



The Role of Intermediaries in the Energy Transition Process of Companies in Vienna. The Example of klimaaktiv.

Bachelor Thesis for Obtaining the Degree

Bachelor of Science

International Management

Submitted to PD Mag.phil. Dr.phil. Sabine Sedlacek

Klara Losert

61903887

Vienna, June 28th, 2023

Affidavit

I hereby affirm that this Bachelor's Thesis represents my own written work and that I have used no sources and aids other than those indicated. All passages quoted from publications or paraphrased from these sources are properly cited and attributed.

The thesis was not submitted in the same or in a substantially similar version, not even partially, to another examination board and was not published elsewhere.

Date

June 28th, 2023

Abstract

Governments and companies are taking action to combat the repercussions of climate change caused by the extensive burning of fossil fuels over the last decades. Implementing the right policy mix and adequate instruments is essential to address this issue and steer companies toward a climate-neutral future. However, introducing new climate regulations and the adoption by companies comes with challenges. Under these circumstances, intermediary roles seek to facilitate a company's shift to renewable energy sources. Energy transition intermediaries aim to encourage exchange and information sharing among actors within a country's energy transition and provide services such as energy consulting and funding opportunities. This research aims to determine the role of energy transition intermediaries and assess their level of involvement in the context of companies' energy transitions. Therefore, the present paper seeks to answer the research question: To what extent are intermediaries involved in companies' intention to use renewable energy sources? Hence, this paper adopts a qualitative data collection approach by conducting expert interviews with five participants, comprising one representative from klimaaktiv and four klimaaktiv partner companies. The results show that intermediaries provide a comprehensive network of partner companies benefiting each company by guaranteeing expert knowledge and exchange and information sharing among businesses. Intermediaries further serve as a motivating role among partner companies. Considering recent advancements, intermediaries aim to equip companies with the most up-to-date information and innovative developments in the energy transition sector. This research concludes that energy transition intermediaries play a vital role companies' intention to shift their energy systems from non-renewables to renewables by providing consultation, motivation, and exchange opportunities.

Table of Contents

1	<i>Introduction</i>	1
2	<i>Literature Review</i>	3
2.1	Energy Transition – An Overview	3
2.2	The Role of Politics in Energy Transitions	6
2.2.1	The Hierarchy of Europe's Energy Policies	6
2.2.2	The Role of Governments in Energy Policy	7
2.2.3	The Austrian Energy Policy.....	9
2.2.4	The Energy Policy of Vienna.....	12
2.3	Energy Transition Intermediaries	14
2.3.1	Introduction to Energy Transition Intermediaries	14
2.3.2	Actors in the Energy Transition	15
2.3.3	Role and Functions of Energy Transition Intermediaries.....	16
3	<i>Company Info – klimaaktiv</i>	18
3.1	Organizational Details	18
3.2	The Role of klimaaktiv in Austrian Climate Policy	19
3.3	Focus Areas	20
3.4	Partner Network	22
3.4.1	Competence Partner	23
3.4.2	Project Partner	23
3.4.3	klimaaktiv Pact Partner.....	23
4	<i>Methodology</i>	25
4.1	Study Design	25
4.2	Guided Expert Interview Development	26
4.3	Qualitative Content Analysis – Philipp Mayring	29
4.4	Data Collection	30
4.5	Introduction of the Interview Partners	32
5	<i>Data Results and Analysis</i>	34

5.1	Category 1 – The Role of klimaaktiv	34
5.2	Category 2 – Partnership and Cooperation with klimaaktiv.....	37
5.3	Category 3 – Climate Measures.....	38
5.4	Category 4 – Outlook.....	40
5.5	Summary and Comparison.....	41
6	<i>Discussion</i>	45
7	<i>Conclusion</i>	49
7.1	Limitations.....	50
	<i>Bibliography</i>	51
	<i>Appendices</i>	62
	Appendix 1.....	62
	Appendix 2.....	56

List of Tables

Table 1: Overview Interview Partners31

Table 2: Summary of the Main Interview Statements42

1 Introduction

The widely utilized and subsequent combustion of fossil fuels has tremendously impacted the world's environmental condition. Global warming and climate change have, thus, become widely discussed topics as the repercussions of burning non-renewables began to affect humans' everyday life (Lee et al., 2023). Under these circumstances, transforming the world's energy system from fossil fuel-based to renewable sources has gained increasing attention. Shifting a system away from non-renewables and replacing it with clean energy sources is considered a challenging task, as it requires a socio-technical system change (Zolfagharian et al., 2019). Consequently, initiating an energy transition involves both social and technological changes, making it a complex matter (Li et al., 2015). The responsibility of implementing a proper policy mix and policy instruments that aim to increase the use of renewables is to be borne by local policymakers, hence the government (White et al., 2013). Literature exploring appropriate energy policies has increased, especially within the past decade, analyzing and suggesting policy instruments and strategies that promote a low-carbon future (Azhgaliyeva et al., 2018). Moreover, an accelerating number of literature draws attention to the work of energy transition intermediaries who appear to facilitate the transitioning process by providing a wide range of services intending to support various actors within the system (Boyle et al., 2021; Kivimaa et al., 2019; Bierwirth et al., 2017). Energy transition intermediaries anticipate establishing a breeding ground for numerous actors involved in energy transitions intending to create a synergetic network (Fickl & Rehbogen, 2011). This network encompasses parties from multiple levels, including policymakers, energy providers, companies, and individuals aiming to facilitate knowledge and information sharing. Since companies' operations significantly contribute to a country's carbon footprint, supporting and empowering businesses to shift towards clean energy systems is particularly important. That is why intermediary roles should pay particular attention to the energy transitions of companies. This undertaking requires establishing an interconnected system that considers current energy policies while creating relationships among relevant stakeholders.

This research study intends to supplement the existing literature by examining companies' intentions to turn to intermediaries while making their energy transition happen. The paper aims to identify the level of involvement of intermediary roles exploring various elements concerning the cooperation between companies and intermediaries. Therefore, the present paper seeks to answer the research question, "To what extent are intermediaries involved in companies' intention to use renewable energy sources?". Aiming to provide a response to the research question, this paper particularly focuses on companies located in Vienna and builds on the example of the Austrian energy protection initiative *klimaaktiv*. This paper entails a dedicated section describing the initiative's framework and mission. The researcher seeks to develop an understanding of the cooperation between *klimaaktiv* and its partner companies while focusing on specific aspects, such as the perceived role of *klimaaktiv*, the partnership between *klimaaktiv* and its partner companies, implemented climate measures, and the future development of the cooperation. To acquire an in-depth understanding, the researcher conducts five interviews with carefully selected experts that can provide relevant information about the subject matter. Before this paper dives into the empirical part, it provides a comprehensive overview of the existing literature concerning the subject matter. First, the literature review provides an overview of the topic of energy transition before examining the energy policy framework of Europe, Austria, and Vienna. The literature part further includes information about the role of governments in energy policy and energy transition. Finally, the literature part contains detailed information about energy transition intermediaries while discussing different actors within an energy transition. The methodology section of this paper provides a detailed explanation of the data collection process and the interview development. It further discusses the study design and method of analysis. The methodology section is followed by the analysis of the collected information following the qualitative content analysis, according to Mayring (2015). Subsequently, a discussion section elaborates on the statements given by the interviewees and compares the results with the previously provided literature. Lastly, the researcher provides a conclusion based on the findings and states the limitations of this research.

2 Literature Review

2.1 Energy Transition – An Overview

Since the industrial revolution, the world's energy production and consumption have been based on fossil-based energy sources, like oil, natural gas, and coal. Humanity took advantage of the combustion of fossil fuels, as it generates an enormous amount of energy within a concentrated space. Fossil fuels, such as gas and oil, are easily accessible as they can efficiently be transported through pipelines. Dominating the global power supply has hugely increased the demand for fossil-based energy sources and thus significantly reduced the price of oil, gas, and coal, making fossils an attractive energy source (Cong, 2022). Under those circumstances, the rise of industrialization and global economic growth increased the reliance on non-renewable energy sources, making the transition away from fossils more challenging for the global economy. Consequently, burning non-renewable fuel sources releases large quantities of carbon dioxide into the air. The generated carbon emissions trap heat in the world's atmosphere, leading to global warming and, thus, climate change. Since the start of the industrial revolution in 1760, greenhouse gases have been emitted into the air, exponentially increasing the emission in the atmosphere. In the nineteenth century, first signs of global warming became visible (Treut & Somerville, 2007). The global surface temperature began to rise, which caused more extended drought periods and severe changes in weather patterns. The consequences of climate change have become increasingly visible in recent years. Due to the global surface temperature increase, the world experiences hotter temperatures, increasing the number of heat waves that trigger wildfires. Global warming is responsible for rising sea levels, as the ocean water expands, causing glaciers and ice sheets to melt. A temperature rise also leads to a higher frequency of natural catastrophes, such as tropical storms, floods, or droughts, jeopardizing the lives of different species and throwing humanity into a global crisis (Lee et al., 2023).

With the magnification of severe climate consequences in frequency and intensity, the global population has become more observant and proactive in addressing climate change. Governments, companies, and individuals began to take action aiming to reduce the amount of emission released into the atmosphere aiming to combat

climate change. Along with developing environmental awareness, the concept of "energy transition" gained significant popularity. Zolfagharian et al. (2019, p. 1) refer to the terminology "transition" as "far-reaching structural changes in socio-technical systems that enable particular desirable societal functions." Transitions are, therefore, a multi-level process that not solely includes technological changes but also considers economic, social, and environmental aspects. Thus, referring to transitions as socio-technical changes, social and technical elements must be treated as interdependent parts of a system, meaning that the successful implementation of a system does not solely rely on technology. Instead, equal attention must be given to technical and social aspects to ensure a successful system change. Li et al. (2015) explored socio-technical energy transition models and drew particular attention to the multi-level perspective. The perspective states that transitions are subject to change at multiple levels. Niche innovation happens at the micro-level, while socio-technical regimes occur at the meso-level. Developments influencing the socio-technical landscape are examined at the macro level. The multi-level perspective has been utilized in the energy sector to facilitate transitions in energy supply, transportation, and the residential construction industry (Li et al., 2015).

Energy transition refers to the structural shift of the global energy sector from fossil-based to renewable energy systems. The goal is to minimize, if not eliminate, energy generation from rare earth products like gas, oil, and coal. Renewable energy refers to naturally replenished resources like the sun or wind for energy generation. Unlike fossil fuels, renewables are infinite, providing a clean energy supply emitting lower emissions and can renew themselves faster than being consumed. Transitioning to a renewable energy system is deemed a long-term process that can take up to decades or even centuries to transform into a resilient and adaptable system that can cope with the implications of climate change (Sovacool, 2017). Referring to the terminology 'climate paradox,' Giddens (2009) describes the expression as the thread of reacting to a slowly emerging problem, which comes with tremendous implications too late, so further preventive actions may fail to be effective. In particular, Giddens (2009) argues that since the effects of global warming are somewhat intangible and do not affect humanity's everyday life, individuals, governments, and organizations will eventually not take anticipatory measures until the consequences become inexorable.

Reviewing the statements of Sovacool (2017) and Giddens (2009), one can argue that reducing the use of carbon-heavy fossil fuels while focusing on employing clean energy sources on an international scale must happen promptly to prevent catastrophic incidents provoked by global warming. Fortunately, within recent years, significant developments regarding decarbonization and electrification have been made, and evolving energy trends steer the global energy system into a carbon-free future. According to Lee et al. (2023), authors of the Synthesis Report from March 2023, published by the Intergovernmental Panel on Climate Change (IPCC), an organization evaluating scientific research on climate change, "adaptation planning and implementation progress has generated multiple benefits, with effective adaptation options having the potential to reduce climate risks and contribute to sustainable development "(p.18). The authors of the report state that progressive effort regarding cleaner energy systems has been made and that the extent of future global warming impacts will heavily depend on the quantity of greenhouse gas emissions released in the future, advocating for sustainable practices.

An example of an ongoing and successful energy transition is the shift from fossil-powered to fully electric vehicles. It turned out that electric vehicles perform better and need lower maintenance than their forerunners, making it a worthy investment. However, although electric cars are less expensive in the long run, their purchase price tends to be higher than conventional vehicles, creating a barrier to achieving a successful mobility transition (Colato & Ice, 2023). Nevertheless, the increasing demand for all-electric automobiles has shifted the production focus of manufacturing firms. Due to increased competitive pressure, well-known automaker brands like Tesla, Nissan, and Chevrolet have already significantly reduced their e-vehicle prices, making electric cars more affordable to the public (Ewing, 2023).

Moreover, governmental practices, especially incentives, greatly and significantly contribute to a nation's electric vehicle transition. Austria, for instance, grants subsidies to individuals and organizations, making purchasing an electric vehicle more attractive. In 2023 the mobility subsidy for a passenger car with electric powertrains was 5,000 Euros for individuals and 2,000 Euros for companies (Klima- und Energiefonds, 2023). In addition to subsidies, electric cars bought in Austria are exempt from tax payments, specifically the NoVA (standardized consumption tax) and

the engine-related insurance tax (BMF, 2023; ÖAMTC, 2023). The evolution of renewable energy-based car engines is a perfect example that illustrates a promising fragment of an energy transition process (Colato & Ice, 2023).

2.2 The Role of Politics in Energy Transitions

2.2.1 The Hierarchy of Europe's Energy Policies

Using fossil fuels, such as coal, gas, and oil, in abundance has led to increased greenhouse gas emissions and related environmental damage. To combat further climate change issues triggered by the overuse of non-renewables, countries and organizations around the globe have collaborated to establish energy targets to prevent future catastrophic events (IPE, 2022). Common goals are represented in the Paris Climate Agreement and the 2030 Agenda for Sustainable Development (United Nations, 2015). In 2015 the United Nations included the goal "ensure access to affordable, reliable, sustainable and modern energy for all" in its set of Sustainable Development Goals (SDGs), calling for expanding current energy infrastructures to facilitate global access to clean energy (United Nations, 2023). Policy instruments and measures that aim at decreasing the world's carbon footprint are deemed to be highly effective regarding clean energy transitions. That being the case, adequate energy strategies are crucial concerning the overall effectiveness of energy policy implementations in a country (Gielen, 2022)

Aiming to achieve climate neutrality by 2050, the European Commission introduced the European Green Deal. The initiative is a package of sustainability-related measures to combat the approximating climate crisis (Panarello & Gatto, 2022). Cutting greenhouse gas emissions, increasing the share of renewable energy, and improving energy efficiency are the critical values of the European Green Deal (European Commission, 2019). The undertaking is financed by the 2021-2027 long-term EU budget and by an investment of six hundred million Euros from the NextGenerationEU. This economic recovery plan aims to assist EU member states in overcoming the economic consequences of the COVID-19 crisis. The European Green Deal strives to position Europe as the world's first carbon-neutral continent and aims to reduce greenhouse gas emissions by 55 % before 2030 relative to 1990 levels. The European Green Deal rests on the Paris Agreement, an international treaty signed by

196 countries that aim to keep the global surface temperature below 1.5 C° (European Commission, 2023). The target is based on the assumption that a temperature above 1.5 C° will eventually unleash severe catastrophic events, damaging local economies and harming economic growth. Member countries must submit determined energy strategies to keep track of their contribution to the agreement's targets (UNFCCC, 2023). Subordinate to the Paris Agreement is the 2030 Climate Target Plan imposed by the European Commission, which entails objectives to cut greenhouse gas emissions (European Commission, 2023). In response to the Russia- Ukraine conflict, the Commission raised the 2030 clean energy target from 40 % to 55 %, intending to overcome Europe's fossil energy dependency on Russia (Conti & Kneebone, 2022). To realize this plan, the European Commission brought the REPowerEU into being. The strategy based on the REPowerEU plan promptly reduces Europe's gas, oil, and coal imports from Russia by speeding up the nation's energy transition intending to realize a more reliable energy system. (European Commission, 2022). Member countries agreeing on pursuing the above-mentioned energy targets must thus implement appropriate energy policies and use adequate energy instruments, adapting the energy transition process to their specific needs. In addition to the REPowerEU plan, European climate lawmakers introduced the "Fit for 55" project (European Commission, 2023). The program is a comprehensive package of legislative proposals and aims to achieve Europe's climate and energy goals in alignment with the European Green Deal. The strategy includes adjusting to the European Climate Law, extending the scope of the EU Emissions Trading System, and revising renewable energy, energy efficiency directives, and other climate-oriented measures (European Council, n.d.).

