ANALYSIS OF URBAN SUSTAINABLE DEVELOPMENT PERCEPTIONS IN THE CITY OF JYVÄSKYLÄ - A QUALITATIVE CASE STUDY ON RESOURCE WISDOM CONCEPT

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ABSTRACT

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Abstract

Due to urbanization and population growth cities are facing sustainability challenges. The amount of people living in urban areas in Finland is estimated to rise to 82 % by the end of 2050. To deal with these current and future problems cities must be innovative and find new solutions and create a robust roadmap to achieve strategic goals and sustainable solutions. This case study focuses on Resource Wisdom and sustainability concepts perceptions and how these are put into practice in Koas and the City of Jyväskylä. The conceptual framework is divided into three sections, sustainable city, smart city, and urban resilience.

This thesis used a qualitative research method based on semi-structured one-on-one interviews with three representatives from Koas and three from the City of Jyväskylä. This case study's main focus was on student housing and specific student housing project Seminaarinmäki. The purpose of this study was to gather data to compare two different organizations' perceptions on how they apply Resource Wisdom in their everyday work. Empirical data was collected to investigate this phenomenon and using thematic analysis to identify themes from collected data.

The research results suggest that both organizations seek to maintain communication and collaboration advantages in order to reach a set of sustainability targets. The conceptual framework supported the findings, even though the urban resilience and smart city concepts were mostly absent in the analyzed data.
This Master's thesis provides additional information and understanding of the direction on urban sustainable development in student housing. Moreover, the data provided perceptions on Resource Wisdom and how these concepts are applied to reach the strategic goals that are set for 2030 in Koas and the City of Jyväskylä.

Key words

Resource Wisdom, smart city, sustainable city, student housing, urban resilience

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Kaupungistumisen ja väestönkasvun vuoksi kaupungeissa on kestävyyshaasteita. Suomessa kaupunkialueilla asuvien ihmisten määrän arvioidaan nousevan 82 prosenttiin vuoden 2050 loppuun mennessä. Näiden nykyisten ja tulevien ongelmien ratkaisemiseksi kaupunkien on oltava innovatiivisia, löydettävä uusia ratkaisuja ja luoda kestävä tiekartta strategisten tavoitteiden ja kestävän kehityksen saavuttamiseksi. Tässä tapaustutkimuksessa keskitytään Resurssiviisauden ja kestävän kehityksen käsitteisiin sekä siihen, miten ne toteutetaan Koasilla ja Jyväskylän kaupungissa. Käsitteellinen viitekehys on jaettu kolmeen osaan, kestävä kaupunki, älykäs kaupunki ja kaupunkien sietokyky.

Tässä opinnäytetyössä käytettiin kvalitatiivista tutkimusmenetelmää, joka koostui puolistrukturoiduista haastatteluista, joista kolme oli Koasin ja kolme Jyväskylän kaupungin edustajia. Tämän tapaustutkimuksen pääpaino oli opiskelija-asunnoissa ja erityisesti Seminaarinmäki -projektissa. Tämän tutkimuksen tarkoituksena oli kerätä tietoja vertaamalla kahden eri organisaation käsityksiä siitä, miten he soveltavat Resurssiviisautta jokapäiväisessä työssä. Tämän ilmiön tutkimiseksi kerättiin empiiristä dataa ja temaattisen analyysin avulla tunnistettiin teemoja kerätystä datasta.

Tutkimustulokset viittaavat siihen, että molemmat organisaatiot pyrkivät ylläpitämään viestintä- ja yhteistyöetuja asetettujen kestävän kehityksen tavoitteiden saavuttamiseksi. Käsitteellinen viitekehys tuki tuloksia, vaikka kaupunkien sietokyky ja älykkään kaupungin käsitteet mainittiin vähän analysoidusta datasta.
Tämä Pro gradu -tutkielma tarjoaa osallistuville organisaatioille lisätietoja ja ymmärrystä kaupungin kestävän kehityksen suunnasta opiskelija-asumisessa. Lisäksi data tarjoaa käsityksiä Resurssiviisaudesta ja siitä, miten näitä käsitteitä on sovellettu strategisten tavoitteiden saavuttamiseksi Koasilla ja Jyväskylän kaupungilla vuodelle 2030. |
| Asiasanat
Resurssiviisaus, älykäs kaupunki, kestävä kaupunki, opiskelija-asunnot, kaupunkien sietokyky | |
| Säilytyspaikka
Jyväskylän yliopiston kirjasto | |

CONTENTS

LIST OF FIGURES, TABLES AND ABBREVIATIONS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

JYY = The Student Union of the University of Jyväskylä
Koas = Central Finland Student Housing Foundation
SDG = Sustainable Development Goals
Sitra = Suomen itsenäisyyden juhlarahasto (The Finnish Innovation Fund)
UN = United Nations

1   INTRODUCTION

United Nations Habitat (2008) states that 60 % of the world's population will be living in urban areas by 2030. And by 2050 the estimated amount will be 70 % of the global population. The number of growing cities will create more burdens on the global environmental challenges and affect the quality of the air, water, and noise (United Nations Habitat 2008). In Finland, Rakli (2020) stated that 70 % of Finnish citizens live in urban areas, and by the end of 2050 the number is estimated to be 82 %. But this will be concentrated on certain areas and that will create challenges for the housing providers, as the growing cities will grow more inward (Rakli, 2020).

Cities around the world are dealing with climate change and need to find regional solutions to address the climate crisis through sustainable actions that could prevent irreversible changes on this planet. When Sustainable Development Goals (2019) are achieved they would provide more jobs, market opportunities, and value in the growth but this will require private sectors to have a significant role by participating and transforming how economic growth is generated (SDG Impact 2019). However, this is not an easy task as it requires adapting these strategies not only in the economic environment but also positively in social and environmental areas. Therefore, in this Master's thesis I examine student housing project in order to understand how collaboration between a city and a small organization contributes to the idea of a sustainable city. More specifically, I study how the city strategy called Resource Wisdom is understood and put into practice in collaboration between parties and how they perceive it contributes to sustainability.

Resource Wisdom has been part of the City of Jyväskylä's strategy since 2013 when the Finnish Innovation Fund (Sitra) designed the operational model that was implemented in Jyväskylä from 2013 till 2015. Sitra has an important role in supporting organizations and developing sustainability. Sitra's definition of Resource Wisdom is

"The decrease in natural resources, population growth and climate change is forcing global societies to become more efficient and cut emissions. Wiser use of resources is now an asset in international competition." (Sitra, 2013).

To measure Resource Wisdom four key indicators are used: carbon footprint as in emissions; ecological footprint as in consumption; material loss as in waste; and the perceived well-being of city residents. The target is to make municipalities carbon neutral and waste-free by 2050 (Sitra, 2013). To reach any target it is important to evaluate the current situation and what kind of strategy is applied to achieve the goals that have been set. In order to get city workers and organizations understanding and perceptions on the current strategy on sustain-

ability required qualitative research study. That way it was possible to get information from this study on how strategic actions are applied in real housing case and co-operation with a small organization. In order to understand Resource Wisdom as a strategy, it is important to see the aspects of being a sustainable city and how to deal with any challenges that any growing city might face. This study will view what smart and sustainable city concepts are and the meaning of urban resilience, as these are the base for connecting the whole study to the main scope of this paper.

1.1   Introduction of the case organization

Central Finland Student Housing Foundation known as Koas was established in 1975. Koas is working together with the City of Jyväskylä, the Student Union of the University of Jyväskylä (JYY), and Student Union of Jyväskylä University of Applied Sciences JAMKO. The Foundation's main aim is to provide student housing by building and renting affordable apartments for all students in Jyväskylä. As a foundation, Koas has a Board of Trustees and there are nine people from different organizations like schools and the City of Jyväskylä. (Koas, 2021.) Koas has sold or renovated shared apartments into studio apartments and focused on providing what students need, affordable studio apartments near the city center. In 2020 Koas had 62 apartment buildings and 3,727 residents living in them. Most wanted apartments are studio apartments near the city center or close to school campuses. Currently, in 2021 the total number of apartments is 2433, and almost half (1176) are studios. The number of family flats is 590 and shared flats 636. (Koas, 2021b.)

Koas newest strategy for the years 2020-2025 prioritizes sustainability, ecology in property design, maintenance, and energy use. Resource Wisdom is a main goal and actions that Koas has been taking will help to fight climate change to reduce carbon footprint and achieve carbon neutrality by 2030. (Koas, 2021.) By providing high-quality student housing Koas would develop students' well-being, the overall image of the city of Jyväskylä, and increase the appeal of University and other schools. The strategy has a target to construct 100 apartments per year so that in 2025 the total number of residential units will be 4 200. Koas follows an established strategy with the designed roadmap that will be reviewed in 2021 and that board members of the Koas will monitor the progress of the roadmap semi-annually. (Koas, 2021a.)
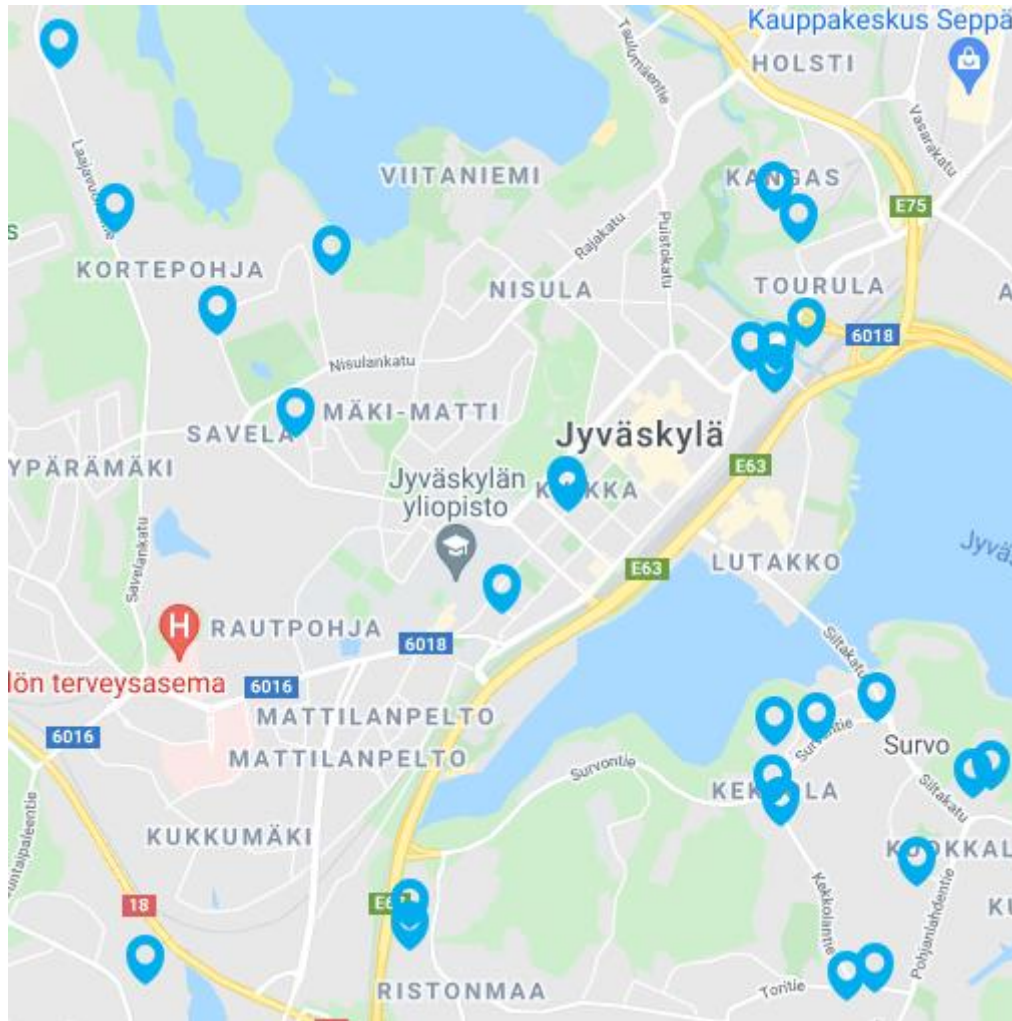
Figure 1: Locations of the Koas student apartments (Koas web page)

The newest apartment building called Koas Kangas will be ready in 2021 in the Kangas area and it will be a modern multi-generational area. A total of 105 student apartments would have 91 studio apartments and 14 family flats. (Kangas, 2021). New apartment buildings are very popular amongst students, and Koas gets thousands of applications per new building, with Koas Harju that got over 1200 applications. Koas will continue to be sustainable and providing the needed student housing near the city center to help different students to study and live well during the studying period of their lives. (Koas, 2019.) In addition, Koas carbon footprint was 2,406 tons of carbon dioxide equivalent in 2020, as in the previous year it was 3,493 t CO2 eq. The carbon footprint decreased 31% from the previous year, mainly due to renewable electricity (Koas, 2021b).

1.2   Motivation for the research

The drive for doing this research on sustainability and city center projects comes from academic and moral reasons. From the academic side, focusing on one city and its current trends that are growing and are part of the city center's development. This kind of specific study is needed to fill the gaps by providing more research on student housing and Resource Wisdom in the City of Jyväskylä. The three concepts that are presented in this study are the sustainable city, smart city, and urban resilience that in different researchers' theories have some challenges in defining these concepts. Applying sustainability has its challenges and it is interesting to see how the sustainable city concept is implemented in medium-size city and its housing projects to understand the idea of a sustainable city through collaboration with the organizations.

From a moral point of view, sustainability issues are very important, and contributing to these actions would increase our own morals and values, and appreciation of a good and sustainable lifestyle. Moral reasons and values are nowadays more important than before. The choices that students make are easily justified by sustainable moral values.

1.3   Aims and Research Questions

This thesis topic was assigned by the Central Finland Student Housing Foundation (Koas) and is part of the sustainability goals of the organization's strategy. The main theme was focused on the Resource Wisdom concept and student housing projects in the city center area. The most suitable housing project for this case was Seminaarinmäki, it was the first student housing residential area that focused on sustainability in the City of Jyväskylä.

The aim of this thesis was to get perceptions of the sustainability actions towards the sustainable city and in the organization to achieve the Resource Wisdom concept. One specific student housing project was chosen to evaluate and observe the previous projects that turned out to be sustainable. One student housing project that had this sustainability aspect was Seminaarinmäki, the two buildings were constructed from wood material in 2018 and are located near the city center and main University campus.

The main research questions were identified for this empirical study:

1. What are the perceptions of Sustainability and Resource Wisdom concepts in the Koas organization and in the City of Jyväskylä's student housing projects?

2. How are Sustainability and Resource Wisdom concepts put into practice in the everyday work of student housing projects for Koas and the City of Jyväskylä?

In this study, a qualitative case study was used to examine the present phenomenon of a wide understanding of sustainability and Resource Wisdom in the City of Jyväskylä. A case study was most suitable for this research because its objective is to do intensive research on a specific case, such as communities and institutes (Rashid, Rashid, Warraich, Sabir & Waseem, 2019). The research data was gathered from semi-structured interviews using the Teams communication tool in order to record the answer to ten sustainability-related questions. In total six persons were suitable for the interview for this one specific case project and had knowledge of Resource Wisdom.

