MASTERARBEIT / MASTER'S THESIS

Titel der Masterarbeit / Title of the Master's Thesis

„Can mission-oriented innovation projects contribute to regional industrial defossilisation?

A case study analysis of Lower Austria's cooperation project Enterprise Klima"

verfasst von / submitted by

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angestrebter akademischer Grad / in partial fulfilment of the requirements for the degree of

Master of Science (MSc)

Wien, 2024 / Vienna 2024

Studienkennzahl lt. Studienblatt / degree programme code as it appears on the student record sheet:	UA 066 855
Studienrichtung lt. Studienblatt / degree programme as it appears on the student record sheet:	Masterstudium Geography: Global Change and Sustainability
Betreut von / Supervisor	Dr. Sebastian Fastenrath

Acknowledgements

This thesis acknowledgement is a tribute to all the people who made my academic journey worthwhile.

I would like to thank my supervisor, Dr Sebastian Fastenrath, whose unwavering support, and experience have enabled me to complete my thesis within the time frame available to me and guided me through all my questions and doubts even while being on paternity leave.

My thesis would not have been possible without the help and support from my colleagues at ecoplus. die Wirtschaftsagentur des Landes Niederösterreich, especially technology evangelist Harald Bleier. I would like to express my sincere gratitude for his professional mentoring and guidance as well as his introduction to the Lower Austrian economic landscape.

I would also like to show my gratitude to the thirteen interview partners of this thesis, who dedicated their time and expertise to support my academic career. Without their patient explanations and insights into the cooperation project Enterprise Klima analysing how defossilising regional industrial landscapes can occur would not have been possible.

Furthermore, without the ongoing support of a few special people in my life, completing my master's degree would seemed unattainable. Firstly, I would like to express my thanks to my friend Jae Hyun Sul, who has supported my academic ambitions since our first Bachelor's semester in Freiburg. Whenever I doubted whether I can write this master's thesis, I remembered her wise words sitting on a windowsill in Vauban "But you are already doing it". Secondly, I would like to thank my parents and my sisters, who have always encouraged me to exceed myself and of those I knew would always have my back. It is their love and support which they have provided to me that has enabled me to achieve everything that I have. And last but not least, I want to express my deepest gratitude to my husband Johannes Thomas Müller-Wagner. He has endured my crankiness, unavailability, and endless amounts of panic with hugs and kind words. Thank you.

Abstract

This master's thesis analyses how the mission-oriented cooperation project, "Enterprise Klima," executed by ecoplus, the economy agency of Lower Austria, supports twelve Lower Austrian companies in implementing sustainable projects within their operations. The research evaluates how the project contributes to regional defossilisation through thirteen interviews with industry experts, document analysis, and observations during project manager meetings, employing Maying's qualitative analysis approach.

In summary, this research identifies five key areas how Enterprise Klima contributes to regional defossilisation: (1) Providing knowledge systems, (2) Mediating policy conditionalities, (3) Uniting invested actors, (4) Offering niches for experimentation, and (5) Providing assets for project partners. Despite external pressures driving companies to defossilise, like the EU taxonomy, intrinsic motivations, and a sense of responsibility towards sustainability also influence industrial defossilisation efforts. The results from the interviews show that the industry acknowledges the necessity for expensive sustainable investments but expresses reluctance due to economic challenges.

Furthermore, the results of this thesis emphasise the importance of strong ties in regional innovation systems for addressing societal challenges like climate change. Enterprise Klima was identified to serve as a catalyst, awakening local industries to their responsibility in fostering innovative, climate-neutral production values. The project aims to inspire more companies in Lower Austria to engage in sustainable initiatives, fostering a platform of knowledgeable stakeholders supporting defossilisation efforts. While Enterprise Klima is viewed as a spark for initiating climate-neutral projects, further research is necessary to explore the long-term effects and development of mission-oriented innovation projects in Lower Austria.

Zusammenfassung

Diese Masterarbeit analysiert, wie das missions-orientierte Kooperationsprojekt "Enterprise Klima", durchgeführt von ecoplus, der Wirtschaftsagentur Niederösterreich, zwölf Unternehmen in Niederösterreich dabei unterstützt, nachhaltige Projekte in ihren Betriebsabläufen umzusetzen. Zur Beantwortung der Forschungsfrage wurden dreizehn semi-strukturierte Interviews mit Branchenexperten durchgeführt. Zusätzlich wurden für die qualitative Analyse nach Mayring (2014) noch von ecoplus bereitgestellte Dokumente sowie Beobachtungen während zwei Projektmanager-Meetings in die Auswertung mit herangezogen.

Zusammengefasst identifiziert diese Forschung fünf Schlüsselbereiche, in denen Enterprise Klima zur regionalen Defossilisierung beiträgt: (1) Bereitstellung von Wissenssystemen, (2) Vermittlung von politischen Bedingungen, (3) Vereinigung engagierter Akteure, (4) Bereitstellung von Experimentier-Nischen und (5) Bereitstellung von Ressourcen für Projektpartner. Trotz externer Druckfaktoren wie der EU-Taxonomie, die Unternehmen zur Defossilisierung antreiben, beeinflussen auch intrinsische Motivationen und ein Gefühl der Verantwortung für Nachhaltigkeit die Bemühungen zur industriellen Defossilisierung. Die Ergebnisse der Interviews zeigen, dass die Branche die Notwendigkeit teurer nachhaltiger Investitionen anerkennt, aber aufgrund wirtschaftlicher Herausforderungen mit der Umsetzung zögert.

Darüber hinaus betonen die Ergebnisse dieser Arbeit die Bedeutung enger Verbindungen in regionalen Innovationssystemen zur Bewältigung gesellschaftlicher Herausforderungen wie dem Klimawandel. Enterprise Klima hat das Potential als Katalysator zu dienen und lokale Industrien für ihre Verantwortung bei der Förderung innovativer, klimaneutraler Wertschöpfungsketten zu sensibilisieren. Das Projekt zielt darauf ab, mehr Unternehmen in Niederösterreich zu inspirieren, sich an nachhaltigen Initiativen zu beteiligen, und somit eine Plattform aus sachkundigen Stakeholdern zu schaffen, die Defossilisierungsbemühungen unterstützen. Während Enterprise Klima als Auslöser für die Initiierung klimaneutraler Projekte betrachtet wird, ist weitere Forschung notwendig, um die langfristigen Auswirkungen und die Entwicklung missions-orientierter Innovationsprojekte in Niederösterreich zu erkunden.

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1. Introduction

The role of industry in the context of climate change is a matter of critical concern in current times. With growing industrialisation and the continued release of greenhouse gases, the industrial sector has become a central player in the global efforts to combat climate change. These emissions include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), released predominantly through the combustion of fossil fuels and various industrial processes. These activities, integral to manufacturing, transportation, and energy production, are not only major drivers of climate change, but also contribute to air pollution, with far-reaching consequences for the environment (Fernández-González, Puime-Guillén, Moutinho, & Oliveira, 2023; McKie, 2023; Raphael, Jide, Oladunni, & Abayomi, 2023, p.69900). In the face of the challenges posed by climate change, the industrial sector stands as both a significant part of the problem and a crucial component of the solution. It is through the concerted efforts of industries, policymakers, and society that we can hope to curtail the detrimental influence of industrial emissions on our climate, paving the way for a more sustainable and resilient future (McKie, 2023).

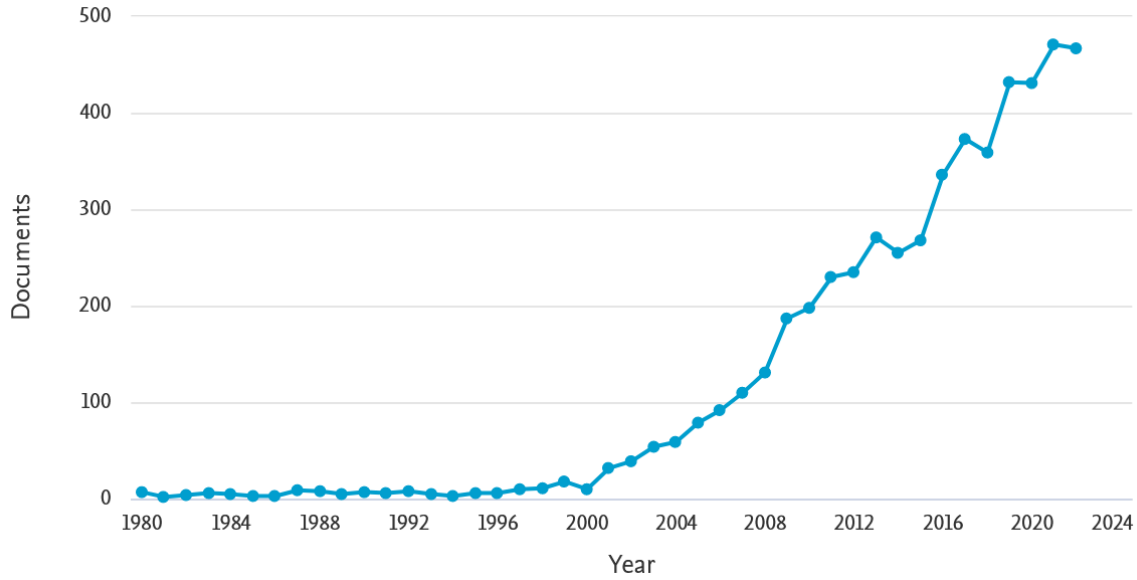

Figure 1: "Innovation Policy" in Title/ Abstract/ Keyword on Scorpus (1970-2023)

Fostering a sustainable economy has become the key task for national, regional and local policymakers in the 21st century (Gibbs & O'Neill, 2017, p. 162). This is also reflected in academia, as research on (mission-oriented) innovation policy **and** sustainability transitions has been developing and expanding rapidly over the last two decades (see figure 1).

The interest in sustainable industrial transition is also reflected in this master's thesis, which will explore the current state-of-the-art developments on the theories of innovation policy and sustainability transitions. These include Mazzucato's (2018) Mission-Oriented Innovation Policy framework, Geels (2002) Multi-Level Perspective, as well as the Challenge-Oriented Regional Innovation Systems (Tödling, Trippl & Desch, 2022; Schot & Steinmüller, 2018; Fastenrath, 2022). Their theoretical frameworks will consequently be applied to the case study presented in this work, namely the cooperation project Enterprise Klima and serves for the analysis of the project's organisation and contribution to defossilising Lower Austria.

The cooperation project Enterprise Klima was designed and executed by ecoplus. the economy agency of Lower Austria. The goal of the project was to support the twelve participating companies from different economic sectors of Lower Austria (including the food, metal processing, and construction industries) to work on sustainable projects (in the following called use cases) in their companies. Harald Bleier, "technology evangelist" at ecoplus, had the initial idea to create a cooperation project to support the Lower Austrian industry in its sustainability pathway. The state of Lower Austria is funding the project with up to 50% of consultancy expenses for the participating project partners. One important consultancy agency is WeAct, which not only provides the project partners with their expertise, but additionally contributes to the project management. As an economy agency, ecoplus aims to ensure that Lower Austria remains an attractive business location (ecoplus. Niederösterreichs Wirtschaftsagentur GmbH, 2023).

The aim of this master's thesis is to analyse and discuss whether and how the Mission-Oriented Cooperation Project Enterprise Klima contributes to regional defossilisation. The results were obtained from thirteen interviews with industry experts, conducted between May and June 2023, from documents provided by ecoplus as well as observations made during two project manager meetings. The qualitative analysis was conducted after Mayring (2023) with the help of the coding software MAXQDA.

2. Theoretical Framework

The aim of the cooperation project Enterprise Klima is to support local businesses with their sustainability transitions as climate change becomes an increasingly pressing issue for the Lower Austrian society and industry. Before exploring the project in detail, it is important to investigate the academic discourse about sustainability transition theory. With a sound

theoretical background, it is consequently possible to analyse the results from the thirteen semi-structured interviews within the context of the ongoing scientific debate.

Sustainability transition is a widely discussed topic within the field of economic geography and gained much attention within the last years as "sustainability challenges are coupled with and aggravated by the strong path-dependencies and lock-ins we observe in the existing sectors" (Markard, Raven, & Truffer, 2012, p. 955). To overcome these lock-in syndromes, the necessary transitions must take place in all societal structures, including the realm of transport, energy, and agri-food systems. Furthermore, they must entail technology, policy, markets, consumer practices, infrastructure, cultural meaning, and scientific knowledge. Therefore, governing sustainability transitions comprise multiple actors, are complex and long-lasting (Geels, 2011, p. 24).

Consequently, the focus should not be solely on technically rational criteria for decision-making but also on socio-technical approaches. These include four important lessons for sustainability policy (1) Focus on dynamic policy mixes, not isolated or static instruments (such as carbon pricing) as they are more flexible and adapt in terms of time and scale (2) Analyse politics, in addition to policy. Analysts should also recognize that disagreement and contestation are central to sustainability transitions and consider how best to accommodate these conflicts rather than ignore them (3) Broaden the solution space, beyond supply-side technology and economics (4) Actively manage phase-outs, in addition to stimulating innovation (Geels, Sovacool, Schwanen, & Sorrell, 2017, pp. 474–477).

Although the listed recommendations by Geels et al. (2017), can be a good start for policy makers, it is important to acknowledge the complexity of these social and economic relationships which are influenced by entrenched beliefs, diverging moral standards, unequal resources, and competition (Geels et al., 2017, p. 463). Despite the complexity of the task, Geels (2004, p. 916) states that climate change is putting too much pressure on our existing systems, which makes change from one system to another necessary. Therefore, a deep understanding of transition theory is important as it might further assist policy makers. Markard et al. (2012) identified in their literature review four key conceptual approaches, namely (1) Multi-Level-Perspective (MLP) (2) Strategic Niche Management (SNM) (3) Transition Management (TM) and (4) Technology Innovation Systems (TIS).

All concepts are important and propose valid analytical insights into transition theory but for the analysis of Enterprise Klima, the most important conceptual approach derives from TIS, namely the Mission-Oriented Innovation System (MOIS). The focus for MOIS is the alignment of the entire innovation system towards achieving defined goals, such as dealing with climate change. This may involve creating, adapting, or applying new technologies. Older projects developed radically new technologies through government procurement projects that were largely isolated from the rest of the economy. Though they frequently affected the structure of related industries they could lead to new spin-off technologies that had widespread effects on other sectors. In contrast, [contemporary] mission-oriented environmental [and other] projects will need to combine procurement with many other policies to have pervasive effects on the entire structure of production and consumption within an economy (Mazzucato, 2016, p. 146).

Although the Mission-Oriented Innovation System framework is the most important one for this work, it will also include a sub-chapter about the Multi-Level Perspective, as it is a practical approach, that offers a "big-picture" framework that combines stability and change (Geels et al., 2017, p. 477). Yet, both frameworks are not without their deficits, as they tend to neglect space specificity (Hansen & Coenen, 2015, p. 104). Therefore, the Regional Innovation Systems framework (RIS) as well as its development into the Challenge Oriented Regional Innovation Systems (CoRIS) (Tödling, Trippl & Desch, 2022) will be presented, which pay specific attention to regional innovative development. Hence, a combination of the frameworks will be used for the further discussion of this master thesis' results.

2.1 Mission Oriented Innovation Policy Framework

The 21st century is full of contradictions: the westernised world is experiencing a high quality of life with a long-life expectancy while simultaneously the human population is experiencing major social, environmental, and economic challenges. These challenges can also be described as "wicked problems" which are defined as unstructured (difficult to identify cause and effect), hold a high degree of conflict/uncertainty (little consensus on the problem or its solution) and are long lasting (continuous decision process) (Coyne, 2005; Rittel, 2013; Rittel & Webber, 1973). "Wicked problems, in other words, cut across hierarchy and authority structures within and between organisations and across policy domains, political and administrative jurisdictions, and political "group" interests" (Weber & Khademian, 2008,

p. 336). Wicked problems never exist alone and are instead connected to other problems whose social implications can be overwhelming (ibid).

To tackle this feeling of overwhelmingness, Mazzucato (2018) has developed the concept of mission-oriented policies, which aims to turn wicked problems into concrete problems that drive innovation (or innovative solutions) across multiple sectors and actors (p. 803). However, this does not mean that by applying mission-oriented policies funds are thrown at the problems. To the contrary, mission-oriented *agencies* and *organisations* make a reflected decision on *what* to fund. Therefore, government and transnational organisations play the part of mission-oriented *actors* or *enablers* to support a mission-oriented programme (ibid).

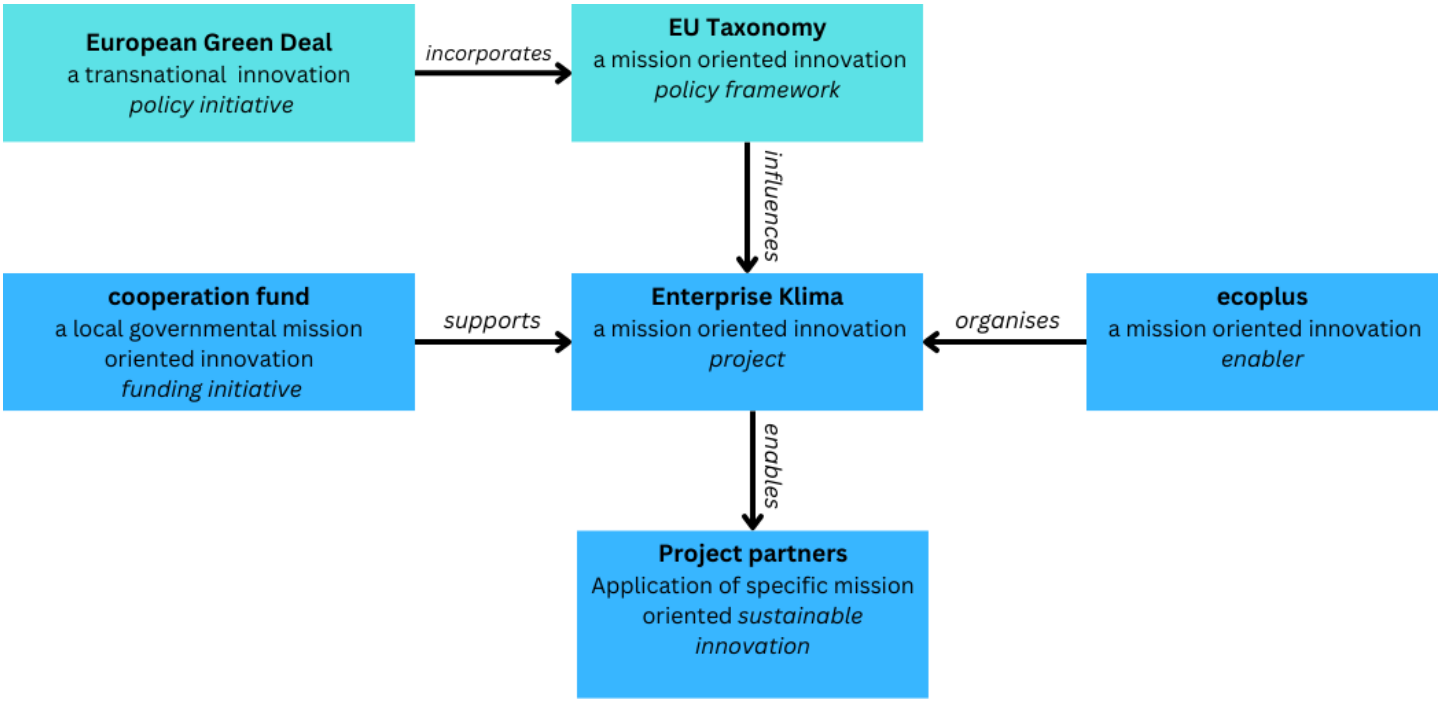

Figure 2: Mission-Oriented Factors

In the case of Enterprise Klima, we can detect multiple mission-oriented factors (see figure 2) that fit into Mazzucato's (2018; Mazzucato & Rodrik, 2023) framework as explained above. The figure is divided into two levels. The upper level with the light blue colour code represents the supranational that influences the cooperation project Enterprise Klima. The policy initiative "European Green Deal" was developed by the European Commission to tackle the wicked problems resulting from climate change (Fastenrath, 2022). One important pillar of the Green Deal is the EU taxonomy, which is a framework for classifying environmentally sustainable economic activities, to support the Green Deal's objectives of achieving climate neutrality and environmental stability in the European Union (European Commission, 2023b).

The EU taxonomy categorises the companies' greenhouse gas emissions into three scopes. Scope 1 covers direct emissions directly produced by the company (i.e., by running a gas boiler), Scope 2 includes indirect emissions from purchased electricity (i.e., for heating or cooling buildings), and Scope 3 encompasses other indirect emissions in the value chain, such as those from supply chains and business travel (Deloitte United Kingdom, 2024). It is beyond doubt that the world needs wide-ranging transformation of socio-technical and social-ecological systems to reach these targets (Fastenrath, 2022).

The darker blue level represents the mission-oriented factors on a local level. Many companies struggle to integrate sustainable solutions to their production processes, consequently ecoplus, the economy agency of Lower Austria, decided to act as a mission-oriented *enabler* by creating the cooperation project Enterprise Klima. In the project, the participating firms could be experimenting in developing mission-oriented use cases to realise sustainable projects in their companies and exchange their knowledge with the project partners. Indeed, this applies to Mazzucato's (2018) demand that mission-oriented policies should not fear failure but welcome experimentation (p. 807). Another important part of the project is the possibility for the firms to have up to 50% of their external consulting costs reimbursed by the State of Lower Austria after successful completion of the project (Amt der NÖ Landesregierung, Abteilung Wirtschaft, Tourismus und Technologie, 2021). Hence, ecoplus not only provides the platform for knowledge exchange, but also applied for the cooperation fund of the WST3 (state of Lower Austria, Department of Economy, Tourism & Technology). This *funding initiative* is, therefore, a reflected mission-oriented decision (after Mazzucato, 2018) of a political institution to support local firms to apply the concrete Mission-Oriented Policy framework *EU taxonomy* to tackle the wicked problem of climate change.