2.2.2 The Role of Governments in Energy Policy

Energy policy refers to the actions taken by the government regarding national energy supply, consumption, and security. Energy policy addresses energy development, conversion, distribution, usage, and greenhouse gas mitigation. Due to climate change and related consequences, current energy policy precisely deals with policy frameworks concerning environmental issues and climate protection (Owen, 2009).

The members of the Paris Agreement and the European Commission set targets that must be met within a specific period. On that account, national governments of EU member states and countries committed to the predetermined climate targets bear

the burden of implementing sustainable measures to meet the energy targets (Maizland, 2022). The governments' roles further include establishing ambitious targets for renewable energy deployment to provide a clear direction and long-term vision for the energy sector within their country. Aiming to increase a country's renewable energy employment, governments design policy frameworks and regulations providing necessary incentives and support instruments. Research shows that governments are essential in effectively shifting a country from fossil fuels to clean energy. Fischer-Kowalski & Hausknost (2014), for instance, articulate that due to governmental policies in Germany and the introduction of thermal insulation, the country's energy consumption decreased by 30 % between 1978 and 1993.

Additionally, after experiencing the first oil price crisis in 1973, data shows that introducing car-free days, fuel-saving vacations, or summertime did not meet the objective of lowering energy consumption. Instead, only energy policies directly related to manufacturing practices lowered energy intensity (Fischer-Kowalski & Hausknost, 2014). Past events, therefore, show that governmental support is crucial in reducing fossil energy consumption. Authorities offer financial aid through grants, subsidies, or feed-in tariffs to promote a sustainable economy (White, 2013). Köppl & Schratzenstaller (2022) elaborate on the nature of carbon taxation regimes. The authors consider the implementation of environmental taxes a key policy to combat the repercussions of climate change. Furthermore, to reduce the utilization of fossil-based cars, several European countries have set phase-out targets for combustion engine cars. Wappelhorst (2020) discusses and provides an overview of European countries and their respective phase-out of fossil fuel vehicles. Norway aims to implement restrictions on the use of combustion-engine vehicles as early as 2025. Additionally, Denmark, Ireland, and Slovenia have set targets to prohibit the sale of gasoline and diesel cars by 2030. France and Spain aim to end the sale of new vehicles powered by fossil fuel by 2040 (Wappelhorst, 2020).

Important to mention is that energy policies and regulations vary across European countries, as governments implement policies considering the country's energy resources and priorities. The United Kingdom, for instance, introduced its Climate Change Act in 2008. The act's general objective is to achieve climate neutrality by 2050. That being the case, the UK government introduced carbon budgets that refer

to determined limits on the total amount of greenhouse gas emissions that can be released within five years (Climate Change Committee, 2020). While the Climate Change Act is implemented across the entire UK, Scotland, Wales, and Northern Ireland have established distinct climate change policies, reflecting different energy targets and approaches (CCC, n.d.). France introduced the Energy Transition for Green Growth Act, which aims to "make France – following on from the Paris Climate Summit – an exemplary nation in terms of reducing its greenhouse gas emissions, diversifying its energy model and increasing the deployment of renewable energy sources" (Ministère de l'Environnement, 2016, p. 3). The act includes policies regarding renewable energy development, carbon pricing, and sustainable mobility. As a forerunner in the energy transition, Sweden introduced an energy tax on diesel and petrol in 1924 and a carbon dioxide tax in 1991 (Cruciani, 2016). The country also provides subsidies and incentives to private individuals and companies, such as tax exemptions, clean energy grants, or heating subsidies (Regeringen, 2020). To give an overview of implemented, existing, and planned renewable energy policies and measures, the International Energy Agency created a database encompassing relevant energy policies and statistical data. A policy example included in the database is the approved cap on electricity and gas prices introduced in November 2022 in the Czech Republic. Another currently in force policy is the energy affordability support package for businesses in Portugal (IEA, 2023). The government introduces compensation measures and subsidies to counteract the rise of electricity and natural gas prices. The IEA created the database aiming to accelerate the ongoing energy transition and allow governments to review past, current, and future energy policies implemented by various countries (IEA, 2023).

2.2.3 The Austrian Energy Policy

Due to insufficient fossil fuel reserves, Austria must import much of its fossil fuel energy. In 2021, Austria's primary energy import comprised 58.5 % oil, 17 % gas, and 11.1 % coal. The remainder was electric and bioenergy, accounting for 13.2 % of the country's primary energy imports. Austria's domestically generated power in 2021 comprised 52.8 % bioenergy and waste, 26.5 % hydropower, and 5.1 % ambient heat. Photovoltaics, oil, gas, and wind accounted for the remaining 15.6 % (BMK, 2022; Odysee-Mure, 2021). Worth mentioning is that Austria's domestic energy production

stands out through a high share of 85 % in renewable energy, being one of the most CO₂-efficient EU countries. In 2022, the overall energy composition of the country showed a significant reduction in fossil-based power and a high increase in renewable energy compared to 2020 levels. The country's two primary energy sources are hydropower and biogenic combustibles, accounting for the most significant share of domestic energy production. The popularity of wind and solar power has allowed the country to improve and diversify its energy generation significantly (BMK, 2022). Exemplary, Austria currently holds the sixth on the energy transition index, which rates 115 countries on transition readiness and system performance (BMK, 2023).

Austrian energy objectives slightly differ from the general EU targets as Austria aims to achieve climate neutrality before 2040, knowing this requires multi-layered technological changes and societal mindsets (BMK, 2023). The government has disclosed specific plans and measures to accomplish its energy objectives. The general Austrian climate policy rests on the #mission2030 strategy, which introduces a pathway towards decarbonizing the energy sector while supporting the innovation capacity of Austrian companies (International Energy Agency, 2020). Measures include researching and developing innovative technologies, reducing the dependency on energy imports, and providing access to clean energy information and education. The main goal is the coupling of different sectors of previously separate systems, such as electricity, mobility, and heat aiming to decarbonize all sectors of Austria's economy. The strategy emphasizes additional importance on public and private finances. Investments shall align with the climate and energy goals at the lowest possible cost and risks. The #mission2030 strategy sees high potential for developing innovative energy solutions and technologies. The plan suggests that energy research makes an energy transition technically and economically feasible (BMNT, 2018). A crucial process during the transition to clean energy systems is a country's investment in research and development programs, driving innovation and advancing sustainable energy technologies. Therefore, Austria introduced energy research policies to support the transition towards a clean energy system. Austria's energy research system promotes clear priorities, increases international engagement related to climate change activities, further funding possibilities for energy research, and increases Austria's research budget (Climate and Energy Fund, 2017). Austria also

introduced the implementation of a new Climate Protection Law with obligatory reduction paths for greenhouse gas emissions, interim objectives for 2030, and energy targets tailored to each economic sector (IEA, 2020). Austria further introduced energy research policies to support the transition towards a clean energy system. Austria's energy research system promotes clear priorities, increases international engagement related to climate change activities, further funding possibilities for energy research, and increases Austria's research budget (Climate and Energy Fund, 2017). Besides, the Austrian government will introduce a ban on gas-fired heating systems in new buildings after 2025, alongside a compulsory phase-out of all oil- and coal-fired heating systems by 2035 (IEA, 2020).

The transportation sector is responsible for generating the most significant share of greenhouse gas emissions and rose by 38.1% compared to 2000, accounting for 30 % of Austria's total emissions in 2019 (European Parliament, 2021). To decrease the reliance on gasoline, Austria intends to permit the sale of petrol and diesel cars by 2030 the latest. The allowance of only zero-emission vehicles and the developing of a sustainable infrastructure that includes e-buses and e-bike sharing systems will strongly contribute to an effective mobility transition. Aiming to enhance the country's public transport services, Austria developed the "Mobility Masterplan 2030" (BMK, 2021). The plan outlines methods to improve traffic and transportation and increase the share of environmentally friendly mobility options (BMK, 2021). The number of electric vehicles in Austria experienced significant growth, increasing from 44,507 in 2020 to 127,987 as of May 2023. This surge represents a substantial rise in the share of e-vehicles within the country (Bundesverband Elektromobilität Österreich, 2023). Co-responsible for the positive development is the growing range of e-vehicle models and financial incentives for the sale and purchase of alternative fuel cars offered by the state (Klima- und Energiefonds, 2022; BEO, 2023).

To further promote the decarbonization of the transport sector, the Federal Ministry of Climate Protection, Environment, Energy, Mobility, Innovation and Technology (BMK) provides funds to develop a clean domestic transport system. The funds are accessible to companies and other entrepreneurial organizations, associations, and denominational institutions purchasing a 100 percent electric or hydrogen-powered vehicle. The fund also applies to acquiring charging infrastructure facilities and can be

claimed after implementation. Additionally, the BMK supports purchasing and operationalizing electric buses and light electric commercial vehicles that exclusively run on renewables (Klima- und Energiefonds, 2023). In 2021 the Austrian government introduced its eco-social tax reform, a climate strategy aiming to reduce greenhouse gas emissions and come closer to achieving the objective of reaching carbon neutrality by 2040 (BMF, 2022). According to the National Reform Program Report, the eco-social tax reform represents a complete change in Austria's tax system. Apart from substantial tax reductions, the reform introduces a new CO₂ pricing scheme that provides cost transparency concerning carbon emissions (Bundeskanzleramt, 2022). The eco-social tax reform's long-term objective is to "strengthen Austria's position as a business location for the long term and provide incentives for environmentally friendly behavior" (Bundeskanzleramt, 2022, p. 14).

2.2.4 The Energy Policy of Vienna

Vienna is the energy transition center of Austria, as the capital accommodates almost one-third of the country's population, including the metropolitan area (Hemis, 2020). Among all the regions in Austria, Vienna has the lowest energy consumption per capita, amounting to 18,140 kilowatt hours (kWh) in 2022. In comparison, the average energy consumption per capita in Austria stands at 32,741 kWh. Moreover, although the city is growing, the per capita emissions of greenhouse gases have continued to decrease, showing a decline of 25 % since 2005 (Stadt Wien, 2022). Unsurprisingly, the transport sector occupies the most significant share of the total energy consumption in Vienna with a total of 31.3 % in 2021 (Wien Energie, 2020). In the middle of the energy transition process, Vienna is initiating multiple projects on a local level, introducing various ways to generate and use green energy. To accelerate the Viennese energy transition, the government set up the Vienna Climate Council to advise politicians and the administration of the city of Vienna on the development of climate policy projects (Stadt Wien, 2023). According to the Advisory Board Science of the Vienna Climate Council, politics and administration must be intertwined, clear objectives must be defined, and sectoral implementation programs must be equipped with adaptable climate policy goals (Kromp-Kolb et al., 2020). Demonstrating an overview of current and future policies and introducing a strategic approach towards sustainability, the city of Vienna published the Vienna Climate Guide (Wiener

Klimafahrplan), touching on mobility, buildings, waste management, production sector, F-gases, and electricity and heat generation (Magistrat der Stadt Wien, 2022). Besides achieving predetermined energy targets, the guide also focuses on respecting social equity and fairness among citizens.

Along with the Vienna Climate Guide, the Smart Climate City Strategy Vienna envisioned Vienna's sustainable development (Stadt Wien, 2022). The city, for instance, plans to upgrade its streetlights to LED lighting by 2026 at the latest to increase energy efficiency. Converting public lights is a safe and cost-efficient way to reduce CO₂ emissions. In addition, Vienna started applying photovoltaic foil on the roof of subway stations as a pilot project. The intention is to use the generated electricity to operate the station's lighting, escalators, and elevators (Stadt Wien, 2021). To ensure a successful development in energy-efficient practices, Wien Energy offers energy consulting for optimized energy consumption (Wien Energy, 2023).

Besides financially supporting organizations and individuals in implementing photovoltaic systems through subsidies and grants, the Viennese government also embraces actions toward an electric mobility transition. In 2023, the Federal Ministry of Climate Protection, Environment, Energy, Mobility, Innovation, and Technology (BMK) will make 100 million euros available to support companies and associations that intend to convert their fleets to emission-free vehicles (BMK, 2022). Wien Energie, Austria's most prominent energy provider, contributes to Vienna's mission to decrease transport emissions by expanding the capital's charging infrastructure for electric mobility and providing hydrogen for hydrogen refueling stations for public transport (Wien Energy, 2023).

In 1998, Vienna introduced the OekoBusiness Wien, which is an environmental service package of the city of Vienna (Magistrat der Stadt Wien, 2009). The program supports companies in implementing environmentally friendly measures aiming to reduce the consumption of non-renewables. The program provides a range of services, including content-specific consultations, workshops, and networking opportunities. The program's objectives include strengthening the competitiveness of Viennese companies considering increased energy efficiency, strengthening the relation

between authorities and enterprises, and following economic success while reducing resource consumption (Stadt Wien, 2023).

2.3 Energy Transition Intermediaries

2.3.1 Introduction to Energy Transition Intermediaries

Due to complexity, governments often encounter difficulties introducing companies and societies to available subsidies, incentives, and policies for implementing renewable energy. Energy systems are complex, involving multiple stakeholders and, thus, various interest groups. Governments must comprehensively understand the energy sector's social, economic, and technical aspects to develop a practical energy policy framework. Moreover, public resistance and skepticism may hinder a country's energy transition. Some may see swapping to renewables as redundant and become opponents to climate change-related policies, as they deem sustainable measures a threat to their economic prosperity. Contrarily, people who believe actions towards a greener future create new jobs and benefit the economy are optimistic and value the importance of a clean energy transition (Thomas et al., 2022). It is essential to mention that some peoples' and countries' existence depends on fossil fuels. Associating a shift towards sustainable energy as a threat might therefore hamper a successful energy system change. That is why Thomas et al. (2022) advise policymakers to openly address downsides associated with climate policies, such as potential job losses and possible threats to humanity if an economy ignores the repercussions of climate change.

Moreover, switching to renewable energy systems often involves financial implications, as transitioning may require substantial investments. Governments must invest in capital-intensive infrastructure, research and development activities, and subsidies and incentives (IEA, 2020). Under those circumstances, governments may turn to intermediary actors expecting to overcome such challenges and facilitate the energy transition. An intermediary is "an organization or body that acts as an agent or broker in any aspect of the innovation process between two or more parties" (Boyle et al., 2021, p. 2). Increased attention has been paid to the role of intermediaries in the energy transition in the form of academic research. Literature on innovation identifies intermediaries as critical actors, as intermediaries facilitate the transfer of

knowledge or technology and link various stakeholders, including governments, businesses, communities, and research institutions (Klerkx & Leeuwis, 2009). It follows that energy transition intermediaries play a vital role in facilitating collaboration and synergy among multiple actors involved in the energy transition, lessening the burden of the government.

