this process, the theme offers insights into the dynamic nature of sustainable transformations.

7.12 Scalability and Growth

The "Scalability and Growth" was highlighted in the symposium discussion in collecting on SME managers' challenges associated with expanding sustainability efforts, with a particular focus on small to medium enterprises. It explores the complexities of maintaining core values and sustainability practices as companies grow, examining the nuanced differences between scaling to an industrial level and prioritizing the local market. This theme covers the critical considerations companies face when scaling sustainability efforts. It investigates how organizations, particularly small to medium enterprises, navigate the balance between growth and maintaining their commitment to sustainability. The theme also highlights the distinct challenges and implications associated with reaching an industrial scale versus concentrating efforts on the local market, offering valuable insights into sustainable business expansion.

7.13 Sustainable expansion and ecosystem preservation

INT: The theme "Sustainable Expansion and Ecosystem Preservation" illustrates on the delicate balance small businesses must strike when expanding sustainably. The strategies employed by these businesses aim to preserve and manage their working ecosystems, ensuring that expansion efforts contribute positively without compromising existing environmental and social structures. Sustainable expansion of SMEs entails the careful management of working ecosystems. By analyzing strategies to expand while preserving environmental and social integrity, the theme explores how businesses navigate the complexities of sustainable growth. It further investigates the motivations and risk management aspects associated with international expansion, all within the framework of maintaining a positive impact on local communities.

8 Conclusions

In answering to a call for more explorative research into sustainability related activities in SMEs, this case book provides more holistic based insight on SME processes which in turn will provide a stroing basis for future research (Dana & Dana, 2005). Due to the wide variation of cases and approaches from the different countries one conclusion is that there are several levels of maturity around sustainable development awareness and how the SME´s relates to the SDGs. However there is a strong indication of the importance of managers intrinsic motivation to drive sustainability initiatives. Thus, motivation and in particular intrinsic motivation (?) for sustainability seems to be key to answering why competence building, strategizing, and implementation of sustainability related activities in SMEs has been started in the first place.

The cross cutting themes provides some guideline as to how sustainability efforts manifests in the SME case sample. However the variance of perspectives on the individual theme across the sample bring evidence of the complexity of the topic. In other word SME managers in the Navarra region may alternate (but as valid) perspective on the different dimensions of sustainability. Consequently, this will impact the way that it is managed in the SME.

There is another important finding in the sample which needs mentioning here. UN's sustainable development goal framework has been heavily popularised. However, this framework is not mentioned by a number of the interviewed SME managers in the sample. The absents of the SDGs was particularly pronounced in the Swedish sample where many companies' daily base and communication lack a reference to the frame work in spite of them being sustainability frontrunners. In contrast, we also see some SMEs has explicit use of SDG in their communications and daily operations. In all, the managerial efforts recorded in the SMEs seems indicative of a need for awareness and understanding of the SDGs. To assist in supporting SME managers in understanding their unique relation to often times conflicting goals as they conduct their daily businesses.

We believe that the this casebook will act as baseline the self-evaluation tool and that the insights from cases may inspire managers to explore the opportunities of the sustainable transition to a greener economy.

9 Avenues of further research

Our studies support existing research (Chan & Ma, 2016) and show that one of the key explanatory factors for sustainability initiatives is central managers intrinsic motivations. Indeed, external drivers are shaping companies commitment to sustainability. However the cases indicate that intrinsic motivation has a pronounced effect on longevity and depth of sustainability efforts in SMEs. This topic requires further exploration. For instance, it could be relevant to investigate how (international) business relationship could enhance (emerging market) companies' willingness to initiate responsible business practices and if so, which means and mechanism that are needed to do so. In extending this line of enquiry, there is also a need of studying which depth and longevity these practices have. Does (international) business relations hold a key to spark intrinsic motivation for a proactive sustainability agenda? To make matters even more complex our case studies also indicate unique dynamics connected to local ownership where in particular the social dimension forms a red tread for many SMEs and their managers.

The European case sample involves early start ups and business on the verge of the SME boundary. Our research indicate that there is a difference in the approach connected to the size of the SME. The impact of size of firms and their approach is currently discussed in the research literature through comparison of SMEs and larger companies (Baumann-Pauly et al., 2013). This literature also points out that SMEs needs to be research thoroughly given their special position (Preuss & Perschke, 2010). This report provides a first stepping stone for a holistic understanding of the dynamics from an SME perspective.

The apparent lack of reference to the SDGs and explicit reference to this framework has also be discussed among the research teams. It seems that legitimacy can be attain through many different forms of communication . It needs to be research whether some SMEs might benefit from explicit employment of the SDG framework. Whilst this might be a necessary condition in some industries knowledge into how SMEs relates to them is a competence in all industries. Hence, future research should aim to support managers understanding of the SDGs and their particular relation to them and the goal conflicts they face in their daily business operations.

To conclude on potential avenues of research, our case sample supports existing research (e.g. Hamann et al., 2017; Jamali & Neville, 2011) by indicating of the strong role of institutions in explaining SMEs' engagements with sustainable activities. This line of research is within the scope of the ARIES4 project and will be addressed through work in related work packages to the current work package 3.

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