1.4   Structure of the Master's Thesis

After the first Introduction chapter where the background and aims are explained, this Master's thesis will introduce the conceptual insights of the smart and sustainable cities concept, environmental insights, and the urban resilience concept. Chapter 3 will focus on this specific case study of city center phenomena, the collaboration between the small organization and the City of Jyväskylä and the Resource Wisdom.

Chapter 4 will present the data and methodology that contains the qualitative case study and presents how it was made for this case study. It is followed by chapter 5 where the research findings of the interviews are presented and are connected to the literature review. After this, a discussion and conclusion are drawn from this study and containing the trustworthiness and limitations of the case study. Lastly, suggestions for the future research on this subject are presented.

2   CONCEPTUAL FRAMEWORK

It was stated by the World Commission on Environment and Development (1987, p. 255) that "*The future will be predominantly urban, and the most immediate environmental concerns of most people will be urban ones.*"

It is important to acknowledge that The Sustainable Development Goals (SDGs) are a set of goals that are universal and relevant to all countries worldwide. These 17 goals in Figure 2 are the core of the 2030 Agenda for Sustainable Development that was established by all UN member states at the United Nations General Assembly in 2015 (Kanuri, Revi, Espey, & Kuhle, 2016). These goals and economic, social, and environmental strategies must work together to tackle climate change and preserve the future of nature and humankind. Goal 11: Sustainable cities and communities are represented in this conceptual framework.

Figure 2: Sustainable Development Goals (Sustainable Development UN, 2021)

Goal 11 provides the figures and facts that were mentioned at the beginning of the introduction. Knowing the facts and what is coming in the future helps to have the right targets, so that in the near future cities would provide the needed support for all residents and that cities are safe for every living being. Set targets for this goal included being resilient to disasters and support in building sustainable and resilient buildings utilizing local materials (UN 2021).

The conceptual framework will examine the methodologies deployed by scholars to investigate the diversity in terms used in different contexts. The concepts are divided into three main areas that focus on sustainable and smart cities and urban resilience and lastly summary of the theoretical outline. Ultimately, the literature review will result in a theoretical understanding that is relevant to

the practical goals laid out for this thesis. The formation of the conceptual theory will provide support in the construction of interview questions and help with data analysis.

2.1   Sustainable city

In this section, the sustainable city concept will include the evolvement of the term and goals for urban sustainability. The term sustainability was introduced by the World Commission of Environment and Development WCDE; known also as the Brundtland Commission in 1987 and by Alberti in 1996 as a particular relationship between human and environmental systems that assure meeting human needs as a continuing process. In the city environment the spread of sustainability needs to be achieved long-term both on the local level and the global level, as in the short-term cities will suffer from global environmental problems like climate change (Alberti 1996). The economic, environmental, and social challenges facing humans create an urgent need for significant changes in the way we design and adapt the cities to future growth. Cloutier, Larson, & Jambeck, (2014) also stated that the state of our current cities is falling short of sustainability. Cloutier et al., (2014) see in the study a lack of resilient and efficient economic, environmental, and social systems that need to be in place when developing communities sustainably.

In Haughton & Hunter (2005) study it was stated that cities are connected to each other, particularly to resource areas by complex web links that are production systems, finance, resource usage, and the environmental problems that cities create and face. Besides, cities can be made sustainable without the use of smart technology and in other way around that smart technologies can be used in cities without contributing to sustainable development (Höjer & Wangel, 2014). Turner (1993) pointed out that there is a strong sustainability rule, and it is needed to at least protect critical natural capital to ensure that it is part of the capital inheritance. Sustainability requires improvements in the process that increase the well-being of the current generation and at the same time is avoiding uncompensated and serious costs to future generations (Turner, 1993). The same direction of the importance of sustainability was stated by Juraschek et al., (2018) that the worlds challenge is to keep our planet habitable and provide enough resources for future generations.

In the future, sustainable cities would have unease to provide a socially diversified environment, where economic and social activities overlap and have communities that are focusing on neighborhoods (Khan & Zaman, 2017). Achieving the commitments to sustainability is still a struggle for many cities and to change that it needs the involvement of the "local stakeholders" like homeowners to improve the city system (Lüzkendorf & Balouktsi, 2017). In Lüzkendorf and Balouktsi (2017) study, the reason behind the local stakeholders' participation in all stages of indicator development as indicators evolve over time, new

circumstances within the area, and along with a piece of new scientific knowledge and data availability. However, in Shen, Ochoa, Shah, & Zhang (2011) study, they stated that there is a wide range of urban sustainability indicators with practical challenges that have led to diverse results in applying sustainability indicators in different environments and very little benefits in sustainability performance.

Bonges (2015) presents The Comprehensive Town Plan where many goals and purposes are promoting e.g., economic growth and perfectly managing high and low population density areas, and this is called a plan for smart growth. As one of the goals is to encourage citizen participation at all levels of the planning process to get impact at the most local level possible (Bonges, 2015). The locals' participation was introduced in Cloutier et al., (2014) study about sustainable urban development and the happiness of residents in the United States was concluded that happiness and sustainable urban development (SD) were positively linked as SD can operate as a driver of residential happiness. An interesting point of view was presented in Grossi & Pianezzi (2017) study, where citizens would be seen as customers, that voluntarily and unconsciously are 'data providers', and would express their opinions on the quality of services.

According to Turner (1993), global environmental change is driven by a range of factors, which are industrial development, urbanization and the intensification of agriculture and climate change may weaken the economy's capacity to achieve sustainable development. Urbanization has created the world's biggest development challenges, but at the same time present opportunities for advancing sustainable development when achieving the Sustainable Development Goals, cities will benefit from sustainable urban development (Kanuri, Revi, Espey, & Kuhle, 2016). A combination of Sustainable development and the SDGs was used in the Juraschek et al., (2018) study to evaluate the effect of Industrial production and urban factories. And it was stated that even urban factories can contribute to cities being sustainable in many ways.

Alberti (1996) suggests that there need to be clear indicators from the measures of urban sustainability, as managers need to see that their decisions affect not only the city's ecological systems but on a much wider area. Then on the manager level, it would be possible to design tools to monitor and build sustainable cities (Alberti, 1996). The same message was stated in Ahvenniemi, Huovila, Pinto-Seppä & Airaksinen (2016) study, which is that the tools are needed as decision-makers need to take actions toward the wanted direction and lead these to the operational level so that cities can assess the progress in pursuing these targets. As transformation has become one of the key concepts it is important to move sustainability into practice in order to survive on this planet (Romero-Lankao, Gnatz, Wilhelmi, & Hayden, 2016). Therefore, the formation of efficient and effective future city design and technology can be the key to solve economic, social, and environmental sustainability (Griffiths & Sovacool, 2020).

The term sustainable city was the most popularly used term from 1996 till 2012 when according to de Jong, Joss, Schraven, Zhang, & Weijnen, (2015) Smart

City term has surpassed sustainable city in the frequency of academic use in 2013 (see Figure 3 below). The concept of smart city became popular among adapting cities and offered investment opportunities for physical urban and infrastructure developments for engineering firms; to promote concrete innovations and engineering system solutions to urban problems. The main point has slowly shifted away from environmental conceptions of the city towards information and infrastructure direction. (de Jong et al. 2015, 10.) Therefore, the use of Smart City term will increase in the academic debate and is in the center stage of the urban development.
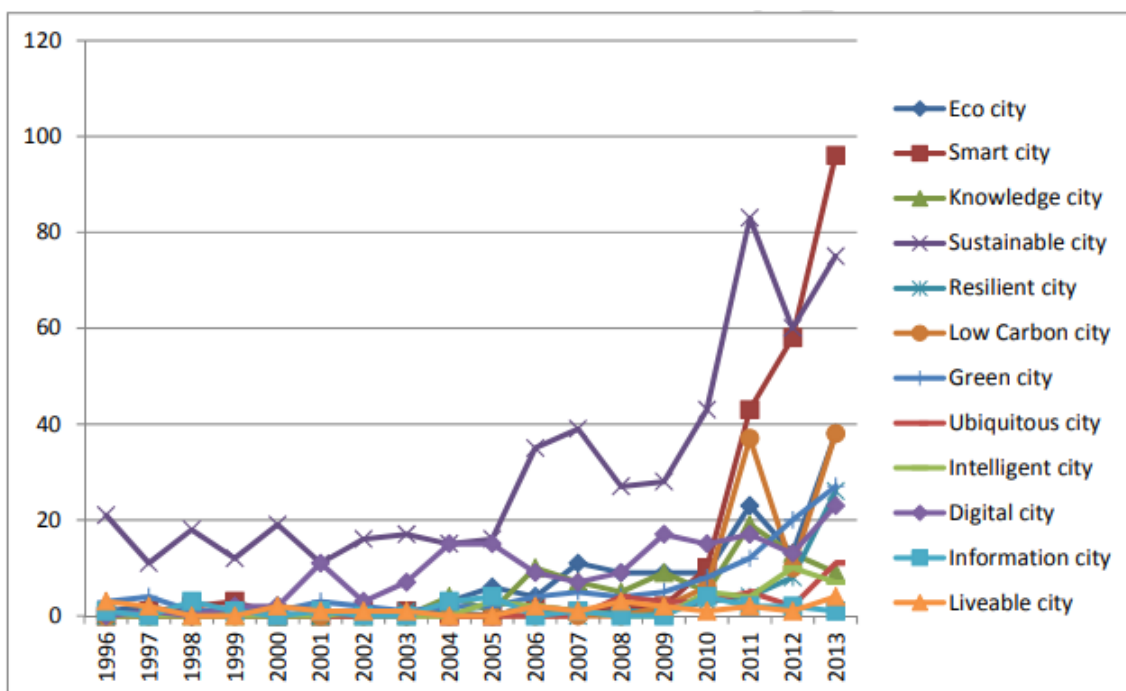
Figure 3: Evolution of the twelve categories over time (frequency in Scopus articles) (de Jong et al. 2015, 31)

Sustainability means building green and eco-cities and that builds sustainable development. Sustainability is a broad concept that combines economic development, social development, environmental management, and urban governance that represents municipal authorities in coordination with national authorities and institutions. (UN, 2013.)

In Table 1 Pillars for achieving sustainability of cities are presented. Investing in each of the component goals of urban sustainability can be challenging as cities operate in different stages and have their various priorities at the local and national levels. (UN, 2013.)

Sustainable cities			
Social development	**Economic development**	**Environmental Management**	**Urban governance**
Education and health	Green productive growth	Forest and soil management	Planning and decentralization
Food and nutrition	Creation of decent employment	Waste and recycling management	Reduction of inequities
Green housing and buildings	Production and distribution of renewable energy	Energy efficiency Water management (including freshwater)	Strengthening of civil and political rights
Water and sanitation	Technology and innovation (R&D)	Air quality conservation	Support of local, national, regional and global links
Green public Transportation			
Green energy access			
Recreation areas and community support			

Table 1: UN/DESA, Development Policy and Analysis Division (UN, 2013)

The union between these four pillars can create a combined effort between environmental management and social development and between urban governance and social development goals. Investment is seen as motivation that is behind the awareness of presented four segment goals of urban sustainability. These four pillars have different challenges that can be seen as opportunities if cities invest in infrastructure, access to good-quality public transportation, housing in urban areas, urban resilience, and adaptation and mitigation strategies. (UN, 2013.) Next section 2.2 will provide information about what Smart City concept is and that it is part of the sustainability concept with the technology aspect.

2.2 Smart City

The previous chapter presented that the Smart City term became the most used term in academic use from 2013 due to technology development, innovations, and problem-solving solutions. Therefore, this chapter provides an understanding of different dimensions of this currently used concept in the academic field. There are many ways one can define the Smart City concept as it is usually linked to Information and Communications Technology (ICT) that improves the efficiency and effectiveness of the activities and services in necessary city processes (Manville, Cochrane, Cave, Millard, Pederson, Thaarup, Liebe, Wissner, Massink, & Kotterink, 2014). According to Manville et al. (2014) the world is becoming more urban, which creates a need for smart cities that can help to solve problems of overcrowding, environmental issues, energy consumption, and resource management. They also studied European smart cities and stated that there are smart cities in all EU-28 countries, as the UK and Spain are largest in numbers and Italy, Austria and northern countries are in the highest of the percentage rate (Manville et al., 2014).

Zubizarreta, Seravalli and Arrizabalaga (2015) stated that cities were created by humans for the need for security, a better quality of life, and smaller mobility distances. When cities became the fusion of languages and overplayed with systems and information, cities needed to become a creator of smart methods and developments, smart approaches, and smart applications (Zubizarreta et al., 2015). Mayors and city officials are willing to invest in a problem-solving technology that is funded also with public money as cities struggling with tight budgets (Cardullo & Kitchin, 2018). According to Kitson, Martin, & Tyler, (2004) governmental interest has reached the '*competitive performance*' in cities and regions as it is considered a key significance in the regional, urban, and local scales.

Defining the Smart City has its various problems as the concept of Smart City is very broad, relatively new, and evolving, as Smart Cities come in many variants, sizes, and types (Manville et al., 2014). In Angelidou (2014) study, all Smart Cities were defined as urban settlements that make a certain effort to take advantage of the new Information and Communications Technology (ICT) scene in a strategic way, seeking to achieve competitiveness, effectiveness, and prosperity on multiple socio-economic levels. Even though the concept of Smart City was developed in 1994 along with the ICT development, the number of papers increased in 2010 as European Union started to use the word "smart" as they qualify sustainability projects (Dameri & Cocchia, 2013). Yet without a clear and consistent understanding of the Smart City concept Ahvenniemi et al. (2016), the diverse technologies can help in achieving sustainability in smart cities (European Commission, 2012).

The Smart City concept overlaps with other related city concepts such as: 'Intelligent City', 'Knowledge City', 'Sustainable City', 'Talented City', 'Wired City', 'Digital City' and 'Eco-City' (Manville et al., 2014). Yet Manville et al. (2014)

stated that globally and in Europe, the Smart City concept has become predominant especially at the policy level and that is the reason for concentrating on these specific definitions of the Smart City. This Smart City concept is still unclear and a multidisciplinary umbrella term that can develop beneath the city's infrastructure and services. Common features of the numerous smart city definitions are Resource Wisdom, co-development, innovative solutions, and the use of open data in the development of services. Within the framework of a Smart City, a special emphasis can be placed on administrative innovations as well as process and service innovations. (Caragliu, Del Bo, & Nijkamp, 2011; Manville et al., 2014.)

According to European commissions, Smart Cities Information Systems (2017) that replication is a keyword in the Smart City community, as successful replication provides new innovative business models that would rise when facing new challenges that would create shared information, good practices, and learned lessons in the process. Adding Manville et al. (2014) key factors that were holistic and fundamentally participative approach and also, collaboration, co-creation, and co-development are key conditions for success in the Smart City initiative. Just as in Ahvenniemi, Huovila, Pinto-Seppä & Airaksinen (2016) the cities have key roles when facing the challenges of climate change, and to decrease greenhouse gas emissions and improving the energy efficiency of cities the new intelligent technology was seen as a key factor. Bellaouar, Guerroumi, Derhab, & Moussaoui (2018) stated that one of the main goals of smart cities is to minimize their transportation problems, which cause congested roads and accidents.