2.3.2 Actors in the Energy Transition

Numerous actors are involved in the energy transition of a country, and intermediary roles seek to bring them together. Actors include energy agencies, which embody international, national, or regional organizations vigorously promoting sustainable energy practices and supporting the expansion of sustainable energy markets. Energy agencies are defined as non-profit, independent organizations working closely with local authorities (European Commission, 2015). Likewise, research institutions are imperative actors concerning sustainable energy development, as universities or institutes provide innovative research about renewable energy technologies and conduct studies, helping policymakers in decision-making (Mousseau & Beaumier, 2017). Since transitioning to renewable energy systems requires new technologies which develop at a constant rate, technology companies play a vital role in providing and developing environmentally friendly solutions (Khan & Su, 2023). Also, non-governmental organizations (NGOs) focusing on environmental protection can be actors in energy transitions. NGOs advocate sustainable energy policies and create awareness of energy-related issues (Pant & Varma, 2021). Crucial in realizing an energy transition are financial institutions. Banks or investment firms can financially support energy projects and solutions. Green and low-carbon investments increased in volume, indicating the importance of sustainable solutions for the energy sector. The profitability of energy projects is a crucial factor because it influences the willingness of finance actors to provide investments (OECD, 2020). Unexpectedly, oil and gas companies are driving actors within the energy transition. Although oil and gas providers follow the trend of decarbonizing the energy sector, such companies must still meet the demand for oil and gas in the long run. However, they are adopting low-carbon business models, investing in decarbonization technologies specific to the oil and gas industry, and working towards improving their reputation. These efforts

demonstrate their commitment to survive and eventually lead the energy transition (Johnston et al., 2020).

2.3.3 Role and Functions of Energy Transition Intermediaries

Climate protection embodies a policy domain presenting significant complexity due to its global dimensions and multiple interdependencies. A collaboration among numerous actors from politics, policy-making institutions, civil society, and companies operating in various sectors is required (Fickl & Rehbogen, 2011). Under these circumstances, intermediary actors are crucial in creating an ideal breeding ground for such cooperation. Intermediaries assist in enhancing and developing socio-technical systems concerning sustainable practices. A key role is knowledge and information sharing. The linking bridge facilitates the exchange of renewable energy knowledge and distributes relevant expertise among different actors (Ptak et al., 2023). Facilitating sustainable knowledge transfer and connecting clean energy-related activities with prospective recipients are critical actions of such intermediaries (Kivimaa et al., 2019). Worth mentioning is that unlike in hierarchical systems, the cooperation between intermediaries and relevant actors is not based on regulations and laws but primarily on the motivation of the parties involved (Fickl & Rehbogen, 2011). Intermediary roles, such as klimaaktiv, build partner networks where each cooperation is based on a contractual agreement (klimaaktiv, 2023). This correlation aligns with the principles of goal-setting theory, which suggests that having clear and specific goals increases motivation and commitment to attaining predetermined targets (Gómez-Miñambres, 2012). Emphasizing the educational role, intermediaries offer education and training programs to increase knowledge and skills related to environmentally friendly practices. Energy transition intermediaries further support the implementation and development of energy projects. Their expertise, in combination with structural guidance, guarantees the successful execution of sustainable projects.

Moreover, financial intermediary roles provide finance and investment support by profitably allocating financial resources and facilitating access to finance for energy projects (Ehnert et al., 2022). Thus, intermediaries connect investors with clean energy project developers, accelerating sustainable growth in the energy sector (Busch & Hansen, 2021). Kanda et al. (2018) explored the different support roles of

intermediaries in ecological innovation. The authors concluded that important roles include forecasting and road mapping, information gathering and dissemination, fostering networks and partnerships, resource mobilization, and commercialization (Kanda et al., 2018). Further literature based on transition intermediaries recognizes intermediaries as actors embodying new sustainable visions, clarifying new policies, and acting as a voice for each party (Talmar et al, 2022; Van Lente & Hekkert, 2003).

Further energy transition intermediary practices include promoting energy-efficient buildings, raising public environmental awareness, and introducing alternative energy generation and consumption. Intermediaries can appear as non-governmental organizations, federal agencies, organizations, or private businesses and operate locally, nationally, or internationally (Bierwirth et al., 2017). Literature acknowledges transition intermediaries as essential actors in accelerating and forming transitions towards clean energy. Other tasks include establishing a network, developing sustainable strategies, advising on different funding sources, providing support during the application process, and consultation on current energy policies and instruments (Bush & Bale, 2017). In recent years, intermediaries' importance in the energy transition process has significantly increased as actor relationships, infrastructures, and technologies experienced a massive shift towards ecological considerations due to new environmental legislations and practices resulting from climate change consequences. Intermediate roles have become indispensable in today's energy policy development and implementation processes (Kivimaa et al., 2019).

Since energy transition intermediaries operate at a non-hierarchical level, monitoring and feedback become a complex task. Maintaining a strong relationship with partners requires the provision of feedback. Implementing a two-way feedback process can significantly enhance the partnership and maximize its value (MirrorWave, 2018). That being the case, clear and measurable objectives must be established to ensure the proper distribution of responsibility and competence. Successful monitoring includes factors such as clear performance standards, the definition of tasks, organizational structures, and defined evaluation criteria. Whereby overregulation exhibits adverse effects on the cooperation between actors (Fickl & Rehbogen, 2011).

3 Company Info – klimaaktiv

The climate protection initiative klimaaktiv serves as a practical example in this research. The following section elaborates on the initiative's organizational framework, focus areas, and the klimaaktiv partner network.

3.1 Organizational Details

klimaaktiv is a modern governance instrument introduced in 2004 and strategically managed by the Federal Ministry for Climate Protection, Environment, Energy, Mobility, Innovation and Technology (BMK). The Austrian Energy Agency is responsible for klimaaktiv's coordination as well as strategic and operative development. The climate protection initiative links climate-related activities throughout Austria and is vital in achieving the country's climate goals. It realizes this by fostering collaboration and enhancing social capital through partnerships with the private sector and civil society actors. klimaaktiv is an instrument integrated and linked to conventional policy instruments, specifically laws, regulations, and subsidies. Several programs of klimaaktiv can be associated with public-private partnerships, allowing to uncover strengths and weaknesses of each entity by providing various forms of cooperation between the state, economy, and civil societies (Fickl & Rehbogen, 2011). The initiative embodies a transformational program supporting socio-technical niches and contributing to changes in the socio-technical regime. klimaaktiv represents an intermediate role in Austria's energy transition as a bridge between the Austrian government and private individuals, companies, and communities. Its objective is to give stakeholders an understanding of current energy policies and make them more aware of available grants, subsidies, and incentives to accelerate Austria's energy transition. The organization aims to minimize carbon emissions by increasing the market share of sustainable technology and services. The initiative aims to support all individuals, businesses, and municipalities committed to safeguarding the environment and actively seeking to contribute to a successful energy transition (klimaaktiv, 2023).

A crucial task is maintaining and developing the klimaaktiv partner network. The Austrian Energy Agency plays a pivotal role in coordinating partnerships with various stakeholders, including economic partners and actors at both state and municipal

levels. This coordination encompasses activities related to the partner network, regional program management, and the klimaaktiv pakt2020 (Austrian Energy Agency, 2023). klimaaktiv offers specific programs in cooperation with actors working in the private sector and civil societies. The programs are awarded to organizations, associations, and private businesses by public tender. Contracts fix the collaborations and can be regarded as private-public partnerships. Adopting climate-friendly measures follows a bottom-up approach, wherein implementation standards are defined and implemented in collaboration with relevant actors, paying attention to the interests of each partner. Furthermore, klimaaktiv partners serve as multipliers, promoting the dissemination of knowledge and distributing klimaaktiv standards and guidelines. The media and networks of partners significantly expand the scope of the climate protection initiative, making them an integral success factor for klimaaktiv (Fickl & Rehbogen, 2011).

klimaaktiv follows a reporting system for programs, where annual reports are combined into general reports. This allows for a comprehensive overview of activities to track the progress of each program. The climate protection initiative provides information through various channels, including reports, publications, and updates on its official website. These sources provide detailed insights into recent achievements, energy projects, current and latest partnerships, and strategies to achieve Austria's climate objectives (klimaaktiv, 2023). The management, executed by the Austrian Energy Agency, in collaboration with the relevant department of the ministry, are responsible for conducting continuous monitoring activities. Monitoring occurs by comparing the previously defined climate targets with the achieved CO₂ savings. While achieving objectives within the framework of mobility programs can be precisely determined, the goal attainment in the field of energy programs is more complex. In response to that, the monitoring is not only subject to data but also to a qualitative reflection process (Fickl & Rehbogen, 2011).

3.2 The Role of klimaaktiv in Austrian Climate Policy¹

As an intermediary connecting multiple actors who aim to contribute to an effective energy transition, klimaaktiv plays a vital role in shaping Austria's climate policy.

¹ Section 3.2 based on klimaaktiv, 2023

Climate policy possesses multiple instruments for achieving sustainable development. Voluntary measures are one of several instruments included in the Austrian climate policy framework. These serve as orientation and motivate individuals and companies to rethink their climate strategy while raising awareness for environmentally friendly measures. Within the Austrian climate policy framework klimaaktiv embodies a voluntary instrument. klimaaktiv's heating checks, buildings standards, Pakt2020, or mobility management program serve as valuable products assisting companies in facing a climate-neutral future. In addition to voluntary measures, climate policy also relies on financial instruments, such as climate funding from the federal government, housing subsidies, or green finance. The financial instruments associated with climate measures greatly rely on climate-friendly investments. klimaaktiv mobil is involved in both voluntary efforts and financing. The mobility program offers voluntary implementation programs and funding opportunities for green mobility. The third instrument in the Austrian climate policy is legal regulations which set the framework conditions for implementing climate measures, such as building codes or traffic regulations.

klimaaktiv participates in climate policy by establishing a network of experts to provide clarity and integrate new developments. klimaaktiv relies on a set of tools to facilitate the implementation of climate measures, such as online tools, fact sheets, guidelines, or quality standards. Another crucial aspect of the initiative is communication on multiple levels through personal contacts, partners, and media.

3.3 Focus Areas

Pursuing to achieve carbon neutrality in Austria, klimaaktiv offers a broad range of services and support to help companies reduce their carbon footprint and assist them in transitioning towards clean energy systems. An essential task of klimaaktiv is to ensure strong content and organizational integration between its programs and partners, receiving positive recognition for its synergy development among stakeholders. Each program associated with companies intends to enhance employee understanding of energy and environmental concerns while encouraging employees to participate in climate protection efforts actively. As of 2020, klimaaktiv's partner network encompasses 265 economic partners, 12 pakt2020-partners, more than

21,000 competence partners, and around 15,000 klimaaktiv mobil project partners (KMU Forschung Austria, 2020). Supporting various kinds of businesses, Klimaaktiv focuses on four primary areas: buildings, saving energy, renewable energy, and mobility.

To support businesses that plan to build or renovate a company building, the climate protection initiative developed the klimaaktiv building standards to reduce the energy consumption of company buildings. The building program's objective is to increase the share of energy-efficient buildings in Austria and provide comprehensive guidance for companies intending to construct sustainable office buildings. By adhering to the klimaaktiv building quality standards, businesses ensure that company buildings fulfill the latest and most efficient construction criteria. Companies following the initiative's building standards also receive the klimaaktiv badge that guarantees the best quality (klimaaktiv, 2023). Klimaaktiv offers training programs and advice to raise awareness about the klimaaktiv building standards and initiate its implementation. As the building standards fall within the responsibility of the federal states, the program has regional specialist partners who consult locally, respecting the regulations specific to their respective states (BMK, 2020). This standard serves as a supplement to the mandatory building codes and is voluntary. It, furthermore, functions as a catalyst for transforming the market by exerting pressure for change (Fickl & Rehbogen, 2011).

Energy Saving focuses on two areas, namely "energy efficient companies" and "topprodukte.at". The program "energy efficient companies" intends to increase energy efficiency in Austrian companies and reduce their CO₂ emissions. klimaaktiv's offering entails consulting services, assisting companies in implementing an Energy Management System (EMS) according to the international standard 50001 to effectively decrease energy costs, energy consumption, and CO₂ emissions. The design incorporates technical, strategic, and organizational measures to improve the company's energy efficiency. Klimaaktiv provides additional guidelines on implementing the EMS into the company and offers an initial assessment check to establish the baseline for implementing the energy management system. Furthermore, klimaaktiv awards companies (project partners) and providers of energy-efficient technologies and services (program partners). "topprodukte.at" is a web-based information service informing consumers about the best energy-efficient

products (klimaaktiv, 2023). The program cooperates with Austria's leading electronics retailer "MediaMarkt," intending to provide more transparency and accelerate the development of energy-efficient goods (MediaMarkt, 2023).

The program "Renewable energy" focuses on five areas: renewable heat, bioeconomy, energy wood, heating plants, and biogas. The program's objectives are the increased and more efficient use of renewables, using quality management systems to promote renewable energy and creating transparency regarding the use of sustainable energy systems (klimaaktiv, 2023).

As the transport sector is responsible for almost three-thirds of Austria's CO₂ emissions, klimaaktiv puts great effort into promoting a successful mobility transition. The initiative consults companies on environmentally friendly and cost-effective transport options using energy-saving, clean, and climate-friendly vehicles. The klimaaktiv mobil advisory program for businesses offers companies complimentary assistance with funding consultation and preparing funding documents. The program informs companies about the benefits of corporate mobility management and encourages its implementation. They further offer guidance on implementing electric vehicle fleets, developing cycling infrastructure, and promoting public transportation usage. Head of the klimaaktiv program "Mobility Management for Companies, Developers, and Fleet Operators" is HERRY Consult, a company committed to the topic spectrum mobility research and consultancy (klimaaktiv, 2023).

3.4 Partner Network²

The initiative's uniqueness is based on trust-based alliances with relevant stakeholders to enhance policies and regulations concerning combating climate change and its repercussions. That being the case, the initiative benefits from a vast network of klimaaktiv partners working collaboratively towards a climate-friendly future. The initiative offers different ways of becoming a verified klimaaktiv partner:

² section 3.4 based on klimaaktiv, 2023

3.4.1 Competence Partner

Competence partners can acquire subject-specific knowledge by attending education and training courses in construction and renovation, energy saving, renewable energy, or mobility. This form of partnership is valid for three years. It can only be extended by showing evidence of further training, such as klimaaktiv courses or project-related activities meeting the klimaaktiv standards. Partners within the competence network gain access to information on the latest developments and technologies, allowing them to deepen further and apply their knowledge. To guarantee an effective knowledge exchange, klimaaktiv collaborates with educational institutions to equip competent partners with the necessary knowledge about the latest technology for energy efficiency and current renewable energy trends. Certified competence partners can use continuing education training on the newest energy efficiency and renewable energy knowledge. Partners benefit from a positive image and are visible actors in the Austrian climate protection progression.

3.4.2 Project Partner

Implementing measures that reduce CO₂ emissions using klimaaktiv quality standards and guidelines verifies organizations and companies as klimaaktiv project partners. Unlike program partners, project partners intend to limit the partnership to just one project. An example is constructing premises considering eco-friendly building designs or an organization's extensive shift to green fleets. Through voluntary agreements to reduce CO₂ emissions, project partners commit to implementing appropriate measures to address climate protection. Stakeholders engaging in this form of partnership benefit from public attention through joint press activities and events while promoting climate protection practices. In addition to a positive public image, adhering to the klimaaktiv criteria during the project's implementation process ensures that the highest quality standards are met. This approach not only enables maximum savings but also optimizes the utilization of available subsidies.