Conditionality

Yet, when introducing mission-oriented industrial policies, it is paramount not to neglect the degree of conditionalities **they are getting from the public sector**. Over the last decades, the common understanding of conditionalities was that they were somewhat inherent in industrial policies. The public sector was providing support and in return the recipients undertook specific actions. Yet, to what extent the generation of public value was implied in these policies has varied considerably and were sometimes even up to interpretation by the

recipients (Mazzucato & Rodrik, 2023). “It is generally acknowledged that conditionalities are important to the design of industrial policies and that their absence could hamper success (…) or lead to parasitic relationships, or capture, whereby businesses simply get handouts and subsidies from lobbying” (Mazzucato & Rodrik, 2023, p. 5). Today, societies try to act responsibly to the wicked problems they face, hence *conscious conditionalities* are being incorporated into key policies. So, instead of focusing on economic values, other factors like environmental and social benefits must be included in the interactions between a public agency (“the government”) and a private-sector entity (“the firm”). These conscious conditionalities can also be detected in the mission-oriented EU Taxonomy.

To sum up, conditionalities refer to the framework that specifies the responsibilities, commitment, or undertaking of the firm. When designing a conditionality, policy makers should focus on two questions: (1) Did the incentive-cum-conditionality pass a broad public value test and (2) Was the public value of the program impact worth the direct and indirect investment (ibid, p. 6). Overall, the design of conditionalities is a delicate task that must juggle the perfect balance of micromanagement (too much can stifle innovation) and giving clear goals that leave the “how” open (i.e., achieving net zero) while at the same time considering the specific *local* opportunities and constraints (ibid, pp. 7-8).

Due to their local characteristics, many Mission-Oriented Innovation Policies take place over various part of the world. Mazzucato and Rodrik (2023) therefore analyse nine case studies drawn from different types of industrial policies, covering programs for renewables, pharma, heavy industries and R&D using a specific analytical taxonomy of different types of conditionality, based on distinctions along four dimensions (p. 8). The EU taxonomy was not included in Mazzucato and Rodrik’s (2023) research; therefore this master’s thesis applied their analytical framework and summarised its most important facts in table 1 (Bundesministerium Klimaschutz, Umwelt, energie, Mobilität, Innovation und Technologie, 2021).

Table 1: EU Taxonomy’s Summary after Mazzucato and Rodrik (2023, p. 10)

Time period	**Policy domain**	**Policy objectives**	**Nature of governmental incentives**	**Most important actors involved**

Since 2021	Environment, Sustainability	Addressing climate change and promoting sustainable finance by providing a standardised and transparent framework to identify environmentally sustainable economic activities or investments	Applied to define the criteria for green bonds	European Commission/ Parliament/ Council; Financial Market participants; Companies and Issuers

Derived from the general considerations explained above, the authors introduced different types of conditionalities, based on distinctions along four dimensions (A-D). The applications of these criteria regarding the EU taxonomy are displayed in table 2.

A - type of firm behaviour targeted: to which specific sphere of firm behaviour is the condition attached to? For the EU taxonomy, the spere *directionality* was identified, as it aims to direct the firms' activities towards socially desirable goals (like the defossilisation of the European industry) (ibid).

B – Fixed versus negotiable/ iterative conditions: which program requirements are fixed, apply uniformly, or have clear incentives determined by firm characteristics? Which are, on the contrary, variable, negotiable or are determined in a process of iteration? Regarding the EU taxonomy, the identified fixed conditions include the compliance of the firms to perform technical screening, reporting and comply to the set environmental criteria (ibid).

C – Risks/rewards sharing mechanisms: To what extent are the risks and rewards of the program shared between the public and private sector? Regarding the EU taxonomy, the risks for the firms include (1) Legal and compliance risks, failure and adhere to the taxonomy requirements could result in legal and regulatory penalties for the industry (2) Facing regulatory uncertainties, making it challenging to plan long-term investments (3) Limited access to capital (green finance) (4) Supply chain complexities, many complex global industries

may struggle to trace and verify the environmental impact of their suppliers (5) Greenwashing concerns, when companies misrepresent their environmental efforts to meet taxonomy, most likely damaging their reputation. Regarding the public sector, the biggest risk is the (6) Substantial loss of local industries/firms and the resulting loss of taxes, jobs, and economic prosperity.

Regarding the benefits of the Mission-Oriented Policy, the companies who are meeting the criteria of the taxonomy are experiencing (1) Access to sustainable investment, as investors are increasingly seeking environmentally responsible opportunities (2) Enhanced reputation, as a demonstration of commitment towards environmental sustainability receives a positive public perception (3) Market competitiveness, as companies can gain a competitive edge by attracting more customers and partners (4) Long-term resilience, meaning that the effects of climate change might not be levelled out by sustainability measures. Regarding the public sector, the most important benefit from the EU taxonomy is (5) Support of a sustainable economy and hence the creation of a world with a high quality of life, while safeguarding the plant's resources for the benefit of current and future generations (European Commission, 2023a, 2023b; European Union, 2023).

D – Measurable performance criteria & monitoring, evaluation: Are the explicit, quantitative, or measurable criteria used to ascertain the compliance with the conditionalities of the EU taxonomy? How is this assessment made and by whom? The EU taxonomy uses a set of measurable criteria to evaluate the environmental sustainability of economic activities. These criteria are designed to assess compliance with six environmental objectives, each of which has specific, quantitative measures: (1) Climate Change Mitigation (2) Climate Change Adaptation (3) Sustainable Use and Protection of Water and Marine Resources (4) Transition to a Circular Economy (5) Pollution Prevention and Control and (6) Protection and Restoration of Biodiversity and Ecosystems.

The most important assessment actors are (1) Financial Institutions and Investors, such as banks and asset managers, who play a role in assessing compliance with the taxonomy when they evaluate investments for their alignment with sustainable finance goals. They use the criteria to make investment decisions and may conduct their assessments or rely on external verification and (2) Companies and Economic Activities, as companies themselves are responsible for evaluating their own activities and operations to determine the compliance

with the conditionalities of the taxonomy. They need to assess and report their environmental performance against the taxonomy criteria to demonstrate their alignment with sustainability objectives (ibid).

Table 2: EU Taxonomy's Conditionalities after Mazzucato and Rodrik (2023, p. 12)

A-Type of behaviour targeted	**B-Fixed versus negotiable/iterative conditions**	**C-Risks/ rewards sharing mechanisms**	**D-Measurable criteria & planned monitoring and evaluations**
Directionality: Compliance with the EU taxonomy can lead to improved access to green finance while non-compliance can result in regulatory and reputational risks	***Fixed conditions****:* the compliance with technical screening, reporting, and environmental criteria	***Risks***: (1) Compliance risks (2) regulatory Uncertainties (3) Green financing (4) Supply chain (5) Greenwashing (6) loss of industry ***Benefits***: (1) Green finance (2) Enhanced reputation (3) Market competitiveness (4) Long-term resilience (5) Sustainability	***Evaluation criteria:*** (1) Climate change mitigation (2) Climate change adaptation (3) Water & marine resources (4) Transition to Circular Economy (5) Pollution Prevention and control (6) Biodiversity & Ecosystems ***Assessment actors:*** (1) Financial Institutions and Investors (2) Companies and Economic Activities

Although Mariana Mazzucato (2018) provides a very important theoretical framework to translate *wicked problems* into *mission-oriented innovation policies*, it is paramount to consider what *innovation* really means. According to Fastenrath (2022) the established understanding of innovation is mostly based on a market- and technology-oriented practice. Yet, he claims, societies should stop evaluating innovative success using quantitative economic data such as the number of jobs occupancies, revenues, and patents. A purely quantitative

evaluation neglects important social-economic aspects of innovation, such as their impact on ecology, mental- and physical well-being as well as social justice (p. 60).

This “alternative” perception of innovation is also supported by the notable Dutch scholar Frank W. Geels (2002) who developed the Multi-Level Perspective framework. The framework aims to explain the development of innovation, which can be categorised in landscape (long-lasting), regime (norm-driven) and niche (volatile and dynamic) levels. Although Geels shaped a new scholarly perception of sustainable transition and innovation, his explanation of innovation development remained on a superficial level. From this insufficiency, researchers started to dive deeper into the development of niche innovations, investigating why some regions are dynamic and easily develop innovations while others remain static and locked in systems that are not adept at tackling *wicked problems* (Fastenrath, 2022).

Every framework has its advantages and disadvantages. It is important to acknowledge them and therefore apply them carefully to one’s own research. To provide a full picture of innovation through a systemic and evolutionary approach, the following sub-chapters will give an insight into Geel’s (2002) Multi-Level Theoretical framework as well as Tödling et al.’s (2021) Challenge-Oriented Regional Innovation Systems as it includes the important concept of place specificity. This master’s thesis therefore aims to provide a holistic view on innovation development and to apply the frameworks carefully on the analysis of the cooperation project Enterprise Klima.

2.1 Multi-Level Perspective

The Multi-Level Perspective (MLP) entered sustainable transition discourse twenty-five years ago and was first formulated by Rip and Kemp in 1998 (Schot & Geels, 2008). It is one approach amongst many to understand social transformations to sustainability. The focus is on systems that supply societal functions (e.g. energy, mobility, food systems) and how sustainable change can occur within them (Geels, 2019, p. 187). According to Grin, Rotmans, and Schot (2010, p. 19) researchers from diverse academic backgrounds like Science and Technology Studies (STS), evolutionary economics, and sociology, have picked up the concept and refined it over the following decades. The goal has been to develop a cohesive framework for understanding long-term and complex socio-technological transitions. “Building on Braudel’s notion of different levels of historical time (…), the MLP starts from three levels: a)

technological niches; b) socio-technical regimes; and c) socio-technical landscape" (Grin et al., 2010, p. 19). One of the most notable differences amongst the levels is their degree of stability. Niches have unstable social networks, limited sets of rules and high volatility. Socio-technical regimes are more stable in larger social networks, a commonly accepted set of rules, and with greater structuring effects. Socio-technical landscapes are almost inert systems that change very slowly over time and are very stable (ibid, p. 19-20). In the following paragraphs, a more precise explanation of the different levels will provide a more solid understanding of the transition dynamics within the Multi-Level Perspective theory.

Socio-technical regimes involve social groups such as scientists, users, politicians, and special-interest groups. As mentioned above, this level is very stable due to the specific set of rules that its members follow. This leads to mutual trust and dependencies within the network. Yet, this amount of stability can also lead to a lock-in phenomenon, meaning that the members are oblivious towards developments outside of their focus. Moreover, a specific set of procedures, legally binding contracts and governmental rules for subsidies might favour existing technologies (ibid). "As a result of these lock-in mechanisms, existing socio-technical systems are dynamically stable: innovation still occurs but is of an incremental nature, leading to cumulative (…) trajectories" (Grin et al., 2010, pp. 21–22). Regimes are known to present themselves as a coherent block towards the outside world as spokespersons of, for example, trade associations or political parties put great emphasis on apparent unity. Yet, tensions within sub-regime groups, disagreements, and conflicts of interest are very common features (Geels, 2011, p. 31), leading to the co-evolution of different trajectories within the system (Gin et al., 2010, p. 21). Sometimes, these tensions and fluctuations in one trajectory can result in the opening of windows of opportunity for transition. It depends on the level's stability how often these windows open (ibid).

Within evolutionary theory discourse, it is suggested that radical innovations often originate outside existing regimes and are protected in niches where mainstream market selection does not apply (ibid, p. 22). Hence, crazy ideas, novelties and unfeasible ideas have room to unfold themselves. "Niches are important, because they provide locations for learning processes, e.g., learning by doing, learning by using and learning by interaction" (Geels, 2002, p. 1261). This "protected space" is often created with the help of subsidies, by public authorities or due to strategic investments of companies (Geels, 2004, p. 912). Small market niches with

different selection criteria and limited resources can nurture radical innovations, but such niches may not always be readily available for new technologies. Therefore, the co-construction of new technologies and markets are essential, with entrepreneurial action playing a transformative role in creating new markets through stakeholder commitments. It is important to note, though, that niches do not simply pre-exist waiting to be filled, but are managed by invested actors providing the resources and time to develop new socio-technical ideas and solutions (Grin et al., 2010, p. 19).

According to Grin et al. (2010, pp. 23-24) the concept of the socio-technical landscape represents a comprehensive exogenous environment that remains beyond the immediate control of both regime and niche actors. The choice of the term "landscape" draws on its literal connotation of enduring solidity, encompassing various tangible facets of society, such as the material and spatial configurations of cities, factories, and electricity infrastructure. This notion was first introduced by Rip and Kemp (1998) during a comprehensive examination of theories on technological change. Philosophically, modern society is seen as residing within a "technotope" rather than a biotope. Historically, it has been demonstrated how road and electricity infrastructures evolved from unfamiliar and contentious technologies into accepted background elements, maintaining their influence even in a stable capacity. Rip and Kemp (1998) envisioned the socio-technical landscape as both something surrounding us, which we navigate through, and metaphorically, as an integral aspect of our existence that sustains us. While the landscape metaphor could imply a certain level of permanence akin to geographical features, it should be noted that it also encapsulates dynamic elements analogous to ever-changing atmospheric conditions, such as rainfall patterns, storms, and lightning. In this regard, the landscape metaphor was extended to encompass three distinct types of factors: those that remain largely static or change at a sluggish pace, such as climate; those undergoing prolonged transformations, like the industrialisation era in the late nineteenth century; and those subjected to abrupt external shocks, such as wars or fluctuations in oil prices. Although human agency significantly contributes to landscape developments, their impact remains beyond the purview of niche and regime actors.

Following the explanation of the different levels within the MLP, the next paragraphs will discuss how transitions can develop in socio-technical systems. As mentioned above, the MLP suggests that transitions occur through interactions between processes at different levels.

Niche innovations are crucial as they are the starting points for transitions. However, the success of these innovations depends on the environment they enter. Instead of a straightforward diffusion, the MLP emphasises multilevel interactions and windows of opportunity (represented by the small arrows in figure 3). Radical innovations in niches face uncertainty and flux. Social networks and visions within niches are influenced by regime and landscape dynamics. Novelties can remain in niches for extended periods due to technological development, mismatch with the existing regime, or active opposition from regime actors (Grin et al., pp. 24-25).

Wider breakthroughs of niche innovations often rely on external landscape changes that create pressure on regimes. However, this pressure does not directly influence regimes but is mediated by actors' perceptions, negotiations, and agenda-setting. Factors such as changing user preferences, increasing negative externalities, policy measures, technical problems, and strategic competition can open existing regimes. These pressures and tensions may create

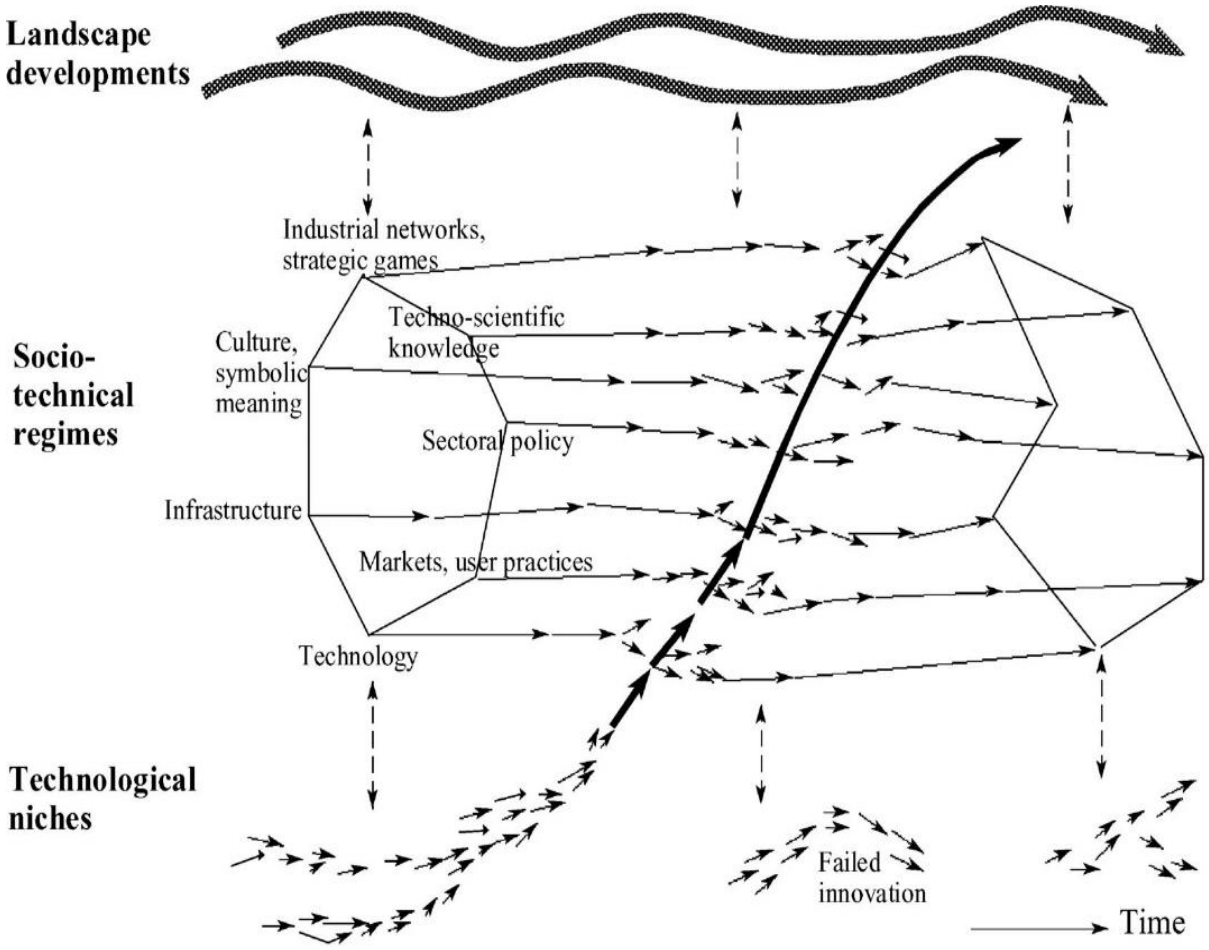

Figure 3: MLP's Structure (Geels, 2002, p. 1263)

windows of opportunity for broader change (ibid, p. 26). Hence, climate change can assert pressure on the landscape, as actors start to change their consumer behaviour and form protest groups like Fridays for Future.

The MLP rejects linear causality, emphasizing co-evolution within and between levels. Transitions occur when these processes link up and reinforce each other. The three levels - technological niches, socio-technical regimes, and socio-technical landscapes - influence local practices differently. Niches provide loose structuration, regimes offer strong structuration, and landscapes provide deep-structural gradients that make some actions easier than others. While niches and regimes involve sociological structuration, landscapes work through latent "action possibilities" in the physical environment, affecting actions through deep-structural gradients (ibid, p. 27).

Lack of space specificity in MLP

Even though the MLP is a commonly used framework to explain shifts in socio-economic systems, it is not without its deficits. Coenen, Benneworth, and Truffer point out that it poorly conceptualises the notion of space (2012, p. 969). What is significant about scale is that the traits of a location affect processes across all levels. Also, Raven, Schot and Berkhout (2012) point out that the MLP neglects the spatial scale while overemphasising the temporal and structural scale which can lead to simplified and incorrect analyses. Hence, the structural scale which is represented by the three levels (niche, regime, landscape) can be misused as concrete territorial boundaries. As a consequence, in academic discussions, the niche level often incorrectly represents local features, the regime level national features and the landscape level international ones (Raven, Schot, & Berkhout, 2012, p. 64). Yet, these “artificial” boundaries do not accurately represent real life scenarios as sustainability transitions are increasingly shaped by transnational actors and relationships operating beyond national borders. These influential entities include multinational corporations, international donors, financial and consumer markets, and non-governmental organisations, many of which may not be located in the regions where sustainability transitions are taking place (Truffer, Murphy, & Raven, 2015, p. 64). It is important to state this criticism and to be extra attentive to not make the mistake of neglecting the importance of place specificity.

Therefore, this master's thesis includes another transition theory frameworks that pays specific attention to place specificity, namely the Challenge Oriented Regional Innovation Systems theory (CoRIS). To understand the concept of CoRIS, its predecessor, the Regional Innovation System (RIS) will be briefly explained, but for the analysis of this master's thesis only the CoRIS theoretical frameworks will be included.

2.2 Regional Innovation Systems

According to Tödling, Trippl and Desch (2022), the Regional Innovation System (RIS) concept has been providing, so far, reliable results whilst analysing regional development. This concept can be seen as a synthesis of research conducted on the topic over the last three decades. Its place-based innovation policies concept has shown greater success compared to the "one size fits all" policy approach. The conceptual and empirical interest of RIS studies are technological, organisational, and marketing innovations as well as their effects on competitiveness and economic growth. Furthermore, it investigates how interactive learning between multiple actors supports regional innovation activities in the firm sector. These multiple actors are primarily firms, research and educational bodies, and policymakers. The institutional set-ups in regions are viewed as influences on key actors and the networks that knit them together. "The innovation capacity of regions is thus understood as the outcome of systematic interdependencies between actors, networks and institutions" (Tödtling, Trippl, & Desch, 2022, p. 2142) Still, RIS dynamics are not limited to the regional level; on the contrary, they are influenced by national and international policies and institutional framework conditions (ibid).