Sustainable city and smart city are both important concepts in this case study, both represent different ideas and require different actions. Being sustainable is not enough but requires smart solutions that technology and innovations bring support to slowing down the climate changes that cities face. The sustainable city concept has its long history, and it helps to guide the future to a better path so that smart city concept can be incorporated into a concrete concept that would not have any misleading information, only helping cities and organizations to succeed in the set objectives for the future. For branding and future innovations smart city would be most suitable to use in any context and the Smart city dimensions (chapter 2.2.1) section will present how it is used in the different factors.

2.2.1 Smart city dimensions

According to Zygiaris, (2013) the Smart City can be divided into six sections: Smart Economy, Smart Environment, Smart Governance, Smart Living, Smart Mobility, and Smart People. Each section will be discussed in more detail below and how these six conceptually distinct characteristics appear in the smart city conversation.

Smart economy

A smart economy is described as the heart of innovation, entrepreneurialism, the flexibility of the labour market, integration in the international market, and the ability to transform (Vanolo, 2014). A smart economy can be competitiveness, innovative spirit, entrepreneurship, and the ability to transform (Giffinger & Gudrun, 2010). Urban problems have usually been solved with creativity and clever solutions that allow cities to thrive through quantitative and qualitative improvements in productivity (Caragliu, Del Bo, & Nijkamp, 2011).
Cities are facing global challenges, they need to have a master plan that should contain the innovative characteristics that contribute to a green, sustainable smart planet growth. A smart economy requires cities to have structures, utilities, and urban planning, and a city's readiness to implement smart policies. (Zygiaris, 2013.) These smart urban policies are required to be tailored to local needs and opportunities without leaving the most challenging goals and priorities attached to the smart city concept. Also, knowledge, the effectiveness of these policies, and awareness are crucial factors in preventing their failure. (Manitiu & Pedrini, 2015.)

Smart environment

A smart environment also known as natural resources was listed by Giffinger & Gudrun (2010) as characteristics and factors that were environmental protection, lack of pollution of natural conditions, and sustainable resource management. A smart environment is understood as the attractiveness of natural conditions, reduction of pollution, and sustainable management of resources (Vanolo, 2014). Smart environment is seen as both green and environmentally friendly and free of garbage and waste. In addition to the aspect of environmental friendliness, the city's residential areas are seen as distinctive that encourages a communal neighborhood. (Kumar & Dahiya, 2017.) According to Cui, Xie, Qu, Gao, & Yang, (2018) smart environment can contribute considerably in terms of building a sustainable society by adopting technical management tools. And smart cities can monitor air quality, energy consumption, the structural reliability of buildings, and traffic jams.

Smart governance

Smart governance is one of the most important features of a smart city and it is based on citizen participation and depends on infrastructure and responsibility (Giffinger et al. 2007). Smart governance means issues that are connected to participation in decision-making processes, transparency of governance systems, availability of public and social services, and quality of political strategies (Vanolo, 2014). Smart governance is seen as public and social services and political perspectives (Giffinger & Gudrun, 2010). In a smart city, decision-making is based on collected and analyzed data provided by a network of sensors and

smart devices to support decision-making. City residents are part of the decision-making process and have access to political decisions concerning, for example, budgeting and urban planning. Information and communication technologies and online platforms are used for decision-making and discussion. Smart governance is seen in the city's growing public satisfaction towards the political system. (Kumar & Dahiya, 2017.) Bolívar and Meijer, (2015) presented their model of smart governance based on theoretical and empirical exploration. Strategies for implementing smart governance contained actions in legislation, policy, and organizational transformation that can explain differences in smart governance compositions (Bolívar & Meijer, 2015). Faraji, Marjan and Arash (2019) collected definitions of smart governance made by previous researchers and the newest one stated that "*Smart governance is intelligent use of ICT to improve decision-making through better collaboration between stakeholders, including government and citizens helping the government to run smart cities.*" (Pereira, Parycek, Falco, & Kleinhans, 2018).

Smart living

Giffinger & Gudrun (2010) listed smart living factors which are cultural facilities, health conditions, individual safety, housing quality, education facilities, and touristic. Smart living includes good quality of life, imagined and measured availability of cultural and educational services, tourist attractions, social cohesion, healthy environment, personal safety, and housing (Vanolo, 2014). Smart living can be seen as smart services that benefit citizens in many ways such as intelligent healthcare applications that monitor people's health conditions via wearable devices and medical sensors or remote control of home appliances. In other words, smart services can create comfortable, intelligent, and energy-saving living environments to improve people's daily lives. (Cui et al. 2018.)

Smart mobility

Smart mobility is a transport and ICT factor that has innovative transportation systems, availability of ICT infrastructure, and international accessibility (Giffinger & Gudrun, 2010). Smart mobility is achieved through the ease of local and supra-local accessibility, good access to ICTs, modern, sustainable, and safe transport systems (Vanolo, 2014). Cui et al. (2018) present IoT-based architecture for a smart city that has an '*Application layer*' that provides intelligent and practical services or applications to users based on their personalized requirements. Aiming to implement "smarter" usage of transport systems and intelligent transport networks to improve safety, speed, and reliability for the public. With smart mobility and transport infrastructure, there will be special emphasis placed on environmentally friendly ways of moving. Infrastructure is being developed, for example, with sensors that provide data on citizens' travel routes in the city and when routes are jammed. Therefore, these sensors are used to collect data on

the citizens and their movement in the city so that the infrastructure can be developed to be more serviceable and smoother. (Lazaroiu & Roscia, 2012).

Smart people

Smart people are defined as the competence of human and social capital, flexibility, creativity, tolerance, sophisticated thinking, and participation in public life (Vanolo, 2014). Smart people can be seen as social and human capital that have open-mindedness, social and ethnic plurality, affinity to lifelong learning, and a good level of qualification (Giffinger & Gudrun, 2010). Also, universities and other educational institutions in the city are involved in developing the city area and in all other activities. Educational institutions utilize information and communication technology for educational use in the form of online teaching. City residents can adapt to changes, they are open-minded, and have a healthy lifestyle. (Kumar & Dahiya, 2017.) Cui et al. (2018) present characteristics of smart city and user involvement as a human factor is very crucial for the development of smart cities that were built to serve their citizens.

This chapter presented how cities can be seen as smart with the help of technology. Involving technology to meet new challenges can improve cities' urban resilience. The current technology that is in use like surveillance cameras can play a key role in securing cities' ability to rebound from natural or manmade disasters. (Scoblete, 2019.) The concept of urban resilience will be introduced in the next 2.3 chapter to help understand the connection to the bigger picture of sustainability actions in the cities.

2.3   Urban resilience

Chan and Zhang (2019) present the connection between the smart city and urban resilience when the role of smart city technology will provide improvement in urban resilience. This does not erase the possible threats that were seen from 'intelligent' AI technology to urban resilience. Instead, a new platform for data could be turned into prediction products that can be utilized by cities or different organizations. Chan and Zhang (2019) argued that there is harmony between smart city technology and obtaining urban resilience through 'proactive design and planning within the engineering conception'.

Originally the word resilience comes from the Latin word *resilio* and it means to "bounce back" (Klein, Nicholls, & Thomalla, 2003; Meerow, Newell, & Stults, 2016). In 1973 C.S. Holling's seminal paper was the first work that had different associations from the traditional stability model (Meerow, Newell, & Stults, 2016). Generally, urban resilience indicates the ability of a city or urban system to cope with shocks and stresses that are understood as climate change that cities face (Leichenko, 2011). Urban resilience studies are based on diverse literature that Leichenko (2011) divided into four categories: (1) urban ecological

resilience; (2) urban hazards and disaster risk reduction; (3) resilience of urban and regional economies; and (4) promotion of resilience through urban governance and institutions. The fourth category governance and institutions are the most suitable branch on urban resilience, it focuses on questions of how different types of institutional arrangements affect the resilience of local environments that have a diversity of approaches and can take many different plans (Leichenko, 2011).

The same idea of the importance of cities was pointed out in Ernstson, Van der Leeuw, Redman, Meffert, Davis, Alfsen, & Elmqvist (2010) study that cities form part of "system of cities", and they cannot be seen as single entities as urban governance need to equip with social networks of urban innovation to preserve ecosystem services. Also, Ernstson et al. (2010) pointed out that: *"resilience theory from ecological research can contribute to our thinking on this normative goal, and that cities can help challenge traditional propositions used by resilience theorists when addressing human-dominated ecosystems"*.

In the literature review, Meerow, Newell, & Stults (2016) found out that urban resilience definitions focus largely on persistence that reflects on the engineering principle where systems are preventing shocks by being robust to impacts and is presented in a text as a specific threat like climate change, or it can be seen as an urban system that can counter all the risks.

Jabareen (2013) pointed out that there is a major theoretical challenge about urban resilience theory that combine a variety of urban dimensions such as social, economic, cultural, environmental, spatial, and physical infrastructure and this provides a need to fill the knowledge-based gaps and create a new framework to understanding the complexity of urban resilience. Meerow et al. (2016) had the same conclusion and stated that the scholarly literature on urban resilience and definition of the terms has not been well defined. Besides, current definitions of both resilience theory and urban theory are inconsistent and underdeveloped. And therefore, Meerow et al. (2016) provide an initial list (see Table 2) of such questions to be considered in the process of understanding resilience in specific urban areas. According to Meerow et al. (2016) diverse stakeholders are involved in the urban resilience process and their motivations, trade-offs, and power dynamics are seen in geographical and temporal scales. However, Chelleri, Waters, Olazabal and Minucci (2015) claim that when the concept of urban resilience is put into practice there is no sufficient understanding of and accounting for such temporal scale resilience trade-offs.

Questions to consider		
Who?	**T R A D E O F F S ?**	Who determines what is desirable for an urban system?
		Whose resilience is prioritized?
		Who is included and excluded from the urban system?
What?		What perturbations should the urban system be resilient to?
		What networks and sections are included in the urban system?
		Is the focus on generic or specific resilience?
When?		Is the focus on rapid-onset disturbances or slow-onset changes?
		Is the focus on short-term or long-term resilience?
		Is the focus on the resilience of present or future generations?
Where?		Where are the spatial boundaries of the urban system?
		Is the resilience of some areas prioritized over others?
		Does building resilience in some areas affect resilience elsewhere?
Why?		What is the goal of building urban resilience?
		What are the underlying motivation for building urban resilience?
		Is the focus on process or outcome?

Table 2: Fundamental questions related to urban resilience (Meerow et al., 2016)

Terms with a similar meaning such as adaptation, sustainability, and vulnerability have been replaced with the term resilience (Elmqvist, 2014; Weichselgartner & Kelman, 2014). The literature on resilience is divided into four parts that are; the ecology that focuses on the natural environment; the psychology that is focused on people; the engineering focus on human constructions and the geography focus on the natural environment, the built environment, and society, but despite this wide applications and contexts, there is no universally accepted term or definition for resilience (Weichselgartner & Kelman, 2014).

The development of the urban resilience concept needs knowledge in order to understand the concept properly as the resilience theory is more and more applied in urban studies (Meerow & Newell, 2019). In their study, it was stated that "resilience" and "urban" present a stronger basis for collaboration and bringing together different stakeholders in phase 1 in the process for enabling the politics of urban resilience. In the conclusion Meerow & Newell (2019) stated that the urban resilience literature needs a more distinction acknowledgment for what defines the "city" or "urban," and geographers need to continue to provide empirically abundant place-based research that advances the understanding of what resilience means and how it is applied in different urban contexts.

According to Ahern (2011) early thinking about sustainability can create stable conditions that could last for generations, while building resilience capacity that requires a new way of thinking about sustainability. The resilience term itself is more strategic and must be especially based on environmental, ecological, social, and economic drivers (Pickett, Cadenassso, & Grove, 2004). In Ahern (2010; 2011) the included studies introduced five urban planning and design strategies

for building urban resilience: adaptive planning and design, (bio and social) diversity, multi-scale networks and connectivity, multifunctionality, redundancy, and modularization that will need a new culture of innovation, monitoring, and assessment of plans for the future testing.

2.4   Summary of the conceptual outline

The terminology of these three conceptual terms presented has common problems that create too many possibilities in understanding how cities can survive future challenges and how humankind can overcome them. Changing the use of a concept from Sustainable to Smart City as the use of technology in 2013 was strongly connected to helping to solve climate challenges that cities were facing now and in the future. When sustainability focused on economical, social, and environmental issues, adding smart with the technology created even more interpretations that cannot be applied to every situation. In addition, the main focus on the city and its constantly evolving urban area are suited to this case study limits and therefore urban resilience was seen as a link to sustainability and how it is seen and applied in the City of Jyväskylä. Through the literature review, it is seen that these concepts may overlap, support, or be used incorrectly at the operation level.

Urban resilience was connected to the cities and their survival plan by many authors like Jabareen (2013) & Meerow et al. (2016) presented that without a clear framework on how to apply urban resilience concept it slows down the gap filling of the future research. These concepts and different uses of the terms provide a wide variety of using the terms as they are understood and benefit the purpose. The use and creation of many interpretations affect the reliability of the research and do not help to form a concrete common understanding of sustainability and its different paths in tackling challenges that the future could bring to humankind that wants to live in the city center. Urban resilience or just resilience itself cannot affect the outcome or on the set goals, the term itself represents good or bad in certain content, and in practice term adaptability and flexibility are used among the city workers.

Therefore, in this case study it was important to carry out qualitative research and gain the data from the current situation and how sustainability is used, understood, and being accepted as a part of a strategy and everyday action plans of the organization. These big concepts are incorporated in different organizations as they suit them, and every organization operates differently and has different perceptions that are experienced through their work.

3   A CASE STUDY ON A STUDENT HOUSING PROJECT

This specific case study that focuses on one area City of Jyväskylä and one housing project that is Seminaarinmäki was the chosen scope for this case study. The buildings were ready in 2018, Seminaarinmäki is one of the locations in many housing options that Koas provides. The center location, lack of private parking options, and the construction materials are what make this housing project very interesting to observe afterwards. And to get the idea behind what happened during the planning and the perceptions from Koas and the City of Jyväskylä people on sustainability, Resource Wisdom, and collaboration with small organizations.

Figure 4: Koas student building. Hämeenkatu 8, Jyväskylä

3.1   City of Jyväskylä's strategy

The sustainable city concept was introduced in chapter 2.1. This chapter will focus on how the city of Jyväskylä is and will be a student city and one of the sustainable cities in Finland. The City of Jyväskylä has a KymppiR-program that for instance has the goal of developing student housing as students increase the city's demographic structure (City of Jyväskylä, 2020b). The total number of students in 2019 was almost 30 000 (Toimintakertomus ja tilinpäätös, 2019).