3.4.3 klimaaktiv Pact Partner

Large companies significantly contribute to Austria's total CO₂ emissions value. Such enterprises must minimize their greenhouse gas emission. That is why the BMK introduced a dedicated instrument targeting large businesses, namely the klimaaktiv

pact. The klimaaktiv pact is a national agreement among large-scale enterprises in Austria. Companies signing the agreement commit to reducing their greenhouse gas emissions by at least 50 % before 2030. To accomplish this goal, pact partners develop comprehensive climate protection concepts that encompass measurable and effective measures in five key areas: energy saving and efficiency, building and renovation, mobility, renewable energy, and awareness-raising activities among stakeholders. The implementation of measures and target achievements are monitored and reviewed annually to ensure transparency and credibility. The klimaaktiv pact aims to demonstrate that energy efficiency and climate protection can be aligned with business success. Eleven major companies signed the klimaaktiv pact and committed to drastically reducing their CO₂ emissions. Among the partners are McDonald's Austria, HYPO ONE, ORF, REWE International AG, UniCredit Bank Austria, and more.

4 Methodology

This research utilizes semi-structured guided expert interviews, thus relying on a qualitative data collection approach. The interviewees comprise one representative of the climate protection initiative klimaaktiv and four partner companies located in Vienna. This section outlines the empirical approach, emphasizing the implementation and evaluation of the interviews.

4.1 Study Design

The world of research distinguishes three kinds of research designs, namely quantitative, qualitative, and mixed methods. Qualitative research is commonly used to understand people's experiences, beliefs, interactions, or attitudes. While quantitative designs rely on a deductive data analysis approach, qualitative research uses inductive and deductive data analysis. The collected data consists of non-numeric data, so the researchers can understand opinions, concepts, or experiences by understanding the phenomenon in-depth. Creswell (2018) highlights five qualitative inquiry approaches: narrative research, phenomenological research, grounded theory, ethnography, and case studies.

This research paper aims to determine the level of involvement of energy transition intermediaries in a company's transition towards clean energy systems. Under those circumstances, the paper analyses the work of klimaaktiv, an Austrian climate protection initiative embodying an intermediary role in the nation's energy transition process. The initiative provides comprehensive services to companies seeking to increase sustainable efforts, including support and advisory programs. Aiming to accelerate Austria's energy transition, klimaaktiv established a broad network of partners consisting of competence, project, and program partners. Through the partner network, klimaaktiv intends to support various businesses in Austria in their energy transition process. To answer the research question "To what extent are intermediaries involved in companies' intention to use renewable energy sources?" it requires an in-depth understanding of both sides, the partners' and klimaaktiv's. Therefore, the research relies on a qualitative research design. The qualitative analysis of the data material allows the detailed mapping and investigation of social structures, contexts, and relationships. Interviewing multiple klimaaktiv partners on the one side

and representatives of the initiative on the other will allow to thoroughly investigate the role and influence of intermediaries in companies' intention to transition to a renewable energy system. The interview will be based on a semi-structured interview approach, as this type of data collection allows asking follow-up questions and gaining deeper insights. Semi-structured interviews consist of pre-determined open-ended questions not following a specific order and allow for interactive engagement with the interviewee. This allows the researcher to discuss topics in more detail. To run an effective interview, the researcher must possess relevant knowledge about the subject being studied to ask appropriate follow-up questions, ensuring the validity of the research (Libakova & Sertakova, 2015). Thus, the expert interviews will occur at the end of May 2023 after the written literature review.

4.2 Guided Expert Interview Development

As a method of collecting the data, the author uses expert interviews based on guidelines. In the following, the methodology of the guideline-based interview is briefly described, and the setting of the interviews and the methodological approach of the analysis are discussed.

A guided interview is an interview approach in which the questions are defined before the start of the interview. However, it is essential to note that the interview guide comprises open-ended questions, meaning there are no pre-determined or ready-made answers. Worth mentioning is that an interview always carries the risk of the conversation getting off track and thus not collecting the desired information. The previously defined questions help to maintain a 'red thread' during the interview and to facilitate a systematization of the evaluation. A guide-based interview is thus a form of open discussion. The aim is to generate a narrative continuity supported by the interview guide. However, this should be considered a rough guideline, subject to modification and supplementation during the interview (Giereth, 2011).

The expert interview is the specific form of guided discussion used for this research. The success of surveys based on expert interviews highly depends on the quality of the selected interviewees considering whether they meet the expectations in the interview situation and whether they can provide the required information. Thus, an expert embodies a person with specialized and comprehensive knowledge about the

subject matter (Anke, 2015). In the context of this research, the researcher identified suitable experts, relying on a set of selection criteria. First, the interviewed company must be a part of the klimaaktiv partner network, hence being acquainted with the work of klimaaktiv, and second, the company must have its registered office in Vienna and its surroundings since this research examines the influence of intermediaries of companies in Vienna. After carefully choosing potential companies listed as partners on the klimaaktiv website, the researcher obtained the contact information and emailed them individually. Since the researcher seeks to ensure a representation of both klimaaktiv partners and klimaaktiv representatives, she additionally contacted professionals working for and representing klimaaktiv who are shown as contact persons on the klimaaktiv website. The author conducted five individual interviews with one klimaaktiv representative and four klimaaktiv partner companies, who were directly involved in cooperation processes and thus have experience in the field of energy transition in companies. By conducting individual interviews, the researcher benefited from a wide range of experiences allowing a comprehensive analysis of the research question considering various perspectives. Primarily, having representation from klimaaktiv provides a valuable opportunity to gain direct insights into the initiative's intentions. All interviewees are distinguished by their expertise in the subject matter and possess specific knowledge contributing to answering the research question.

In the research process, formulating relevant questions and establishing an appropriate interview guide are crucial steps aligning with the theoretical framework. Thus, the researcher developed an interview guide with questions designed to answer the research question. As the researcher intends to interview two groups, klimaaktiv representatives and klimaaktiv partners, two separate interview guides containing tailored questions have been established. The researcher decides to follow a semi-structured interview approach that allows asking follow-up questions to obtain a thorough understanding. Appendix 1 contains the interview guides providing a comprehending set of questions for conducting the interviews. The interviewees are provided with the interview questions beforehand, alongside the request to review and prepare answers. The interview guide created for klimaaktiv contact persons comprised five questions. The questions are designed to acquire an insightful

understanding of the initiative's objectives, cooperation partners, offers and services, and prospects. The interview questions for klimaaktiv partners, on the other hand, ask queries on how they became aware of the climate protection initiative, their motivation behind becoming a partner, what benefits they acquired through the partnership, the specific measures the partner companies implemented and the level of support klimaaktiv provided during the implementation process, as well as the partner company's future sustainable outlook.

Before distributing and utilizing the interview guides, the interview guidelines have received approval from the Institutional Review Board (IRB). The following guides are the basis for the expert interviews conducted in this work:

klimaaktiv Partner Companies

How did you become aware of the climate protection initiative "klimaaktiv"?

How would you describe the role of klimaaktiv and its influence on the national energy transition?

Why did you decide to become a partner company of klimaaktiv?

What benefits have you experienced through the partnership with klimaaktiv, and what potential do you see for the coming years?

What measures have you implemented since beginning your partnership with klimaaktiv, and how has klimaaktiv assisted you? Please consider both information and concrete support.

How has the collaboration with klimaaktiv influenced your long-term strategy regarding climate-friendliness and sustainable practices, and where do you see your company in the future?

Klimaaktiv Representatives

How would you describe the role of klimaaktiv as an intermediary in the energy transition process of companies in Vienna?

Could you please explain the climate goals listed on your website in more detail and describe how klimaaktiv contributes to the national energy transition?

How does klimaaktiv collaborate with other stakeholders, such as government agencies, energy utilities, and environmental organizations, to promote the energy transition in companies in Vienna?

What specific services and support measures does klimaaktiv provide as an intermediary to promote the energy transition progress in Vienna companies?

How do you envision the future development and significance of intermediaries, particularly klimaaktiv, regarding the energy transition of companies in Vienna?

4.3 Qualitative Content Analysis – Philipp Mayring

The data analysis process in this work follows the qualitative content analysis according to Philipp Mayring, as this approach is a standardized method, which is mainly, but not only, suitable for large amounts of transcribed material, whereby a mix of inductive and deductive category formation was chosen. This approach allows more complex linguistic material to be analyzed systematically and comprehensibly (Mayring, 2015).

The method follows a gradual structural reduction of the statements provided by the interview partners, ultimately extracting the core message. The process involves four phases. Initially, the statements of each interview participant are paraphrased to achieve greater clarity and quality of the statements, preparing them for the subsequent analysis process, which is the step of generalizing the statements. The next phase involves shortening the response to capture the key message. Ultimately, the researcher allocates a category to each analyzed statement, which are outlined below. This extraction process helps the researcher to capture the key message allowing to categorize and structurally analyze the interview responses. The categories can be formed inductively, deductively, or mixed. This research contains one set of categories consisting of three categories derived from the interviews as well as the literature. Appendix 2 contains an excerpt of the evaluation of the interviews. The categories utilized are outlined as follows:

1. The Role of klimaaktiv
2. Partnership with klimaaktiv
3. Climate Measures
4. Outlook

The material of this work consists of transcribed interviews, which are systematically analyzed. The qualitative content analysis, according to Mayring (2015), reduces and structures the original text to prepare its findings for further research. Following this approach, commonalities and differences in the material can be identified and highlighted. Hence, in this research, various perceptions about the supportive role of klimaaktiv can be compared and evaluated. The content analysis method ensures high relevance to the subject matter since the analysis depends on the material itself and the categories derived from the study matter. The categorization process makes the interview statements systematically understandable and allows for targeted comparisons. According to Mayring (2015), the qualitative analysis distinguishes between three approaches: summary, explanation, and structuring. In this paper, the author has opted for the summary content analysis, following a mixed categorization approach.

4.4 Data Collection

The interviewees for this study were selected based on their specific expertise and knowledge relevant to the research topic. The interviewed individuals greatly vary in terms of company position and experience. The companies also differ in size, industry, and organizational structure. This made it possible for the author to combine, relate and contrast different experiences concerning klimaaktiv. The interviews were in-person at the participants' office or via Microsoft Teams. Due to time constraints, one interview partner could not attend the interview in person or online. Alternatively, the participant answered the questions of the interview guide in written form and submitted the completed questionnaire. The responses provided by this participant were then analyzed alongside the responses from the other interview partners. All

interviews took place between May 26 and June 5, 2023. Before starting the interview, the questioned expert is asked permission to record the interview via the "Voice Memo" application on the researcher's iPhone, which will be saved as an audio file and deleted after the researcher has transcribed the audio file to text. If the interview partners wish to conduct the interview via Microsoft Teams, the researcher seeks permission to record the conversation. By participating in the discussion, the participants agree that their data will be collected, used, and stored following the following conditions: The data collected will be solely used for research purposes. Furthermore, the interview partner agrees that they will be identifiable and that their identities can be matched with the answers they provide. Participants can withdraw from the interview at any stage of the research process without giving a reason. The interview language is German. The introduction mentioning all conditions can be found in Appendix 1 alongside the interview guide.

The researcher transcribes each recorded interview. The transcription follows a semi-verbatim format, omitting filler words, verbal pauses, and false starts. Furthermore, grammatical errors will be corrected where necessary. Subsequently, the transcribed interviews are used for the analyzation process.

Tabular overview of all interview participants:

#	Name	Company	Position	Relation to klimaaktiv	Date	Place
1	Stephan Fickl	Austrian Energy Agency	Program Director klimaaktiv	klimaaktiv management	25.05.2023	Participant's Office
2	Gilbert Gugg	HERRY Consult	Consultant	klimaaktiv mobil project partner	26.05.2023	Microsoft Teams
3	Natalie Egreteau	Boehringer Ingelheim	Environmental and Sustainability Senior Specialist	klimaaktiv mobil and energy-efficient companies project partner	26.05.2023	Microsoft Teams
5	Roswitha Reisinger	Lebensart Verlag	Managing Partner	klimaaktiv partner	31.05.2023	E-Mail
4	Claudia Mikes	HYPO NOE	Head of Investor Relations & Rating	klimaaktiv pact partner	05.06.2023	Microsoft Teams

Table 1: Overview Interview Partners

4.5 Introduction of the Interview Partners

Interview partner 1: Stephan Fickl – Program Director klimaaktiv

Stephan Fickl serves as the program director for klimaaktiv and embodies the representative role of klimaaktiv. This research seeks to elaborate on the role of intermediaries in the energy transition of companies. That is why this interview partner represents an essential contribution to the present study, as klimaaktiv personifies an intermediate role in Austrian energy policy. Therefore, this interview partner can provide deep insight into the work of klimaaktiv and thus intermediary roles within energy transitions.

Interview partner 2: Gilbert Gugg – Consultant at HERRY Consult

The second interview partner is Gilbert Gugg who works as a consultant at HERRY Consult. The consulting firm plays a predominant and noteworthy role within the network of klimaaktiv. It manages the program “Mobility Management for Businesses, Property Developers and Fleet Operators” on behalf of the ministry. HERRY Consult can be described as a middleman connecting klimaaktiv mobility projects with potential and interested companies by providing comprehensive consulting services concerning green mobility practices. The consulting company HERRY Consult is characterized as a “project partner” of klimaaktiv.

Interview partner 3: Natalie Egreteau – Environmental and Sustainability Senior Specialist at Boehringer Ingelheim

Natalie Egreteau is an Environmental and Sustainability Senior Specialist at Boehringer Ingelheim, a globally renowned research-driven pharmaceutical company. Boehringer Ingelheim has been a klimaaktiv project partner in the area “Energy-efficient Companies” since 2016. The company can already show three implemented measures that were honored by klimaaktiv including measures directed towards the optimization of refrigeration and ventilation system, process optimization steam system BIO, and heat recovery. Moreover, Boehringer Ingelheim is a klimaaktiv mobil partner and has already implemented multiple measures addressing mobility management and active employee mobility. During the planning and implementation

process of mobility measures, HERRY Consult provided guidance and consultation services.

Interview partner 4: Roswitha Reisinger – Managing Director at Lebensart Verlag

Lebensart VerlagsGmbH is a private Austrian sustainability magazine publisher. The company frequently informs about sustainability topics encompassing, economic, social, and environmental aspects. Besides providing information about how to live sustainably, the magazine also offers concrete solutions to environmentally conscious individuals, such as tips for reducing energy consumption or ways of adapting environmentally friendly eating habits.

Interview partner 5: Claudia Mikes – Head of Investor Relations & Rating at HYPO NOE

Claudia Mikes holds the position of Head of Investor Relations & Rating at HYPO NOE. HYPO NOE Landesbank is the oldest and largest Austrian provincial mortgage bank. The company is well-positioned in Lower Austria as well as in Vienna and offers a wide spectrum of financial services tailored to meet the needs of the public sector, businesses, and real estate. Alongside large real estate projects HYPO NOE focuses on the financing the construction of non-profit and commercial housing as well as infrastructure. In 2021, HYPO NOE signed the klimaaktiv pact and made a commitment to reduce the company's carbon footprint by at least 50 % before 2030. The regional mortgage bank is not only klimaaktiv pact partner but also program partner in the area “

5 Data Results and Analysis

The subsequent section provides a comprehensive analysis of the evaluated interviews according to their respective categories and compares the findings intending to determine differences and similarities. The first category, referred to as “The Role of klimaaktiv” highlights the statements given by the interview participants concerning their perception of the nature and overall function of klimaaktiv. “Partnership with klimaaktiv” corresponds to the second category. Although this category might include similar responses as the first category, the second specifically elaborates on the relationship and cooperation with the climate protection initiative from the perspective of the interviewees. The third category identifies and discusses implemented climate measures by the partner companies and their relation to klimaaktiv in terms of support. Lastly, Category 4 examines the outlook concerning each company’s sustainable future strategies and the prospective collaboration with klimaaktiv. The last subsection of this unit provides a summary of the individual category evaluations and compares the statements of the interviewees with one another. The aim is to identify interfaces, differences, and contrasts among assertions.