Even though the conventional RIS approach has been widely adopted within the socio-economic transformations research field over the last decades, Tödtling et al. (2022, p. 2143) have thoroughly investigated why this concept lacks very important parameters for future analysis. They have listed six reasons, which will be summarised and discussed in the following section. Firstly, over the last few years, a broader understanding of innovation has immerged, that current RIS scholarship has thus far not sufficiently considered. Secondly, grand societal challenges such as climate change, aging society and social inequalities must be addressed also at a regional scale. Unfortunately, though, the traditional RIS approach limits the purpose of innovation to fostering economic competitiveness. Thirdly, it becomes more and more

important to open the innovation process to a broader variety of innovative agents apart from firms and their support organisation. Various kinds of users and stakeholders such as civil organisations must be included. Fourthly, RIS studies have focused too long on the supply side of innovation, its focus must shift to the application side. Fifthly, the sole focus on the design of "smart" strategies and the proposal of a proper set of tools is not sufficient as it has severe limits to their overall effectiveness in achieving policy goals. Sixthly, RIS studies ignore the fact that innovation is not always positive, as it may create more problems than it solves. This pitfall can be described as the "pro-innovation bias" which refers to the assumption that innovation generally benefits a whole society and does not need to be altered to specific social or geographical contexts. This pro-innovation belief neglects innovations with negative externalities and subsequently ignores the importance of the discontinuation of specific innovations and their diffusion. This strong expectation that innovation always leads to improvement also influences how policies are designed and implemented (ibid, p. 2144). One approach that has been suggested as appropriate for overcoming this over-emphasis on innovation is the concept of exnovation, which can be defined as

> (...)the purposive termination of existing (infra)structures, technologies, products, and practices. It can be driven by different actors (the innovator but also other actors), for different (economic, ecological, ideological, or other) reasons, and it may occur in the short term or over a longer term and step by step ("phase-out") (Arne Heyen, Hermwille, & Wehnert, 2017, p. 328).

Due to these six deficiencies listed above within the RIS concept, it becomes apparent that RIS studies and regional innovation policies need to reorientate to face the grand societal challenges of current times, like climate change. In the next section, one reconfiguration of the RIS studies will be presented and set into context, namely the Challenge-Orientated Regional Innovation System (CoRIS) approach.

2.3 Challenge-Orientated Regional Innovation Systems

The goal of reconfiguring the traditional RIS concept to a CoRIS approach is to create a broader and more critical understanding of innovation, one that captures the directionality of change

and is open to new innovation actors. It also includes novel coordination mechanisms between various stakeholders and territorial scales. In contrast to the RIS concept, CoRIS additionally takes the application side into account and **upscaling of innovation within the region and beyond** (Tödtling et al., 2022, p. 2144). To summarize, CoRIS can be understood as those parts of RISs that features a challenge orientation. In table 3 the differences between the traditional RIS and the CoRIS approach are depicted in detail. To further expand the notion of CoRIS, it is important to note that a CoRIS is not necessarily enclosed to a particular challenge, but rather constitutes the wider regional or territorial framework. Hence, it addresses a region's capacity to address various and partly interrelated challenges, while at a more concrete and operational level it might apply multiple CoRISs. For a CoRIS to be successful, the authors analyse that "much depends on the innovation capacity of public and private actors, available assets – including natural resources and other assets such as industrial, human, infrastructural, material ones (…) - historically grown networks and institutional configurations" (Tödtling et al., 2022, p. 2145). Consequently, for the initiation and upscaling of challenge-oriented innovation in regions, these inherited structures on the place-based level and RIS elements can both be a potential and a constraint (ibid).

Table 3: Conventional RIS Approach in Comparison with CoRIS (Tödtling et al., 2022, p. 2144)

	Conventional RIS approach	Challenge-oriented RIS approach
Type of innovation	Innovation in the regional corporate sector: technological, organizational, marketing innovation	Innovation in the regional corporate sector and in other realms (public sector, civil society, regional and urban communities: technological, user, social, institutional innovations)
Purpose of innovation	Economic growth and competitiveness of the regional economy	Grand societal challenges and problems faced by the region
Effects of innovation	Focus on positive effects (strong pro-innovation bias)	Focus on multi-dimensional effects of innovation: bright and dark sides
Actors, networks, institutions	Firms, universities, state, intermediaries knit together in stable (local and non-local) networks and embedded in a static multi-scalar institutional landscape	Conventional RIS actors and 'new' innovation agents (civil society, public sector actors, users, etc.) knit together in/influenced by dynamically developing networks and evolving institutional configurations at multiple scales
Production and application sides	Supply side (generation/production of innovation in the region)	Supply side and demand/application side (experimentation/diffusion/upscaling of innovation in the region)

The application of the CoRIS approach can occur in two different ways, either implemented by policy actions (top-down manner) or growing organically (bottom-up manner). These policy actions might develop within the political body of a region, but they can also come from higher

special scales (i.e. national and supranational institutional barriers). Hence, the way challenge-oriented innovations unfold in a region might be affected by external sources. However, regional innovative capacities might also be influenced by external influences such as shocks (Tödtling et al., 2022, p. 2146).

3. Research Methods

In this master's thesis, five research methods have been used. For the theoretical framework, the literature was obtained via a narrative literature research. The results of the semi-structured interviews for the analysis and discussion sector were obtained via the embedded case study design and consequently combined with documents obtained by ecoplus and observations made during project meetings via a triangulation of data. The quantitative analysis followed the structure formulated by Maring (2014). In the following section, the three methods will be briefly explained, to aid comprehension of the thesis' design.

3.1 Literature Research

The literature was obtained from the search engines scorpus.com as well as u: search, which is the search engine provided by the University of Vienna. The publication date was limited to ten years, apart from the theoretical framework section, where older articles have been included for the MLP as they have entered the canon of the framework. Generally, a narrative review was applied, which is a less formal approach than a systematic review. "Narrative reviews do not require the presentation of the more rigorous aspects characteristic of a systematic review such as reporting methodology, search terms, databases used, and inclusion and exclusion criteria" (Jahan, Naveed, Zeshan, & Tahir, 2016). For this master's thesis, this rather informal literature research method was applied as the main methodological work is the embedded single-case case design, and not the literature review. Hence, the selected literature was mostly chosen to give the reader a concise theoretical framework and clear background information, but not to give a systematic review on MOIS, MLPs and CoRIS applications. Additionally, many articles were retrieved via snowballing effect, meaning that the bibliographic entries of articles were screened and consequently selected to the narrative literature review (Wright, Brand, Dunn, & Spindler, 2007, p. 25).

3.2 Embedded Single Case Design

Firstly, it is important to understand what research design means. According to Yin (2018)

> Every type of empirical research study has an implicit, if not explicit, research design. In most the elementary sense, the design is the logical sequence that connects the empirical data to the study's initial research questions and, ultimately, to its conclusion. Colloquially, a research design is *a logical plan for getting from here to there,* where *here* may be defined as the set of questions to be addressed, and *there* is some set of conclusions about these questions (Yin, 2018, p. 26).

Although not all case study research includes a formal design, it can make one's case stronger and easier to conduct (ibid, p. 47). Hence, this work included a proper design, more specifically an embedded single-case design (see figure 4).

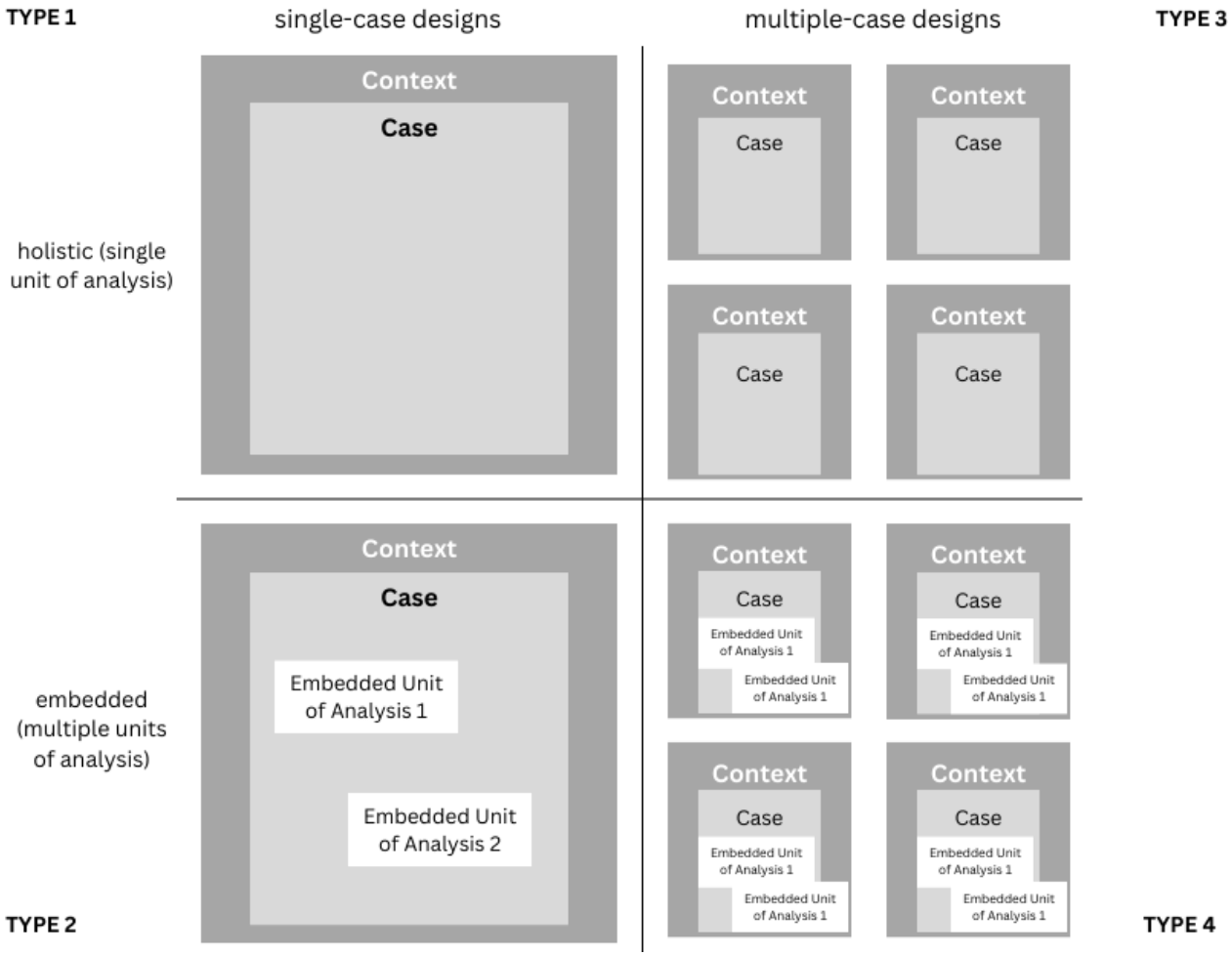

Figure 4: Basic Types of Designs for Case Studies after Yin (2018, p. 53)

Enterprise Klima is clearly one case that will be analysed; hence only the left side of the matrix will be discussed. However, ecoplus is preparing more projects with a similar design as Enterprise Klima, therefore further research could investigate the projects-in-planning in a multiple-case design study. For this master's thesis, it is important to note that single case studies can be subcategorized in two variants, those using holistic designs and embedded units of analysis (see figure 3). An embedded design proves to be advantageous when specific subunits can be defined that help to maintain the study's focus (p. 53). Referring to "Enterprise Klima", the topic of the single case study is the project Enterprise Klima while the subcategories are the use cases of the participating firms. Yin (2018) points out that one risk of working with the embedded case study design is to overemphasize the embedded units and consequently neglect the "original" case (p. 53), namely the question of whether and projects like Enterprise Klima contribute to the defossilisation of the industry of Lower Austria. Therefore, this work will pay special attention to not fall into this pitfall.

3.3 Triangulation of Data

Triangulation of data means that the findings of a case study will have been based on multiple sources of evidence to strengthen the construct validity of the case study (Yin, 2018, p. 128).

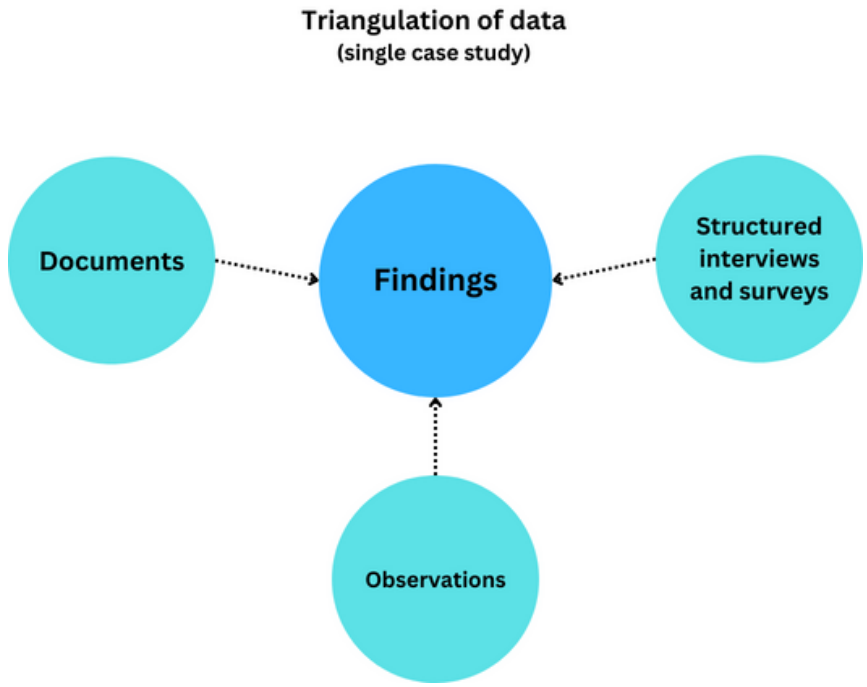

Figure 5: Triangulation of Multiple Sources of Evidence after Yin (2018, p. 129)

The main source of information for this master's thesis comes from the semi-structured interviews conducted with the thirteen project partners that participated in the Enterprise Klima project. Additional documents obtained from ecoplus will also be included in the analysis of this project, as part of the cooperation. Important documents are the use case canvas, where the firms described their projects and their hoped outcomes before the official start of Enterprise Klima. Most firms have already finished their use cases and submitted a final report to ecoplus. This information will be compared with the use case canvas and included in the analysis of the project. Furthermore, the project managers have met quarterly to exchange their progress, ideas, and difficulties. As part of this master's thesis, the author was present at two project managers get-togethers. The obtained observations will also be included.

3.4 Semi-Structured Interview

For the empirical part of this master's thesis, thirteen semi-structured interviews were conducted. Nine of the interviews took place in situ to gain a better understanding of the firm location. For four interview partners, where a personal visit was not possible, the video conference platform "Microsoft Teams" was used (see table 4). All partners expressed their wish for the answers to be anonymised apart from the description of their use case results. Therefore, the interviewees were assigned to a number ranging from 1-13, respectively. All interviews were transcribed with the help of the software "Sonix" and additionally corrected/ edited. In the editing process, long pauses, repetitions, slips of the tongue as well as filler words were excluded to enable easier readability of the interviews. The interview questionnaire is included in the appendix of this master thesis. As the interviews were conducted in German, the answers were translated into Academic English with the support of the chatbot OpenAI, yet careful attention was paid not to alter the content of the interviews.

Table 4: Enterprise Klima's Interviewees

Interview partner	**Company**	**Position**	**Recordings**
Arianne Schmelzenbart	Astotec Pyrotechnic Solutions GmbH	ESG Manager	In situ

Anton Harrer	Harrer Eisdielen GmbH	CEO	In situ
Gernot Gobec	Franz S. Huemer GmbH	COO	In situ
Christian Wahlmüller	Swietelsky AG	Sustainability Manager	In situ
Eduard Artner	Baumit GmbH	Head of BauMinator/ 3-D concrete printing	In situ
Florian Kernstock	Jungbunzlauer Austria AG	Manager Sustainability	Microsoft Teams
Robert Nunkovic	Georg Fischer Fittings GmbH	Head of IMS/ DS/ PM/ Sustainability/ Risk Management/ Legal Compliance	In situ
Gerhard Zirsch	WeAct	Partner WeAct Business consultant	Mircosoft Teams
Engelbert Schwank	Ing. Baierl GmbH	CEO	Microsoft Teams
Johanna Seidl	TEST-FUCHS International GmbH	Process Manager & Sustainability Office	In situ
Elisabeth Bergthaler	Bellaflora Gartencenter GmbH	Sustainability Manger	In situ
Ingrid Steindl	Welser Profile GmbH	Sustainability Manager	Microsoft Teams
Christian Schiller	WeAct	Partner WeAct Business consultant	In situ

The analysis of the interviews was conducted after Mayring (2014), which will be explained in the following.

3.5 Qualitative Analysis after Mayring

Prof. Dr Phillip Mayring is a German psychologist and sociologist whose research activities focus on the development of criteria and procedures for qualitatively oriented research design ("Research: Prof. Dr. Philipp Mayring," 2023). He described in his standard book about

qualitative content analysis (2014) the deductive category formation method (p. 95-97). For this process, the structure is based on a category system and applied to the material. “All text components addressed by the categories are then extracted from the material systematically” (p. 95). The important point is that the fundamental structuring dimensions must derive from the problem concerned and theoretically based. When working through the interview transcripts, each extract must be checked whether the pre-determined category is applicable, and a categorical assignment is possible.

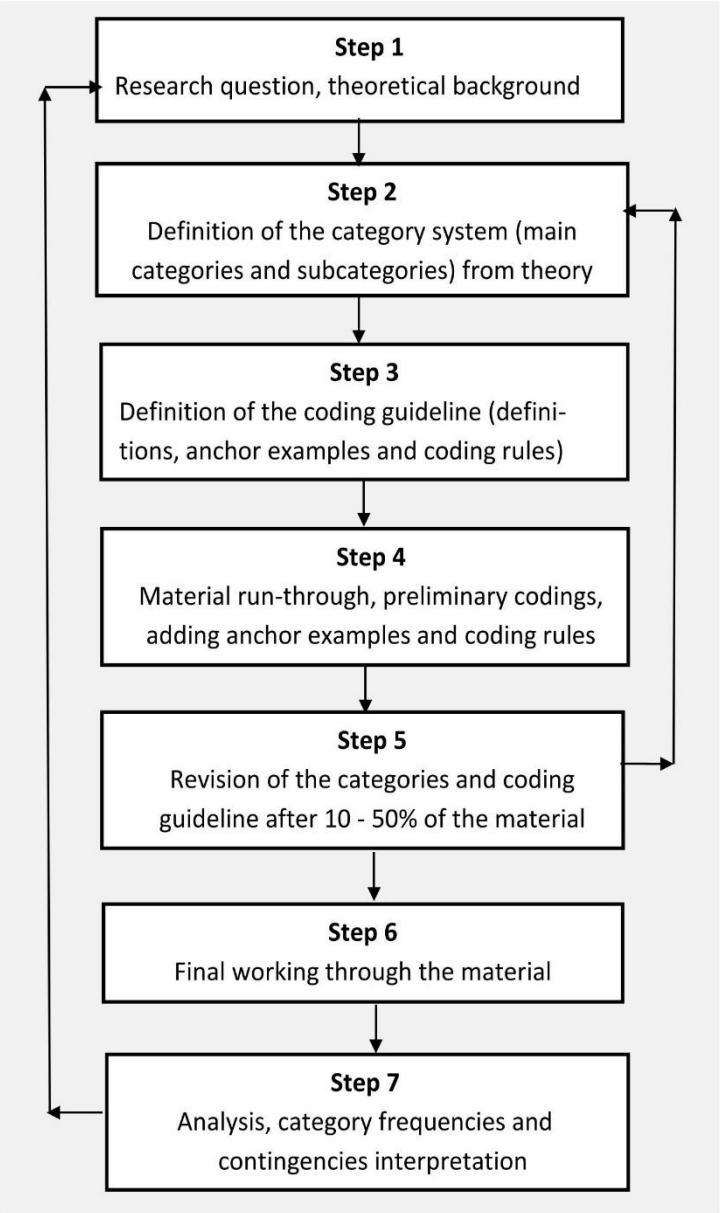

Figure 6: Qualitative Analysis (Mayring, 2014, p. 97)

Figure 6 shows the deductive coding system after Mayring (2014). Firstly, it is important to determine the research question based on the theoretical framework, in the case of this master’s thesis how Enterprise Klima contributed to industrial defossilisation in Lower Austria based on the MLP, MOIS and CoRIS theoretical frameworks. In the second step, the category system must be defined, which is displayed in table 5. The codes are derived from the interview questionnaire (which is based on the theoretical framework) and is attached in the appendix. Step four includes the first coding round procedure, where examples and coding rules are added. In the next step, the categories and codes should be revised after about 10-50% of the material. As thirteen interviews is a comparatively small

sample size, the codes were altered and extended after two interview transcripts. In the next step, the coding work was finalised and prepared for step seven, which includes the interpretation of the material.

Table 5: Deductive Coding Steps I and II after Maring (2014)

Deductive Coding I (Step 1-4)		**Deductive Coding II (Step 5)**
Coding category	Code	Code
Knowledge systems	B2B cooperation	Regional Impact and Benchmarking
	Network & Knowledge exchange	
	Cooperation for Innovation	
Policy conditionalities	EU regulations	Sustainability policies
	EU taxonomy	External pressures & regulatory support
Motivation	Role of sustainability in company	Personal significance of sustainability
	Environmental innovations	Motivation of participation
Challenges		Infrastructure
		Conservative industry
		Limited Resources

In table 5 the two coding “rounds” are depicted. After the first interview, the category “challenges” was also included in the interview guideline, as the interview partner was emphasising on the difficulties the company phases and the information served to answer the research question. Moreover, recommendations for policy makers can be deducted from this information. The coding categories were derived from the three theoretical frameworks, which are explained in detail in chapter 2. These coding categories were consequently used to analyse the interview transcripts and will be discussed in chapter 5.