According to the City of Jyväskylä (2020b), student housing is seen as one of the competitive advantages when attracting students into the city. It was mentioned that from 2010 the birth rate has been low, it is estimated that there will be fewer young adults moving into the city to study. Therefore, it is important to offer enough high-quality and affordable student housing that the City of

Jyväskylä has this competitive advantage to compete against other university cities in Finland. (City of Jyväskylä, 2020b.) Sustainability and sustainable development were the main starting points for the City of Jyväskylä to start using Sitra's operation model, the concept of Resource Wisdom. It was a joint project with FISU Network between 2013-2015 to develop an operating model that cities can promote when implementing different practical trials on the local scale. (Sitra, 2013).

The mentioned concept of Resource Wisdom refers to the ability to use various resources (natural resources, raw materials, energy, products and services, facilities, time, and knowledge) in a prudent way that promotes well-being and sustainable development. Resource Wisdom is a more holistic definition of resource efficiency: it looks at resource consumption at the level of society as a whole, avoiding sub-optimization to achieve the best overall outcome. Resource Wisdom can be promoted through the circular economy, materials lifecycle management, energy and material efficiency, and the transition to renewable energies. A resource-wise policy is designed to promote human well-being while minimizing adverse effects on the environment and human beings. (City of Jyväskylä, 2020a.) The City of Jyväskylä has a long-term commitment to Resource Wisdom. By 2040, the goal is to be a sustainable city that is zero-waste, emission-free, and free of overconsumption. In addition, the city of Jyväskylä aims to be a carbon-neutral municipality by 2030. (City of Jyväskylä, 2020a.)

Kuntalehti (2015) wrote an article that municipalities could reach even more efficient resource wisdom by using Sitra's operating model. By using natural resources efficiently, municipalities would create a competitive advantage, this would form a strong regional economy and improve residents' well-being (Kuntalehti, 2015). Also, it was stated that the city of Jyväskylä is a forerunner in resource wisdom projects as the city has a strategy that is based on Resource Wisdom and follows Resource Wisdom principles in all already pending projects (Kuntalehti, 2015). Last autumn in 2019, Jyväskylä was chosen as the municipality of the year in the circular economy (Kuntalehti, 2020).

The City of Jyväskylä is a student city and most students want to live near the city center and school campuses. Most popular way of living is in a studio or one-bedroom apartment as rooms in shared flats are not so popular. Students live where student housing is available and the need for studio apartments is increasing and therefore 56% out of student apartments available in Jyväskylä are already studios. (City of Jyväskylä, 2020b.)

The KymppiR-program mentioned at the beginning of chapter 3 had a clear goal in its policies from 2016 to 2019. In 2019 it was identified that it is the city center area where specific regional policies are needed. Socially sustainable housing and the diversity of the housing stock will be endorsed by town planning plans, controlling the average floor area of housing and the quality of housing. (City of Jyväskylä, 2020c.)

Student housing providers like Koas are constantly reacting to feedback and what students require to live in the student housing. Four trends are currently on the top in the housing providers' views. One is that shared flats are not popular, and in the future, it would be ideal that students will get studio apartments more easily from the beginning of their studies. In other words, the goal is to increase the number of studio apartments in the total amount of student apartments. Second thing is that even though students live in small apartments alone they need communal facilities for social interactions with other residents. It creates a need for space like a common room for studying, hanging out, and events. These different shared facilities have been very popular amongst the students. In order to understand the students, it is important to understand what kind of students are moving to student apartments. As more and more international students are coming to study in Jyväskylä, they are interested in cheap apartments that are usually shared and furnished apartments. The price aspect is important to students with children, but their number is decreasing and there is competition with other providers like hotel-type accommodations that could be cheaper and available for a short amount of time. The last and most crucial point is that interest in living in the city center increases constantly. Therefore, the goal of student housing providers is to increase the number of student apartments in the city center and near school campuses. Already some of the city center houses are without their own parking space, as cars are not a necessity in the center. In addition, the limit of available plots and the high costs of the city plots limits the constructions for student housing providers. (City of Jyväskylä, 2020b.)

3.2   Collaboration with the organization

Mutual goals and constantly improving student housing and other affordable housing are the key part in getting new residents. And for students, giving all of them a good living experience would make more students stay in Jyväskylä after graduation. Therefore, a collaboration between the student housing providers, schools, and the city have a central role also in the future. (City of Jyväskylä, 2020b.)

One of the goals that were more focused on in this thesis is Recourse Wisdom that is seen very strongly in both Koas and the City of Jyväskylä's vision now and in the future. Through a renewed strategy, Koas has set sustainability as the priority for the year 2020-2025. The goal is to tackle climate change by reducing carbon footprint and acquiring only renewable electrical energy. That requires putting more effort into life cycle thinking and Resource Wisdom in material acquisition. By focusing on these Koas aims to become carbon neutral by 2030. (Toimintakertomus ja tilinpäätös, 2019.) These common goals and focusing on the same issues would make collaboration between the City of Jyväskylä and Koas very productive and benefit both parties. Besides, collaboration is not a one-time event, but a constantly evolving interaction process (Äyväri 2006, 58-59).

Besides, an open strategic networking environment with a confidential atmosphere creates room for creativity and learning new things (Arhio, 2007). One example is Business Jyväskylä (2020) that has its own value network called Smart City. Together with companies, research institutes, Jyväskylä city, and its surrounding communities, and its citizens, they create innovative, digital, and ecological solutions. The idea is to increase the attractiveness of the Jyväskylä region by creating advanced digital infrastructure, services, and an urban environment (Business Jyväskylä, 2020).

Koas' strategy is based also on the City of Jyväskylä's strategy; going towards a more sustainable and Resource Wise city that supports sustainable housing projects. Koas and the City of Jyväskylä are the source of the data in this case study as the most current and real work-life information was needed in this qualitative research.

4   DATA AND METHODOLOGY

This chapter aims to explain the chosen research methodology and understand this phenomenon that requires qualitative methods for this specific case study in this Master's thesis. This chapter consists of a chosen research approach and then explains how data was collected and analyzed.

4.1   Research approach

This study focuses on one specific case, a student housing project in the City of Jyväskylä. The main phenomenon was Resource Wisdom which is a part of the sustainability strategy of Koas and the City of Jyväskylä. The specific housing case was Seminaarinmäki that had wood as a main construction material. To get a better understanding of this Resource Wisdom phenomenon, a qualitative research approach was chosen from the beginning. Considering that it is an effective way to get a better and deeper understanding of the current situation in the small organization that works together with the city. The qualitative research approach helps to understand phenomena in context-specific settings, in other words as "real world setting" in order to produce findings of the phenomenon naturally (Golafshani, 2003). This specific qualitative case study gained information from empirical data like interviews with two different information sources: three workers in the City of Jyväskylä and three representatives from the Koas organization. In the case study respondents views are explained by the researcher with a specific framework in order to test a theory or in this case the conceptual phenomena in practice (Rashid et al, 2019).

According to Gillham (2010), a case study itself attempts to see a group of people's activity in the real world that can be studied in context, it exists here and now, and it merges in with its context creating difficulty to draw the precise boundaries. It depends on the case setting, what needs to be found out, what kind of evidence is needed to answer the research questions. Furthermore, the definition of a case study can be seen as an empirical inquiry that goes in-depth within the real-life situation and is a suitable strategy specifically when the boundaries between present-day phenomenon and situation are not entirely clear (Yin, 2019). Case study itself is a great research approach as it allows looking at the present-day phenomenon in a specific situation, meaning that collecting evidence about a specific phenomenon where it is taking place (Farquhar, 2012).

The aims of the research are to test concepts and literature and share the knowledge gathered by qualitative research that would present how the world works and why it works as it does (Patton, 2002). Qualitative data is words, stories, observations, and documents that are based on three kinds of data: 1) in-

depth, open-ended interviews; 2) direct observation; and 3) written communication. And in this case, interviews will provide answers from people about their feelings, experiences, opinions, and knowledge. (Patton, 2002.) The qualitative data generally comes from the field and the researcher has an opportunity to interview people and then analyze the written documents (Patton, 2002). Next, the data collection and qualitative case study chapters will present how the selection and interview went with the chosen interviewees.

4.1.1 Data collection

In this case study, the data collection was conducted through interviews as semi-structured thematic interviews. To understand the phenomenon, an interview was the most suitable method for collecting qualitative data. And the reason for choosing semi-structured interviews was that it allowed researchers to ask questions that are not specified but still include common questions for all participants. The interview questions are seen in Appendix 1 questions for Koas and Appendix 2 questions for the City of Jyväskylä. Saunders, Lewis, and Thornhill (2019) stated that interviews are the way researchers can practice their judgments so that they know what to ask in order to collect as rich information as possible from participants. The interview questions were formed to answer the research questions and the conceptual framework helped in narrowing and focusing on the phenomenon. Selection criteria were used for the interviewees in Table 3.

A specific set of questions was used for each interview and the alteration of the questions was changed according to what organization participants represented. In structure, the prepared questions consisted of the basic starting questions and most of the main questions that were suitable for this case study. In the interview situation, the main questions will lead to follow-up questions if needed and vary based on the answer to the main question. That way every interviewee can present their thought of how a certain phenomenon is seen in their work role and the interview situation would flow naturally and be flexible in 30-minute interview time.

Totally six representatives were interviewed, three interviewees were from Koas and three were from the City of Jyväskylä. This data gained provided an equal quantity of information from both organizations. Selection for the interviewees was based on the connections to the thesis topic and the selection criteria (Table 3). In the case of Koas, mostly three persons were suitable for the interview. And in the City of Jyväskylä case interviewees were suggested by the City of Jyväskylä people, which helped to choose the sources for data collections by the researcher and purposeful sampling supported the researcher to obtain needed information from the source. Purposeful sampling is used as a chosen strategy in implementing research in any study. With purposive sampling, the researcher can learn from an unusual expression of phenomena and in this case strategy of a *typical case* was used to illustrate what is normal and not make generalized statements about the experiences of all participants. (Palinkas, Horwitz, Green, Wisdom, Duan, Hoagwood, 2015; Patton, 2002.)

All interviewees were based in Jyväskylä and they met the requirements of either having knowledge of Resource Wisdom, working with student housing, or being part of public housing projects in the City of Jyväskylä. In this case study, the interviewees work location was important to this case, as it was all about the City of Jyväskylä, student housing in Jyväskylä and sustainability like Resource Wisdom that was part of the work. The City of Jyväskylä interviewees consisted of different roles that were dealing with different sustainability issues in their line of work and had different views and knowledge on concepts like Resource Wisdom. Table 3 below shows how interviewees were divided according to their work role and tasks in their current position.

Selection criteria	Description (number of interviewees)
1. Person who deals with the concept of Resource Wisdom in daily work.	- work role contains this concept (4) - expertise from work or education (4)
2. At least half representatives are working with student housing projects.	- yes (3) - no (3)
3. Representatives that were related to construction projects and specifically Seminaarinmäki projects.	- was part of Seminaarinmäki project (3) - works close to construction projects (4)
4. At least half of the representatives have knowledge and experience in the sustainability field.	- is part of sustainability strategy (6) - have an affect on the sustainability outcome (6)

Table 3: Interviewees and selection criteria

4.1.2 Qualitative case study

The interviewees were selected based on their position in the organization. In the case of Koas, three individuals were working with student housing projects and sustainability topics particularly and therefore were considered the most important source of inside information for this case study. For the City of Jyväskylä employees, the selection was discussed together with two representatives that were working for the City of Jyväskylä and with related sustainability subjects. After discussing the studied subject with these representatives, suggestions about specifying the research aims and possible interviewees, were helpful for this case study to narrow the exact researched topic and start thinking specific research questions for suggested interviewees. Time was the big issue, interviews were conducted as efficiently as possible and at the most suitable time for the interviewee. After agreeing in the email about the interview time, the meeting time was sent by Teams communication tool along with the main questions (see Appendix 1).

In this master's thesis, the interviewees' names are not presented but instead they are replaced with numbers in a random order in the result section. This way every interviewee can freely express their thoughts about the subject. All interviews were conducted by interviewing one person at a time, also communication was in Finnish language and which made the studied topic to be easily understood. Misunderstandings were less likely on both sides because of the language barrier. Using the native language instead of English in the interview made the respondents feel more comfortable during the interview and that helped to keep the quality of these interviews high. In addition, interviewees first answered the simple questions where the interviewees were asked about their work role in the organization and how long they have been in this current work or total experience in this work field. These simple questions helped to start the conversation and to get to know each interviewee and their perceptions and motivations.

The interviewees were all Finnish, and the interviews were held in Finnish. Every interviewee was interviewed individually by using the Teams communication tool. The Teams communication tool was great for recording every interview and made it easy to transcript the interviews into text form. The first interviews were conducted in April 2020, the first interviewees being from Koas. Individual interviews gave a lot of interesting data to start with. Interviewees had time to read the questions as the main questions were sent beforehand by email to every participant to have time to think about the answers in advance. The second round of interviews was conducted later in November 2020 and again using the Teams communication tool. Each interview was recorded and lasted between 20 to 37 minutes (Table 4). The interview questions were sent beforehand and shown during the actual interview situation and additional questions were asked to get a deeper answer on the matter. Customized interview questions were used as a tool to help to answer the research questions.

Interviewees from Koas			
Date	09.04.2020	15.04.2020	17.04.2020
Duration of the in interview	24:51 min	23:15 min	20:09 min
Work experience in this organization (at the interview time)	6 months	16 years	14 years

Interviewees from the City of Jyväskylä			
Date	06.11.2020	09.11.2020	13.11.2020
Duration of the interview	23:44 min	36:50 min	28:13 min
Work experience in this organization (at the interview time)	Over 13 years	Over 10 years	10 years

Table 4: Interviewees from both organizations

The interviewees were interviewed on different days and in different seasons, the reason was that it was clear from the beginning who were suitable for the interview in Koas. For the City of Jyväskylä, it took longer to seek out suitable interviewees that had time and interest in participating in this study.

4.2   Thematic analysis

The use of thematic analysis is to analyze qualitative data and it is a great method for identifying and reporting themes within qualitative data (Braun & Clarke, 2006). According to Braun and Clarke, (2006) the thematic analysis provides more accessible form of analysis and it is suitable for those early in their research career. In Nowell, Norris, White, and Moules, (2017) study stated that Braun and Clarke (2006) and King (2004) argued on the usefulness of the thematic analysis method, even though the method was great for examining the perspectives of different research participants, highlighting similarities and differences. The disadvantage was the lack of substantial literature on thematic analysis and when compared to other methods, even if it is flexible, a researcher can face a lack of coherence when developing themes derived from the research data (Nowell, Norris, White, & Moules, (2017).

There are different orientations in thematic analysis. The deductive analysis is driven by the researchers' theoretical or analytic interest and may provide a more detailed analysis of some aspect of the data but tends to produce a less rich description of the overall data. (Braun & Clarke, 2006.) According to Tuomi and Sarajärvi (2009, 95), qualitative analysis usually consists of inductive or deductive analysis. Inductive analysis is a bottom-up approach from the individual to the broader general. These two analyses neglect the third logic of reasoning

that is abductive reasoning, through which the formation of a theory is possible when making observations involving some guiding idea. (Tuomi & Sarajärvi, 2009, 95). In this qualitative research study, abductive reasoning was used to analyse the data.