5.1 Category 1 – The Role of klimaaktiv

The first interview partner, who embodies the program director of klimaaktiv and thus serves as the representing role of the climate protection initiative in this research, states that klimaaktiv builds on and strengthens climate activities that the supported company already implemented. The interviewee further states that klimaaktiv typically intervenes where companies struggle to progress and move forward. In this context, the representative of HERRY Consult, a middleman between klimaaktiv and its partner companies, managing the program "Mobility Management for Businesses, Property Developers and Fleet Operators," affirms that businesses are always in different stages of the company's energy transition when they get in touch. Therefore, HERRY Consult provides guidance on intensifying and enhancing existing energy measures. In this context, both experts point out that klimaaktiv amplifies existing climate strategies within companies.

Furthermore, the klimaaktiv representative frequently emphasizes klimaaktiv's role of strengthening the initiative's network of partners. The first interview partner further

states that thanks to the comprehensive partner network, klimaaktiv can promptly access expert knowledge and provide information about various topics. Also, interview partner number three, who works at Boehringer Ingelheim and holds the position of Environmental and Sustainability Senior Specialist, values the regular sustainability-related exchange among partner companies. She specifically states, "even though partner companies do not operate in the same industry, the exchange of ideas generates valuable and practical insights, as they encounter similar challenges." The Managing Partner of Lebensart Vertrag considers that klimaaktiv plays a vital role in pooling relevant information in order to establish meaningful connections between klimaaktiv's target groups. The Head of Investor Relations & Rating at HYPO NOE, a partner of the klimaaktiv pact, also mentions klimaaktiv's connective role, as the initiative enables pact partners to exchange views and expertise, allowing them to continually "learn from and with each other." Upon analyzing the interviews conducted with the three partner companies, it is evident that all interviewees recognize and value the role of klimaaktiv as a connecting platform among various stakeholders.

The program director of klimaaktiv confirms that the generation of applicable laws is a challenging task. In this matter, he further expresses that klimaaktiv plays a vital role in sharing valuable know-how with the ministry, which has been obtained through interaction and exchange with partner companies. Noteworthy is that the information goes not only to lawmakers but also back to companies, informing them about upcoming regulations. This aims to create acceptance and understanding of new policies among companies.

Another critical role of klimaaktiv is the provision of various tools that companies, and their sustainability managers can apply. Stephan Fickl states that klimaaktiv provides overview brochures or technical guidelines to enhance companies' energy efficiency. klimaaktiv, therefore, includes relevant information about various technologies, such as steam systems, compressed air systems, or lighting systems. Ensuring that the tools are practically applicable, the initiative collaborates with experienced technology partners. Therefore, the provision of tools is an imperative service of klimaaktiv that companies seem to embrace and take advantage of to improve energy efficiency, optimization, and consumption.

Answering the question of how new knowledge and innovation enter the network of klimaaktiv, Stephan Fickl, program director of klimaaktiv, states that the initiative collaborates with research institutions to try out new tools that can be subsequently adopted and implemented by companies. Providing incentives, klimaaktiv offers research funding to foster innovation. For instance, the widely acknowledged klimaaktiv building standard has been developed through this collaborative approach. According to the interview partner, klimaaktiv's main task is to make theoretical knowledge practically applicable. Worth noting is that interview partner one, who represents klimaaktiv, highlights klimaaktiv's provision of "best practice examples" as an essential element of the initiative. He states that successful projects that utilized different klimaaktiv tools serve as best practice examples to inspire other companies to adopt similar approaches. The interviewee explicitly argues that "companies prefer learning from other companies than energy consultants." Interestingly, interview partner two, who works at HERRY Consult, confirms this statement by claiming that clients often inquire about projects already undertaken by other companies. Additionally, he states that providing examples of good practice happens as part of efforts to create public awareness. The observation that companies value real-life examples can be correlated to the previously discussed finding that companies appreciate the exchange between like-minded businesses. Either observation primarily concentrates on learning from other companies' experiences, promoting active engagement and willingness to implement sustainable measures.

Interview partners one, three, and four specifically mention that they view klimaaktiv as a motivating force that drives the adaption of climate-friendly solutions in their companies. Interviewee three says that besides benefiting from access to technical information and the exchange among companies, Boehringer Ingelheim also takes advantage of klimaaktiv's motivating role. She states that by signing a contract between the company and the initiative, they committed to reducing CO₂ emissions which "gives them a little nudge" towards achieving the goals outlined in the agreement. Also, for Lebensart Verlag, klimaaktiv represents a motivating factor in implementing sustainable measures.

5.2 Category 2 – Partnership and Cooperation with klimaaktiv

klimaaktiv relies on an established consultation network. According to the program director of klimaaktiv, klimaaktiv does not provide consultation services to companies directly. Instead, they collaborate with energy consultants who provide subsidized consultation to companies in Austria. He further states that the climate protection initiative powerfully works in the background, supporting the advisory network. One of the consultation providers is HERRY Consult. According to the company's interviewed consultant, they offer consultation services and assistance to all companies in Austria concerning mobility. The interview partner argues that HERRY Consult assists during the transformation process by aiming to achieve the company's climate targets. In this case, klimaaktiv acts as an agent connecting the consulting service company with those businesses that seek advice.

Interview partner three, working at Boehringer Ingelheim, believes that the partnership with klimaaktiv and the associated exchange with like-minded businesses makes them aware of new and emerging technologies. She states that the knowledge comes from outside the company and provides vital inputs. Worth noting is that she values the feedback mechanism between Boehringer Ingelheim and klimaaktiv. Additionally, she states that the feedback process is a two-way conversation, meaning that not only the partner company receives feedback but also klimaaktiv. Additionally, Natalie Egreteau considers it essential to provide klimaaktiv with the company's experiences and challenges encountered throughout their energy transition journey to collaboratively find solutions and provide companies with information also to businesses that do not operate within the same industry. Also, the program director of klimaaktiv notes that reviewing ideas and receiving feedback is crucial for the further development of the initiative. Furthermore, the interview partners Natalie Egreteau and Roswitha Reisinger point out that they intend to strengthen klimaaktiv and its underlying philosophy through the partnership.

Stephan Fickl mentions that klimaaktiv organizes workshops to encourage the exchange among partner companies and to inform stakeholders about recent developments. Also, interview partner five, working at HYPO NOE, states that the company capitalizes on regular occurring workshops with pact partners. These

workshops include introducing partners to current projects, which promotes information sharing. She further says that the exchange among partners is beneficial and exciting, fostering motivation and the partnership.

As mentioned in Category 1 and indicated in the company info section, a partnership with klimaaktiv relies on a contract signed by both parties. Two interviewees mention this contractual relationship. HYPO NOE embodying a pact partner signed an agreement to achieve the predetermined targets before 2030. Also, Natalie Egreteau mentions the contract-based partnership considering it a commitment towards achieving the commonly determined energy goals.

5.3 Category 3 – Climate Measures

The interview with the first participant reveals the following procedure when implementing measures: First, the interested company receives consultation services that involve discussing its current state and the most suitable measures that can be implemented and tailored to the company's needs. The second step consists in realizing the recommended actions within the company. Lastly, the company receives financial compensation for the implementation after carrying out the measures. The second interview partner affirms that HERRY Consult consults clients on funding programs that are offered by klimaaktiv mobil that provide financial support for implemented mobility measures. HERRY Consult provides comprehensive advice on project funding opportunities and how to capitalize on existing funding programs while considering regulatory conditions effectively. He also says that Vienna stands out from other federal states by offering specific subsidies in the area of cycling. He attributes this to shorter travel distances within Vienna. That being the case, transport bicycles have become a particular focus in Vienna regarding funding considerations. According to the third interview partner, Boehringer Ingelheim has implemented several measures in collaboration with klimaaktiv and HERRY Consult within the klimaaktiv mobil program to become a cycling-friendly employer. For example, the company took steps towards enhancing bike-friendly parking amenities, such as constructing a two-story bicycle parking facility on the company premises in Vienna. In addition to bike parking possibilities, employees enjoy free bike services and a fixed bike service station at the location. Moreover, the managing director of Lebensart

Verlag places great emphasis on clean employee mobility and emphasizes that employees only use the car in case of emergencies. In this context, the interview partners from HERRY Consult, Boehringer Ingelheim, and Lebensart Verlag highlight the importance of active employee mobility. To support active mobility, Boehringer Ingelheim constructed, in collaboration with the ÖBB and klimaaktiv, a new exit at the train station on the side of Boehringer Ingelheim. The company also introduced "Jobtickets," which are public transportation passes employers provide to employees. Within mobility management, it can be argued that companies place increased importance on promoting environmentally friendly modes of transport to their employees. In response to such emerging trends, klimaaktiv provides expert advice and support opportunities considering recent developments.

During the interview with the fifth participant, the Head of Investor Relations and Rating at HYPO NOE elaborated on the klimaaktiv pact and its committed objectives. As a klimaaktiv pact partner, HYPO NOE has made a commitment to reduce the company's CO₂ emissions by 80 %, improve energy efficiency by 30 % based on the 2015/16 baseline, and aim for a 65 % share of renewable energy sources. All targets must be achieved no later than 2030. According to the interview partner, it appears that the company is on track to achieve their predefined energy targets. The interview partner confirms that the company is aiming for a total reduction of CO₂ emissions by 80 %, exceeding the initial target of 50 %. This suggests that the company's efforts have been successful in driving significant progress towards more sustainable practices. The managing director of Lebensart Verlag affirms that the company was able to reduce its energy consumption by 70 % compared to 2005 levels. Interview partner three states that the production company Boehringer Ingelheim puts particular emphasis on measures related to energy optimization, such as decarbonization, heat recovery, and the optimization of plants. As stated under Category 1, companies can take advantage of various tools offered by klimaaktiv that help companies to improve energy efficiency, optimization, and consumption. That being the case, klimaaktiv partners can draw on tools provided by klimaaktiv to assist and be incorporated in implementing energy measures.

5.4 Category 4 – Outlook

The first interviewee describes klimaaktiv as a "pull mechanism" within the Austrian climate policy, meaning that klimaaktiv pulls companies towards implementing climate-friendly measures. At the same time, regulatory regulations and laws are the push factors. He expresses that klimaaktiv wants to retain this role in the future. Moreover, he recognizes that companies are implementing individual measures but are not yet considering a complete transition to renewable energy systems. Therefore, he believes it is necessary to establish a step-by-step fossil fuel exit strategy to steer companies toward a fully climate-neutral future. Furthermore, the interview partner refers to klimaaktiv as a "learning system" that develops in alliance with its surroundings since technologies, the environment, and the attitude of partners are subject to constant change. klimaaktiv's mission is thus to effectively make new knowledge and technologies applicable and usable. He states that the core characteristics of klimaaktiv will remain unchanged; however, there will be changes and further developments in terms of content. The second interview participant also notes that within recent years significant changes occurred concerning content-related and technical aspects within the mobility sector. He further believes that the "Mobility Management for Businesses, Property Developers and Fleet Operators" program will gain relevance as the demand for mobility consultation has increased significantly not only because an increasing number of companies want to act more sustainably but also because evolving environmental regulations and laws oblige companies to reduce CO₂ emissions. That being the case, the second interviewee believes that more companies will have to deal with the topic of green transportation. As a result, the demand for assistance and support by HERRY Consult and thus klimaaktiv will increase.

klimaaktiv pact partners, such as HYPO NOE, commit themselves to achieving predetermined targets by 2030. The representative of HYPO NOE is confident that the company wishes to continue cooperation with klimaaktiv also far beyond 2030. She considers the klimaaktiv a magnificent initiative significantly impacting the company's sustainable development.

klimaaktiv is for the managing partner of Lebensart Verlag, a motivational factor and a valuable sign to the outside world. However, since the publisher focuses on sharing sustainability information and is thus extensively involved in eco-friendly contributions, she believes that also in the absence of klimaaktiv, they would continue with their sustainability measures in the same manner. Understandably, the program director of klimaaktiv expresses the view that it would be ideal for the future if klimaaktiv won't be needed anymore.

5.5 Summary and Comparison

In this subsection, the statements correlating to the corresponding categories will be summarized and compared to provide a brief overview outlining the collected and analyzed data. The table below presents a visual summary of the key points discussed by each interviewee in relation to each category:

Category	Interviewee 1	Interviewee 2	Interviewee 3	Interviewee 4	Interviewee 5
Role of klimaaktiv	<ul style="list-style-type: none"> • Strengthening the partner network • Access to expert knowledge and topic-specific information • Information sharing among actors • Provision of tools and best practice examples • Motivating factor 	<ul style="list-style-type: none"> • Provision of best practice examples to create public awareness 	<ul style="list-style-type: none"> • Exchange among partner companies • Motivating factor 	<ul style="list-style-type: none"> • Pooling of relevant information • Connecting target groups • Motivating factor 	<ul style="list-style-type: none"> • Information and experience exchange
Partnership with klimaaktiv	<ul style="list-style-type: none"> • Organization of workshops 	<ul style="list-style-type: none"> • Assisting in achieving climate targets 	<ul style="list-style-type: none"> • Two-way feedback 	<ul style="list-style-type: none"> • Seek to strengthen klimaaktiv 	<ul style="list-style-type: none"> • Workshops among pact partners
Climate Measures	<ul style="list-style-type: none"> • Finance compensation for implemented measures • Application of tools 	<ul style="list-style-type: none"> • Advice on financial support and funding opportunities • Bicycle funding programs in Vienna • Active employee mobility 	<ul style="list-style-type: none"> • Introduction of cycling-friendly parking amenities • Free bike services • Active employee mobility • Measures addressing energy optimization 	<ul style="list-style-type: none"> • Active employee mobility 	<ul style="list-style-type: none"> • klimaaktiv pact: achieving defined energy targets by 2030
Outlook	<ul style="list-style-type: none"> • Pull-mechanism • Fossil fuel exit strategy • Learning system • Making innovation applicable • Changes in terms of content 	<ul style="list-style-type: none"> • Program will gain in relevant • Increased demand due to voluntary but also mandatory sustainable measures 	<ul style="list-style-type: none"> • More efficient use of energy 	<ul style="list-style-type: none"> • Continue implementing green measures also without klimaaktiv 	<ul style="list-style-type: none"> • Continuing cooperation with klimaaktiv

Table 2: Summary of the Main Interview Statement

The first category concerns the role of klimaaktiv in the viewpoint of the interview partners. Four out of five interviewees emphasize that klimaaktiv play an essential role in connecting multiple actors by maintaining a comprehensive network of partners, fostering information sharing and exchange among various stakeholders, including policymakers, businesses, and research institutions. Moreover, klimaaktiv plays a vital role in facilitating a company's transition process by providing different kinds of tools developed with research institutions, which are acknowledged as education partners within the klimaaktiv network. Successful projects that apply these tools serve as best practice examples presented to prospective companies to inspire them to adopt similar measures. This is an essential strategy, as interview partners confirm that companies prefer learning from the experience of other companies. Most of the interview partners also express that klimaaktiv acts as a motivating force that animates them to engage in sustainable practices.