4. Embedded Unit Analysis

The following chapter will describe the cooperation project Enterprise Klima in detail, the project companies, the project managers as well as the use cases will be presented.

4.1 Astotec Pyrotechnic Solutions GmbH

The company Astotec specialises in pyrotechnical expertise for automotive safety. This includes the production of igniters used in various applications, including the automotive industry, mining, and avalanche protection. The utilisation of pyrotechnics in these applications allows for extremely rapid responses, which are critical for safety, and much faster than electric solutions. Astotec is divided into three main areas:

1. Astotec Pyrotechnic Solution: This segment is responsible for manufacturing igniters used in various applications, including the automotive sector, mining, and avalanche protection.
2. Astotec Metal Processing: This department involves bending and stamping operations.
3. Astotec Automotive: Within this domain, the focus is on pyrotechnical safety components, encompassing various aspects such as pedestrian protection, occupant safety, and electrical safety components. For example, actuators are employed to raise the hood during a collision, minimizing injuries to pedestrians. Additionally, components to prevent the whiplash effect and secure the steering column contribute to safety measures.

Astotec originated as a munitions manufacturer but has subsequently realigned itself since the 1990s to promote the value safety and sustainability. This realignment included a name change to distance itself from the negative connotations of its prior activities.

Arianne Schmelzenbart is the lead project manager for the cooperation project Enterprise Klima. She works as the ESG manager (Environmental, Social, and Governance) at Astotec. In her role, she is responsible for developing a sustainability strategy and ensuring that the company complies with evolving regulations and customer requirements. She also manages environmental and waste management and oversees whether the company meets ISO 14.001 certification criteria. Her responsibilities encompass introducing sustainability concepts within the company, monitoring regulatory changes, and considering customer requirements. She emphasises that the field of sustainability and environmental compatibility is continually expanding and broadening, and pertains not only to internal processes but also the entire supply chain. (Schmelzenbart, 1-143).

Astotec's Use Case:

Thes two use cases involve exploring different renewable energy options to fulfil energy requirements at the companies' locations in Winzendorf and Hirtenberg.

Winzendorf Use Case: In Winzendorf, the primary concern is meeting their energy demands, encompassing both electricity, and heating, through sustainable sources. They've already taken steps by sourcing green energy (Ökostrom) and installing a photovoltaic (PV) system, which partially covers their electricity needs. To further explore options, they are considering the expansion of photovoltaic systems, potentially using agricultural land for an Agri-PV system. They are also contemplating the installation of a wind turbine and the production of hydrogen, not necessarily to meet immediate energy needs but as separate possibilities.

Hirtenberg Use Case: In Hirtenberg, the focus is on finding alternative energy solutions since the current heating system relies on gas, which is challenging to replace. The site comprises various buildings with differing structures. The analysis centres on investigating alternatives such as district heating, geothermal energy, or heat pumps as substitutes for the existing gas heating system (Schmelzenbart, 372-396).

4.2 Harrer Eisdielen GmbH

Harrer Ice Cream was founded in 1988 by Anton Harrer, who is the business owner of the company. It is a business deeply rooted in the art of crafting premium ice cream. Founded on a passionate commitment to creating exceptional frozen delights, the company has evolved to incorporate various strategies, with a particular focus on providing relatively climate-neutral ice cream. Operating as a traditional seasonal ice cream parlour, Harrer Ice Cream serves customers from spring to autumn. Over the years, the company expanded, establishing multiple retail locations, and even venturing into international markets, including a decade-long presence in China. However, due to logistical challenges, the international venture has been since discontinued.

In recent years, the company has strategically adapted its operations for enhanced efficiency and sustainability. Shifting from labour-intensive brick-and-mortar establishments to a centralised production facility has allowed them to diversify distribution channels, including business-to-business collaborations and partnerships with grocery retailers for automated ice

cream dispensing. This diversification has helped the company to mitigate the impact of adverse weather condition, as rainy days impact ice cream parlours.

Committed to sustainability, Harrer Ice Cream has initiated measures to evaluate and mitigate its environmental impact. They emphasise the importance of embracing regional products and the integral role of local farmers and producers. For instance, their milk is sourced from Alpine regions and processed in Klagenfurt, minimising transportation, and redundant heating procedures.

While striving for sustainability and regional integration, the company recognises that certain products, such as milk, cannot be entirely replaced without jeopardising customer expectations. Customer preferences remain centred on cost and brand image, making a complete transition to organic or vegan alternatives challenging. Nevertheless, the company consistently integrates regional products and deliberates over the environmental ramifications of their decisions. Practical measures, such as the adoption of electric cars for private transportation and the support of local employees, have led to reduced commuting-related stress and a diminished carbon footprint (Harrer, 1-184).

Harrer's Use Case:

Calculating Product Carbon Footprint: To better understand and manage its environmental impact, the company has undertaken the task of quantifying the carbon footprint associated with each of its products. The goal is to derive an aggregated measure known as the "Company Carbon Footprint."

4.3 Franz S. Huemer Holding GmbH

The FSH Holding is positioned as an industrial holding company comprised of independently operating entities. It aims to establish itself as a sustainable and internationally successful Austrian holding company, with the goal of expanding and enhancing its existing business areas.

Through its minority shareholdings, the FSH Group seeks to maintain a balanced and competitive portfolio that generates both customer value and growth with favourable profit margins. Leveraging its ownership structure and expertise in plastic machinery manufacturing, plastic processing, and metalworking, the FSH Group is committed to facilitating the sound

and sustainable development of each subsidiary while emphasising innovation and customer-centric approaches. Furthermore, it collaborates on forward-looking strategic decisions.

As a holding company, the FSH Group strives to ensure the long-term success of its subsidiaries, allowing them to better navigate cyclical fluctuations while preserving their entrepreneurial creativity and flexibility. In their respective market segments, the group aims to be among the leaders, providing products, services, and solutions distinguished by optimal quality and maximum customer value (FSH Holding, 2023).

FSH's Use Case:

The use case of FSH revolved around reducing their emissions regarding scope 1 and 2. For their production site in Hungary, they calculated which investments would lead to a reduction of their carbon footprint. The result was the installation of a photovoltaic site and the introduction of electric vehicles, which will be further discussed (Gobec, 179-187).

4.4 Welser Profile GmbH

Welser Profile is a well-established and innovative company with a strong focus on providing customised metal profile solutions. Based in Austria, the company has gained a reputation for its expertise in roll forming technology and metal processing. Welser Profile's core mission revolves around precision engineering and delivering tailored solutions to meet a wide range of customer needs.

The company has a rich history dating back several decades, during which it has continuously evolved and adapted to the changing needs of industries worldwide. It has built a strong foundation in the field of metal profile production and serves various sectors, including automotive, construction, logistics, and more (Welser Profile GmbH, 2022).

Welser's Use Case:

Welser participated in the Enterprise Klima project with two use cases. One focused on the calculation of the scope 3 emissions, hence the GHG emissions resulting from the company product's value chain (14:05-14:42). The second use case involved the ongoing evaluation of waste streams, focusing on alternative uses for waste materials, in particular used oils. The

aim is to explore alternative utilisation methods beyond the end-of-life scenario of incineration and to reduce the emissions resulting from waste. Furthermore, discussions have taken place with a collaborative partner regarding the return or alternative route for the generated scrap metal to explore different, more sustainable options. However, there is currently no available information on the status of these efforts (Steindl, 204-215).

4.5 Jungbunzlauer Austria AG

The origins of the Jungbunzlauer Group can be traced back to 1867, when it commenced its operations as a distillery in Jungbunzlau, Bohemia. Over time, the company has evolved into a global leader in the production of ingredients sourced from natural origins. Its corporate headquarters are situated in Basel, Switzerland, and Jungbunzlauer remains a family-owned entity with a specialised focus on manufacturing organic acids such as citric, lactic, and gluconic acid, in addition to their corresponding salts and esters. The company's product portfolio extends to include biogums like xanthan gum and gellan gum, as well as the natural sugar substitute, ERYLITE® erythritol. These diverse ingredients serve as eco-friendly alternatives across various applications in the food and beverage, pharmaceutical, and home and personal care industries.

Jungbunzlauer operates four production facilities, with three located in Europe (Austria, Germany, and France), and one in Canada. In addition, the company maintains sales offices in the USA, Mexico, Singapore, India, Japan, and the Netherlands. This strategically decentralised sales structure, in collaboration with local distribution partners, ensures efficient and optimised service delivery to customers in over 130 countries.

The central focus of Jungbunzlauer's core business lies in the production of ingredients derived from renewable sources, predominantly through fermentation processes involving substances like carbohydrates from corn. As fermentation aligns with the natural order of processes, the company is dedicated to establishing a sustainable positioning through its strategic endeavours (Jungbunzlauer, 2022).

Jungbunzlauer’s Use Case:

Their use case was intentionally designed to be technology-agnostic. Carbon footprint calculations and energy management systems had already been established processes within

their organisation for several years and were continually improved. Projects at the cutting edge of technology, such as heat pump initiatives and heat recovery projects, were already in progress. By maintaining a technology-agnostic approach, they aimed to deliberately explore out-of-the-box ideas in the Enterprise Klima project.

Turquoise Hydrogen (Methane Pyrolysis): At the outset of the project, the process of methane pyrolysis was examined in detail, researched, and pilot facilities were visited. Introducing a methane pyrolysis step into their process to capture climate-damaging carbon, while maintaining consistent heat supply, would significantly increase the demand for natural gas. However, due to shifting geopolitical conditions in early 2022 and a shortage of natural gas, further consideration of methane pyrolysis was abandoned.

Energy Storage / Peak Production Storage: At the project's inception, a large PV open-air installation at their operational site had already been planned and was now in the implementation phase. Therefore, energy storage, particularly peak production storage, became a significant concern. Various technologies were considered, such as electrical energy storage, thermal energy storage, and storage in the form of green hydrogen. Thermal energy storage was of particular interest, given that most of their energy demand was in the form of heat. They are now examining several concrete facilities and technologies in their organisation.

Other Technologies: Throughout the project, Jungbunzlauer realized that the most significant emissions reductions in the future would be achieved by using biogenic fuels as a substitute for natural gas. Therefore, they explored the thermal utilisation of the by-products they generate. A project development is currently underway, in which they plan a boiler system based on the results. The boiler system is intended to offer the necessary fuel flexibility to utilise various biogenic fuels in the future, ultimately ensuring a substantial reduction in CO_2 emissions (Use case description provided by ecoplus, 2023).

4.6 TEST-FUCHS International GmbH

Testfuchs, a prominent company located in Groß Sigharts, Austria, stands as a significant player in the field of testing and simulation solutions, particularly in the aerospace and defence sectors. Founded in 1989, Testfuchs has consistently exhibited its commitment to

providing cutting-edge technology and comprehensive testing capabilities, earning a reputation as a globally recognised leader in its domain.

The company's primary focus lies in the development and manufacturing of high-precision testing systems and simulation equipment, catering to the specific requirements of the aerospace and defence industries. Testfuchs' product portfolio includes a wide range of testing solutions, such as hydraulic test stands, component testing systems, and environmental simulation equipment. These systems serve a crucial role in the verification and validation of various components and systems, ensuring their reliability, safety, and performance under diverse operational conditions.

Testfuchs' global reach is facilitated by its extensive network of customers, collaborators, and partners, further establishing its reputation as a reliable and influential player in the field. The company's mission is to continue contributing to the advancement of aerospace and defence technologies by offering cutting-edge testing and simulation solutions that meet the ever-evolving demands of these industries (TEST-FUCHS GmbH, 2019).

Testfuchs' Use Case:

Testfuchs joined Enterprise Klima later than the other project partners and have not yet finalised their use case. The goal of the company is to reach climate neutrality by 2030 and this was formulated, albeit vaguely, in their use case. In the beginning of 2023, they re-formulated their use case more precisely, namely the building of an environmental data controlling system for the entire Testfuchs Group (including their branches abroad). The goal is to collect all relevant data within the system to evaluate them collectively and to be prepared for the EU taxonomy regulations, starting in 2025 (Seidl, 161-208).

4.7 Georg Fischer Fittings GmbH

Georg Fischer Fittings, located in Traisen, Austria, is a subsidiary of the renowned Georg Fischer Group, globally recognized for its advanced piping system solutions. This facility plays a pivotal role in the company's mission to produce precision-engineered fittings that serve diverse industries and applications. Specialising in the manufacture of a broad spectrum of fittings, Georg Fischer Fittings in Traisen adheres to rigorous industry standards. These fittings,

including piping components, couplings, and connectors, are designed for efficient fluid transport in the industrial, commercial, and residential sectors.

The facility's commitment to quality and innovation manifest in stringent quality control measures and state-of-the-art manufacturing processes. These practices ensure the production of reliable and precise fittings. Moreover, environmental responsibility is a hallmark of Georg Fischer Fittings. The facility's commitment to eco-friendly manufacturing and sustainable product design aligns with global efforts to promote environmentally conscious industries.

The facility's reach extends beyond Traisen; its products are sought after by customers worldwide. Georg Fischer Fittings' global network of partners and customers underscores the company's position as a trusted and influential player in the field of piping and fluid transportation solutions (GF Piping Systems, 2023).

Georg Fischer Fittings' Use Case:

Currently, Georg Fischer's industrial site in Traisen runs on fossil fuels, namely coke and natural gas (Nunkovic, 364-368). Hence, the two use cases served as points of observation for the potentials in reducing their greenhouse gas emissions. One approach investigated was the production of green hydrogen through solar energy. Unfortunately, this technology is still too expensive, but may be implemented in the future if costs are lower (313-320). Another aspect investigated was to exchange the energy source for the tempering furnaces, which is a type of industrial oven used for the process of tempering. Currently, at the site in Traisen, natural gas is used for this process. With the consultants, the possibility of using other gas-similar mediums was explored. The idea was to transform hydrogen into a synthetic gas and burn it directly. However, the processing steps are delicate and transitioning from one burning medium to another is likely to significantly influence the product. Furthermore, the effort involved in all these conversions is so extensive that the process would no longer be cost-effective (400-403). Hence, exchanging the heat source for processing is still a complicated measure. But the heat used for the production site and for warming the office building was successfully exchanged from fossil fuels to renewable biogas energy produced by a wood chip

heating plant close to the production site in Traisen, delivered through a pipeline installed in the second half of 2023 (409-424).

4.8 Swietelsky AG

Swietelsky AG is one of the biggest construction companies in Austria. The company currently employs circa 12,000 people and operates in 21 countries. Its main construction output takes place in Austria (59%), followed by the Czech Republic, Germany, and Hungary (all 11%). The company operates in all branches of the building industry, including in building construction, civil engineering, road and bridge construction, railway construction, and tunnel construction (Swietelsky AG, 2023). Three years ago, Swietelsky intensified its focus on sustainability and appointed Christian Wahlmüller as the head of sustainability management. The new department is held directly accountable to the board, which is a significant advantage. This arrangement ensures strong support from the board for driving sustainability initiatives. Additionally, the company is in the process of completely renewing its sustainability strategy, which is expected to be finalised by Fall of 2023 (Wahlmüller, 27-42)

Swietelsky's Use Case:

The use case is related to minimising asphalt temperature during installation. The primary focus is on reducing the temperature required for asphalt installation from the standard 170 degrees Celsius to lower temperature, potentially as low as 120 degrees Celsius. By achieving this reduction in temperature, the installation process is expected to yield a substantial decrease in the consumption of heating materials, such as gas and oil, with the projections ranging from 30% to 40%. The ongoing experiments aim to determine how far the temperature can be lowered while maintaining the necessary elasticity of the material for on-site asphalt installation.

This reduction in energy consumption presents a substantial opportunity for both environmental and economic benefits. Swietelsky recognises the need to balance ecological considerations with economic feasibility. Notably, this initiative results in a significant reduction in CO_2 emissions. Additionally, it allows the company to offer its products and materials at a lower cost, enhancing its market competitiveness.

Nevertheless, there are regulatory challenges to overcome, as certain laws mandate specific installation temperatures, which must not be compromised. The objective is to identify the

optimal temperature range that adheres to legal requirements whilst still achieving a significant reduction. Swietelsky is conducting various projects to explore different scenarios, including standard asphalt with conventional aggregates, asphalt with recycled materials, and the incorporation of Asphalt-Lith additives. Further investigations will assess the impact of recycling materials on this additive. Swietelsky's long-term goal is to increase the use of recycled materials from the current 10-20% to 40-50%, in alignment with the principles of the circular economy. These ongoing experiments will determine the extent of Asphalt-Lith's influence on the asphalt installation process under different recycling scenarios (Wahlmüller, 75-104).

4.9 Baumit GmbH

Baumit GmbH is an enterprise that operates as a manufacturer and supplier of construction materials, with a notable focus on innovative and sustainable solutions. The company's overarching mission is to establish itself as a leading Austrian firm known for its dedication to environmental consciousness and international competitiveness. Baumit aims to diversify and expand its product portfolio to meet evolving market demands.

From its humble beginnings as a small lime kiln, Baumit has evolved into a global player in the industry of dry mortar and pasty products, with a presence in 24 countries. As a family-owned company, it upholds a strong commitment to its customers and partners. Baumit's commitment to innovation is further reflected in Baumit StarTop, the next-generation facade plaster, introduced in 2018, designed for low-maintenance facades and enhanced protection against algae and fungi. In 2021, Baumit introduced Go2morrow Recycling Beton, composed of 100% recycled aggregates.

Throughout its history, Baumit has achieved several significant milestones, including the revolutionary ALL IN Technology introduced in 2022, where the packaging becomes an integral part of the product. In the same year, Baumit expanded its presence in Germany, adding five new locations and acquiring Sakret Trockenbaustoffe Dr. Arnold Schäfer GmbH and its subsidiary, the paint manufacturer Diessner, in Berlin (Baumit, 2023).

Baumit’s Use Case:

The use case of Baumit was highly practical. The company has been involved in 3D concrete printing for six years with the aim of designing lightweight building components. The advantage of this process is that by deliberately omitting certain parts, material usage can be reduced. Given the high carbon dioxide (CO_2) intensity of the construction industry, responsible management of critical resources, such as limestone, is forward-thinking. Prior to the initiation of the collaborative project Enterprise Klima, Baumit had already been collaborating with the Technical University of Vienna, and initial experiments utilizing 3D-printing in construction were conducted. The project's goal was to implement a 3D-printed concrete ceiling in Germany and achieve a 40% reduction in CO_2 emissions (Artner, 133-214).

Figure 8: Full-Scale Test in Nördling, Germany

Figure 7: Test Sample

4.10 Ing. Baierl GmbH

Ing. Baierl GmbH, a dynamic company with a team of fifty dedicated professionals, including ten apprentices, is at the forefront of the electrical, plumbing, and renewable energy sectors. They offer a wide spectrum of services, ensuring that they meet every client's unique requirement. From the installation of photovoltaic systems and intelligent heating solutions to heat recovery systems, central vacuum systems, and luxurious wellness bathrooms, Ing. Baierl GmbH offers tailored solutions for the specific needs of their clientele. Their commitment to sustainability is exemplified by their expertise in harnessing innovative technologies for the efficient use of resources, such as wood chips, pellets, biogas, energy

grains, and solar power. As a certified installer of bio-thermal systems and heat pumps, they lead the way in environmentally friendly energy solutions.

Since becoming an independent entity within the Austrian construction conglomerate Swietelsky AG in 2018, Ing. Baierl GmbH has secured jobs in the region and unlocked new growth opportunities. This strategic alliance reflects their adaptability to industry changes while continuing to provide outstanding services (Ing. Baierl GmbH, 2023; Steinach am Forst, 2023).

Ing. Baierl's Use Case:

Baierl's use case centred on the development of cutting-edge AC and DC charging stations for public spaces. These charging stations were designed with a uniform and distinctive aesthetic, ensuring high recognition value.

The manufacturing process of these charging stations incorporated innovative, environmentally friendly technologies, emphasising sustainability and resource efficiency. This approach not only contributed to their longevity but also resulted in a reduced carbon footprint during production (Use case documentation provided by ecoplus, 2023).

4.11 Baumit GmbH & Ing. Baierl GmbH Cooperation

Engelbert Schwank and Eduard Artner, project managers, first met during the kick-off meeting at the cooperation project Enterprise Klima, and their collaboration commenced with the idea of using Baumit's 3D concrete printing technology to design the charging stations for the Baierl use case. This approach allowed for the integration of the charging technology within the wallbox, enabling a 40 KW DC charge. Two charging stations with different widths were conceptualised, offering the advantage of easy assembly through individual segments and hollow bodies. Furthermore, the reduced material usage associated with 3D printing, in contrast to a conventional concrete pillar, enhances its appeal. In terms of carbon footprint reduction, the 3D-printed charging station represents an ecologically significant alternative

when compared to a stainless-steel version, as it requires less material than a standard concrete structure. In the next steps, prototype charging stations will be installed at Ing. Baierl,

Figure 10: Prototype with AC Wallbox

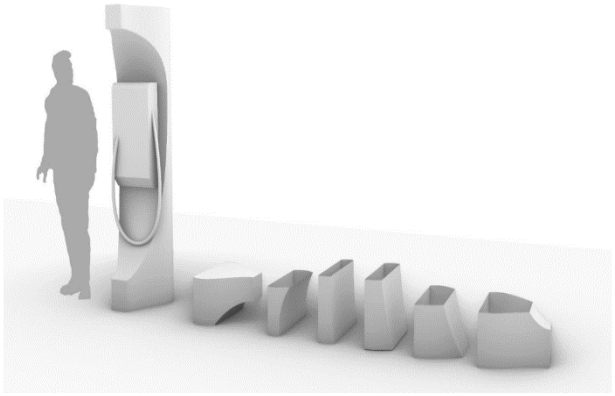

Figure 9: Schematic Structure of the Charging Station

improvements in design, functionality, and long-term performance will be derived from a pilot operational phase of one to two years.