According to Tuomi and Sarajärvi (2018), the researcher analyses the codes by comparing their similarities and differences. The codes were put into two categories Resource Wisdom and sustainability, the second category was coming from the research questions. In order to answer these two research questions, it was important to understand and see how the codes and categories were related to the phenomena and provided a broad selection of themes. The main purpose was to reveal the possible similarities and differences between two different organizations. During the analyzing process, the main themes were found and collected to present the interviewees perceptions and how sustainability is seen in practice. This part will be presented in section 5 Findings that is divided into 5.1. and 5.2 by the research questions.

4.2.1 Interview questions

The list of pre-planned questions was sent by email (see Appendix 1). For Koas there were six questions and additional questions were asked if needed depending on the responses. The time limit of 30 minutes gave enough time to ask additional questions and whether interviewees would like to add anything else at the end. To start the interview the interviewees were asked simple questions about their role and work backgrounds in the organization. After that, the interviewee was asked to describe how they see Resource Wisdom in everyday work in the student housing projects. The role and importance of different actors and strategies were discussed and how Koas can concretely affect their process in becoming more sustainable and Resource Wise in the future. Following up the process was an important aspect and how sustainability is visible in all the parts of the organization and can be resilient in new unpredicted situations. The main focus was on how these concepts are visible in the housing projects and what kind of perceptions interviewees had on sustainability and Resource Wisdom in Koas organization.

For the City of Jyväskylä interviewees, ten pre-planned questions began with the same questions about the role and work experience in the organization or their field. The main questions focused on getting the perceptions on how sustainability and Resource Wisdom affect through their work and in different stages of the housing projects. Also, it was interesting to see how in a city worker's opinion student housing would develop in five years and how mobility in the city center would develop. All ten questions are attached at the end (see Appendix 2).

4.3 Methodological limitations

This case study had some limitations based on the organization Koas and the City of Jyväskylä. The main focus was to get relevant information from the individuals that are currently working with sustainability issues in different housing projects that focus also on affordable student housing. The case study itself narrowed down the City of Jyväskylä, student housing provider Koas and not interviewing all people working in these organizations, but rather those who can provide current information from the work field from past or current housing projects and their work contains sustainability themes like Resource Wisdom. The current sustainability related terms are diverse and the use of them and understanding in different contexts in a way would have an effect on the data quality.
The covid-19 situation also limited the ways of conducting the interviews, not to mention the views on future sustainability issues in the student housing projects were not the most relevant in the current situation.

4.3.1 Reliability and Validity

Case study research can be versatile and highlight different issues and create challenges for the researcher in terms of reliability and validity. These concepts are typically applied to quantitative research and different kinds of strategies are needed to put in place in order to evaluate qualitative research, in other words, ensure 'trustworthiness' of the findings (Noble & Smith, 2015). When testing reliability, quality is seen as the most important in any qualitative research. The quality concept in the qualitative study has the objective of "generating understanding" (Stenbacka, 2001, p. 551; Golafshani, 2003). When analyzing results and judging the quality of the study, reliability and validity are two factors that need to be taken into consideration when designing a qualitative study (Patton, 2002; Golafshani, 2003). In addition, Golafshani (2003) stated that the examination of trustworthiness is crucial in order to ensure reliability in qualitative research, but Leung (2015) pointed out that in qualitative research a small margin of variability in the results is tolerated, as long as the methodology and epistemological logistics are consistently producing data that is similar and may differ in richness and is surrounded with similar dimensions.

According to Golafshani (2003), the validity concept in qualitative studies is described by a wide range of terms and researchers have developed their own concepts for validity such as accuracy, quality, and trustworthiness. In Leung (2015) study, the meaning of validity in qualitative research is seen in the suitability of the data, processes, and tools. In conclusion, the chosen methodology should help the detection of studied findings or phenomena in a suited context for it to be valid.

Kothari (2004) pointed out that any type of study needs to have a common ground of scientific method, the used methods for the analysis part should be

appropriate and the validity and reliability of the data should be checked thoughtfully. In addition, Kothari (2004) stated that good research is empirical as it deals with one or more aspects of a real situation and works as a basis for external validity to research results. Validity is seen as a critical criterion that finds and measures true differences among those being tested (Kothari, 2004). Reliability contributes to validity and they were both important to assess in this master's thesis. The results of the interviews are presented in the following chapters.

5   RESEARCH FINDINGS

The research findings chapter will present the results of the semi-structured thematic interviews and provide the main points related to the sustainability and Resource Wisdom concepts. The findings will be presented separately according to where the interviewee works for Koas or the City of Jyväskylä. Direct citations will be marked as Interviewee 1 to 3 referring to Koas and Interviewee 4 to 6 referring to the City of Jyväskylä people in the following sections to answer the research questions of this thesis (Table 5).

KOAS	City of Jyväskylä
Interviewee 1	Interviewee 4
Interviewee 2	Interviewee 5
Interviewee 3	Interviewee 6

Table 5: The partition of the interviewees

5.1   Perceptions

This section will present the transcript data from the interviews with the Koas organization and their perceptions on sustainability themes to answer the first research question:

1. What are the perceptions of Sustainability and Resource Wisdom concepts in the Koas organization and in the City of Jyväskylä's student housing projects?

5.1.1 Perceptions in Koas

In this chapter, the collected interview data is organized into the main themes that were constantly emerging in the interviews with Koas (Figure 4). The three main themes are presented in the circles and these are analyzed by going through the gathered data in each interview. The outcome of the analysis is based on the data but also on the researcher (Tuomi & Sarajärvi, 2018, pp. 143).
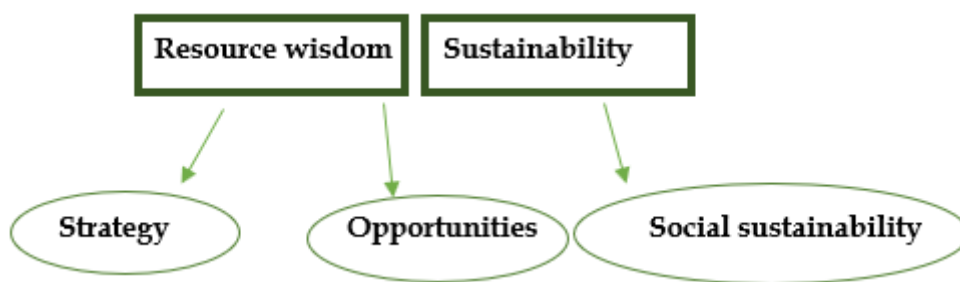
Figure 5: Main themes for Koas

These three main themes; Strategy, Opportunity, and Economical sustainability that were analyzed based on three interviews from Koas' answers about perception on Resource Wisdom and sustainability actions in their organization. The strategy aspect represents Koas organization's mission and vision for the future. How they want to serve students and provide needed services even more sustainably than before. A written strategy gives clear guidance for the Koas organization and all cooperation partners. In the interview strategy theme was most visible and mentioned part of the sustainability goals and actions towards being more Resource Wise. It was clear in the interviewees' answers that the main reason for successful Resource Wisdom actions is that it is a big part of Koas strategy.

> *"We have four components in the strategy: carbon neutrality by 2030, the promotion of community and increasing the degree of economic self-sufficiency, and then these desired apartments or good housing locations. In these, it is seen that it is in itself a holistic account of responsibility when those strategies cover these three pillars of responsibility and sustainable development."* - Interviewee 1

A clear strategy that is aligned with the city's strategy gives good guidance in any changes and a clear vision for board members and other stakeholders. These themes are so deeply integrated into the organization that it is easy to be aware of and view it only positively as part of work.

> *"In a way, one could say Resource Wisdom in a broader sense was like a guide when we changed our strategy."* - Interviewee 2

The opportunity aspect rose in the answers as it was clear that sustainability actions created many ways of saving energy and time. Seeing opportunities in the constantly developing world provide more ways in acting more sustainable and make any part of the student housing projects further advanced. Therefore, Seminaarinmäki has been a great start and provided more opportunities from this successful student housing project.

"Seminaarinmäki location and then the just mentioned Harju location, so it clearly shows Resource Wisdom that they are located in the city center and are very very close to the campuses and then these environmental impacts of traffic are minimized so that car-free city center construction/projects can be implemented." - Interviewee 2

"I would like to be in support of seeing the overall impact and rather the potential for saving money and then seeing, as a whole, greater effectiveness and the potential for social impact." - Interviewee 1

"We monitor how we have succeeded in what has been done, in repairs or in energy-saving actions."
".....If you think about that Resource Wisdom, it's how it makes sense to save nature and the smart use of natural resources." - Interviewee 3

Koas organization utilizes the given opportunities in order to contribute towards sustainable city center student housing areas. This creates a good balance in social, economic, and environmental sustainability in the City of Jyväskylä and the next theme is talking about social sustainability as it is the most important aspect in Koas organization.

Social sustainability and responsibility are one of the biggest goals in the strategy as listening to the current and future residents will help Koas to provide good apartments that serve its residents well. Not just building rooms to live in but other common spaces to socialize with other residents.

"In a way, it's listening and understanding, and how understanding and trust and creativity are in our strategic values specifically support it, you kind of have start it with the resident's requests on what projects will be planned." - Interviewee 3

Koas organizations are the biggest and most important student housing providers in the City of Jyväskylä, therefore social sustainability needs to be the top priority to provide what the student needs as there are so many different situations and different life phases in student lifetime.

5.1.2 Perceptions in the City of Jyväskylä

This section will present the main themes that arose in the interview data with representatives of the City of Jyväskylä. By analyzing the interview data, three main themes stood up (see Figure 5). These three main themes were Innovation, Benchmarking, and Lifecycle thinking. These themes represent Resource Wisdom thinking and are big influencers on the sustainability approach in the City of Jyväskylä. Resource Wisdom has been a big part of the City of Jyväskylä's strategy since 2013 as mentioned in the introduction. This creates a good base of

knowledge, experience on wise use of resources, time, and expertise. This can create innovations and help move towards the Smart city conceptuality.

> *"I could start from Kangas, which is in a way our Smart city area, although a Smart city in Jyväskylä is built in many ways, but it has been Kangas as this kind of area. And in Kangas, the basis on which the Smart city was built is based on the joint arrangements that were made with the Tekes project at the time, so the aim of the joint arrangements is to create a more cohesive and resource-wise area."*
> - Interviewee 5

The transition from the Sustainable City concept to the Smart City concept is seen in the interviewees' answers and how their perceptions are in line with the conceptual theory that change has happened in a real work environment.

> *"…it is not project nature, but it is quite related to that basic activity of the city, it is viewed from the Resource Wisdom point of view, and it is brought into that daily work."* - Interviewee 4
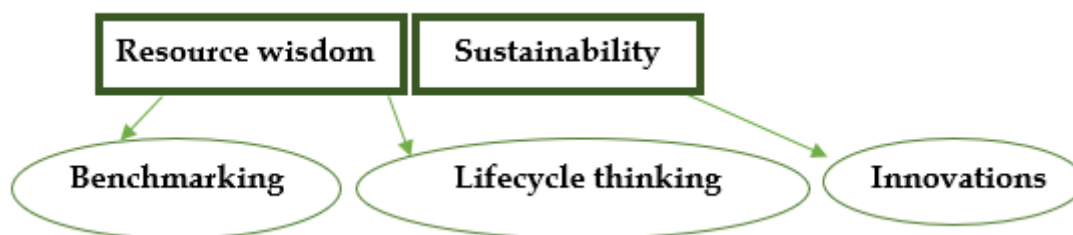

Figure 6: Main themes for the City of Jyväskylä

Benchmarking theme is seen as a way of sharing good knowledge and available to apply in future projects.

> *"There is always the risk of duplication, that here we have genuine knowledge of what is being done elsewhere and does not only concern our own municipality. But if a great solution has been invented in another municipality, it would be more sensible to start developing our solution based on that."* – Interviewee 5

The City of Jyväskylä has constantly developed and improved its processes in the construction methods and this could be referred to benchmarking practice when comparing with other cities.

> *"Of course, we have tried by other means to make it clear that the City of Jyväskylä wants wood construction and has tried to encourage wood construction. Instead, that car-freeness, too, was a bit like a new phenomenon coming up that had been thought to the city center gridiron plans for the area."* - Interviewee 6

"What can be influenced here locally is, of course, wood construction is one, which we may have only now strongly coming." - Interviewee 4

In addition, benchmarking and Lifecycle thinking can be seen in many ways and it is all part of a strategy and new ways of thinking. All three interviewees mentioned Lifecycle thinking and the importance of the end phase of the construction process.

"I'm currently doing this kind of project where Circular Economy has been taken in another way at an early stage of consideration." - Interviewee 6

"It is not always thought about, the very end of the Lifecycle. As of today, it should be known to consider the construction until the demolition phase. How easy it would be to demolish it. A lot has been done and there is still a lot to do. If I could decide then all construction would have to be a Lifecycle model construction." - Interviewee 5

"But then, like Resource Wisdom, in construction overall, if you think about demolishing buildings and then construction activities, so there it may appear in the way that materials are utilized better than before. For example, concrete, brick, demolition materials are reused. Just as asphalt it is reused and it makes infrastructure material-efficient perhaps even more than before." - Interviewee 4

5.1.3 Comparison of these two organizations

This section shortly summarizes the themes that rose up in the two organizations Koas and the City of Jyväskylä. These six themes represent the possibility and how daily work matters when actions are planned and fall thought. Being in a pioneer role and being the one who makes new concepts for the first time is crucial in innovating processes. Besides, creating these opportunities when having mutual strategy towards a more Resource Wisdom environment in the student housing and the housing area, in general, is very important. Based on the interviews, it is reasoned to argue that Figure 6 which presents the main themes, requires participants to be involved in cooperation, have trust in one another and be resilient in new challenges.
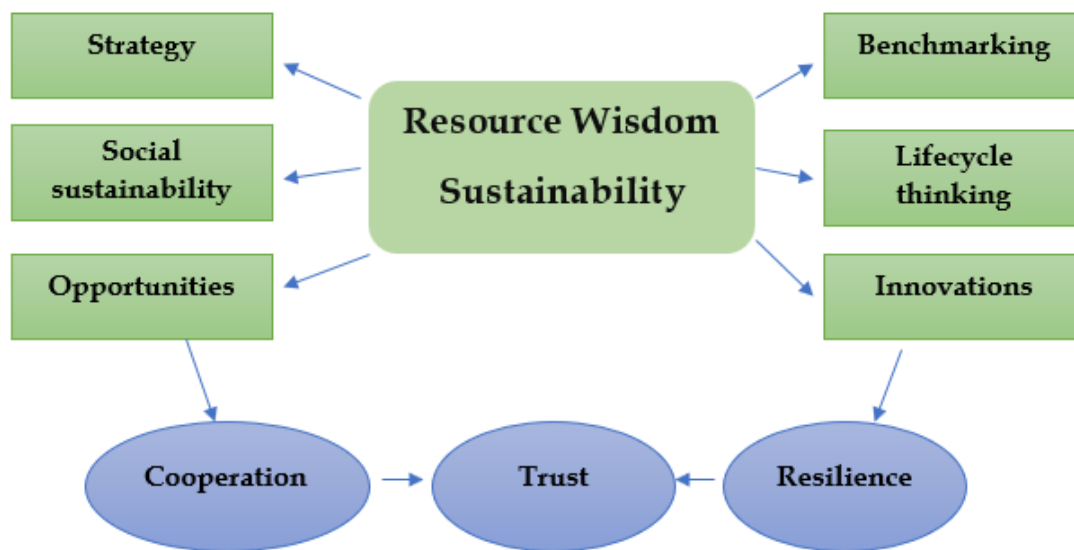
Figure 7: Gathered themes

Perceptions arise from the experience and the common idea is that improvement can be made. The atmosphere during the interviews was that cooperation can be improved as trust already exists. The resilience aspect is evidently coming from previous situations and is strongly tight up in the strategy that guides every situation. When the basics are in place and there are fewer struggles in getting sustainability actions in practice in every step of the planning and executing process.