Category 2 aims to understand the relationship between klimaaktiv and its partner companies. It appears that klimaaktiv embodies a decisive role operating in the system's background. The initiative puts tremendous importance into establishing a connection between two parties that can mutually benefit from each other, such as companies seeking sustainable advice and consultation companies. Furthermore, klimaaktiv encourages the feedback flow between the initiative and companies to uncover flaws and opportunities, resulting in more effectiveness of the initiative and its partner network. Partner companies appear to gladly support the initiative's future, as two interview partners state that they want to strengthen it. klimaaktiv further organizes workshops among partner companies to promote the sharing of valuable experiences. The partnership between klimaaktiv and its partner institution is based on an agreement signed by both parties.

Category three entails the measures implemented by the companies and offered by klimaaktiv mentioned by the interview participants. According to interview partners one and two, klimaaktiv provide funding programs and financial support to companies successfully implementing energy-friendly measures and HERRY Consult advises companies on klimaaktiv funding opportunities. Another critical element are comprehensive consultation services on various funding opportunities. It appears that the advisory services are tailored to each provincial state. For instance, in Vienna,

where there is a strong emphasis on bicycle transportation, HERRY Consult advises companies in Vienna on funding possibilities related to bicycles. Boehringer Ingelheim has already implemented various bike-friendly measures on the company premises in Vienna. Also, the fourth interviewee, Lebensart Verlag, places paramount importance on active mobility among employees. HYPO NOE, one of a few klimaaktiv pact partners, lists its measures to reduce CO₂ emissions, improve energy efficiency, and increase the share of renewables. Lebensart Verlag reduced its energy consumption by 70% compared to 2005. Also, Boehringer Ingelheim puts great emphasis on measures related to energy optimization.

Category 4 seeks to outline the interview participants' vision for their future collaboration with klimaaktiv as well as their future energy-friendly strategy. The representative of klimaaktiv wishes to retain the role of pulling and motivating companies to implement energy-friendly practices. Furthermore, he believes that klimaaktiv will maintain its position in an ever-evolving environment, adjusting to new developments. The program will potentially gain relevance not only because an increasing number of companies seek to adopt climate-friendly measures but also because new regulations force companies to reduce their carbon footprint. According to the interviewees, HYPO NOE and Boehringer Ingelheim wish to maintain their partnership with klimaaktiv. Since the publisher Lebensart Verlag primarily focuses on sustainability-related topics, the managing director believes the company will continue acting sustainably even without klimaaktiv. The first interview partner suggests that the most desirable outcome would be for the companies that partner with klimaaktiv to reach a point where they no longer require the services provided by klimaaktiv.

6 Discussion

This research paper aims at identifying the role of intermediaries in the energy transition process of companies in Vienna and seeks to answer the research question “To what extent are intermediaries involved in companies’ intention to use renewable energy sources?”. To being able to examine the factors involved in the cooperation between companies and intermediary roles, this research makes use of the example of klimaaktiv. klimaaktiv is a climate protection initiative operating in Austria and plays an important role in the country’s energy transition process. The researcher hoped to gain a deeper insight into the influence of an intermediary role on company’s transition towards deploying clean energy systems by interviewing klimaaktiv representatives and klimaaktiv partner companies. This research study is based on five interviews conducted with four partner companies and one representative of klimaaktiv. The following section examines the results of the expert interviews in relation to the presented literature. The statements of each category will be reflected and correlated to the existing body of literature.

As previously stated in the company info section, a vital characteristic of the initiative is its extensive partner network, consisting of various types of partner relationships. Four out of five interview partner acknowledge klimaaktiv as a connecting role, encouraging the sharing of information and exchange among partner companies. It appears that companies can benefit from the experiences and challenges of other businesses, even if they do not operate within the same industry. Thus, actors within the energy transition capitalize on relationships among stakeholders which fosters exchange of relevant information. This observation is consistent with the literature stating that intermediaries play an imperative role in energy transitions by facilitating the transfer of knowledge and expertise (Kivimaa et al., 2019). On the one hand, klimaaktiv emphasizes on strengthening its partner network, ensuring a constant information flow between companies. On the other hand, klimaaktiv shares information between policymakers and companies to ensure the development of applicable regulations. According to the literature, governments find it challenging to introduce companies to policies, as it needs a profound knowledge about all aspects of the energy sector to create an appropriate policy framework (Thomas et al., 2022). This case shows that klimaaktiv serves as a linking bridge between lawmakers and

those responsible for implementing the legislation by listening to both parties' needs and aligning their interests.

klimaaktiv also partners with technology and research institutions to develop relevant tools energy advisors and sustainability managers can implement. The partnership with technology institutions plays a vital role, as tools must be practically applicable. In addition, such tools must be up to date. Therefore, klimaaktiv cooperates with research institutions to ensure consideration of new knowledge and technologies when developing tools. This verifies the assertions made in the literature saying that intermediaries connect various actors, including technology companies and research institutions since they play a vital role in facilitating the transition to a renewable energy system (Mousseau & Beaumier, 2017; Khan & Su, 2023). According to the interviews, klimaaktiv helps companies in situations businesses encounter challenges. In such situations, klimaaktiv's role includes assisting in overcoming obstacles by utilizing tools that facilitate the process. To make companies aware of available tools, klimaaktiv demonstrates best practice examples. The strategy of showcasing what effectively works intends to increase sustainable awareness among Austrian companies and to motivate them to integrate similar approaches. It appears from the interviews that companies value experiences from other companies what makes the provision of best practice examples and the exchange among actors a paramount task.

According to Gómez-Miñambres (2012), goal setting enhances motivation towards achieving a specific target. This can be applied to the contract based partnership between klimaaktiv and partner companies, as each contract, particularly the agreements with klimaaktiv pact partners, entails predefined objectives concerning reducing CO₂ emissions. Therefore, it can be argued that klimaaktiv functions as a motivational factor for its partner network. Three out of five interview partners emphasize on klimaaktiv's role of being a motivating force. Given the statements of the interviewees, one can argue that a partnership with klimaaktiv positively influences a company's motivation to adopt climate-friendly energy sources and engage in sustainable practices.

It is noteworthy that two interview partners prize the opportunity to provide and receive feedback. Feedback plays a crucial role in enhancing collaborative intentions

and increasing the value of a partnership (MirrorWave, 2018). That's why it is critical to create a culture that encourages partners to share their feedback to improve the effectiveness of klimaaktiv. It appears from the interviews that klimaaktiv partner companies fully support the initiative klimaaktiv, putting effort into strengthening the initiative.

Following the interviews, it results that HERRY Consult advises on funding programs and financial support schemes offered by klimaaktiv. Therefore, companies receive advice on project funding opportunities and how to take advantage of circulating funding programs. Considering these aspects, it is worth noting that the situation of providing financial incentives is backed up by the literature stating that intermediaries facilitate the access to funds (Busch & Hansen, 2021). Moreover, the consultation services differ between provincial states. HERRY Consult, for instance, advises companies in Vienna specifically on funding programs related to bicycles. It appears that many companies in Vienna place particular and increasing importance on active employee mobility. That being the case, klimaaktiv provides consultation services tailored to each federal state while considering recent trends.

Working under a fast-paced, constantly evolving environment, it appears that klimaaktiv will continue to play a vital role in making new knowledge available to companies while also introducing and implementing recent technologies. The framework of klimaaktiv will remain unchanged, however, due to constantly changing surroundings, the communicated content will adapt to the evolving landscape and encompass recent developments to ensure up-to-date information. Moreover, the service of klimaaktiv will increase in demand since more companies not only voluntarily decide to act sustainably but also because government regulations pressure companies to shift away from fossil fuel-based energy sources. The latter has also been mentioned in the literature, stating that governments introduce carbon taxes or restrict the use of vehicles powered by fossil fuels (Köppl & Schratzenstaller, 2022; Wappelhorst, 2020). By comparing the statement of the interview partner with the information presented in the literature, it can be argued that climate policies impact companies' willingness to transition to cleaner energy sources. This again shows that it is an essential task of klimaaktiv to provide a clear communication way between policymakers and affected companies.

Furthermore, the first interview partner holds the belief that it would be optimal if klimaaktiv were no longer required to provide its services in the future. Following this statement, it might be desirable if companies don't require the services in terms of implementing green solutions aiming to decrease CO₂ emissions. In an ideal future, companies would not have to contemplate transitioning their energy systems because, ideally, companies would already operate in a climate-neutral manner. If such an ideology were to become a reality, it is indeed true that klimaaktiv may no longer be needed to provide its services concerning funding programs, the provision of tools, or consultation services. However, this research indicates that the partner network highly benefits from exchange and information sharing among companies. NYPO NOE, for instance, wishes to continue working with klimaaktiv even after achieving their energy objectives. That being the case, it is still possible for companies to capitalize on collaboration and exchange opportunities within the partner network even in a climate-neutral world where companies have successfully achieved sustainable operations.

7 Conclusion

The existing body of literature and policy documents in combination with the results of the present research study have provided significant insights into intermediary roles within the energy transition process of companies. Therefore, this research has successfully addressed the research question of this thesis: To what extent are intermediaries involved in companies' energy transition process? Based on the literature and the information collected during conducting the expert interviews the involvement of intermediaries, particularly klimaaktiv, in a companies' energy transition process can be defined.

A main function of intermediary roles is the establishment and maintenance of an exclusive network of partner companies which seek to encourage the exchange and sharing of information, such as experiences, challenges, developments, or expertise among them. Under these circumstances, an intermediary provides connections between multiple actors within an energy transition, such as technology companies, research institutions, policymakers, or companies to facilitate the sharing of knowledge intending to create a synergetic system. Intermediaries do not only provide the network with know-how but also equip actors with tools assisting them in implementing clean energy practices. Aiming to create public awareness, intermediaries can capitalize on showcasing best practice examples including successful projects that utilized these tools. This research shows that generating good practice examples increases a company's willingness to apply similar approaches. Furthermore, collaborating with an intermediary enhances a company's interest and motivation in incorporating green measures. Actors within an energy transition can expect intermediaries to connect them with relevant stakeholders, such as consultation companies that advise businesses on funding programs and opportunities. They further specialize on regional measures and opportunities to provide services relevant and tailored to the specific actor's needs. To maintain the effectiveness of the cooperation between actors and intermediaries, intermediaries encourage stakeholders to provide feedback while also delivering feedback back to them, relying on a two-way communication principle. Furthermore, intermediary roles keep up with recent developments and advancements to provide stakeholders with the latest information and sustain the momentum of the energy transition.

Lastly, intermediaries must adapt and respond to the constantly changing environment, including changes in technologies and attitudes as well as regulatory measures to keep the momentum of the energy transition going.

7.1 Limitations

This subsection lists the limitations of this research paper that need to be considered, as they may influence or impact the interpretations of the findings.

First, this research only conducted five interviews in total. A higher number of interviews could have resulted in deeper and more insights, differing from the findings presented in this research. Second, the interview participants were restricted to employees working in companies located Vienna and its surroundings. Covering a broader area, such as other regions in Austria, could have potentially resulted in different findings considering a more diverse range of perspectives. Third, the general limitations of qualitative research apply. The interviewees could have been biased, only sharing answers that they believed were expected of them to say. Furthermore, this research looks at only one energy transition intermediary. Viewing multiple intermediaries, the researcher may have been able to answer the research question more thoroughly. Moreover, the researched intermediary primarily operates within Austria. Analyzing intermediaries that function internationally or operate in another country might influence the findings.

This research study can be expanded by gathering information from a larger number of companies in Vienna and its surroundings. This would create a deeper insight into the subject matter, as the research can consider more perspectives and viewpoints. Therefore, the researcher further suggests interviewing companies that are part of the klimaaktiv partner network across multiple regions of Austria to broaden the scope of the research. Moreover, since this research only focuses on one intermediary role within the energy transition, future research could explore multiple intermediary actors to collect more comprehensive data that can be applied on a broader scale.

Bibliography

- Anke, R. (2015). Das Experteninterview als zentrale Methode der Wissensmodellierung in den Digital Humanities. *Information - Wissenschaft & Praxis*, 66(5-6), 327-333.
- Austrian Energy Agency. (2023). *klimaaktiv*. Retrieved from energyagency: <https://www.energyagency.at/klimaaktiv-dachmanagement#:~:text=Eine%20wesentliche%20Aufgabe%20des%20Dachmanagements,Wirtschaftspartnern%20aus%20verschiedenen%20Bereichen%20wichtig.>
- Azhgaliyeva, D., Liu, Y., & Liddle, B. (2020). An empirical analysis of energy intensity and the role of policy instruments. *Energy Policy*, 145.
- BEO. (2023, February 16). *beoe*. Retrieved from Bestand E-Autos (BEV) in Österreich: <https://www.beoe.at/bestand/>
- Bharathidasan, M., Vishnu, V. I., Suresh, J. M., & Leonowicz, Z. (2022). A review on electric vehicle: Technologies, energy trading, and cyber security. *Energy reports*, 8, 9662-9685.
- Bierwirth, A., Schecke, N., Wagner, O., & Becker, F. (2017). *Making the energy transition happen. Intermediaries as 'driving force' of local energy projects – a case study in South Westphalia, Germany*. Stockholm: Europ. Council for an Energy Efficient Economy.
- BMF. (2023). *Befreiungen*. Retrieved from bmf: [https://www.bmf.gv.at/themen/steuern/kraftfahrzeuge/Normverbrauchsbgabe-Übersicht/NoVA-Befreiung.html#:~:text=Elektro%2D%20und%20Wasserstofffahrzeuge%20\(%24%203%20Abs.&text=Kraftfahrzeuge%2C%20die%20auf%20Grund%20ihres,sind%20von%20der%20NoVA%20befreit.](https://www.bmf.gv.at/themen/steuern/kraftfahrzeuge/Normverbrauchsbgabe-Übersicht/NoVA-Befreiung.html#:~:text=Elektro%2D%20und%20Wasserstofffahrzeuge%20(%24%203%20Abs.&text=Kraftfahrzeuge%2C%20die%20auf%20Grund%20ihres,sind%20von%20der%20NoVA%20befreit.)
- BMK. (2020). *Bauen und Sanieren*. Vienna: BMK.