The collaboration between the two companies was even further developed, as Baumit suggested to print a carport for electric cars with the 3D technology. The connection between the carport and the charging stations is that the carport provides a secure environment, where the e-cars can be charged. With the 3D printing methods, 30% less material was needed and consequently CO_2 emissions were saved. With this project, a perfect alignment between environmental and economic sustainability was developed (Use case documentation provided by ecoplus, 2013).

4.12 Bellaflora Gartencenter GmbH

Bellaflora's inception can be traced back to a small, locally operating nursery business. Even as the company expanded to twenty-seven locations throughout Austria, it maintained its commitment to its regional roots. Over two-thirds of the plants offered by Bellaflora are sourced from local nurseries, and the company's employees are drawn from the immediate vicinity of its locations. This community-oriented approach, characterised by mutual support and a shared pursuit of success, remains an integral part of Bellaflora's ethos.

The company's dedication to nature and the environment is further evidenced by its sustainable practices, including its product offerings. In 2004, Bellaflora introduced the "bellaflora biogarten" brand, marking the company's initial venture into organic gardening. This product range has since been expanded to encompass "edible organic plants," plant strengtheners, organic pest control measures, and natural fertilisers, including peat-free potting soils. Since 2012, Bellaflora has proudly been a member of the Climate Alliance (Klimabündnis), signifying its voluntary commitment to energy efficiency and resource optimization.

In 2013, Bellaflora took a significant step towards sustainability by eliminating all chemically synthesised pesticides and transitioning exclusively to biological pest control methods and plant fortifiers. This commitment was extended to fertilisers in 2014. Furthermore, since 2015, Bellaflora has been continuously reducing the peat content in its soils and has successfully introduced peat-free alternatives. These environmentally conscious measures underscore the company's dedication to sustainable and responsible practices (Bellaflora GmbH, 2023).

Bellaflora's Use Case:

Bellaflora's use case focused on creating the foundation for a climate neutrality strategy, with a primary emphasis on building management. This encompassed scope 1 and 2 emissions, mainly related to facility management and aspects of mobility, such as business travel and company-owned vehicles. However, the central challenge lay in addressing the heating aspect, as it was the most significant contributor to their emissions. Bellaflora does not have greenhouses of its own, but its retail spaces serve as greenhouses. They primarily function as a retail business without production facilities. The key objective was to develop a roadmap and cost estimates for transitioning away from conventional heating methods, particularly focusing on shifting from gas-based heating to photovoltaic solutions. While some of their branches had already adopted alternative heating systems like heat pumps and district heating, most of their 17 additional locations still relied on gas heating. Bellaflora recognised the unique challenges of heating these greenhouse-like spaces and the need to explore alternative heating methods (Bergthaler, 135-160).

4.13 WeAct

WeAct is a consultancy firm dedicated to facilitating sustainable transformations for businesses seeking to address their environmental impact and embrace climate-conscious strategies. With a holistic approach, WeAct offers a comprehensive suite of services across three core modules, each tailored to guide organisations in their journey towards sustainability and climate responsibility.

The consultancy company performs comprehensive assessments, examining both the potential risks and benefits from an enterprise-wide perspective over time. They derive actionable measures, considering their timeline and economic viability. Additionally, they explore opportunities related to the circular economy and waste management while assessing certified climate projects for emissions offsetting. WeAct also aids in establishing collaborations for renewable energy projects and electric mobility solutions. They outline strategic action scenarios, highlighting potential gains, risks, and costs, ultimately leading to the formulation of a climate roadmap and contingency measures to ensure operational resilience (WeAct Ökologie, 2024).

We Act's Role for Enterprise Klima:

In the project Enterprise Klima, WeAct provided important insight to the project partners, organised workshops regarding green management and EU Taxonomy and accompanied the use cases of some, but not all, project partners. The members of the consultancy group have extensive experience in the energy sector and provide hands on knowledge. Two members, Gerhard Zirsch and Christian Schiller, were interviewed for this master's thesis.

5. Analysis

In the following section, the results of the thirteen interviews will be described and summarised. As the interview partners wished to be anonymised, each interviewee was assigned to a number, ranging from one to thirteen. Therefore, the referencing will be displayed with the representative interview number together with the respective lines. **The interviews focused on the research question, namely whether and how the mission-oriented cooperation project Enterprise Klima contributed to regional industrial defossilisation in Lower Austria.**

5.1 Defossilisation through Knowledge Systems

Enterprise Klima serves as a platform fostering the exchange and development of environmental innovations among diverse companies. This collaborative environment is essential as it allows for the sharing of unique perspectives and resources, enabling the collective development of innovative solutions to environmental challenges. The importance lies in creating spaces where cross-industry cooperation flourishes, acknowledging the interconnected nature of environmental issues. Through this collaborative effort, participating companies can efficiently contribute to and implement sustainable initiatives, leveraging each other's strengths. The following subchapters explore which specific B2B cooperations resulted from the Enterprise Klima project and whether the project succeeded in creating a safe space for networking and knowledge exchange.

5.1.1 Cooperation Experimentation

The collaboration between Baierl GmbH and Baumit GmbH in the Enterprise Klima project centred around the innovative domain of 3D printing, specifically exploring applications related to concrete printing. This collaboration was characterised by the convergence of expertise from different areas, creating a synergistic partnership. The interviewees stated that their names can be displayed.

Schwank, representing Baierl GmbH in the project, highlighted the somewhat serendipitous nature of their collaboration. Despite their distinct professional backgrounds – Eduard Artner with a focus on concrete printing and Engelbert Baierl specialising in energy technology – they found common ground during the initial stages of the project. This collaboration was facilitated by their introduction and interaction at the project's early events, emphasising the role of personal connections and networking in fostering interdisciplinary partnerships. “And with Edi [Artner], two people found each other with the topics, which was really cool. I believe, we would not have otherwise crossed paths like we did at the first event” (Schwank, 196-198).

Baierl's prior knowledge in concrete printing and Artner’s expertise in the same area became a focal point of collaboration. Schwank's exposure to concrete printing was a result of his engagement in the strategy development for the Swietelsky AG, focusing on future

production methods. The strategic alignment of their interests and expertise provided a unique opportunity for collaboration within the broader scope of the Enterprise Klima project.

Their joint exploration of 3D printing in the context of concrete printing aligned with the project's objectives, showcasing a commitment to innovative and sustainable practices. The collaboration involved delving into the intricacies of concrete printing technology, exploring its potential applications and environmental implications (Schwank, 189-198 and Artner, 239-255).

> […] and someone says, hey, I have an idea, let's do it. It would never have come about if there hadn't been this ecoplus round. And now all sorts of ideas are emerging, when everyone sees, look, he can do this, he can do that, and come over here, could we do this, yes or no. And that is precisely the network, the network effect of the whole story that is very well at play there (Artner, 300-305).

This partnership exemplified the project's ethos of encouraging diverse collaborations, where individuals with complementary skills and knowledge could join forces to explore unconventional avenues for change. The Baierl-Schwank collaboration underscores the dynamic and interdisciplinary nature of the Enterprise Klima ptoject, fostering connections that might not have naturally occurred within traditional industry silos. Through their joint efforts, they contributed to the broader discourse on sustainable practices within the construction industry, particularly in the realm of 3D printing and concrete printing technologies.

Additional Collaborative Experiences

[11], on the other hand, primarily worked without further cooperation on their use case, with limited synergies observed with other companies. This demonstrates a more self-contained approach, where collaboration is centred around knowledge exchange rather than widespread engagement (411-420). Similarly, [9]'s engagement appeared self-centred and focused on their own needs. Their collaboration seemed more internally oriented, reflecting a unique role within the initiative (269-272).

[8] highlighted the importance of external suggestions, mentioning an exchange with another company on CO_2-related topics. This external input provided valuable insights, showcasing the potential for cross-industry knowledge transfer. However, the collaboration did not, so far, extend significantly beyond knowledge exchange (536-550). Similarly, [6] noted the potential for future collaborations resulting from the project, citing instances of shared contacts and interest in specific technologies (370-380). This indicates that while immediate collaborations might not have materialised, the groundwork for potential future partnerships has been laid. [4] also discussed the challenges of regulatory constraints affecting a potential collaboration with [5]: “Especially (…) where we said that we could possibly mix the slag into our asphalt, but then again, it did not work one hundred percent due to regulatory reasons, as the addition of slag to the asphalt is unfortunately considered too critical” (262-275). Despite the regulatory hurdles, [4]’s and [5]’s openness to collaboration and exploration of alternative directions showcases the adaptability of partnerships within the initiative.

In contrast, [2] expressed limited inspiration or cooperation within the project, citing disparities in the scale and nature of their operations. This reveals that the applicability of collaborative efforts may vary depending on the nature and scale of the businesses involved (457-483). Likewise, [7]'s engagement remained more at the level of information exchange, and no concrete projects emerged from the collaboration (333-336). This highlights that not all interactions led to immediate tangible outcomes. Also, [5] emphasised an outcome-oriented approach, where the company independently worked on the project's aspects and later shared results for discussion.

In summary, the Enterprise Klima project showcased a spectrum of collaboration styles, from tightly integrated partnerships (Baierl-Baumit) to more individualised and information-sharing approaches. The flexibility within the initiative allowed companies to adapt their engagement based on their specific needs and priorities. The varying degrees of collaboration reflect the diverse nature of the participating companies and their unique contributions to the overall project objectives.

5.1.2 Cooperative Learning and Benchmarking

Collaborative learning is a key element of the cooperation project Enterprise Klima, as it allows the project partners to share experiences and to safe time (and money) when introducing

sustainable solutions by building on the shered learning experience. Yet, another important aspect of cooperative learning is “benchmarking”, meaning that companies get an insight about its own sustainable status. This is important, as it might inspire them to act more forcefully or to realise that they are already pioneers in their field to discover their own market value regarding sustainable practices.

[3] stated that the project served as a catalyst, providing companies with valuable insights rather than dictating their actions. He says that it is not the role of externals to tell companies what to do, but to expand their horizon. He highlighted the importance of benchmarking against other companies, citing the observation noted by [4] that Jungbunzlauer is already a decade ahead in addressing similar sustainability challenges, which might initiate stricter sustainability projects in [4]’s company (269-278). Additionally, [9] highlighted the positive experience of gaining insights into various use cases through collaborations (446-452).

[8] agrees with [9] on the advantages of being part of a collaborative project, citing the structured nature of external involvement, shared learning experiences, and the ability to compare progress with other companies. “One can also compare. Are we perhaps more advanced in one area, or maybe one realises that, oh, the others are similarly positioned to us, and they don't have more people, but still, they are much further ahead. Why is that so?” (8, 574-577). He acknowledged the challenges of sustainability initiatives being predominantly managed by a few individuals within companies. Therefore, getting in contact with others outside of one own’s company can provide helpful insights and support (556-595). [5] also emphasised the value of the project in exposing companies to diverse use cases, allowing them to peer into other businesses. She considered this insight to be extremely valuable (260-264).

In summary, Enterprise Klima serves as a catalyst for companies, offering valuable insights without imposing directives. According to [3] benchmarking against other companies is important, with a recognition of advanced sustainability initiatives. Collaborative learning is perceived as beneficial, providing structured external involvement, shared experiences, and opportunities to compare progress.

5.1.3 Networking and Knowledge Exchange

The following subchapter provides important information on the research question, namely whether and how mission-oriented industrial projects like Enterprise Klima can contribute to the defossilisation of a region. Therefore, the questions regarding the role of networking and knowledge exchange within the project phase are displayed in more detail. The aim is to understand how support networks evolved, and knowledge exchange occurred and which influence that had on the project partner.

In the interview with [3], the interviewee reflects on the valuable insights gained from the Enterprise Klima project, emphasising the significance of networking. Coming from a distinct professional background as a salesperson, the interviewee acknowledges the paramount importance of networking, even in the absence of direct sales objectives, highlighting the intrinsic value of engaging with others due to the project's inherent importance. [3] underscores the project's role in facilitating networking opportunities, a sentiment reinforced during company visits. He specifically mentions visits to Georg Fischer Fittings GmbH, a major supplier for their installation business, where insights into production processes were gained. This experiential learning, particularly during company visits, fostered a deeper understanding of the production background, such as discovering the substantial by-products like slag in the manufacturing process. The interviewee highlights a newfound awareness of the potential reuse of materials, such as for asphalt mixtures, and the economic challenges faced by companies in disposing of seemingly non-waste materials at considerable cost. [3] acknowledges the unanticipated learnings facilitated by the project, particularly underscoring the role of project initiator Harald Bleier as a skilled networker in establishing valuable connections. The interviewee emphasises the significance of presenting one's company and the essential nature of active participation and discussion fostered by project events (235-260).

[10] also highlights the unique value he attributes to the project. He commends the project for cultivating a broad network encompassing diverse topics, extending beyond his immediate concerns and appreciates the project's role in expanding horizons through exposure to varied themes within the extensive network (218-238).

In articulating the role of networking and knowledge exchange within the Enterprise Klima project, [11] emphasises the intrinsic value of diverse exchanges, acknowledging the project's continual interest and worth. Despite the absence of identical enterprises for intensive dialogue, the interviewee underscores the importance of a mixed participant pool, asserting that direct competitors might hinder open discourse (239-250). Notably, the interviewee contends that while energy-related concerns are not in the core or daily operations of their business, exchanging insights with others becomes invaluable. Drawing parallels to the collaborative dynamics observed in startups, the project is viewed as analogous to a startup within a company, initiating the exploration of energy-related themes. Furthermore, [11] articulates the imperative for companies to navigate the societal expectations of transitioning away from fossil fuels. While the primary focus remains on maintaining comfortable indoor environments, ensuring the availability of electricity, and attracting customers, the broader societal responsibility towards sustainable practices, driven by the looming challenges of climate change is acknowledged (345-366). The interviewee contends that engaging with other companies is vital to explore possibilities in areas such as contracting and identifying competent partners who can address energy-related concerns to some extent (377-396).

> But to truly take responsibility for one's own energy consumption is the challenge. And there, as mentioned, I believe it is very important to have an exchange with other companies and to explore what possibilities exist in the example of contracting. What good partners are there who can take care of the issue for us to some extent (11, 375-381).

[9] further highlights the internal project goal of intensifying their engagement with sustainability, gaining insights into the practices of other companies. The engagement is highlighted through the appreciation of the company visits. These visits were perceived as captivating, providing an opportunity to understand the approaches of different companies in addressing the shared challenges of sustainable production sites. The exchange of ideas and discussions during these visits enabled the participants to learn from one another, contributing to a broader perspective on the industry (287-300). Additionally, [9] recalls the value derived from expert presentations during the project, particularly praising the contributions of jurists elucidating the EU taxonomy and legal frameworks. These presentations, covering topics such as legislation and regulations, offered valuable insights

that facilitated a deeper understanding of the legal landscape (393-399). The emphasis on the exchange of practical solutions and modernisation processes within companies emerges as a recurrent theme, underscoring the collaborative and educational nature of the Enterprise Klima project.

[8] states that Enterprise Klima held immense value for fostering collaboration among companies from various sectors. Bringing together diverse businesses allowed the project partners to collectively address similar challenges and share insights. Personally, the interviewee found this collaborative platform beneficial and established direct contacts with project leaders from other companies. Engaging in direct exchanges enabled a deeper understanding of each other's projects and challenges (522-529). The project encourages a comparative analysis of progress, offering a valuable opportunity to assess ones standing in comparison to other firms (572-578). In his experience, project meetings are pivotal, serving as forums for in-depth discussions during project leader sessions. These meetings strategically focus on specific topics, allowing for the exchange of ideas, conducting of internal surveys, and the identification of key priorities. This flexibility ensured that the project partners concentrate their efforts on the issues that matter most to their company's sustainability goals (605-614). In essence, Enterprise Klima, from his perspective, serves as a dynamic and collaborative platform that facilitates knowledge exchange, strategic alignment, and a collective commitment to addressing industry-specific challenges.

[6] reflects on the positive impact of the Enterprise Klima project, emphasising the valuable connections and insights gained. “(…) we have actually encountered many interesting individuals in Lower Austria who are involved in numerous different projects that I was not been aware of before” (205-211). Notably, through Enterprise Klima, collaborations and knowledge-sharing opportunities emerged, citing the example of expertise exchange regarding methane pyrolysis with another project partner (222-228). Therefore, [6] states, that the project provided a platform for diverse workshops where experiences from existing projects were shared, offering valuable perspectives (278-291). Furthermore, [6] highlights the collaborative exchange with other project participants, particularly major industrial enterprises, focusing on common projects related to photovoltaic and wind energy. The exchange allowed for shared learnings and insights by addressing similar challenges. He acknowledges the universal interest in transitioning from gas as a prevalent theme among

participants, leading to engaging discussions on this topic (278-291). Regarding the learning experience, [6] points out the significance of understanding the intricacies of the approval process for projects like photovoltaic and wind installations. While he personally deals less with the technical aspects, the challenges posed by the approval phase were a common concern (292-306). [6] also underscores the importance of sharing knowledge: "(…) to disseminate our knowledge, let's say, also to smaller companies. Establishing contacts, of course, regionally. And also, to see, in which direction are we headed" (319-321). Reflecting on knowledge exchange, [6] finds value in interactions with company [1], witnessing their progression from the project's initial stages and their commitment to a clear climate strategy. He emphasises the importance of personal meetings within Enterprise Klima, noting that such gatherings foster new connections, discussions, ideas, and influences, providing diverse perspectives and approaches (352-359).

In the context of the Enterprise Klima, [4] acknowledges the project's pivotal role in expanding networks and cultivating valuable connections with a myriad of companies. Numerous instances have arisen for initiatives, which without the project would have remained inaccessible due to a lack of contacts. One of the project's fundamental aspects, as perceived by [4], lies in the extensive network established and the rich exchange of ideas emanating from diverse firms. The compilation of insights from different project partners stands out as a particularly intriguing aspect, providing a valuable repository of ideas that, while not always directly applicable, fuels innovation within the organisation. [4] notes that this collection of ideas has empowered the team to present several concepts to the board, leading to a responsive stance from the leadership. Even in cases where not all proposed initiatives are greenlit, the mere exposure of novel possibilities, such as the consideration of wind turbines, has contributed to fostering a more open and exploratory corporate culture. This cultural shift facilitates a proactive consideration of various innovative ideas and approaches within the company, creating an environment where the leadership, including the board, is more receptive to embracing novel and diverse initiatives. The Enterprise Klima project, from [4]'s perspective, serves as a catalyst for fostering connections, ideation, and a corporate culture that is receptive to progressive and sustainable initiatives (231-246).

"So, it is very wise when many companies come together on a particular issue" (7, 267-268).

[7] shares her experience in the Enterprise Klima project, emphasising the importance of networking and knowledge exchange. She recounts how another project partner recommended ETA Environmental Management GmbH, a well-established company specialising in environmental management certifications since the 90s. Despite being a smaller firm, ETA is noted for its grounded approach and practical assistance to companies navigating environmental challenges (193-203). [7] highlights the wisdom in companies collaborating on common issues, such as environmental concerns. She underscores the benefits of collective learning from presentations and information-sharing, citing a specific meeting focused on scope calculations as an example of universally engaging content. The interviewee finds the diverse array of companies involved in Enterprise Klima intriguing, recognising that each, including the companies Bellaflora and Welser, brings unique demands and perspectives. The ability to exchange insights with peers in similar roles across different organisations is deemed invaluable (267-286). Additionally, she emphasises the significance of the resulting collaborative network, viewing it as essential for subsequent projects. [7] appreciates the mutual learning facilitated by companies connecting and emphasises the value of exchanging tips and tricks with colleagues facing similar challenges in their respective companies. The interviewee concludes by expressing her enthusiasm for the ongoing and evolving collaborative projects, stressing the essential role of networking and shared learning in fostering sustainable practices among diverse companies (399-402).

[1], reflecting on the Enterprise Klima project, acknowledges the diverse nature of the topics addressed, spanning various levels of complexity. She notes that while certain learnings, such as energy efficiency improvements and broad-level carbon footprint calculations, can be readily applied across projects, challenges arise when projects delve into intricate, process-specific details or involve disparate measures (255-237). She further explains the difficulty in translating certain initiatives between companies due to these variations. The art of the project, as she sees it, lies in navigating these differences effectively. Exchange of insights, she believes, predominantly occurs through interpersonal connections rather than formal presentations, in her case especially with the sustainability manager of another participating company. Despite allocating significant time to project updates, she suggests that the real value emerges during casual conversations where participants share experiences, challenges, and lessons learned. This human aspect of interaction, according to [1], is crucial for mutual

learning and problem-solving (301-316). The collaborative atmosphere, however, fosters a supportive environment where professionals can freely inquire about each other's approaches, avoiding potential pitfalls and leveraging shared expertise. Therefore, [1] highlights the positive dynamics and hopes that such camaraderie will persist, creating a network where individuals can reach out for advice and guidance (333-343).

[5] expresses that the level of engagement in the Enterprise Klima project was satisfactory for her, given that her professional focus aligns precisely with the project's objectives. While she personally did not feel the need for additional involvement, she highlights that meaningful exchanges did occur, particularly with the project manager of the above-mentioned company. “For me, it was basically sufficient because my area of activity was precisely targeted in that direction. And I wouldn't really have needed more directly. However, with the company (…), there was still more exchange. And that was really a great time ultimately because it was also an exchange beyond these topics” (244-249).