When analyzing the answers, it was easy to interpret the answers into Cooperation, Trust, and Resilience sub-themes. One of the reasons for choosing the qualitative study is that it is more flexible, and researchers can connect the dots and the idea behind the interviewees answer as the subject, in general, was familiar to the interviewees. As a word, trust and cooperation were mentioned in the interviewees answers and in that small sentence, it was understood that these are referred to all companies, organizations, and partners that Koas or the City of Jyväskylä works with. This is important to highlight that this message in both organizations was clear even without saying it as it is, but how it was experienced throughout the time and helped to stay trustworthy, continuing the cooperation.

The resilience theme needed more interpretation as resilient cities are seen as a norm that does not accrue as it is. Even though it can be a norm inside the organization, it still changes and adapts during different times. Both organizations had faced many changes in their work-life or the tasks that they are focusing on now more reflects on the adaptation mechanism that represents resilience and that both organizations had established high goals in third strategies so that sustainability creates a smart city that Jyväskylä is slowly becoming. The researcher's own interpretation can lead to reliability issues and if this study would be done again by another researcher, it would have different themes and outcomes, but that is taken into consideration in the reliability section of this thesis

and is understood that the same issues can be seen differently as the interviewees can reply differently according to their perceptions on the Resource Wisdom and sustainable development in their work. Additionally, the specific student housing project Seminaarinmäki was mentioned more by Koas interviewees than by the City of Jyväskylä representatives. The difference in the total amount of housing projects could be the reason for this difference in the interview answers.

Overall, it was interesting to analyze and see what kind of themes would be seen and how closely they are connected when interviewing these two different organizations. It seems that they are more alike as the strategy and the sustainability goals reflect one another and are not excluding each other's ways of work. The next chapter will present how Resource Wisdom and sustainability actions are seen in everyday work life in both organizations. New themes will be covered and presented in the same form as in this chapter.

5.2   Visibility in everyday work

This section will present the collected data from the interviews with the Koas organization and the City of Jyväskylä. How they see the sustainability themes in their everyday work. By analyzing the answers, it will help to answer the second research question:

2. How are Sustainability and Resource Wisdom concepts put into practice in the everyday work of student housing projects for Koas and the City of Jyväskylä?

5.2.1 Everyday work practices in Koas

In this section, the new themes arise when searching for the Resource Wisdom and sustainability everyday actions that were visible in Koas organization. In Figure 7 three new themes represent interviewees common views on how the main concepts are put into practice. Monitoring actions for water and energy consumptions and also carbon footprint calculations were certainly present in everyday actions when talking from a Resource Wisdom point of view.
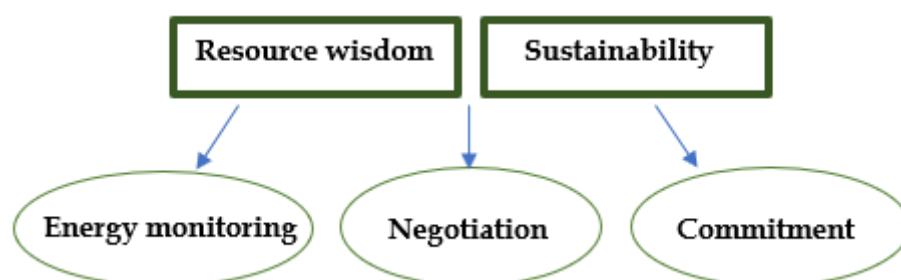
Figure 8: Themes visible in practice in Koas

Monitoring and measuring actions were the most visible everyday activities that provided the data of the progress to the Koas organization and kept the set goals on track. The tracking, measuring, and carrying set goals now and in the future can be seen as the biggest impacts on the successful sustainability levels in the Koas organization. All three interviewees mentioned monitoring/measuring in some way if it was related to the normal energy consumption or the newest carbon neutral footprint calculations. This information is the base for the potential and future decisions related to Resource Wisdom.

> *"And in the same way, it is precisely this energy monitoring that is at its best that we monitor how we have succeeded in the repair actions or energy-saving measures that were taken, so in that field Resource Wisdom is strongly visible."* - Interviewee 3

> *"..the carbon footprint calculation is done at the moment, which is then based on those possible and future decisions like Resource Wisdom actions."* - Interviewee 1

The energy consumption has changed over the 30 years as the new building consumes almost one-third of the energy used and with this huge difference, it is easier to reduce the consumption to a minimum.

> *"What is, in the long run, is going towards then this zero energy or low energy consumption."* - Interviewee 2

This next theme brings the possibility to negotiate projects, possible changes and make things differently than before. When certain sustainability issues are negotiable between different parties it creates better results and things can change for the better according to new ideas, strategies, and common interests. Although, there are always improvement ideas that require communication and time.

> *"The gatherings of the areas where it is meant to implement resource wisdom. That perhaps it is one concrete means of implementation where different actors are able to sit down and go through what kind of ideas and thoughts come, exchange of thoughts."* - Interviewee 3

> *"…each project must be individually negotiated and then have access on those projects."* - Interviewee 2

> *"..but it is possible to deepen that discussion and deepen that reflection, for example around Resource Wisdom and around promoting sustainable city themes."* - Interviewee 1

Listening, participating, and consulting phases are seen in everyday work, as gathering new information and seeing and experimenting with new ideas is vital for the development, and reaching together those common strategic goals is important for both organizations. That brings us to the last theme of this section that is a commitment that is mutual and long-lasting.

> *"Well, it is precisely these things that are then reflected, for example, in the choice of the form of energy production, we have implemented one solar power plant and are happy to look for experimental and alternative ways of energy production. However, there is a clear desire to commit when the City of Jyväskylä has made district heating power plants and does so, it is a combination where electricity is generated alongside heat production, all our sites are in district heating even if there is some other alternative form of energy production."* - Interviewee 2

> *"It involves all such as long-term planning and perhaps the fact that closer cooperation with the city and how the city sees certain areas and how the development of the city center has gone. And such dialogue may be needed so that we know how to nurture them in our apartments so that they are in sensible locations for the students."* - Interviewee 1

The answers represent in a different way how Resource Wisdom and sustainability actions have been implemented over time and have been quite successful for Koas. Working with the City of Jyväskylä has provided new opportunities for Koas and not so many improvements arose in the interviewees' answers. Many issues were mostly related to the suitable plots or lack of them and keeping the strong communication and connection for active cooperation now and in the future. The next section will present the City of Jyväskylä's point of view on the same matter with themes.

5.2.2 Everyday work practices in the City of Jyväskylä

The interviewees from the City of Jyväskylä have similar thoughts on how Resource Wisdom and sustainability are seen in their everyday work lives. There are similarities with the Koas organization in clear and good strategy guides the work and same commitment to set goals. In addition, the same terminology came up such as carbon neutrality which would indicate that the connection between these two organizations is strong as there are more similarities and very few differences in the interviewees' answers. It mostly depends on the person's role, previous experience, or work years in the current position. And how this specific person sees her or his current practices in everyday work life.

Based on the answers the common thing rose up and the one difference that the City of Jyväskylä has to think more about is the car parking and mobility issues in the city center. Figure 8 shows that commitment was a big part of sustainability work and the city had to think about the parking issues or not having any parking spaces when planning new housing projects. In that sense, the planning of any housing project in the city center involves areas that are just outside the building. That concludes the need for mobility issues being one of the themes that stood out in the answers and were too a big factor in the current work projects.
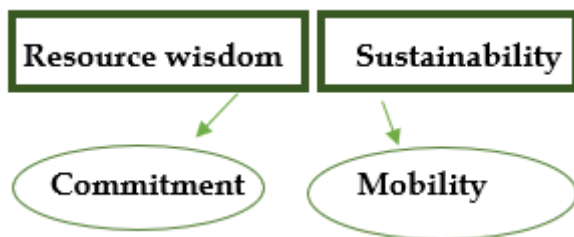

Figure 9: Themes visible in practice in the City of Jyväskylä

It was clear that people were committed, they were active, and can see that sustainability is the basis for their work.

> *"Then again, in Resource Wisdom, the term itself, circular economy, carbon neutrality, such terms are now the ones that come up and emerge really from everyday work."* - Interviewee 4

> *"…it is quite related to the basic activity of the city, to look at it from the Resource Wisdom point of view, and to bring it into everyday work."* - Interviewee 4

These answers indicate that these everyday practices are seen as basic actions that are part of the big picture. Meaning that strategy and laws are guiding and supporting the work, in addition, personal motives can help implement these sustainability actions consistently.

"That it comes right from the legislation, but also the city's own strategies and also its own motives." - Interviewee 6

"I think that we have big goals are fine and the grass-root level may be fine. It should just take care that Resource Wisdom is always there as a red thread."
- Interviewee 5

When analyzing these answers, it came clear that the commitment is strong and visible in everyday work life. People are committed to the strategy, sustainability goals and their own motivation give them a purpose to implement Resource Wisdom in their work and possibly in their private lives.

Another subject that rose up was parking spaces and mobility in the city center. The City of Jyväskylä has many residential properties that do not have parking spaces coming with the apartment, in student housing projects, Seminaarinmäki and Harju did not have parking spaces in the town planning plans. The most important aspect was the location and that the student housing projects were as sustainable as possible. Most students can commute by bike and it is the goal of the City of Jyväskylä that in the city center a car would not always be needed.

"It is that mobility is then possible with other than that own car." - Interviewee 4

"Instead, that car-freeness, so that too, was a bit like a new coming phenomenon that had been thought of in the city center grid plan area." - Interviewee 6

"..living without a car is possible and in a way those areas are reserved for people and not for cars and thus all parking is there in the parking garage." - Interviewee 5

All three interviewees have the same idea when it comes to the necessity of the car in the city center. This comes down to the fact that the distances are short and using a bike or public transport are great options for most city center residents. In addition, the City of Jyväskylä constantly improves its bike lanes and listens to its residents for opinions on the public transportation lines and timetables.

"Cycling and walking routes are being improved all the time and there are development programs in place." - Interviewee 5

Mobility is closely related to social sustainability and well-being. Not having a car in the city center does not mean that people cannot move and get into nature quickly. The City of Jyväskylä is quite a compact area and the distances are not too long and time-consuming. Yearly developments are part of the progress and interviewees could see those actions as their everyday work and that those practices were needed for going toward Resource Wisdom and the carbon neutral goal for 2030. The next chapters will compare these two organizations and their

practices in everyday work life and also summarize the research findings for this qualitative study.

5.2.3 Comparison of these two organizations

Resource Wisdom and sustainability were positively seen in everyday work life for both organizations. Different actions were connected to Resource Wisdom and were easily explained to others so that every individual was able to describe easily how their work affected the sustainability in the City of Jyväskylä and small organizations.

In the Koas organization, the three main themes (Figure 9) that arise were more related to what they have done before such as the monitoring progress, the commitment to the values and mission that Koas stands for and negotiating with other organizations like the City of Jyväskylä. Koas wants to continue to be a good and reliable partner for the City of Jyväskylä and follow the current trends in the student housing market by listening to students and creating new ways of improving sustainability in the Koas apartments.
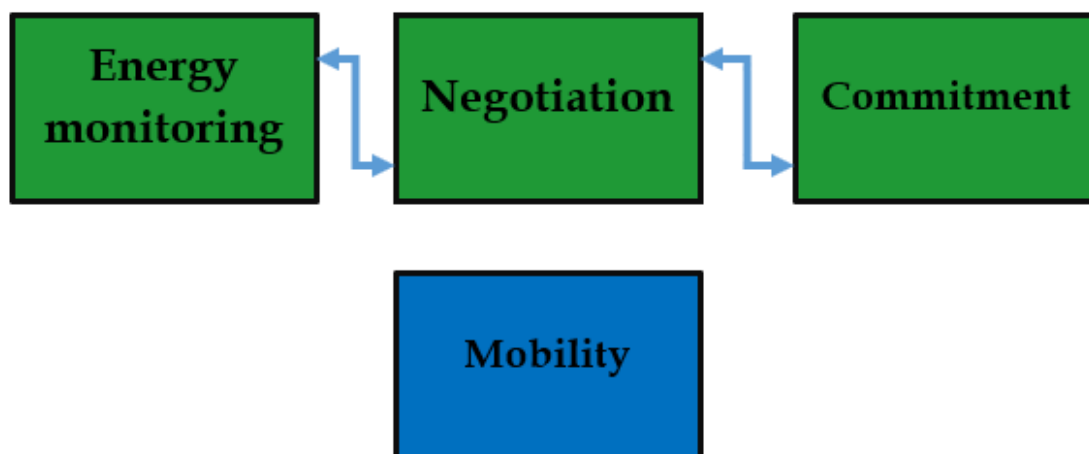

Figure 10: Compared themes for two organizations

The mobility aspect was clearly seen together with the above themes (Figure 9) in the City of Jyväskylä. The importance of providing a new type of housing without its own car park or improving the public transport and other ways of moving around in the city was clearly on the agenda when planning new housing projects. The possibility that organizations like Koas can take these projects to support the no-car locations plans and that the trend is growing in the city center especially. The monitoring part can be seen in the rush hours and the pollution levels that cars are emitting every day. The data collected then and now by the City of Jyväskylä can be compared and additionally help with carbon reductions, noise reduction, and the overall well-being of the residents.

These four themes mentioned that rose up in these two organizations show that there is a great emphasis on the constant development of different aspects of the cooperation with different organizations and that robust cities need to develop in order to cope with any climate challenges. The City of Jyväskylä is moving forward towards the smart city concept and has shown the resilience side during the pandemic period and future housing projects. Together with Koas organization, the city can develop and be a vibrant city for students and other residents.