- BMK. (2021). *Austria's 2030 Mobility Master Plan*. Vienna: Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology.
- BMK. (2022, December 16). *bmk*. Retrieved from Erfolgreiche E-Mobilitätsinitiative wird 2023 fortgesetzt:
https://www.bmk.gv.at/service/presse/gewessler/20221216_eMobilitaetsinitiative.html
- BMK. (2022). *Energie in Österreich*. Vienna: BMK.
- BMK. (2023, March 11). *bmk.gv*. Retrieved from Energy Transition Index:
<https://www.bmk.gv.at/en/topics/climate-environment/energy-transition/energy-transition-index.html>
- BMF. (2022, July 11). *Initial information on the 2022 national emissions certificates trading law (NEHG 2022)*. Retrieved from bmf:
https://www.bmf.gv.at/en/topics/Climate-policy/initial_nehg_2022_en.html
- BMNT. (2018). *#mission2030*. Vienna: BUNDESMINISTERIUM FÜR NACHHALTIGKEIT UND TOURISMUS.
- Boyle, E., Watson, C., Mullally, G., & Gallachoir, B. O. (2021). Regime-based transition intermediaries at the grassroots for community energy initiatives. *Energy Research & Social Science*, 74, 1-10.
- Boyle, E., Watson, C., Mullally, G., & Gallachoir, B. O. (2021). Regime-based transition intermediaries at the grassroots for community energy initiatives. *Energy Research & Social Science*, 74, 1-8.
- Bundeskanzleramt. (2022). *National Reform Programme 2022*. Vienna: Federal Chancellery.
- Bundesverband Elektromobilität Österreich. (2023, June 19). *Bestand E-Autos (BEV) in Österreich*. Retrieved from beoe: <https://www.beoe.at/bestand/>

- Busch, H., & Hansen, T. (2021, May). Building communities in times of crisis - Impacts of the COVID-19 pandemic on the work of transition intermediaries in the energy sector. *Energy Res Soc Sci*.
- Bush, R., & Bale, C. S. (2017). The role of intermediaries in the transition to district heating. *Energy Procedia*, 490-499.
- CCC. (n.d.). *A legal duty to act*. Retrieved from Climate Change Committee: <https://www.theccc.org.uk/what-is-climate-change/a-legal-duty-to-act/#:~:text=The%20Climate%20Change%20Act%20commits,20%25%20of%20the%20UK%27s%20emissions.>
- Climate and Energy Fund. (2017). *Energy Research Innovation*. Vienna: Federal Ministry for Transport, Innovation and Technology.
- Climate and Energy Fund. (2018). *Climate and Energy Model Regions An Austrian blueprint for a successful bottom-up approach in the field of climate change and energy*. Vienna: Climate and Energy Fund.
- Climate Change Committee. (2020). *The UK Climate Change Act*. London: CCC.
- Colato, J., & Ice, L. (2023). Charging into the future: the transition to electric vehicles. *Employment & Unemployment*, 12(4).
- Cong, J. (2022). Advantages and disadvantages of energy from fossil fuels. *Global Science Research Journals*, 1-2.
- Conti, I., & Kneebone, J. (2022, May 19). *A first look at REPowerEU: The European Commission's plan for energy independence from Russia*. Retrieved from Florence School of Regulation: <https://fsr.eui.eu/first-look-at-repowereu-eu-commission-plan-for-energy-independence-from-russia/>
- Creswell, J. W. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Los Angeles: SAGE Publications Ltd.
- Cruciani, M. (2016). The Energy Transition in Sweden. *études de l'Ifri*.

Ehnert, F., Egermann, M., & Betsch, A. (2022). The role of niche and regime intermediaries in building partnerships for urban transitions towards sustainability. *Journal of Environmental Policy & Planning*, 24(2), 137-159.

European Council. (n.d.). *Fit for 55*. Retrieved from European Council:
<https://www.consilium.europa.eu/en/policies/green-deal/fit-for-55-the-eu-plan-for-a-green-transition/>

European Commission. (2022, May 18). *EUR-Lex*. Retrieved from COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS REPowerEU Plan:

European Commission. (2023, May). *2030 Climate Target Plan*. Retrieved from Climate Action: https://climate.ec.europa.eu/eu-action/european-green-deal/2030-climate-target-plan_en

European Commission. (2015). *Energy Agencies in Europe*. European Commission.

European Commission. (2019, December 11). *Commission Europa*. Retrieved from A European Green Deal: <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1576150542719&uri=COM%3A2019%3A640%3AFIN>

European Commission. (2023, May 11). *A European Green Deal*. Retrieved from Commission Europa: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

European Parliament. (2021). *Climate action in Austria*. EPRS.

Ewing, J. (2023, February 10). Electric Vehicles Could Match Gasoline Cars on Price This Year. *The New York Times*.

Fickl, S., & Rehbogen, A. (2011). Zwischen Hierarchie und Netzwerk Steuerung und Bündelung von heterogenen Kooperationen. Die Österreichische Klimaschutzinitiative klima:aktiv als modernes Governance-Instrument. In

Gesundheits- und Sozialpolitik im Diskurs (pp. 287-308). Vienna: Springer
Wien.

Fischer-Kowalski, M., & Hausknost, D. (2014). *Large scale societal transitions in the past*. Vienna: WWWforEurope.

Fischer-Kowalski, M., & Hausknost, D. (2014). *Large scale societal transitions in the past*. Vienna: Institute of Social Ecology.

Giddens, A. (2009). *Politics of Climate Change*. Cambridge: Polity Press.

Gielen, D. (2022). Energy Planning. *energies*, 15(7).

Gielen, D., Boshell, F., & Saygin, D. (2019). The role of renewable energy in the global energy transformation. *Energy Strategy Reviews*, 38-50.

Giereth, S. (2011). *Guided Interview and Qualitative Content Analysis as Instruments of Qualitative Research*. Munich: GRIN Verlag.

Gómez-Miñambres, J. (2012). Motivation through goal setting. *Journal of Economic Psychology*, 33(6), 1223-1239.

Hemis, H. (2020). New ways for the energy transition – the Viennese approach. *Energy Democracy*.

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A230%3AFIN&qid=1653033742483>

IEA. (2020). *Austria 2020 Energy Policy Review*. Paris: International Energy Agency.

IEA. (2020). *World Energy Investment 2020*. Paris: IEA Publications - International

IEA. (2023, February). *Policies database*. Retrieved from [iea: https://www.iea.org/policies/about](https://www.iea.org/policies/about)

International Energy Agency. (2020, September 14). *Climate and energy strategy "mission 2030"*. Retrieved from [iea: https://www.iea.org/policies/8509-climate-and-energy-strategy-mission-2030#](https://www.iea.org/policies/8509-climate-and-energy-strategy-mission-2030#)

- IPE. (2022). *EPA Collaboration with Europe*. Retrieved from EPA:
<https://www.epa.gov/international-cooperation/epa-collaboration-europe>
- Irshaid, J., Mochizuki, J., & Schinko, T. (2021). Challenges to local innovation and implementation of low-carbon energy-transition measures: A tale of two Austrian regions. *Energy Policy*, 1-10.
- Johnston, R. J., Blakemore, R., & Bell, R. (2020). *The Role of Oil and Gas Companies in the Energy Transition*. Washington DC: Atlantic Council.
- Kanda, W., Hjelm, O., Clausen, J., & Bienkowska, D. (2018). Roles of intermediaries in supporting eco-innovation. *Journal of Cleaner Production*, 205, 1006-1016.
- Kemp, R. (2010). The Dutch energy transition approach. *Int Econ Econ Policy* 7, 291–316.
- Khan, K., & Su, C. w. (2023). Does technology innovation complement the renewable energy transition? *Environmental Science and Pollution Research*, 30, 30144–30154.
- Kivimaa, P. (2014). Government-affiliated intermediary organisations as actors in system-level transitions. *Research Policy*, 43, 1370-1380.
- Kivimaa, P., Boon, W., Hyysalo, S., & Klerkx, L. (2019, May). Towards a typology of intermediaries in sustainability transitions: A systematic review and a research agenda. *Research Policy*, 48(4), 1062-1075.
- Kivimaa, P., Hyysalo, S., Boon, W., & Klerkx, L. (2019). Passing the baton: How intermediaries advance sustainability transitions in different phases. *Environmental Innovation and Societal Transitions*, 1-16.
- Klerkx, L., & Leeuwis, C. (2009). Establishing and embedding of innovation brokers at different innovation system levels: Insights from the Dutch agricultural sector. *Technological Forecasting & Social Change*, 76, 849-860.
- Klima- und Energiefonds. (2022). *FAKTENCHECK E-Mobilität*. Vienna: Klima- und Energiefonds.

Klima- und Energiefonds. (2023). *Leitfaden E-Mobilität für Private*. Retrieved from klimafonds: https://www.klimafonds.gv.at/wp-content/uploads/sites/16/Leitfaden_EMob_Private_2023.pdf

Klima- und Energiefonds. (2023). *Leitfaden E-Mobilität für Betriebe, Gebietskörperschaften und Vereine*. Retrieved from klimafonds: https://www.klimafonds.gv.at/wp-content/uploads/sites/16/Leitfaden_EMob_Gewerbe_2023.pdf

klimaaktiv. (2023). *klimaaktiv*. Retrieved from <https://www.klimaaktiv.at>

KMU Forschung Austria. (2020). *Kurzbericht Evaluierung klimaaktiv*. Vienna: Wuppertal Institut.

Komendantova, N. (2018). Energy transition in the Austrian Climate and Energy model regions: a multi-risk participatory governance perspective on regional resilience. *Procedia Engineering*, 212, 15-21.

Komendantova, N., Riegler, M., & Neumueller, S. (2018). Of transitions and models: Community engagement, democracy, and empowerment in the Austrian energy transition. *Energy Research & Social Science Volume 39, May 2018, Pages 141-151*, 39, 141-151.

Köppl, A., & Schratzenstaller. (2022). Carbon taxation: A review of the empirical literature. *Journal of Economic Surveys*.

Kromp-Kolb, H., Lechner, R., & Lenz, B. (2020). *Überlegungen des Advisory Board Wissenschaft des Wiener Klimarates zur Prioritätensetzung in der Wiener Klimapolitik*. Vienna.

Le Treut, H., R. Somerville, U. Cubasch, Y. Ding, C. Mauritzen, A. Mokssit, T. Peterson and M. Prather, 2007: Historical Overview of Climate Change. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt,

M. Tignor and H.L. Miller (eds.)). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Lee, H., Calvin, K., & Dasgupta, D. (2023). *SYNTHESIS REPORT OF THE IPCC SIXTH ASSESSMENT REPORT (AR6)*. Interlaken: IPCC.

Li, F., Strachan, N., & Trutnevyte, E. (2015). A review of socio-technical energy transition (STET) models. *Technological Forecasting and Social Change*.

Libakova, N. M., & Sertakova, E. A. (2015). The Method of Expert Interview as an Effective Research Procedure of Studying the Indigenous Peoples of the North. *Journal of Siberian Federal University. Humanities & Social Sciences* 1, 114-129.

Magistrat der Stadt Wien. (2009). *Der Ökologische Fußabdruck der Stadt Wien*. Vienna: Magistrat der Stadt Wien.

Magistrat der Stadt Wien. (2022). *Wiener Klimafahrplan*. Vienna: Magistrat der Stadt Wien.

Maizland, L. (2022, November 4). Global Climate Agreements: Successes and Failures.

Mayring, P. (2015). *Qualitative Inhaltsanalyse*. Basel: Beltz Verlag.

MediaMarkt. (2023). *BetterWay Nachhaltigkeits-Kriterien*. Retrieved from Media Markt: <https://www.mediemarkt.at/de/specials/nachhaltig-einkaufen/betterway-kriterien>

Ministère de l'Environnement. (2016). *Energy Transition for Green Growth Act*. Paris: Ministère de l'Environnement, de l'Énergie et de la Mer.

MirrorWave. (2018, November 2). *Are you in the business of partnerships? Two-way feedback is your ticket to success*. Retrieved from mirrorwave: <https://mirrorwave.com/blog/are-you-in-the-business-of-partnerships-two-way-feedback-is-your-ticket-to-success/>

- Mohammadi, F., & Saif, M. (2023). A comprehensive overview of electric vehicle batteries market. *e-Prime - Advances in Electrical Engineering, Electronics and Energy*, 3, 1-12.
- Mousseau, N., & Beaumier, L. (2017). *The role of universities in the strategy for energy transition*. Montréal: Institut de l'énergie Trottier, Polytechnique Montréal.
- Odysee-Mure. (2021). *Energy efficiency trends and policies*. European Union funding for Research & Innovation.
- OECD. (2020). Financing environmental and energy transitions for regions and cities. In *Managing Environmental and Energy Transitions for Regions and Cities*. Paris: OECD Publishing.
- Ornetzeder, M. (2022, November 14). Will we make the energy transition happen?
- Owen, A. D. (2009). Energy Policy. *Encyclopedia of Life Support Systems*.
- ÖAMTC. (2023). *Motobezogene Versicherungssteuer*. Retrieved from oeamtc: <https://www.oeamtc.at/thema/steuern-abgaben/motorbezogene-versicherungssteuer-18178410>
- Panarello, D., & Gatto, A. (2022). Decarbonising Europe – EU citizens' perception of renewable energy transition amidst the European Green Deal. *Energy Policy*, 172, 1-17.
- Pant, H., & Varma, J. (2021, October). Role of NGO's in Environmental Protection. 311-320.
- Pohjolainen, P., Kukkonen, L., & Jokinen, P. (2018). *Public Perceptions on Climate Change and Energy in Europe and Russia*. Tampere: European Social Survey.
- Ptak, E. N., Graversgaard, M., & Dalgaard, T. (2023). Navigating the nexus: The role of intermediaries in charting a new frontier of policy integration for agrifood and energy systems transformation. *Environmentan Science & Policy*, 91-103.
- Regeringen. (2020). *Sweden's Integrated National Energy and Climate Plan*.

- Salman, M., Long, X., Wang, G., & Zha, D. (2022). Paris climate agreement and global environmental efficiency: New evidence from fuzzy regression discontinuity design. *Energy Policy*, 168, 1-22.
- Sovacool, B. K. (2017). The History and Politics of Energy Transitions: Comparing Contested Views and Finding Common Ground. *The Political Economy of Clean Energy Transitions*, 18.
- Stadt Wien. (2022). *Energiebericht der Stadt Wien*. Vienna: Magistratsabteilung 20.
- Stadt Wien. (2021). *wien.gv*. Retrieved from Wiener Umweltbericht 2020/21: <https://www.wien.gv.at/spezial/umweltbericht/energiewende/weitere-projekte/#EU-Projekt-EfficienCE>
- Stadt Wien. (2022). *Smart Climate City Strategy Vienna*. Vienna: Vienna Municipal Administration. Retrieved from smartcity wien.
- Stadt Wien. (2023). *OekoBusiness Wien - Programmes for sustainable business management*. Retrieved from City of Vienna: <https://www.wien.gv.at/english/environment/protection/eco/modules.html>
- Stadt Wien. (2023). *Wiener Klimarat*. Retrieved from Stadt Wien: <https://www.wien.gv.at/umwelt-klimaschutz/klimarat.html>
- Talmar, M., Walrave, B., Raven, R., & Romme, A. G. (2022). Dynamism in policy-affiliated transition intermediaries. *Renewable and Sustainable Energy Reviews*.
- Thomas, M., DeCilia, B., Santos, J. B., & Thorlakson, L. (2022). Great expectations: Public opinion about energy transition. *Energy Policy*, 1-13.
- Thomas, M., DeCillia, B., Santos, B. J., & Thorlakson. (2022). Great expectations: Public opinion about energy transition. *Energy Policy*, 162, 1-13.
- UNFCCC. (2023, March 4). *unfccc*. Retrieved from The Paris Agreement: <https://unfccc.int/process-and-meetings/the-paris-agreement>.

- United Nations. (2015). *The Paris Agreement*. Retrieved from UNFCCC: https://unfccc.int/sites/default/files/resource/parisagreement_publication.pdf
- United Nations. (2023, May 11). *Ensure access to affordable, reliable, sustainable and modern energy for all*. Retrieved from SDGs: <https://sdgs.un.org/goals/goal7>
- Van Lente, H., & Hekkert, M. (2003). Roles of Systemic Intermediaries in Transition Processes. *International Journal of Innovation Management*.
- Wappelhorst, S. (2020). *The end of the road? An overview of combustion- engine car phase-out announcements across Europe*. International Council of Clean Transportation.
- White, W. (2013). The role of governments in renewable energy: The importance of policy consistency. *Biomass and Bioenergy*, 57, 1-28.
- Wien Energie. (2023). *Our Topics*. Retrieved from wienenergy: <https://positionen.wienenergie.at/en/topics/>
- Wien Energie. (2020, November 2). *Wien Energie*. Retrieved from Endenergieverbrauch in Wien: <https://positionen.wienenergie.at/grafiken/endenergieverbrauch-in-wien/>
- Zolfagharian, M., Walrave, B., Raven, R., & Georges, R. (2019). Studying transitions: Past, present, and future. *Research Policy*, 48.