From an external viewpoint, the networking and knowledge exchange processes during the project phase are analysed by the two consultants who were engaged in Enterprise Klima. According to [13], it is evident that certain informal networks have swiftly emerged within the project. Notably, sustainability managers, particularly the female participants, actively exchanged contact information and engaged in continuous communication outside the formal project framework. Whilst a similar trend was observed among male participants to a lesser extent, these networks have unmistakably formed and are contributing to ongoing communication and collaboration among project members (202-208).

[12] agrees with [13]’s opinion and adds that the cooperation between the experts and the participating companies has been notably strong. The firms seem content with the interaction, but there might be room for improvement in the exchange of learnings, as attendance varied among participants. Encouraging a more proactive and creative approach to showcasing projects during meetings could enhance the sharing of insights (176-193). In terms of mutual assistance among the companies, there is evidence of firms providing support to each other, particularly in highlighted instances such as the notable projects involving 3D printing by Baumit and the charging station by Baierl. Additionally, interactions during events, like Testfuchs connecting with other companies, facilitated valuable exchanges where newcomers

in certain roles sought information and assistance from more experienced counterparts, fostering a sense of support and collaboration among the participating firms (194-205).

5.2 Defossilisation by Mediating Policy Conditionalities

As explained in chapter *2.3 Challenge-Orientated Innovation System*, conditionalities are the set of rules that outline what a company needs to do. Designing these rules is tricky because it requires finding a balance between giving clear goals (like reaching net zero) and avoiding too much control, which can stifle innovation. It's also important to consider local opportunities and challenges during this process (Mazzucato, 2023, pp. 6-8). In the following, the opinion of the interview partners regarding policy conditionalities will be displayed.

> A clear no, they [the politicians] are not capable of [a hydrogen strategy]. And essentially, it's just a gut feeling, the industry will be the one driving it more than the guys up there. Because, we will have to fulfil the whole thing (10, 424-426).

The interview with [10] explored the prospects of a coherent hydrogen strategy and the likelihood of a successful transition towards large-scale implementation. He expresses scepticism regarding the competence of policymakers, asserting that industry initiatives will likely drive significant change rather than government actions. He emphasises the need to focus on achieving energy goals, irrespective of the specific energy form, be it hydrogen, battery, or others. According to [10], the key is to define the required energy reduction, leaving room for competition among technologies to achieve the set targets (421-437). Furthermore, [10] illustrates a simple approach to harnessing solar energy by covering millions of roofs with solar panels. However, he acknowledges challenges such as energy storage issues and the necessity for infrastructure development, emphasising the need for a national program to connect roofs to the main power grid. He criticises bureaucratic obstacles and the lack of a proactive approach to address regulatory barriers, suggesting that a pilot project could pave the way for regulatory adjustments based on practical experience. He concludes by highlighting the reluctance to open existing regulations, citing the need for a shift in the political will to foster innovation and sustainable solutions (444-472).

[2] reflects on the prevalent perspective in Austria that a complete overhaul is necessary. He recalls an instance involving an important politician, who expressed intentions to revolutionise entrepreneurs and show them the way to sustainability in a forceful way. This drastic approach made him angry, and he stresses the importance of acknowledging what is feasible and what is not. While supporting the idea of progressing along a predetermined path, [2] states the importance of maintaining practicality to ensure sustainability. He advocates a balanced approach, incorporating both business and political considerations, suggesting that finding a middle ground will pave the way for successful outcomes in both sectors (118-128).

> The Ukraine crisis was indeed a significant change in our project because we were examining a use case involving applications based on natural gas. However, this had to be swiftly removed from the agenda due to the shortage of gas and delivery bottlenecks (6, 37-41).

According to [6], the Ukraine crisis marked a significant shift in their project, particularly when examining a use case involving applications based on natural gas. Due to the gas shortage and supply disruptions, certain aspects had to be swiftly removed from their agenda. The carbon savings of individual projects were quantified in terms of CO_2 tons, and the necessary reductions were determined. However, these calculations involve variable factors, necessitating continuous monitoring. There remains a challenging timeline for the decarbonisation goal, particularly with substantial geopolitical influences like the ongoing Ukraine crisis (37-41; 144-151). In addition, [6]'s company is currently benefitting from a free allocation, anticipated to be lost around 2030. The finalisation of this matter is still under discussion at the EU level, with the reduction plan being a subject of scrutiny, especially by legislative bodies, as it directly affects them (427-431).

[4] discusses the regulatory challenges in the context of sustainable energy projects. He acknowledges that some regulations are not entirely negative and should not be demonised. For example, he points out the difficulty in implementing large wind turbines due to the mandated distance of 1.2 kilometres between residential buildings and turbines, yet likewise expresses understanding of the concerns regarding noise of the local population. Despite these obstacles, he notes the gradual progress, with Lower Austria leading in infrastructure development and zoning, although Upper Austria is gradually catching up (173-184). Regarding his own company, "wind power is, of course, yes, also a topic, but the regulations

are insane" (161-162). Currently, progress in this area is not straightforward due to the large distances required by regulations making implementation extremely difficult, if not impossible, considering their operational locations (161-166). Regarding the broader realm of environmental innovations, [4] asserts that policies are lagging, hindered by various political dynamics. Over the past decade, regulatory preparations have been insufficient, causing delays in implementing sustainable practices. He highlights challenges, including the slow adaptation to innovations, as seen in the lagging development of the power grid. The statement underscores the need for more robust and timely regulatory frameworks to support the transition to sustainable energy (173-200).

[13] highlights a prevalent issue in Austria concerning sustainable practices, particularly in the context of waste recycling. He states that the regulatory landscape in the country poses significant hurdles for companies aiming to implement sustainable initiatives. The stringent regulations, perceived by the interviewee as influenced by specific interest groups, present challenges for businesses seeking to recycle their own waste. The requirement to hand over waste to designated collectors and the complex process of becoming a certified waste handler with specific business licenses act as substantial barriers to innovation. These regulatory obstacles discourage many companies from engaging in recycling practices, illustrating a broader challenge within Austria's regulatory framework for companies pursuing sustainable endeavours (170-184).

> When you look at the whole thing, we should be concerned. Especially in Austria, if nothing progresses. We have complete stagnation. Currently, politics is working completely in a different direction, perhaps because it is lacking in knowledge and information. (…) There is no pulling together in a common direction, and the "Floriani principle" still applies, where everyone supports wind parks everywhere but not in their own backyard. (12, 58-66).

[12] points out the need for swift action, especially in the realm of mobility, which contributes significantly to greenhouse gas emissions. Proposing a pragmatic approach, he advocates the rapid adoption of appropriate vehicles and infrastructure, focusing on technological solutions rather than ideological considerations (58-71). To address knowledge gaps and varying

expertise levels, the interviewee recommends prioritising education and training, particularly in universities and universities of applied sciences. He envisions targeted education programs that channel expertise toward sustainable management, providing both technical know-how and strategic insights. The emphasis is on practical skills, such as planning and implementing renewable energy solutions like hydrogen storage. The interviewee underscores the importance of cultivating a workforce equipped with the knowledge to guide businesses and governments through the transformative journey toward sustainability (80-103).

Like [4] and [12], interviewee [1] discusses challenges related to wind energy projects “as we were just talking about the wind turbines, we are facing challenges because, from a spatial planning perspective, the area is not zoned. Or, from a spatial planning perspective, we are dealing with a Natura 2000 area” (178-181) which makes construction of wind turbines nearly impossible. The questions raised by [1] include how to address these challenges, who to approach, and which alternatives exist. The context shifts to political involvement, questioning which level of government is responsible and seeking clarity on who will drive expansion and provide the necessary investment. There is an acknowledgment that industries play a role, but the expectation is for collaboration between industries and the government (178-208).

Additionally, [1] highlights the need for guidance and support from political entities, specifically citing the example of Lower Austria’s clear goal to expand renewable energy sources but a lack of clarity on how it will be executed. The interview highlights the importance of communication between industry and government, suggesting that sharing project results can lead to constructive exchanges. The presence of influential figures like the former environmental minister Eva Glawischnig, is noted for the potential to facilitate connections and share expertise, reinforcing the idea that collaboration and knowledge-sharing between industry and political figures are essential for navigating the complexities of sustainable initiatives (210-218).

In summary, diverse opinions on sustainable policies prevail among the project partners. Some express scepticism about policymakers' competence, emphasising industry-driven change and competition among technologies [10]. Others advocate a balanced approach, considering both business and political factors [2]. The Ukraine crisis has severely impacted projects [6], whilst regulatory challenges hinder the expansion of renewable energy, like wind

power exploration [4]. Similarly, companies wishing to implement internal waste recycling face hurdles due to stringent regulations [13]. Hence, concerns over stagnation are attributed to political inertia and a lack of knowledge [12]. Recommendations include prioritising education for a workforce equipped with sustainable practices [ibid]. The collaboration between industries and the government is seen as crucial, with influential figures facilitating knowledge-sharing [1].

5.2.2 Influence of EU Regulations

"Without the regulations imposed by the EU, most of the companies that are now getting involved would not be doing so" (11, 463-464).

During the interview with [11], the project partner discussed the growing importance of sustainability control in response to various EU regulations, such as the EU taxonomy. The interviewee acknowledges the increasing requirements imposed by the EU, particularly in the context of sustainability reporting. While her company has voluntarily reported since 2013, it now faces the transition to annual reporting, reflecting the evolving landscape of EU regulations (41-47).

Furthermore, [11] highlights the long-term impacts of EU regulations, including the CO_2 taxes and other mandates, expressing approval for the external pressure placed on businesses (340-343). Yet, she delves into the challenges of calculating carbon footprints, especially Scope 3 emissions, and the need for collaboration among retailers to share insights on sustainability practices (381-396). Although it is a complicated endeavour, the interviewee emphasises that without EU regulations, many companies would not proactively address sustainability concerns, especially in the context of supply chain laws (463-464).

Also, [11] underscores the significance of EU regulations in influencing corporate behaviour regarding ethical sourcing and labour practices. The mentioning of the challenges faced by companies already taking proactive measures, particularly in terms of Green Claims and the administrative burden of certification, adds complexity to the regulatory landscape. In summary, the project partner expresses a dual perspective on the regulatory changes: on the one hand recognising the necessity for sustainable business practices while on the other hand acknowledging the challenges and resource implications for businesses in adhering to these

standards (474-482). She stresses the need for businesses to prioritise ecological and social considerations over profit maximisation and advocates a regulatory framework that ensures businesses operate within societal and planetary boundaries (498-512).

[8] emphasizes that his company's approach to sustainability, as reflected in the Supplier Code of Conduct, predates certain elements of EU regulations. Whilst acknowledging that the EU has addressed some of these issues in separate components, the interviewee notes that his company has integrated and implemented them within its supply chain for quite some time (110-115).

[9] expresses the perspective that certain issues, particularly those related to international matters and EU regulations, are being addressed at the company level, with a positive outlook on finding regional responses. He believes that as an individual company, there might be limited actions beyond adapting to the economic, ecological, and environmental situation and outlining a path forward (351-357). [9]’s statements acknowledge the company's proactive approach, taking advantage of opportunities presented by international and EU-related themes. The project partner mentions the anticipation of the years 2025 and 2026, especially in the context of taxonomic steps and company audits. There is a sense of uncertainty regarding whether these measures will significantly contribute to decarbonisation and the achievement of the 1.5-degree climate target, and he indicates a sceptical opinion that, for his company, it might not have a substantial impact (475-480).

[2] expresses scepticism about the impact of certain regulations on small businesses. He believes that many small enterprises, including his, often operate below the regulatory radar. Regarding the Supply Chain Law, the interviewee mentions that he is currently implementing what seems like logical steps for him. However, he expresses uncertainty about the future implications and acknowledges the likelihood of increased complexity. “As with most things, there is a fear that it will become more complicated, and simplicity is certainly not a given when it comes to such regulations. Let's wait and see” (448-450).

In [4]’s statement about his perspective on the impact of the EU's new regulations, including the EU Taxonomy and ESG (Environmental, Social, and Governance) measures, the interviewee describes it as a delicate balance between genius and madness. He expresses

hope that these regulations will be a stroke of genius rather than leading to chaos. He acknowledges the potential for positive outcomes and opportunities but also warns about the risks, suggesting that if not managed properly, the regulations could result in economic stagnation and parts of the economy collapsing. [4] raises the concern that EU-produced products might become too expensive and lose competitiveness on the global market, emphasising the challenge of maintaining a balance. He mentions the difficulty of applying the same regulations to products imported into the EU, expressing doubt about whether such equilibrium can be achieved. Overall, [4]'s opinion reflects a cautious optimism about the potential benefits of EU regulations but also a recognition of the challenges and uncertainties involved (201-220).

> (…) we received again this week a questionnaire from a client where all these topics are queried: supply chains, environmental protection, compliance, anti-corruption, labour law, human rights, etc., etc. And there are so many questions in there where you think, yes, of course, it's logical that we adhere to them, but you must document it somewhere or be able to prove it" (7, 219-225).

[7] expresses that while the EU is making decisions that become mandatory for companies above a certain size, there seems to be a lack of active preparation or support for businesses. She notes the importance of proactively engaging with these topics and expresses that without personal involvement, she does not perceive much external assistance for companies in actively preparing for these regulations (371-378).

In his statement, [13] expresses his opinion on the question of whether the EU has achieved something positive with the new regulations they are implementing. He states that the EU is moving in the right direction and emphasises the importance of the EU protecting its own industries, particularly in the context of lessons learned from the COVID-19 pandemic and supply chain issues. The interviewee acknowledges the tension between the desire to re-establish key technologies in Europe to reduce dependency on supply chains and the current challenge of facing significant competitive disadvantages (372-384). Moreover, he points out that while there is an effort to bring back industries, there is a temporary decrease in competitiveness. [13] expresses concern about the Carbon Border Adjustment Mechanism

(CBAM), stating that the current EU draft only includes raw materials or semi-finished materials in this mechanism. This, in his view, poses a problem because if finished products are manufactured in Asia using materials with high carbon intensity, they may become significantly cheaper at the border. The worry is that the current CBAM design does not effectively address this issue (397-406).

[5] expresses a nuanced perspective on the EU's active engagement with sustainability issues through regulations. She acknowledges the positive aspect of the EU taking an active stance on the matter and advancing it through regulations. However, being in the metal processing industry, she raises concerns about whether being seen as a global pioneer in these regulations might result in a competitive disadvantage for the EU on a global scale. The project partner recognises the value and importance of addressing sustainability issues but expresses scepticism about potential global implications that may not necessarily be positive (67-83).

Moreover, [1] sheds light on the resource challenges faced by companies in meeting EU regulations. While acknowledging the positive aspects of EU initiatives, the speaker emphasises the difficulty of translating these regulations into practical, on-the-ground actions. The need for substantial organisational efforts to raise awareness and build expertise across different departments illustrates the resource-intensive nature of compliance with evolving sustainability standards (160-167).

5.2.3 External Pressures and Regulatory Support

[11] and [9] acknowledged the positive impact of external pressures such as CO_2 taxes and EU regulations. [9] emphasis that cooperation becomes more likely with external support, especially when there are government incentives. He acknowledged the effectiveness of the "carrot and stick" approach in promoting sustainable practices (446-452). [11] states that external pressures are important to support to introduce sustainable practices in companies (336-343). They noted that regulatory support acts as a catalyst for sustainability initiatives within companies.

[2] underscored the significance of initiatives like "Enterprise Klima" in initiating actions for greenhouse gas reduction. He stressed the role of such missions in driving innovation, particularly when relying solely on market mechanisms might prove inadequate (485-493). [6]

recognised the project's importance for knowledge sharing and collaboration but indicated that, for larger companies, the sole reliance on regional projects might be insufficient for fostering significant change. He highlighted the need to also learn from larger enterprises outside the region (311-330).

5.3 Defossilisation through Invested Actors

Enterprise Klima was designed to give the Lower Austrian industry a guide towards industrial defossilisation and to ultimately introduce sustainability in the companies. Therefore, it is interesting to see what sustainability means for the respective interview partners, which role it has had prior to the project for the companies and whether they are pioneers in the field; meaning if they are developing or are applying environmental innovations within their companies.

5.3.1 Personal Significance of Sustainability

In this compilation of interviews, diverse perspectives on sustainability are illuminated, providing a nuanced understanding of how individuals from various sectors perceive and engage with the pressing issue of climate change.

[3] views climate change not merely as a looming threat but as an opportunity for innovation within his company. He asserts that his company's subsidiaries recognise the changing climate as a chance to address specific issues such as avalanches and climate damage. Despite emphasising the proactive involvement of his company in mitigating climate damage, [3] expresses concern about the absence of younger voices in the discussions. His unease is rooted in the predominantly older demographic in the industry, raising apprehension about the responsibility of addressing climate issues falling onto future generations. This reveals a dichotomy between proactive efforts in climate mitigation and a palpable concern for the generational transfer of responsibility (65-92).

Contrastingly, [10] adopts a sceptical stance on human behaviour and its capacity for proactive change. This interviewee asserts that significant shifts only occur under the driving forces of overwhelming greed or intense pain, expressing a long-standing disillusionment with humanity's collective engagement in forward-thinking attitudes. [10] laments the difficulty of motivating billions to think collectively and strategically, highlighting a recurrent pattern of

short-sightedness until confronted by extreme circumstances. This perspective reflects a profound scepticism about the likelihood of sustained positive change in human behaviour which starkly contrasts the optimism of [3] (541-552).

[2] shifts the focus to regional development, emphasising its significance beyond the efforts of individual producers or entrepreneurs. He underscores the broader positive impact on individuals, families, and communities, asserting that fostering regional ties is not only environmentally beneficial but also economically and socially advantageous. The interconnectedness of environmental, economic, and human factors in regional development is emphasised, contingent on the consistent production of high-quality goods. This perspective aligns with a holistic approach that intertwines environmental, economic, and social considerations, demonstrating a convergence of interests with [3]'s emphasis on proactive involvement (154-159).

> [Sustainability] is deeply rooted in me, extremely so. Personally, I have already insulated my house, installed a photovoltaic system, drive an electric car, and in terms of nutrition, I have made changes. That's in the private sphere (4, 20-24).

[4] introduces a personal and professional dimension to the discourse. [4] exemplifies a holistic commitment to sustainability, implementing various eco-friendly practices in his private life and emphasising the substantial challenge posed by climate change within his company. This holistic perspective, spanning personal lifestyle choices to corporate strategies, aligns with the integrated approach advocated by [2]. However, [4] adds a visceral element by expressing fear both personally and professionally, particularly for his children who are on the brink of facing severe impacts of climate chance. This emotional dimension amplifies the urgency of addressing climate change, echoing [5]'s later admission of personal and professional fear, reinforcing the collective recognition of the undeniable consequences of climate change (18-26; 42-47).

[5] echoes the fear and concern expressed by [4], stressing the apprehension felt in both their personal and professional life. This interviewee candidly acknowledges the fear experienced both personally and within the organisation, emphasising the undeniable reality of climate

change and the urgent need for collective action. The convergence of emotions between [4] and [5] underscores a shared concern within the companies, pointing out the palpable impact of climate change and the imperative for collective engagement (356-366).

In summary, while there are points of convergence, such as the recognition of climate change as an opportunity for innovation and the importance of holistic approaches, there are also notable divergences in perceptions. These range from a proactive stance rooted in the belief of the human capacity for positive change, to a sceptical view that anticipates significant shifts only under extreme conditions. The interviews reflect the multifaceted nature of sustainability perceptions within different sectors and individual contexts.

5.3.2 Role of Sustainability in the Companies

We manage our business sustainably for ourselves, or from our perspective to a certain extent, because operational activities are always geared towards sustainable profitability (9, 87-89).

While exploring the role of sustainability within different companies, it becomes evident that each project partner approaches this critical aspect with a unique blend of historical context, strategic decisions, and forward-thinking initiatives.

[10]'s company focuses on refining existing practices within its corporate strategies. The interviewee points out a commitment to sustainability, with a specific focus on reduced energy consumption and the integration of renewable resources. Unlike other companies, [10]'s approach involves a dedicated exploration of formulations with diminished binding agents and reduced cement content while maintaining optimal performance. This strategic approach positions the company at the forefront of sustainable business practices within the industry (111-122).

[11]'s company shows a longstanding commitment to organic plants, particularly herbs and vegetables, dating back to the 2000s. A formal initiative in 2010 prompted a strategic evaluation, leading to the internal cessation of chemical-synthetic fertilisers in 2012 and the complete elimination of chemical-synthetic pesticides in 2013. Currently, only pesticides approved for organic farming are included in its inventory. The discontinuation of chemical-synthetic fertilisers followed in 2014. These initiatives, coupled with the transition to 100%

eco-friendly electricity around 10-12 years ago, underscore significant milestones in the company's dedication to sustainable and organic practices (66-84).

In contrast, [9] perceives sustainability as being of inherent economic value. The company's commitment is deeply rooted in familial values, with an active contribution to responsible practices for economic sustainability. The interviewee stresses a standard practice of incorporating recyclates into operations, continually exploring their use. The application of recyclates varies based on quality, with pharmaceuticals being an exception due to the need for material transparency (87-106; 481-490).

[8]'s company distinguishes itself with a long-standing engagement with sustainability, particularly in the context of reporting, dating back to the 1990s. The company has evolved from providing rudimentary sustainability reporting to being globally recognised, consistently placed among the top 100 in global sustainability rankings. The formation of a dedicated sustainability strategy in 2020 marked a notable shift in the company, departing from a traditionally finance-oriented approach (159-169; 170-224).