There is always room for improvement, the communication part requiring patience and the effort to constantly be involved in different housing projects. Both organizations need to maintain and share their knowledge, be as an excellent example, provide support and motivate others with positive sustainability attitudes and motives. Overall, these two analyzed organizations have more in common than what separates them. As previously mentioned, the cooperation is strong, both strategies supporting one another, and commitment for development and finding ways to be more sustainable was visible in the interviewees' answers and everyday actions. Even though the mobility theme was visible only in the City of Jyväskylä answers, it indicates that they are the ones that make the rules and Koas then follows them, as Koas knows what their residents want and owning their own parking space is not the top priority for the students. It is most important to be very close to the school campuses and city center so that a car is not a necessity for students. To conclude this research, the next chapter will provide a summary of research findings, collect the themes, and analyze them further.

5.3   Summary of the research findings

In this section, the results from the analyzed interviews are shortly summarized in Figure 10. These organizations have a good base for current and future collaborations. The common goals and strategies are clear and well communicated between different organizations. Even though the common message was that communication and dialogue can be improved, the knowledge and awareness of that show that organizations know what the possible areas of improvement are for the future in order to continue successful cooperation.
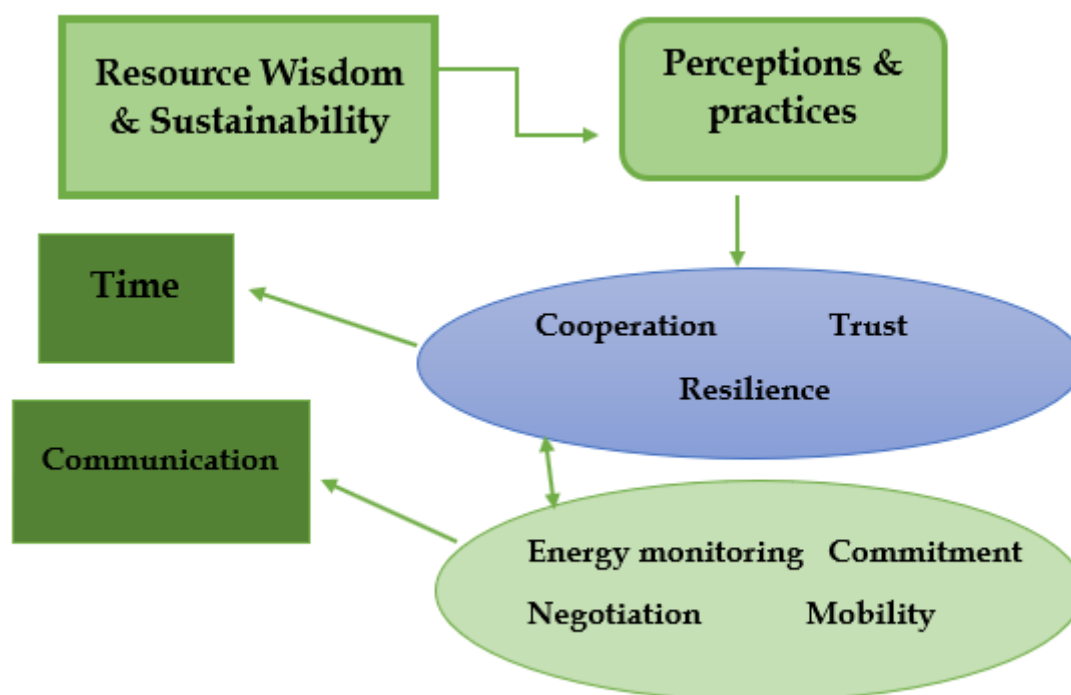

Figure 11: Summary of the found themes

Not all themes presented from the beginning were included in Figure 10but so-called sub-themes that were analyzed and summed up to the last themes are time and communication. These keywords need time to utilize and implement. Communication both ways ensure that the focus stays clear and there is no double or unnecessary work to do. Time itself was seen as a resource that needs to be used wisely. Work itself takes time, all the different processes and steps take time. Recognizing this would make communication more relevant and important between different organizations and stakeholders.

The interviewees provided an insightful source of information to understand sustainability practices in the real-life work of two completely different organizations. How work and task are consistently going forward, and the rules

and negotiation points are present. The interview situation was relaxed, and interviewees freely expressed their points of view on the discussed topics. Moreover, there were no secrets or any issues that could not be mentioned at all. If there are some improvements need to be made, organizations probably have already been talking about it and that is a part of a long cooperation process to exchange thoughts and ideas.

The Resource Wisdom theme was seen for all interviewees as a standard and combined well in the different processes so that it is just a normal way of working. The way Resource Wisdom is present in the work is seen differently in a different role, but the understanding and the goals are so clear that interviewees could easily tell how and where they put Resource Wisdom into practice. The big picture of the sustainability umbrella is strong and even if there is no clear solution at the beginning the outcome has been very successful like in Seminaarinmäki housing project case. Although, that was not the only case that could have been suitable for the Resource Wisdom theme, as there are many other housing projects that have been seen as resource-wise like Harju for Koas and Kangas area for the City of Jyväskylä. Both are in the city center or near and there are many more developments going on that prove the idea of Smart City ideology and wise planning in the city center area.

Resilience in urban city life was the hardest theme to identify as the scope of this theme was less familiar to the interviewees in both organizations. Mainly it could be understood as a way of handling changes and new situations that could arrive in the organization. A deeper understanding would have resulted if this aspect would affect or be a part of Resource Wisdom. In a way, interviewees' answers supported the urban resilience literature review that the City of Jyväskylä is a smart city that can bounce back as nature, people, and the city environment perceived to be a priority in Jyväskylä. Additionally, the interviews were conducted during a pandemic and that was not seen as a negative or very much affecting sustainability issues as everything can adapt to a different situation, find new solutions. And continue with the same drive and ambition that these two organizations have done.

The mobility theme that was one of the differences divided the City of Jyväskylä interviewees based on how they answered the last question (see Appendix 2). And of course, Koas representatives viewed mobility mostly as being closer to campuses and the city center. Mobility can be seen as a technical issue that needs to be planned from the beginning, or one issue that needs improvement from the sustainability point of view. Parking space has been a commonly talked topic in the City of Jyväskylä and it is impossible to please every citizen. Interviewees' answers showed that the work that they are doing is to help the environment and well-being of all and create overall prosperity for the city and the nearest municipalities.

All of the themes that were presented could be described as social responsibility in which people take care of themselves, others, and nature in order to achieve set strategic goals. Not all issues of sustainability could be taken into this research study and that provided the narrowing path to the themes and subjects

to go through to have meaning to this specific case study. This summarized analysis was based on research, as it reflected on the understood idea behind the collaboration between Koas and the City of Jyväskylä. To conclude this research study the next chapter will have a discussion section about the thesis trustworthiness and ideas for future research.

6   DISCUSSION AND CONCLUSIONS

This chapter of the thesis includes a discussion of the findings for this case study, where the conceptual theory and research questions are relevant for this research study. After this discussion part, the assessment of the trustworthiness of this qualitative case study will be evaluated. The final section will consider the research's limitations and suggestions for future research.

6.1   Discussion

The conceptual framework section of this thesis was collected to provide overall background for the sustainability topics and see whether these concepts would arise among the interviewees. Connecting Resource Wisdom to the main sustainability topics and finding the suitable path for this case study was not easy as there was no same type of research available, and the concept of Resource Wisdom is mainly known as a Finnish term in the City of Jyväskylä. Of course, there are many studies closely related to student housing or the same type of Resource Wisdom themes. This study would be seen as a great addition to specific types of qualitative research and provide more research ideas from this case study.

The empirical study in this thesis examined two different organizations, one being a small foundation that provides student housing, and another the City of Jyväskylä. Qualitative research was the best option for gaining inside knowledge from specific people that are working with sustainability issues and especially with Resource Wisdom themes. These suitable individuals were divided into two groups based on where they work, three representatives were from Koas and three representatives were from the City of Jyväskylä, totally having 6 interviewees for this case study. The participants have a good knowledge of their organization's sustainability strategies and can easily point out Resource Wisdom actions in everyday work. When the data is gathered through individual thematic interviews it gives sufficient data from two different organizations that work closely together, and findings confirm the current knowledge in the field and what is written in the introduction part of this subject.

These sustainability themes like Resource Wisdom, Smart City, carbon neutrality, and circular economy will surge even more in the future. The more these themes are studied the more there is knowledge and understanding of how it is important to apply these actions every day and that everyone can be an example of successful sustainability practices in the city environment. Before suggesting what could be the future research ideas that are in chapter 6.3, it is important to make a comparison of these research results with previous research results. One of the newest qualitative studies that were made by Jalava (2020) was to find out the social sustainability of student housing in Jyväskylä.

This study had five dimensions of social sustainability, they were demographic change (regional change and mobility), at the regional level, population mixing, cohesion and the empowerment of individuals, regional identity and culture, safety, social capital, well-being, happiness, and quality of life. A common theme was mobility even though these are different ways to present that the City of Jyväskylä is constantly improving and monitoring the social sustainability part in the student housing area. One could say that results of this case study support Jalava's results as they are under the same sustainability section and provide the real-time situation in the City of Jyväskylä.

Another interesting research result was in the Tolonen (2017) case study that investigated how Resource Wisdom can be used as a support mechanism to export Finnish companies' services through a public-private partnership (PPP). These recognized themes in Tolonen case study were under leadership, management, and structure that highlighted the importance of communication and collaboration. In addition, the strategy aspect of the organization was pointed out that the values and the role in society depend on the organization itself. This all sums up all the possibilities that different organizations can achieve when effectively applying Resource Wisdom together with other stakeholders in Finland.

A third qualitative study was made by Kähkönen (2014) about government to business stakeholder communication and sustainable development in the case of the Finnish National Commission on Sustainable Development (FNCSD). The objective was to study how a government body works to communicate about sustainable development to its corporate stakeholders and research finding included the importance of communication with multiple stakeholders. This study also focused on a specific case organization (FNCSD) and despite the challenges in their communication activities, the organization will aim to execute in a strategic manner communication about the national strategy. The main message was clear, that being transparent and having a strategic aim to improve communication on sustainable development would ensure positive perceptions from corporate stakeholders. Overall, these three case studies are in line with previous research results.

6.2   Trustworthiness of the study

This chapter will discuss the trustworthiness of this qualitative study. When analyzing the qualitative data, the trustworthiness of it can be presented by using terms such as authenticity, credibility, conformability, dependability, and transferability (Elo, Kääriäinen, Kanste, Pölkki, Utriainen, & Kyngäs, 2014).

In order to analyze if the research is "good research," it is important to reflect on the trustworthiness of its findings (Lincoln, 1995; Patton, 2002; Northcote, 2012). The authenticity term is one of the many types of qualitative validation terms that show a range of realities (Lincoln & Guba,1985; Polit & Beck, 2012; Elo et al., 2014). This fifth term is not commonly used, however in this case study it is vital in the terms of getting the most relevant and current data from the interviewees by using appropriate methods to secure the authenticity of the case study.

The credibility of the study is ensured by identifying and describing accurately participants in this research. Therefore, both credibility and conformability of the findings need to accurately represent the data and the information that participants provided to ensure that collected data is not invented by the researcher. (Lincoln & Guba,1985; Polit & Beck, 2012; Elo et al., 2014.) Being objective is important when assessing conformability to keep the congruence of data accuracy, relevance, and meaning. When ensuring the credibility of the results, it is essential to assess how different categories cover the data and identify similarities within and differences between categories. (Elo et al., 2014.) During this case study, the participants that were heard provided plenty of documented details to demonstrate the diversity of sources from different work fields and work experiences. Furthermore, the number of participants was sufficient in order to gather relevant data to analyze from proper sources. However, according to (Tuomi & Sarajärvi, 2018), the collected data that was gathered only by one-to-one interviews refers to a lower contribution to the credibility of a case study as there was no possibility in using multiple triangulations.

This research study has been in progress for almost two years and during that time the current and future data has not changed. However, the dependability of this case study cannot be stable in another research study over time or under different conditions. Even though other researchers could follow the choices made by the initial researcher, the outcome could be totally different (Thomas & Magilvy, 2011; Elo et al., 2014).

The objectives were to collect the overall picture of the Resource Wisdom and sustainability perceptions and actions in everyday work life. The conceptual framework was applicable to this case study. In addition, this case study could give direction and possibilities to other researchers in equivalent situations. Then, due to the case-specific nature of the study that focused on one city and one student housing organization Koas, the transferability to other contexts would be difficult but not impossible. Overall, this assessment of a case study,

summed up the way the data was gathered with the help from suitable participants.

6.3   Limitations of the study and suggestions for future research

There were many limitations in this study. Nonetheless, it was still possible to freely choose interviewees and focus on the differences and similarities when analyzing the answers in order to answer the research questions. The Resource Wisdom subject itself limited the research study in this thesis and the focus was on sustainability in Koas organization and collaboration with the City of Jyväskylä.

Kothari (2004) mentioned that qualitative research is a biased assessment of attitudes, opinions, and behavior. The qualitative approach would generate results that are not subjected to strict quantitative analysis. With collected data, the researcher will have insights and impressions of the phenomenon in the organization. This can lead to diverse outcomes in the same research. In addition, this was a case study that essentially investigated particularly these two organizations in one city and their perceptions on Resource Wisdom. Even though the limitations of the qualitative study were precise, the subject itself was broad and every aspect of the Resource Wisdom could not be part of this study. Furthermore, asking different kinds of questions would provide different answers and possibly different outcomes and varying themes to analyze.

Another limitation was how interviews were conducted. Teams communication tool was the only option, as the world situation would not allow meeting in person. The time restriction was also present, as it was important to stay on the main subject and be as efficient as possible due to the busy schedule of the interviewees. Conducting interviews so far apart from the first and last interview helped to adjust and customize questions for these two different organizations. Together with the limited time, the third limitation was finding the suitable people for the interview that had knowledge or experience of Resource Wisdom, time, or interest for the interview and having that insight knowledge of this phenomenon that was studied in this case study.

Regarding the limitations and time restrictions, this study could have been even more in-depth in terms of research findings and analysis would have been extended with more interviewees or by asking various research questions.
Overall, the study created more awareness that there is a need to study more Resource Wisdom. And the need for an even deeper understanding of sustainability issues like carbon neutral calculation and sustainability strategies in Koas and in the City of Jyväskylä.

The wide understanding of Resource Wisdom provides even more research possibilities that need to be studied in the near future. Going deeper into Resource Wisdom is one opportunity and possibly focusing more on economic

and environmental sustainability. Focusing more on economic and environmental aspects would provide more practical information and data for example when making carbon neutral calculations and other measurements for comparison.

The Resource Wisdom aspects can be studied in The Student Union of the University of Jyväskylä (JYY) as well. There can be a starting point on what is the current sustainability status in JYY. And what are the needed steps to reach possible goals to be more sustainable and even carbon neutral to be part of a smart and resilient city. The Kortepohja area is one of the interesting regions, where many students live, and many international students are located. The good location near the city center and many other possibilities are available in JYY's Kortepohja area. It can be a more robust and innovative place that has a road map that can be exported to any region. Resource Wisdom itself can provide a useful base for further research as not all aspects can be studied in one case study. Therefore, these above possibilities can be suitable, or any other subjects of many possibilities in future research studies.