Appendices

Appendix 1

Interview Guide

German version:

Sehr geehrte/r Interviewteilnehmer*in,

vielen Dank, dass Sie sich dazu bereit erklärt haben, an diesem Interview teilzunehmen. Diese Studie untersucht die Rolle von Intermediären in der Energiewende von Unternehmen in Wien am Beispiel von klimaaktiv. Das Ziel ist es, Einblicke in die Rolle von klimaaktiv als Intermediär zu gewinnen und den Einfluss auf die Energiewende zu erforschen. Um herauszufinden, inwieweit die österreichische Klimaschutzinitiative „klimaaktiv“ Einfluss auf die Energiewende von Unternehmen hat, werden Vertreter und Vertreterinnen der Initiative sowie klimaaktiv-Partnerunternehmen zum Thema befragt.

Die Informationen, die während des Interviews gesammelt werden, werden ausschließlich für Forschungszwecke verwendet. Sie werden identifizierbar sein und Ihre Identität kann mit den von Ihnen gegebenen Antworten in Verbindung gebracht werden. Ihre Teilnahme an diesem Interview ist freiwillig. Sie haben das Recht, Ihre Teilnahme jederzeit und ohne Angabe von Gründen zurückzuziehen. Bitte beachten Sie, dass dieses Interview mit der App Voice Memos auf dem Handy der Forscherin aufgenommen wird. Die Aufnahme dient lediglich dem Zweck, das Interview zu transkribieren, um es nachträglich analysieren zu können. Nach der Transkription des Gesprächs wird die Sprachaufnahme auf dem Handy der Forscherin gelöscht.

Die verantwortliche Forscherin für diese Arbeit ist Klara Losert. Bei Fragen oder dem Wunsch, Ihre Teilnahme zurückzuziehen, können Sie sich jederzeit per Mail an klara.losert@icloud.com oder Telefon unter +436508935033 an mich wenden.

Mit Ihrer Teilnahme an diesem Interview stimmen Sie zu, dass Ihre Daten gemäß den oben genannten Bedingungen verwendet und gespeichert werden.

Interview Guide – Partnerunternehmen

Wie wurden Sie auf die Klimaschutzinitiative „klimaaktiv“ aufmerksam?

Wie würden Sie die Rolle von klimaaktiv und deren Einfluss auf die nationale Energiewende beschreiben?

Warum haben Sie sich dazu entschlossen klimaaktiv-Partnerunternehmen zu werden?

Welche Vorteile haben Sie durch die Partnerschaft mit klimaaktiv erfahren können und welches Potential sehen Sie für die kommenden Jahre?

Welche Maßnahmen haben Sie seit Beginn Ihrer Partnerschaft mit klimaaktiv bereits umgesetzt und wie hat Ihnen klimaaktiv hierbei geholfen? Denken Sie bitte hier sowohl an Information als auch an konkrete Hilfestellungen.

Wie hat die Zusammenarbeit mit klimaaktiv Ihre langfristige Strategie in Bezug auf Klimafreundlichkeit und nachhaltiges Handeln beeinflusst und wo sehen Sie ihr Unternehmen in der Zukunft?

Interview Guide – klimaaktiv

Wie würden Sie die Rolle von klimaaktiv als Intermediär im Energiewende-Prozess von Unternehmen in Wien beschreiben?

Könnten Sie bitte die auf Ihrer Webseite aufgelisteten Klimaziele genauer erläutern und beschreiben, wie klimaaktiv zur nationalen Energiewende beiträgt?

Wie arbeitet klimaaktiv mit anderen Akteuren wie Regierungsbehörden, Energieversorgungsunternehmen und Umweltorganisationen zusammen, um die Energiewende in Unternehmen in Wien zu fördern?

Mit welchen spezifischen Dienstleistungen und Unterstützungsmaßnahmen fördert klimaaktiv als intermediär gezielt den Fortschritt der Energiewende in Wiener Unternehmen?

Wie sehen Sie die zukünftige Entwicklung und Bedeutung von Intermediären, insbesondere von klimaaktiv, in Bezug auf die Energiewende von Unternehmen in Wien?

English version:

Dear Sir or Madam,

Thank you for agreeing to participate in this interview. This study examines the role of intermediaries in the energy transition of companies in Vienna, using the example of "klimaaktiv." The goal is to gain insights into the role of klimaaktiv as an intermediary and its influence on the energy transition. To assess the extent to which the Austrian climate protection initiative "klimaaktiv" influences the energy transition of companies, representatives of the initiative and klimaaktiv partner companies will be interviewed on the topic.

The data collected during this interview will be used solely for research purposes. You will be identifiable, and your identity can be connected to the answers you provide. Your participation in this interview is voluntary. You have the right to withdraw from the interview anytime and without providing a reason. Please note that this interview will be recorded using the Voice Memos app on the researcher's mobile phone. The recording is solely to transcribe the interview for subsequent analysis. After transcribing the conversation, the audio recording will be deleted from the researcher's mobile phone.

The responsible researcher for this study is Klara Losert. If you have any questions or wish to withdraw your participation, you can contact me at any time via email at klara.losert@icloud.com or by phone at +436508935033.

By participating in this interview, you agree that your data will be collected, used, and stored under the abovementioned conditions.

Interview Guide - Partner Companies

How did you become aware of the climate protection initiative "klimaaktiv"?

How would you describe the role of klimaaktiv and its influence on the national energy transition?

Why did you decide to become a partner company of klimaaktiv?

What benefits have you experienced through the partnership with klimaaktiv, and what potential do you see for the coming years?

What measures have you implemented since beginning your partnership with klimaaktiv, and how has klimaaktiv assisted you? Please consider both information and concrete support.

How has the collaboration with klimaaktiv influenced your long-term strategy regarding climate-friendliness and sustainable practices, and where do you see your company in the future?

Interview Guide – klimaaktiv

How would you describe the role of klimaaktiv as an intermediary in the energy transition process of companies in Vienna?

Could you please explain in more detail the climate goals listed on your website and describe how klimaaktiv contributes to the national energy transition?

How does klimaaktiv collaborate with other stakeholders, such as government agencies, energy utilities, and environmental organizations, to promote the energy transition in companies in Vienna?

What specific services and support measures does klimaaktiv provide as an intermediary to promote the energy transition progress in Vienna companies?

How do you envision the future development and significance of intermediaries, particularly klimaaktiv, regarding the energy transition of companies in Vienna?

Appendix 2

Excerpt Interview Evaluation

Interview 1: Stephan Fickl – Program Director klimaaktiv

Statement	Paraphrasing	Generalization	Reduction	Category
We have a bunch of experts all over Austria and a network that is constantly exchanging information and in contact with other parts of the entire energy system, so to speak. So, this is something where we can provide competent information relatively quickly on a wide range of topics.	klimaaktiv has access to a comprehensive network of experts which allows for regular exchange of information. That being the case, the initiative can access and distribute relevant information in a timely manner.	klimaaktiv's extensive expert network enables the initiative to promptly access and transmit relevant information on various topics.	klimaaktiv's expert network allows for promptly accessing and passing information.	1
So, we are the ones who pull forward and say that's already possible. Look at what they have already done, it is even economically good. And of course, we want to stay that way. So, we are rather the pull thing the legal thing are rather from behind and say that it allowed that is not allowed. So, to say, pushing from behind and the subsidies are also rather pull things while taxes and so are rather the pushing things.	klimaaktiv pulls companies towards implementing climate friendly measures by providing incentives or showcasing best practice examples. On the other hand, legal requirements are push factors, obliging companies to implement sustainable measure, such as taxes.	klimaaktiv pulls and thus motivates companies to act sustainably while legal regulations oblige companies to do so. klimaaktiv wants to retain that "pulling role" in the future.	In the future, klimaaktiv wants to maintain the role of a "pull factor".	4

	klimaaktiv wants to remain this position.			
We also work with technology partners on this topic. In other words, with companies that are already very experienced in this area in order to make our tools suitable for practical use. This allows us to see whether they really work, not only theoretically, but also in consulting.	klimaaktiv works together with experienced technology partners to produce tools that are practical, allowing them to see whether such tools are applicable.	A cooperation with technology partners allows klimaaktiv to produce applicable tools.	klimaaktiv cooperates with technology partners to produce applicable tools.	1

Interview 2: Gilbert Gugg – Consultant at HERRY Consult

Statement	Paraphrasing	Generalization	Reduction	Category
This is always essential to our service because all companies ask: What are the others doing? How are the others doing it? And our task is to present examples of best practices from the program at events, consultations, etc. So, content-related consulting, funding focus and best practice, and public relations are the three pillars describing our services within the program's framework.	Companies ask about what other companies are doing and how they are doing it regarding implementing mobility measures.	Companies are curious regarding the practices and approaches of other companies regarding mobility measures.	Companies want to learn from other companies' experiences.	1

<p>I believe that the program, and this is what we have noticed in the last few years, will at least gain a lot of relevance because the topic of environmentally friendly mobility is gaining an ever-stronger foothold, in everyday life. We are noticing this simply from the demand from companies that could have been involved with this for years but have not yet done so, and now there is a certain level of compulsion and obligation.</p>	<p>The topic of green mobility is expected to gain popularity soon. This is because company demand regarding green mobility measures steadily increases. The demand is driven not only by the desire to transition to sustainable energy sources but also by the increasing obligation to adopt such measures.</p>	<p>Due to the rising demand for green mobility measures, their relevance will grow.</p>	<p>Mobility measures will gain significance.</p>	<p>4</p>
<p>The klimaaktiv mobil subsidy is nationwide, i.e., it applies equally to all companies. But of course, there are also provincial subsidies specific to the provinces. In Vienna, there are a few subsidies, especially around bicycles, which do not exist elsewhere. So, Vienna also sets specific priorities in terms of funding to support here, for example, especially in the transport cycling area. So, this is very well supported in Vienna. In our experience. This may also align with the shorter distances in the federal state. So, the transport bike has more topics in Vienna and is a bit specific, also in terms of funding.</p>	<p>Subsidies granted by klimaaktiv apply nationwide. However, each federal state has its specific subsidies in addition. Vienna specifically focuses on subsidies concerning bicycles, as people in Vienna need to travel shorter distances, and thus bikes have more relevance.</p>	<p>Vienna's infrastructure allows citizens to easily travel by bike, thus supporting bike-related subsidies.</p>	<p>Vienna provides bike subsidies.</p>	<p>3</p>

Interview 3: Natalie Egreteau – Environmental and Sustainability Senior Specialist at Boehringer Ingelheim

Statement	Paraphrasing	Generalization	Reduction	Category
A lot of this also involves exchanges with other companies. So that is definitely an important point of klimaaktiv. I like that because it also brings together ideas. We usually have the same problems, even if we don't come from the same industry.	An important point of klimaaktiv is the exchange with other companies, as this process combines ideas. Interestingly, companies encounter the same challenges even if they do not operate within the same industry.	Ensuring exchange among companies is an important role of klimaaktiv, as this allows for sharing ideas and challenges.	klimaaktiv allows companies to share information.	1
They're nudging us, too. So, the other thing is not just the information about technologies or the exchange itself. Even if you have a partnership, whether it is with klimaaktiv or with someone else, you are committed even if it is voluntary.	In addition to acquiring information about technologies and the exchange among partners, klimaaktiv acts as a motivating force, as the company signed an agreement.	The agreement between klimaaktiv and the company motivates Boehringer Ingelheim to act sustainably.	The partnership with klimaaktiv is a motivation factor to implement sustainable solutions.	1
And these are beautiful technologies, and they are more likely to come up with the partnerships with klimaaktiv, if we get information here and because there is also a regular exchange. These are very good	There is a regular exchange between partner companies allowing Boehringer Ingelheim to become aware of new	The klimaaktiv partner network allows companies to become aware of new	The klimaaktiv partner network enables	2

inputs that we need. Otherwise, you don't get the info yourself. Otherwise, you would have to look for it yourself, and it just comes in a bit from the outside.	technologies.	technologies.	companies to discover new technologies.	
--	---------------	---------------	---	--

Interview 4: Roswitha Reisinger – Managing Partner Lebensart Verlag

Statement	Paraphrasing	Generalization	Reduction	Category
Since 2005, we have been reporting in our media about sustainable developments relevant to Austria. Over time, it is inevitable to encounter larger players along your path. Since that, the Energy Agency and thus klimaaktiv has been an important partner for expertise in the fields of energy, building, mobility at all levels.	While frequently posting publications about sustainability in Austria, the organization became aware of the initiative klimaaktiv, which embodies a significant player within Austria's sustainable development. Ever since, klimaaktiv has been a vital partner, providing expertise in energy, building, and mobility.	klimaaktiv is imperative in Austria's energy transition process by offering expertise in various fields.	klimaaktiv offers subject-related expertise.	1
Klimaaktiv is very important because it needs a body that bundles relevant information for all possible target groups (companies, households, communities, partners, education) and connects them in a	klimaaktiv plays a vital role by collecting relevant information and subsequently facilitating the connection among various	Klimaaktiv bundles relevant information to connect various types of actors.	klimaaktiv collects information and connects	1

meaningful way.	stakeholders.		actors.	
For us, the cooperation with klimaaktiv is more of a motivational factor and a signal to the outside world.	For the managing director of Lebensart Verlag, klimaaktiv is a motivational factor and a sign to the outside world.	klimaaktiv serves as a motivating force and a sign to the outside world.	klimaaktiv acts as a motivating force and a visible symbol.	1

Interview 5: Claudia Mikes – Head of Investor Relations & Rating at HYPO NOE

Statement	Paraphrasing	Generalization	Reduction	Category
The cooperation is such that the pact partners organize joint workshops and exchange ideas. They present each other's projects, for example in mobility management, illustrating how they do it, and learn from and with each other.	A partnership with klimaaktiv allows pact partners to exchange information during organized workshops to learn from and with each other.	Organized workshops allow pact partners to exchange information to build on each other's experiences.	Pact partners learn from each other.	1
So, we have the greenhouse gas emissions, here the saving until 2030 is 80% and the improvement of the energy intensity, so the energy efficiency, is to increase by 30%. Regarding the share of renewable energy sources, the target value is 65%. And all of that by 2030.	HYPO NOE committed themselves to achieve a reduction in greenhouse gas emissions of 80 % and increase energy efficiency by 30 %. In addition, the company aim for a 65 % share of renewable energy	HYPO NOE seeks to reduce its CO ₂ emissions by 80 %, increase its energy efficiency by 30 % and have a 65 % share of renewable energy by a target value before	HYPO NOE committed to reduce its CO ₂ emissions, increase energy efficiency, and	3

	sources before 2030.	2030.	increase its share of renewables by 2030.	
So, we see and wish for a cooperation also far beyond 2030. I think this is a very great initiative and has brought us a lot.	HYPO NOE wishes to retain the collaboration with klimaaktiv far beyond 2030, as the representatives think it is a great initiative that has brought them a lot.	HYPO NOE aims to continue their collaboration with klimaaktiv well beyond 2030, recognizing it as a valuable and beneficial initiative.	HYPO NOE seeks to sustain the collaboration with klimaaktiv due to its benefits.	4