[6] outlines a strategic decision made in 2020 to establish sustainability as a long-term core goal. "(…) the decision was made within the business concept to set [the climate-neutrality] goal with the support of the owner family as a long-term fundamental objective. To achieve this goal, the Sustainability Team was established within the organisational structure" (110-113). In alignment with this overarching objective, a more immediate target was set—the company aims to achieve a 25% reduction in greenhouse gas emissions by 2030 in Scopes 1 and 2, with additional engagement targets in Scope 3 (110-140).

The company of interviewee [4], intensified its focus on sustainability three years ago. Benefiting from direct oversight by the executive board, this strategic advantage ensures full support from the board for driving sustainability initiatives. The company is currently in the process of developing a comprehensive sustainability strategy, involving various initiatives such as optimising the entire car fleet, implementing photovoltaic systems, and undertaking projects like reducing asphalt temperatures to achieve significant carbon dioxide savings (27-68).

In 2021, [5] assumed the role of sustainability lead at her company, a position reflecting the company's commitment to environmental and energy management systems certified by ISO 14001 and 50001 for decades. Despite its recent establishment, the role signifies a renewed organisational consciousness around sustainability. “For example, in May, we had a Sustainability Awareness Day, a full day with all executives, where sustainability was discussed according to each department, in a sense. Each department almost had its own discussion, and thus, a significant awareness has been gained by now” (37-41). [5] anticipates a continuous evolution of this awareness, especially given the multifaceted challenges posed by EU regulations (5, 27-41).

This comprehensive exploration highlights the diverse nature of sustainability initiatives across different companies. Whilst some companies have a historical grounding in sustainability, others are strategically pivoting towards sustainability as a core business objective. The nuances in their approaches showcase the complexity of integrating sustainability into corporate strategies, balancing economic imperatives with environmental responsibility. The shared commitment to sustainable practices, albeit manifested differently, underscores the global imperative for businesses to embrace sustainability as a fundamental aspect of their operations.

5.3.3 Environmental Innovations

The discourse surrounding environmental innovation reveals a spectrum of attitudes and strategies among different companies. The critical stance of [9] towards the concept of environmental innovation sets the stage for a nuanced exploration of the theme. “The plastics industry has always been a pioneer. However, it is not present in the media that the plastics industry has always been using recycled materials” (9, 124-126).

The interviewee exhibits a sense of resistance and scepticism, dismissing environmental innovation as a cliché term without a clear and precise meaning. He questions the specificity of the term "innovation" within the environmental context, suggesting that environmental considerations are inherent in various industrial processes. When presented with examples such as sustainable water management and energy efficiency, the interviewee redirects the conversation to historical practices within the plastics industry. He emphasizes that the plastics industry has been using recycled materials since the 1980s, framing it as a standard

and longstanding practice rather than an innovative shift. The interviewee underscores the energy-intensive nature of plastic processing and the industry's commitment to energy-efficient practices that he already encountered in the 1980s. This dismissive attitude underlines a perceived gap between conceptual environmental innovation and the practical, historically grounded approaches in industrial sectors (107-136).

Contrastingly, [10] demonstrates a proactive and innovative approach to environmental considerations. The company's entry into 3D printing is portrayed as a response to the owner's vision and a strategic move within the construction sector. Unlike [9], [10] positions his company as an advocate for environmental innovation, actively venturing into new territories to align with evolving regulations and sustainability imperatives. The company's commitment to 3D printing is presented as a strategic response to the stagnation observed in the construction industry's historical resistance to innovation. The interviewee subtly critiques the construction industry's slow uptake of innovations, by giving the example of the durability of the conventional brick for over 2000 years and contrasting it with the dynamism of other sectors. This narrative underscores the company's forward-thinking approach to environmental innovation and positioning the company as a pioneer within the construction industry (50-61; 195-199).

[8] introduces another perspective by raising the topic of sustainability-based product certificates. The company employs approximately fifteen auditors dedicated solely to product certificates, emphasising the importance of these certifications in their operations. "They examine all the processes; each person has their own focus, and we have a colleague from product management who supports us in that, and he handles the whole thing" (295-298). Therefore unlike [10]'s, [8]'s company perceives its strength not in groundbreaking product innovations but in providing an additional avenue to address sustainability. This pragmatic approach is positioned as a valuable alternative for customers seeking practical and applicable certifications, highlighting the company's adaptability to the changing landscape of environmental considerations (294-303; 370-391).

The exploration of electric battery-powered construction vehicles explained by [4] presents yet another facet of the environmental innovation landscape. The company conducts trials on smaller construction sites with positive feedback from the team, illustrating the potential

of electrically powered equipment. However, challenges emerge when considering the significantly higher costs associated with larger construction equipment, raising economic viability concerns. This discussion reflects the real-world challenges companies face in adopting environmentally friendly technologies, emphasising the delicate balance between economic feasibility and environmental impact. The commitment to ongoing research explained by [4] signifies a forward-looking stance, acknowledging the evolving nature of technological developments in this field (75-134).

Project manager [7] discusses the company's forward-looking approach to hydrogen and explains their proactive stance even before the emergence of widespread attention to hydrogen. The initiative originated during the COVID period when the aviation sector experienced a downturn. Faced with economic uncertainty, the company initiated a Think Tank, encouraging employees to contribute ideas on utilising their expertise in alternative sectors. The hydrogen initiative emerged from this collaborative effort, leveraging the company's existing experience in hydrogen applications, particularly in aerospace, where the company had been involved with low-pressure valves for hydrogen use. "We have already gained experience in the field of hydrogen (H_2), meaning the topic itself is not entirely new for us. So, it evolved from there, and this hydrogen-powered electricity generator, the H_2 Jetset, subsequently emerged from this think tank" (109-114). The company is proud to have developed the H_2 Jetset, a hydrogen-powered generator, showcasing their commitment to exploring innovative solutions beyond their traditional focus on aerospace engineering (92-114).

Furthermore, [5] provides insights into several technical initiatives aimed at reducing the company's ecological footprint. From strategic emulsion use to electric mobility, 3D printing, and innovative recycling practices, this company portrays a comprehensive commitment to sustainable practices. The initiatives encompass diverse aspects of the production process, with a focus on resource efficiency and waste reduction. This multifaceted approach distinguishes [5]'s company as actively engaged in environmental innovation across various dimensions of its operations (94-138).

In summary, the interviews examined in this analysis offer a rich tapestry of perspectives on environmental innovation. The critical stance of [9] underscores the conservative perception

associated with defining and implementing environmental innovation. Contrasting [9]'s position, [10] and [7] emerge as proactive advocates for environmental innovation within their sectors, positioning themselves strategically in response to evolving regulations. The emphasis on sustainability-based product certificates by [8] showcases a pragmatic approach, adapting to changing environmental standards. The exploration of electric battery-powered construction vehicles by [4] highlights the challenges and ongoing research in adopting environmentally friendly technologies. Finally, [5] presents a comprehensive commitment to sustainable practices, demonstrating environmental innovation across various facets of its operations. These nuanced perspectives collectively demonstrate the complex and evolving nature of environmental considerations within diverse industrial contexts.

5.4 Defossilisation through Niche Creation

In the modern world, the day-to-day business for companies is very competitive and focused on profit maximisation. Therefore, many CEOs and managers are limited in their resources to provide enough time and space to allow experimentation and creative investment in sustainable ideas, especially if they are less profitable than existing (unsustainable) practices. Therefore, Enterprise Klima aimed to create a space for the project managers and CEOs, where the pressure of market mechanisms did not prevail.

5.4.1 Protected Space

The feedback on the Enterprise Klima project provides valuable insights that the creation of a protected space is crucial for a collaborative sustainability initiative. The perspectives shared from the project partners collectively contribute to a holistic understanding of the project's structure.

Collaboration and the exchange of ideas emerge as the cornerstone of the Enterprise Klima initiative. [8] lauds the collaborative atmosphere and talks positively about the cross-learning opportunities among participating companies (505-529). [4] and [13] underscore the significance of dialogue and idea exchange, fundamental aspects that contribute to the development of a community of practice focused on sustainability (4, 221-231 and 13, 143-161).

Meeting dynamics play a crucial role in shaping the collaborative ethos of the project. [1] appreciates the diversity in meeting types, especially the inclusive nature of the initiative (290-300). “For example, I found the CEO meeting very good. The contents presented there were really excellent” (1, 291-292). [8] commends the strategy of holding meetings at various locations, fostering familiarity among participating companies. This diverse meeting approach accommodates the varied needs and preferences of participants, contributing to a more inclusive and engaging collaboration (663-678).

[11] brings attention to the importance of diversity in participation, especially considering the prevalence of producing companies in the project. She critiques that another commencing company would have made the project more attractive for her (189-198). “Well, I have to say, there were quite a few manufacturing companies there, and there are just many more similarities (…). But it's just... we don't produce anything. We are a certain size, not as large as most producers” (194-198).

[8] shifts the focus from diversity to enthusiasm. He points out that the positive outcomes of involving enthusiastic companies genuinely interested him in the project. These reflections highlight the need for varied perspectives to foster a comprehensive understanding of sustainability challenges and solutions (663-678).

[6] focuses on learning aspects, emphasising the professional workshop organisation and the importance of personal interactions. This internal learning objective highlights the dual nature of the project as not only a platform for cross-company collaboration but also an opportunity for individual organisational development (348-352).

In conclusion, the protected space created Enterprise Klima project's organisational structure demonstrates adaptability and inclusivity, as it fosters collaboration and sustainability initiatives. Commonalities underscore financial commitment, collaboration, and the value of networks, while differences highlight unique challenges, and internal learning objectives. The project stands as a model for effective cross-company collaboration in the realm of sustainability, providing a blueprint for future initiatives seeking to address complex challenges through shared efforts.

5.4.2 Role of Funding

> And, of course, with these subsidies you receive, it becomes easier to implement projects. If you have some external financing, it becomes easier, too, internally when you can say, "Look, friends, here we go, it might not be profitable yet because it's just a pilot project, but we have this contribution, and this partner is contributing, and that partner is contributing. Look, it makes sense, let's do it!" (10, 264-270).

The role of funding emerges as a crucial aspect in the interviews conducted within the Enterprise Klima project. Participants consistently highlight the advantages of financial support, as it facilitates the implementation of projects and eases the burden on internal resources.

[10] underscores the significance of external financing in making projects more feasible, allowing companies to make initiatives more attractive to internal stakeholders (264-270). Similarly, participants from different companies, such as [11] and [8], appreciate the funding structure, describing it as valuable and manageable, ensuring minimal impact on their operational processes. The financial commitment required is viewed as worthwhile, given the substantial benefits derived from the project (11, 411-420 and 8, 479-483). Notably, even companies not directly eligible for regional funding, like [9] acknowledge the reasonable financial outlay in proportion to the valuable outputs received (269-272).

[2], however, brings attention to the exclusive focus on advisory support, expressing a desire for more flexibility in fund usage, particularly for practical implementation rather than solely for consultation (457-483). This sentiment is echoed by [7] who appreciates the financial support but remarks on the challenge for companies operating on tight budgets to implement suggested changes (440-452).

In summary, the interviews collectively highlight the instrumental role of funding in Enterprise Klima, in making sustainability initiatives more accessible and impactful for participating companies. This releases the pressure of finding instantly marketable solutions and creates a space for experimentation and creativity.

5.5 Defossilisation Challenges

To support Lower Austria's businesses to tackle climate change, it is important to understand where the biggest obstacles lie. The semi-structured interviews therefore specifically asked the project partners which areas must improve or change to allow for a sustainable economy. The answers of the thirteen project partners can be grouped into three categories, namely the lack of **infrastructure** like hydrogen pipelines, **conservative views** within the industrial landscape that block sustainable change and **limited resources**, including manpower and financial means of the companies.

5.5.1 Infrastructure

In the interview on sustainable practices within the construction sector [3] provides insights into the intricate challenges faced in transitioning to environmentally friendly practices across diverse construction sites. Addressing the urban-rural divide, he emphasises the vital role of infrastructure in achieving climate-neutral construction practices. He highlights the constraints of remote locations, pointing out the absence of essential renewable energy infrastructure, such as hydrogen pipelines, as a significant hurdle (120-135).

[3]'s observations resonate with that of [9], where the focus is on the commuting challenges influencing environmental practices. The impact of local infrastructure on transport choices is highlighted, with limitations in regions with vast commuting distances. The narrative illuminates the intricate relationship between sustainability and the availability of local infrastructure, especially with regards to electric mobility and charging infrastructures. "I can make a construction site climate-neutral, for example, in Vienna, where I have the necessary connections to charge electric devices, but that's not possible in the countryside (…) in the middle of nowhere" (120-125).

Similarly, [13] introduces a historical perspective and therefore contextualises the relatively slow pace of transitioning to sustainable energy sources. The historical lens provides a backdrop for understanding societal progress in energy use. His argument is based on historic milestones, from taming fire to utilising coal and oil, highlighting transformative shifts in human evolution taking a long time (303-333).

Drawing cross-references between the statements, [3] and [9] both emphasise the significance of location-specific constraints and the pivotal role of infrastructure in sustainable practices. The challenges of remote construction sites, both in terms of energy availability and commuting infrastructure, highlight the need for a comprehensive approach to sustainability.

In summary, these perspectives collectively draw attention to the centrality of infrastructure challenges in driving a sustainable transition for the industry. The discussions illuminate the multifaceted nature of these challenges, ranging from location-specific energy gaps in construction sites to the pivotal role of local infrastructure in shaping commuting choices. The historical context provided by [13] enriches the discourse, as it includes the need for a nuanced understanding of the diverse infrastructure challenges that construction and related industries face in their journey toward sustainability.

5.5.2 Conservative Industry

"Again, the construction industry is very conservative, and you have to motivate everyone for their own good" (10, 322-232).

According to [3], the conservative nature of the construction industry poses a significant challenge to the timely adoption of sustainable practices and tends to embrace trends belatedly. He draws a parallel to the German construction industry, highlighting that even in the realm of sustainability, the adoption of practices such as those promoted by the sustainability manager of his company is relatively recent within the last two or three years. The delayed response to sustainability trends in the construction sector is further exemplified by the company's participation in Enterprise Klima, where the initiative was not propelled by the CEOs of the company itself but rather initiated through the sustainability department (37-43).

Similarly, [10] recognises the deeply ingrained conservatism within the construction sector. He critiques the necessity of having to motivate every stakeholder within the industry to actively embrace sustainable practices. He humorously notes the need to encourage everyone "to seek their own happiness" (323). The interviewee points out that the entry channels for change within this conservative industry involve showcasing past experiences

and successes. Demonstrating that certain practices have been implemented successfully in the past becomes a crucial strategy for motivating industry participants to adopt new, more sustainable approaches. This highlights the industry's reliance on historical precedent and the challenge of steering it toward novel, environmentally friendly practices (322-326).

In the context of the horticultural sector, an example provided by [11] sheds light on the conservative resistance within industries dealing with long-standing practices. The specific example relates to the use of peat or substrates in gardening. The interviewee notes that this is a significant climate-related issue in the horticultural domain. The challenge faced is that, despite being aware of the environmental impact, nurseries continue using peat "because peat is inexpensive. Or very cheap. And the nurseries have been accustomed to working with it for 50, 60 years" (488-490). The interviewee anticipates that real change will only occur when legislation prohibits the use of peat, thereby compelling all nurseries to adopt alternative substrates. This scenario also highlights the industry's resistance to change unless enforced by regulations, showcasing a profit-oriented stance that impedes the swift adoption of sustainable practices (482-490).

In summary, the conservative nature of these industries, whether construction or horticulture, acts as a hindrance to the seamless and rapid integration of sustainable practices. The reliance on historical practices, hesitancy to embrace new trends promptly, and the need for regulatory enforcement are common themes that impede a more expeditious transition toward sustainability in these sectors.

5.5.3 Limited Resources

"But as I said, the effort involved in all these transformations is so extensive that it simply becomes uneconomical" (8, 400-401).

The limited availability of resources poses a significant challenge to sustainable development within various companies, as evidenced by statements from different project managers. [3] acknowledges the substantial investment required for implementing sustainable energy solutions like wind power or large-scale photovoltaic installations. While such projects have been incorporated into his companies' initiatives, the financial commitment remains a

notable consideration (17-22). This highlights the constraint imposed by financial resources on the implementation of environmentally friendly practices.

In the construction industry, [3] further elaborates on the challenges of operating within a department dependent to sustainability management which is dependent on decisions from top leadership. While he, as a subsidiary manager, enjoys a degree of autonomy in implementing sustainability measures, he underscores the crucial role of the operational team in executing these initiatives. The interviewee states that effective sustainability implementation requires both top-down decisions and active involvement from the operational level, illustrating the complexity and resource dependence of sustainability initiatives in the industry (143-163; 203-228).

[11] highlights the resource challenges faced by companies operating across multiple locations. With limited facility managers and an absence of dedicated personnel for sustainability tasks, the burden of managing sustainability-related data falls on the shoulders of branch managers. “So, for us, the challenge is really managing to get the data from all locations. But we don't have a facility manager for each site. Yes, we have two for the entire company, which, from my perspective, is insufficient” (250-253). This illustrates the resource limitations in dedicating personnel to environmental management, particularly in companies where sustainability is not the core business focus (250-260; 351-353).

The difficulties extend to the economic considerations associated with sustainable transportation. [9] highlights the financial constraints that hinder the company's ability to equip all employees with electric cars. Despite the intent, the practicality of such a transition is constrained by the financial resources available to the company (406-408).

Similarly, the complexities of comprehensive sustainability transformations are addressed by [8] who notes that the extensive efforts required for such transformations might not be economically viable. The consideration of economic feasibility becomes a critical factor in determining the practicality of large-scale sustainability initiatives (400-403).

In the food production sector, [2] illuminates the challenges posed by the availability and cost of specific ingredients. The interviewee discusses the difficulty of sourcing local, sustainable ingredients, emphasising the financial and logistical constraints that dictate sourcing

decisions. The necessity of adhering to budgetary constraints and consumer preferences demonstrates how resource limitations can shape sustainable practices (58-65).

In summary, the statements collectively demonstrate the diverse impact of limited resources on sustainable development within various industries. Financial constraints, staffing limitations, and economic considerations emerge as common themes, resulting in the need for a strategic and judicious approach to navigate these challenges.

6. Discussion

The following chapter will bring together the analysis of the interview results with the sustainability transition theories explained in Chapter 2, namely the Mission-Oriented Innovation Policy framework (MOIS), the Muli-level Perspective (MLP) and the Challenge-Oriented Regional Innovation System (CoRIS) approach. By intertwining these two focal points of the master's thesis, the research question about the effects of Enterprise Klima for regional industrial defossilisation will be answered.

6.1 Enterprise Klima provides Knowledge Systems

In the academic discourse on sustainability transition, the importance of knowledge systems and networks is identified as a key element to reach a sustainable economic transition. Tödling et. al (2021) state that by mobilising existing actors, resources and the support of networks regional innovation systems can tackle grand societal challenges like climate change (pp. 2144-2145). Networks and knowledge systems provide important services that pure markets and hierarchies cannot provide, including the transfer of information via the pathways and relationships that connect networks (Weber & Khademian, 2008, p. 337). As Enterprise Klima creates strong interpersonal ties between the participants in the project, the cooperation contributes to regional industrial defossilisation in Lower Austria. As shown in *Chapter 5.1 Defossilisation through Knowledge Systems*, all interviewees agree that they benefited from the exchange with other project partners. For example, interviewee [9] explicitly states that the shared learning experiences and insights into other companies contributes to the sustainability transition in his company (556-595). Additionally, all project partners agree that the company visits were an integral part of the project [3; 235-260], as it gave them an understanding of the production methods of the project partner. Through this

understanding of the hosts' struggles and difficulties, the interpersonal relationship among members was deepened.

According to Weber and Khademian (2008), "[w]icked problem-based network settings involve highly diverse participants, so the information flowing through the network is likely to have different meanings, different uses, and different values for the individuals and groups receiving and using it" (p. 337). Hence, this different perception of the wicked problem can create tensions and difficulties if the communication between the project partners is not open and unbiased. Luckily, good communication channels did develop in Enterprise Klima, as cooperation and knowledge exchange occurred among heterogeneous project members. Although the project set-up is designed for industrial companies, it also included participants from other backgrounds, such as the food industry. The latter underscored the significance of initiatives like Enterprise Klima in initiating actions for greenhouse gas reduction, particularly as relying solely on market mechanisms is inadequate [2, 485-493].

As Schot and Steinmueller (2018) summarised, only through the experience of manifold actors with different motivations can an acceptable pathway to sustainability be pursued (p. 1563). Hence, another example for the importance of a heterogeneous network is the Baierl-Baumit cooperation. Although the construction industry and the electric installation industry traditionally share common aspects, top managers of both sectors seldomly come together to discuss sustainability projects. Yet, during Enterprise Klima as explained in chapter *5.1.1 Cooperation Experimentation,* Baumit GmbH and Baierl GmbH were able to share information and create the idea of co-working on a 3D-concrete printed carport (see chapter *4.1.1 Cooperation between Baumit GmbH and Ing. Baierl GmbH/Swietelsky AG*). This shows **how Enterprise Klima contributes to regional defossilisation**, namely by creating innovation capacity in Lower Austria as the outcome of systematic interdependencies between the participants (Tödling, Trippl & Desch, 2022, p. 2142).

6.2. Enterprise Klima mediates Policy Conditionalities

The action as a mediator (Fastenrath et al., 2023, p. 9) regarding supranational policies like the EU taxonomy for the companies on a regional level shows **how Enterprise Klima contributes to regional defossilisation**. In Chapter 5.2.2, which examined the influence of EU regulations on the sustainability pathways of the companies, it became evident that the

project partners had mixed feelings towards the political intervention in their economic endeavours. On the one hand, they appreciated the EU's approach to integrating sustainable practices within the industry, as, on a personal level, most of them see sustainability as an important part to battle climate change (see Chapter *5.2.1 Personal Significance of Sustainability)*. On the other hand, the project partners conveyed that the consequences of the regulation are still unclear, that integration of the requirements is sometimes impossible, and the workload exceeds their resources. "Scope 1-2 are, of course, the primary areas, but Scope 3 must be calculated properly in the future. We cannot create a carbon footprint for each individual product. That is not feasible" [11, 385-388]. Project partner [4] expresses his ambivalent opinion towards the regulation by stating that it is a delicate balancing act between genius and madness (201-220).

Hence, one could conclude that the EU taxonomy is too difficult for the companies to apply and that the attempt to introduce sustainable practices in the European industrial landscape will result in unnecessary reporting practices without any impact. More drastically, some expressed concerns that local industries would move abroad where production is cheaper and less regulated, resulting in defossilisation accompanied by economic crisis. Yet, when considering the problem of climate change as a wicked problem, mission-oriented policies are among the most effective ways to face it (Mazzucato, p. 803). It is important to learn from the (ineffective) mission-oriented industrial policies that bent their legislation in favour of the receivers (ibid). Hence, the introduction of conscious conditionalities must be perceived as a regulatory mechanism that does not aim to harm the industry, but rather to build a sustainable one (see Chapter *2.1 Mission-Oriented Innovation Policy Framework).* Looking at the types of conditionalities applied to the EU taxonomy as displayed in table 2, it shows that the EU taxonomy employs a carrot and stick policy. If the industrial partners do not fulfil the fixed conditions, namely compliance with technical screening, reporting, and environmental criteria, they are likely to face compliance risks, regulatory uncertainties, and most importantly, issues with financing. But, if the companies do apply to the conditionalities of the mission-oriented industrial policy, they stand to gain a competitive advantage in their industrial sector, green financing, and to enhance their reputation as a green player.

Ecoplus as an economy agency entangled with the state of Lower Austria takes a very important role in this field of tension between the expectations of the EU taxonomy and the

industry's sense of excessive demand. Taking its role as a supporter of the industrial landscape in Lower Austria seriously and trying to contribute to a thriving economy, ecoplus decided to initiate the cooperation project Enterprise Klima. The goal is to provide the project partners with the necessary information on the regulations from expert talks and to create a platform where exchange and cooperation is a key element throughout the duration of the project. Therefore, ecoplus acts as a **mediator** (Fastenrath et al., 2023, p. 9) between the supranational and local levels. In fulfilling this role, the cooperation project does indeed contribute to the defossilisation of Lower Austria, by not criticising the local industry for their contribution to greenhouse gas emissions, but by supporting them in the implementation process, listening to their needs and providing networks that facilitate the sustainable transition process.

6.3 Enterprise Klima unites Invested Actors

The goal of Enterprise Klima is to create a platform for project partners where the challenges and successes of defossilising their production sites can be shared. Yet, the project's success depends on the motivation of the project partners to not only invest their time and expertise in their use cases, but also on their active contribution to the project. Hence, the project is dependent on invested actors that not only feel the external pressures of society and politics, but that intrinsically want to contribute to defossilisation. According to the study on environmental behaviour conducted by Silvi and Padilla (2021), intrinsic motivation is the leading force for sustainable behaviour and they find that "intrinsic motivation—mostly internalized environmental norms, but also awareness of environmental consequences and ascription to personal responsibility towards the environment—is the leading force (…)" (Silvi & Padilla, 2021, p. 630).

In chapter *5.3.1 Personal Significance of Sustainability* almost all project partners agree on the importance of climate change and have the urge to reach industrial sustainability. Yet, very interestingly, a divergent approach could be detected between sustainability managers and CEOs, the latter arguing more in favour of economic sustainability. For example, [3] notably considered climate change not as a looming threat, but rather as a business opportunity that opens the space for new green innovation, inventions and, consequently, market opportunities [3, 65-92]. [9] is the only project partner on a decision-making level who

questions the benefits of the EU regulations and considers his company already sustainable; moreover, he even doubts that it can contribute much to defossilising and consequently reaching the 1.5 goal (475-480).

Contrary to the two rather conservative and sceptical voices in the project, the sustainability managers were greatly invested and considered climate change and sustainability important factors in their private life as well. For example, project partner [4] points out that he not only works towards sustainability in his company but has also adopted many eco-friendly practices in his daily life (18-26). Also, sustainability manager [5] views climate change as a pressing issue that will affect mostly future generations, which worries her and motivates her in her work (356-366).

In summary, it is too early to evaluate whether companies with invested sustainability managers will provide more sustainable solutions and consequently contribute more to defossilising Lower Austria compared to companies or CEOs that are influenced by external incentives like the EU taxonomy. Fact is that all project partners agreed that they had benefitted from the project and learned for future sustainable endeavours. Hence, bringing "the willing" together and creating a mixture of intrinsic and extrinsic motivation within a limited group of people shows **how Enterprise Klima contributes to regional defossilisation.** Through follow-up projects and workshops, this group will eventually grow and the potential for a sustainable and defossilised Lower Austria increases.

To summarise with the words of Grin et al. (2010), niches are not pre-existing spaces, but must be built by the work of invested actors (p. 19). Ecoplus is one of these invested actors that is providing resources and time for the project partners to develop their sustainability pathways. Hence, in Enterprise Klima, invested actors (i.e., project partners and the state of Lower Austria) congregated, exchanged experiences, and consequently contributed jointly to a more sustainable industrial landscape in Lower Austria.

6.4 Enterprise Klima provides a Niche for Experimentation.

"Mission oriented policies could be productive if the missions are formulated in an open-ended way that encourages experimentation and diversity. New forms of engagement and networks are required between public, private and third sector actors" (Schot & Steinmueller,

2018). This call for a protected space by Schot and Steinmüller (2018) resonates with the MLP framework which categorised long-term and complex socio-technological transitions into three levels (see Chapter 2.1). Niches are dominated by unstable social networks, a limited set of rules and high volatility. Hence, radical innovations can develop due to their protective state where mainstream market selection does not apply (Grin et al., 2010, p. 19-22). Enterprise Klima opens this space, as the project timeline is limited to two years (hence unstable network), project partners can decide to participate in follow-up projects and network meetings (high volatility) and all use cases are welcome (origination of radical innovations). One of the few rules that applies to the project is that use cases' results are shared to create a space of mutual trust and learning by doing as suggested by Geels (2002, p. 1261). In chapter *5.4 Defossilisation Through Niche Creation*, the project partners state that the atmosphere allowed them to foster collaboration, gain insights into sustainability through learning experiences and find space for experimentation.

The use case of project partner [6] provides a perfect example of experimentation and development of radical ideas. The company of [6] is one of the largest companies in Austria and therefore has a very high energy demand. The goal is to substitute all fossil energy sources with renewable energy within the next decades. The initial use case considered providing a large part of the energy demand by methane pyrolysis. Through another project partner in Enterprise Klima, sites of methane pyrolysis were visited, and expert contacts were exchanged. Yet before the firm made the decision to invest, the geopolitical situation of the Ukraine crisis emerged, and natural gas was no longer available at former conditions. Hence, [6] changed course and conducted research into alternative sources of renewable energy (234-257). This flexibility is a crucial element of Enterprise Klima, which is designed to provide the project partners with a protected space that allows for deviations and a change of ideas.

Furthermore, one very important aspect of Enterprise Klima's goal of creating a protected state without mainstream market selection (Grin et al., 2010, p. 19-22) lies in applying for external funding for the project partners. As explained in chapter 2.1, ecoplus liaises with the funding organisation and provides both parties with the necessary information and documentation. Therefore, the project partners can receive funding with a relatively little effort. In chapter *5.4.2 Role of Funding*, the project partners state that receiving funding created an important opportunity to discuss sustainable alternatives within their firms,

without market pressures. By receiving funding of up to 50% for consulting services, sustainable activities became a considerable alternative for the companies. Additionally, sustainability managers could justify the time spent working on project meetings to their CEOs by emphasising the benefits of the funding received. Hence, the provision of a protected space without capitalistic market structures shows **how Enterprise Klima contributes to regional defossilisation.**

6.5 Enterprise Klima provides Assets

Another important field how Enterprise Klima is contributing to defossilising Lower Austria is its ability to provide assets to overcome sustainability challenges. According to Tödling et al. (2022), for challenge-oriented policies to be successful "much depends on the innovation capacity of public and private actors, available assets – including natural resources and other assets such as industrial, human, infrastructural, material ones (…) – historically grown networks and institutional configurations" (p. 2145). Chapter *5.5 Defossilisation Challenges* summarises the most important challenges faced by the project partners, namely (1) Building a new, sustainable infrastructure (i.e. replacement of natural gas pipelines to hydrogen pipelines), (2) Overcoming attitudes of outdated conservative actors within the industrial landscape and (3) Working with limited resources, including financial and human resources.

How does Enterprise Klima, as a mission-oriented cooperation project, provide assets to overcome these challenges? First, the project does not aim to build a new hydrogen pipeline. However, it does bring together powerful industrial stakeholders that articulate their needs and can put pressure on politicians and decision-makers by joining forces. Most of the project partners represent industries with a high energy demand, hence the availability of renewable energy is essential to defossilise their value chains. Many of them have already invested in solar panels on their factory roofs, but this does not provide the needed processing energy. Therefore, by creating a platform for the stakeholders to interact and to cooperate, the project lends a voice to industry representatives.

Secondly, overcoming conservative actors of the industry is a difficult and important task. In traditional regional innovation systems, the purpose of innovation was limited to fostering economic competitiveness (Tödling et al., 2022, p. 2144). According to the project partners, conservative voices in the Lower Austrian landscape want to continue with business as usual.

However, climate change is not a topic that allows for ignoring the exploitation of important resources and contributing to climate change. Consequently, assembling willing actors, as descripted in Chapter 6.4, creates a crucial opportunity to balance out conservative voices. Through cooperation and exchange with like-minded members of the same industrial field, possibilities and innovation not only are developed, but get a stage. This display might inspire others, and subsequently, marketable innovations could be created. This means that conservative voices should not be considered as a constrain, but rather as a motivation to discover more like-minded and innovative project partners.

The last difficulty discussed by the project partners during the interviews is the topic of limited resources. Enterprise Klima already aims to provide the project members with funds made available by the state of Lower Austria to finance consultancy for green transition, but the tasks are expensive and long-lasting. Therefore, it is understandable that many smaller enterprises do not have the financial means to defossilise their entire production chain within a very short time span. And as project partner [2] points out, this funding is limited to

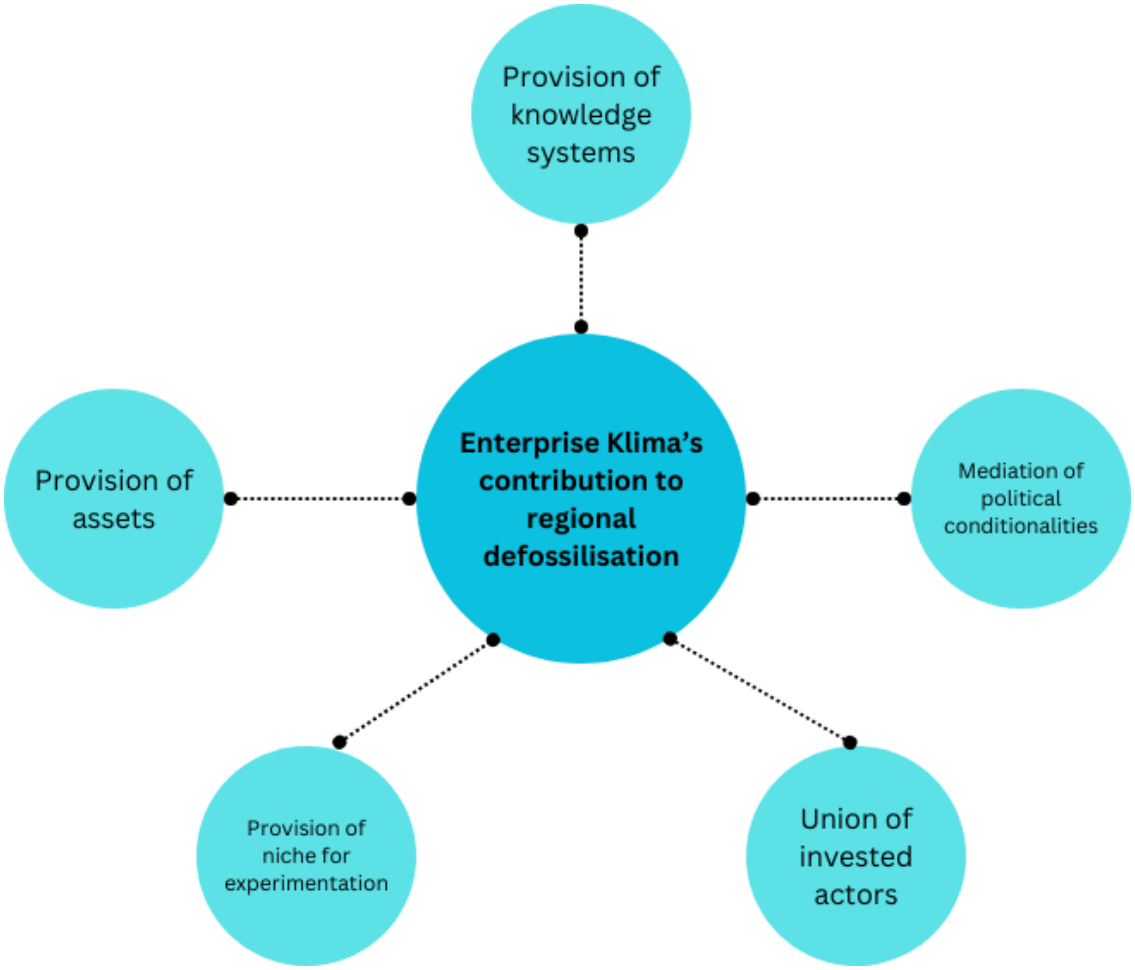

Figure 11: Five Key Areas for Regional Defossilisation

consultancy and does not include actual investments. However, Enterprise Klima provides the project partners with a network within which experiences, failures and successes can be shared. As a result, project partners save time and money by learning from one another and do not repeat other members' mistakes. Of course, this depends on the openness of project participants in sharing their experiences, hence an important task of the project organisers, namely ecoplus, is to create this atmosphere of mutual trust and exchange. Furthermore, by assembling industrial members and by challenging their needs and difficulties, ecoplus can communicate these difficulties to the local politicians, who consequently can decide which funds are needed for the green transition in Lower Austria.

In summary, Enterprise Klima as a mission-oriented cooperation project is not tasked with financing the industrial green transition in Lower Austria, yet it can provide the project members with space for knowledge exchange, for cooperation and with an important network to advocate for their (financial) needs.

7. Conclusion

In Summary, this master's thesis identified five key areas how the mission-oriented innovation project Enterprise Klima contributes to regional defossilisation in Lower Austria: (1) Providing knowledge systems, (2) Mediating policy conditionalities, (3) Uniting invested actors, (4) Providing niches for experimentation and (5) Providing assets for their project partners. It was shown that through cooperation and knowledge exchange in regional innovation systems, complicated and demanding tasks such as battling climate change can be approached without fear and feeling overwhelmed.

Most project partners state that the incentives to start defossilising their production chains are fuelled by external pressure, including the EU taxonomy, and do not necessarily originate from intrinsic and altruistic motivation. Yet while conducting the interviews, it became apparent that most companies do not only feel responsible for the environment, but also for their employees. When transitioning the economic system from a fossil fuel centred value generation to a post-fossil era, a great number of very expensive investments will be necessary. Therefore, the reluctance of the companies to initiate change is understandable,

even though the drastic effects of climate change do not leave more time for hesitation but call for action. Accordingly, external pressures like the European Green Deal appear necessary to initiate investigations and sustainable production chains, yet the *how* is being negotiated on a regional level.

Therefore, strong ties in regional innovation systems are of the upmost importance to tackle grand societal challenges like climate change. Without mission-oriented cooperation projects like Enterprise Klima, the different players in the region might not find the drive to invest time and money to initiate green transitions. It has been evidenced that the project serves as a wake-up call to the local industry, emphasising the responsibility they bear in contributing to innovative climate-neutral production values and to consequently position themselves as pioneers not only in the region, but in Europe. The goal of the project is to inspire more companies in Lower Austria to participate in the follow-up projects of Enterprise Klima and to create a platform of knowledgeable and engaged stakeholders, that offers support, cooperation, and innovative ideas to its project partners. With this tool, achieving a defossilised region in the following decades could be possible.

All in all, Enterprise Klima can be perceived as a spark for the region to initiate climate neural projects, but from this spark many innovative solutions and ideas can emerge. It is therefore important to conduct further research into the development of mission-oriented innovation projects in Lower Austria and to investigate which effects Enterprise Klima shows in the long-run.

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9. Appendix

Interview guideline

Can mission-oriented industrial policy initiatives contribute to regional industrial defossilisation? A case study analysis of Lower Austrian's cooperation project "Enterprise Klima"

Interview-Notizen: Enterprise Klima

- Art des Interviews: ExpertInnen Interview
- Interview-Partner:
- Interviewer: Anna Wagner
- Leitfaden: semi-strukturiert
- Ort:
- Datum/Uhrzeit:
- Aufnahme Name:
- Dauer:
- Setting:
- Transkription:

Interview-Leitfaden: Enterprise Klima

Struktur:

Einstieg	● Kurze Vorstellung der Interviewenden ● Information über das Ziel/den Kontext der Untersuchung ○ Interview für Master-Arbeit ○ Fragestellung: **Inwieweit helfen missionsorientierte Industriepolitische Initiativen (wie Enterprise Klima) bei der Defossilisierung regionaler Produktion?** ● Abklärung über Verwendung des Aufnahmegerätes bzw. etwaige Fragen vor Beginn des Interviews ● Deutlich machen, dass die erhobenen Informationen, bei Wunsch!, nicht weiter gegeben werden (z.B. an Ecoplus als Organisator) und streng anonym bearbeitet werden.

Vorstellung Interviewpartner	**1.** Laut meinen Recherchen beschäftig sich Ihr Unternehmen … und die wichtigsten Kunden …, liege ich damit richtig? **2.** Ihr Aufgabengebiet im Unternehmen liegt im Bereich …, würden Sie damit übereinstimmen? Möchten Sie Ihre Rolle noch in eigenen Worten erläutern? **3.** Welche Rolle haben die Themen Klimawandel und Nachhaltigkeit in Ihrem Unternehmen und seit wann? **4.** Ist das Unternehmen an der Herstellung von Umweltinnovationen beteiligt? (Und wann ja, seit wann?)
Projekt – Motivation und Organisationstruktur	**5.** Wie sind Sie auf das Kooperationsprojekt „Enterprise Klima“ aufmerksam geworden und warum haben sie sich entschlossen daran teilzunehmen? **6.** Wie viele Personen in Ihrem Unternehmen sind in dem Projekt mit einbezogen? **7.** Haben Sie bereits vor dem Projekt mit der Wirtschaftsagentur Ecoplus oder anderen teilnehmenden Unternehmen zusammengearbeitet? **8.** Wie war das Kooperationsprojekt (aus ihrer Sicht) organisiert? **9.** Welche Rolle haben Sie innerhalb des Projektes eingenommen? **10.** Wer hat die Koordinierung übernommen? **11.** Aus Ihrer Sicht, sind regionale Kooperationsprojekte geeignet um komplexe Themen wie die Defossilisierung der Industrie anzugehen?
Use Case	**12.** Können Sie Ihren Use Case beschreiben? **13.** Welche Ergebnisse sind durch Ihren Use Case entstanden?
Kooperation/ Lernaustausch	**14.** Wie lief die Zusammenarbeit mit anderen Firmen im Rahmen von Enterprise Klima? **15.** Wie wurde Wissen zwischen den Firmen ausgetauscht? **16.** Gab es Zusammenarbeit zwischen Firmen bei der Lösungssuche oder haben Sie Ihren Use Case selbstständig bearbeitet?
Ergebnisse	**17.** Was haben Sie/ihr Unternehmen aus dem Projekt mitgenommen? / Was wurde voneinander gelernt? **18.** Hat sich aus diesem Wissensaustausch eine Kooperation außerhalb von Ecoplus entwickelt? • Wenn ja, welches? Können Sie eine kurze Beschreibung geben?

	• Wie würde Sie dessen Mehrwert für das Unternehmen bewerten? **19.** Hätten Sie dieses Wissen/ diese Kooperation auch ohne die Zusammenarbeit in Enterprise Klima erlangt? **20.** Sehen Sie Potential in weiteren Kooperationen, Nachhaltigkeit als Themenschwerpunkt in die österreichische Industrie zu integrieren? **21.** Sind Ihrer Meinung nach Mission-orientierte Initiativen wie Enterprise Klima notwendig, um Innovationen anzutreiben oder sollt es reinen Mechanismen des Marktes überlassen werden?
Politische Faktoren	**22.** Wie ist Ihre Einstellung gegenüber der EU Taxonomie? **23.** Beeinflusst die EU Taxonomie bereits ihr Unternehmen? **24.** Welche Strategien verfolgen Sie, um mit der EU Taxonomie umzugehen?
Schwierigkeiten	**25.** Welche Schwierigkeiten erfahren Sie und Ihr Unternehmen, Nachhaltigkeitsstrategien zu verwirklichen?
Ziel-Frage:	Führt Austausch und Kooperation (Co-design) zum Erfolg bezüglich der Defossilisierung von Produktion?