REFERENCES

Ahern, J. (2010). Planning and design for sustainable and resilient cities: theories, strategies and best practices for green infrastructure. In: Novotny, V., Ahern, J., Brown, P. (Eds.), Water-centric Sustainable Communities. John Wiley and Sons, Hoboken, pp. 135–176.

Ahern, J. (2011). From fail-safe to safe-to-fail: Sustainability and resilience in the new urban world. Landscape and Urban Planning, 100(4), 341-343.

Ahvenniemi, H., Huovila, A., Pinto-Seppä, I., & Airaksinen, M. (2016). What are the differences between sustainable and smart cities? Cities 60, 234–245. https://doi.org/10.1016/j.cities.2016.09.009

Alberti, M. (1996). Measuring urban sustainability. Environmental Impact Assessment Review, 16(4), 381-424.

Angelidou, M. (2014). Smart city policies: A spatial approach. Cities, 41, 3–11.

Arhio, K. (2007). Luova laatu ja arvoinnovaatiot oppivan verkoston tuottamina. Tapaustutkimus rakennuspuuteollisuuden verkostosta. University of Jyväskylä. Jyväskylä Studies in business and Economics 59.

Bolívar, M.P.R., & Meijer, A. (2015). Smart Governance: Using a Literature Review and Empirical Analysis to Build a Research Model. Social Science Computer Review. DOI: 10.1177/0894439315611088

Bonges, A.H. (2015). Making Towns More Sustainable by Incorporating Metrics in the Town Plan. Harvard University Extension School, Cambridge. http://dx.doi.org/10.2139/ssrn.2604977

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3 (2). pp. 77-101. http://dx.doi.org/10.1191/1478088706qp063oa

Caragliu, A., Del Bo, C. & Nijkamp, P. (2011). Smart Cities in Europe, Journal of Urban Technology, 18:2, 65-82. http://dx.doi.org/10.1080/10630732.2011.601117

Cardullo, P., & Kitchin, R. (2018). Smart urbanism and smart citizenship: The neoliberal logic of 'citizen-focused' smart cities in Europe. Politics and Space, Vol. 37(5) 813–830. https://doi.org/10.1177/0263774X18806508

Chan, J., & Zhang, Y. (2019). Urban Resilience in the Smart City. Conference paper. Jakarta.

Chelleri, L., Waters, J. J., Olazabal, M., & Minucci, G. (2015). Resilience trade-offs: Addressing multiple scales and temporal aspects of urban resilience. Environment and Urbanization, 27(1), 181–198. http://dx.doi.org/10.1177/ 0956247814550780

City of Jyväskylä. (2019). Jyväskylän kaupunki, kaupunkisuunnittelu ja maankäyttö. (2019). Kaavoituskatsaus 2020–2022. Retrieved on September 21, 2020 from https://www.jyvaskyla.fi/kaavoitus/projektit-ja-ohjelmat/kaavoitusohjelma

City of Jyväskylä. (2020a). Resurssiviisaus - mitä ja miksi? Retrieved on September 21, 2020 from https://www.jyvaskyla.fi/ymparisto/resurssiviisaus/resurssiviisaus-mita-ja-miksi

City of Jyväskylä. (2020b). KymppiR-ohjelma 2020, Maankäytön toteuttaminen vuoteen 2030. Jyväskylän kaupunki suunnittelu ja maankäyttö. (2020). Retrieved on September 21, 2020 from https://www.jyvaskyla.fi/kaavoitus/projektit-ja-ohjelmat/maankayton-toteutusohjelma-kymppi-r

City of Jyväskylä. (2020c). Maankäytön toteutusohjelma KymppiR. Yhteenveto vuosien 2016–2019 ohjelmien linjauksista. Retrieved on September 21, 2020 from http://www2.jkl.fi/kaavakartat/kymppir2020/KymppiR_linjaukset_2016_2019.pdf

Cloutier, S., Larson, L., & Jambeck, J. (2014). Are sustainable cities "happy" cities? associations between sustainable development and human well-being in urban areas of the United States. Environment, Development and Sustainability, 16(3), 633-647. http://dx.doi.org/10.1007/s10668-013-9499-0

Cui, L., Xie, G., Qu, Y., Gao, L., & Yang, Y. (2018). "Security and Privacy in Smart Cities: Challenges and Opportunities", IEEE Access, vol. 6, pp. 46134-46145.

Golafshani, N. (2003). Understanding Reliability and Validity in Qualitative Research. The Qualitative Report, 8(4), 597-606. Retrieved on February 19, 2020 from http://nsuworks.nova.edu/tqr/vol8/iss4/6

Dameri, R., & Cocchia, A. (2013). Smart city and digital city: Twenty years of terminology evolution (pp. 1–8) X Conference of the Italian Chapter of AIS, ITAIS 2013, Università Commerciale Luigi Bocconi, Milan (Italy). https://docplayer.net/51551824-Smart-city-and-digital-city-twenty-years-of-terminology-evolution.html

de Jong, M., Joss, S., Schraven, D., Zhang, C. & Weijnen, M. (2015). Sustainable–smart–resilient–low carbon–eco–knowledge cities. Making sense of a multitude of concepts promoting sustainable urbanization. Journal of Cleaner Production, 109, 25–38. https://doi.org/10.1016/j.jclepro.2015.02.004

Elmqvist, T. (2014). Urban resilience thinking. Solutions, 5(5), 26–30.

Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K., & Kyngäs, H. (2014). Qualitative Content Analysis: A Focus on Trustworthiness. *SAGE Open*. https://doi.org/10.1177/2158244014522633

Ernstson, H., Van der Leeuw, S. E., Redman, C. L., Meffert, D. J., Davis, G., Alfsen, C., & Elmqvist, T. (2010). Urban transitions: on urban resilience and human-dominated ecosystems. *Ambio*, 39(8), 531-545.

European Commission. (2012). Communication from the commission. Smart cities and communities– European innovation partnership. Brussels. Retrieved on September 14, 2020 from http://ec.europa.eu/energy/technology/initiatives/doc/2012_4701_smart_cities_en.pdf

European Commission. (2017). The making of a smart city: best practices across Europe. Retrieved on September 14, 2020 from https://smartcities-infosystem.eu/sites/default/files/document/the_making_of_a_smart_city_-_best_practices_across_europe.pdf

Faraji, S. J., Marjan, J. N., & Arash, M. (2019). The analysis of smart governance scenarios of the urban culture in multicultural cities based on two concepts of "cultural intelligence" and "smart governance". GeoJournal. 1-21. http://dx.doi.org.ezproxy.jyu.fi/10.1007/s10708-019-10074-6

Farquhar, J. D. (2012). Case study research for business. Los Angeles, California; London: SAGE.

Giffinger, R., Fertner, C., Kramar, H., Kalasek, R., Pichler-Milanovic´, N., & Meijers, E. (2007). Smart cities: Ranking of European medium-sized cities. Vienna: Centre of Regional Science - Vienna UT.

Giffinger, R., & Gudrun, H. (2010). Smart cities ranking: an effective instrument for the positioning of the cities? ACE: architecture, city and environment, 4(12), 7-26.

Gillham, B. (2010). Case Study Research Methods. Continuum, London.

Griffiths, S., Sovacool, B.K. (2020). Rethinking the future low-carbon city: Carbon neutrality, green design, and sustainability tensions in the making of Masdar City, Energy Research & Social Science, Volume 62. https://doi.org/10.1016/j.erss.2019.101368

Grossi, G., & Pianezzi, D. (2017). Smart cities: Utopia or neoliberal ideology? Cities, 69, 79-85. https://doi.org/10.1016/j.cities.2017.07.012

Haughton, G., and Hunter, C. (2005). Sustainable Cities. Part A Sustainability and Urban Development. http://www.stellenboschheritage.co.za/wp-content/uploads/Sustainable-Cities.pdf

Jabareen, Y. (2013). Planning the resilient city: Concepts and strategies for coping with climate change and environmental risk. *Cities*, *31*, 220-229.

Jalava, J. (2020). Jyväskylän opiskelija-asumisen kehittäminen sosiaalisen kestävyyden näkökulmasta. Pro gradu -tutkielma. Maantieteen tutkimusyksikkö. Oulun yliopisto.

Juraschek, M., Bucherer, M., Schnabel, F., Hoffschröer, H., Vossen, B., Kreuz, F., Thiede, S., & Herrmann, C. (2018). Urban Factories and Their Potential Contribution to the Sustainable Development of Cities. Procedia CIRP, 69, 72-77. https://doi.org/10.1016/j.procir.2017.11.067

Kangas. (2021). Central Finland Student Housing Foundation. Retrieved on February 1, 2021 https://www.koas.fi/en/applicants/locations/kangas/

Kanuri, C., Revi, A., Espey, J., & Kuhle, H. (2016). Getting started with the SDGs in cities: A guide for stakeholders Sustainable Development Solutions Network. https://faud.unc.edu.ar/files/Cities-SDG-Guide.pdf

Khan, S., & Zaman, A. (2017). Future cities: Conceptualizing the future based on a critical examination of existing notions of cities. Cities, 72, 217-225. http://dx.doi.org/10.1016/j.cities.2017.08.022

King, N. (2004). Using templates in the thematic analysis of text. In Cassell, C., Symon, G. (Eds.), Essential guide to qualitative methods in organizational research (pp. 257–270). London, UK: Sage.

Kitson, M., Martin, R., & Tyler, P. (2004). Regional Competitiveness: An Elusive yet Key Concept? Regional Studies, 38:9, 991-999. https://doi.org/10.1080/0034340042000320816

Koas. (2021a). Koassi-magazine. Koas aims to become carbon neutral by 2030. Retrieved on February 1, 2021 from http://verkkolehti.koas.fi/en/koassi-magazine/koas-aims-become-carbon-neutral-2030/

Koas. (2019). Toimintakertomus ja tilinpäätös 2019. Keski-Suomen opiskelija-asuntosäätiö sr. Report by the Board of Directors and Financial Statements 2019. Central Finland Student Housing Foundation. Retrieved on September 14, 2021 from https://www.koas.fi/fi/keski-suomen-opiskelija-asuntosaatio/toimintakertomus/

Koas. (2021b). Toimintakertomus ja tilinpäätös 2020. Report by the Board of Directors and Financial Statements 2020. Central Finland Student Housing Foundation. Retrieved on May 22, 2021 from https://www.koas.fi/fi/keski-suomen-opiskelija-asuntosaatio/toimintakertomus/

Kothari, C. R. (2004). *Research methodology: Methods & techniques*. New Delhi: New Age International (P) Ltd.

Kumar, T. V., & Dahiya, B. (2017). Smart economy in smart cities. In Smart Economy in Smart Cities (pp. 3-76). Springer, Singapore.

Kuntalehti. (2015). Karisto, E. Resurssiviisaus tuo kunnalle kilpailuetua. Retrieved on September 14, 2020 from https://kuntalehti.fi/digilehti/08-2015/resurssiviisaus-tuo-kunnalle-kilpailuetua

Kuntalehti. (2020). Vento, M. Kestävän kaupunkikehityksen tunnustuspalkinto Jyväskylän kaupungille.

Kähkönen, N. (2014). Government to Business Stakeholder Communication: "From sing and dance to show and tell." Case of Finnish National Commission on Sustainable Development. Master's Thesis. Department of Communication Aalto University School of Business.

Lazaroiu, G. C., & Roscia, M. (2012). Definition methodology for the smart cities model. Energy, 47(1), 326-332.

Leichenko, R. (2011). Climate change and urban resilience. Current opinion in environmental sustainability, *3*(3), 164-168.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Thousand Oaks, CA: Sage.

Lincoln, Y. S. (1995). Emerging criteria for quality in qualitative and interpretive research. Qualitative Inquiry, 1(3), 275-289.

Lützkendorf, T., & Balouktsi, M. (2017). Assessing a Sustainable Urban Development: Typology of Indicators and Sources of Information. Procedia Environmental Sciences, 38, 546–553.

Manitiu, D. N., & Pedrini, G. (2015). Smart and sustainable cities in the European Union. An ex ante assessment of environmental, social, and cultural domains. The SEEDS Working Paper Series 13/2015.

Manville, C., Cochrane, G., Cave, J., Millard, J., Pederson, L. K., Thaarup, R. K., Liebe, A., Wissner, M., Massink, R., & Kotterink, B. (2014). Mapping smart cities in the EU. Directorate General for Internal Policies. Policy department A: Environmental and Scientific Policy. Study http://www.europarl.europa.eu/RegData/etudes/etudes/join/2014/507480/IPOL-ITRE_ET(2014)507480_EN.pdf

Martin, C. J., Evans, J., & Karvonen, A. (2018). Smart and sustainable? five tensions in the visions and practices of the smart-sustainable city in Europe and North America. Technological Forecasting and Social Change, 133, 269. Retrieved on September 14, 2020 from https://search.proquest.com/docview/2100878559?accountid=11774

Meerow, S., Newell, J. P., & Stults, M. (2016). Defining urban resilience: A review. Landscape and urban planning, 147, 38-49.

Meerow, S., & Newell, J. P. (2019). Urban resilience for whom, what, when, where, and why? Urban Geography, 40(3), 309-329.

Noble, H, & Smith, J. (2015). Issues of validity and reliability in qualitative research. Evidence-Based Nursing 2015; 18:34-35.

Northcote, M. T. (2012). Selecting Criteria to Evaluate Qualitative Research. *Education Papers and Journal Articles.* Paper 38. http://research.avondale.edu.au/edu_papers/38

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic Analysis: Striving to Meet the Trustworthiness Criteria. International Journal of Qualitative Methods. https://doi.org/10.1177/1609406917733847

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful Sampling for Qualitative Data Collection and

Analysis in Mixed Method Implementation Research. *Administration and policy in mental health*, 42(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y

Patton, M. Q. (2002). Qualitative research and evaluation methods (3rd ed.). Thousand Oaks, California: Sage Publications.

Pereira, G. V., Parycek, P., Falco, E., & Kleinhans, R. (2018). Smart governance in the context of smart cities: A literature review. Information Polity, 23(2), 1–20. https://doi.org/10.3233/IP-170067.

Pickett, S.T.A., Cadenassso, M.L., & Grove, J.M. (2004). Resilient cities: meaning, models, and metaphor for integrating the ecological, socio-economic, and planning realms. Landscape Urban Planning, 69, 369–384.

Polit, D. F., & Beck, C. T. (2012). *Nursing research: Principles and methods*. Philadelphia, PA: Lippincott Williams & Wilkins.

Rakli. (2020). Retrieved on February 3, 2020 from https://www.rakli.fi/kaupungistuminen/

Rashid, Y., Rashid, A., Warraich, M., Sabir, S., Waseem, A. (2019). Case study method: A step-by-step guide for business researchers. International Journal of Qualitative Methods Volume 18: 1–13. https://journals.sagepub.com/doi/pdf/10.1177/1609406919862424

Romero-Lankao, P., Gnatz, D.M., Wilhelmi, O., & Hayden, M. (2016). Urban Sustainability and Resilience: From Theory to Practice. Sustainability, 8, 1224.

Satterthwaite, D. (1997). Sustainable cities or cities that contribute to sustainable development? Urban Studies, 34(10), 1667-1691. https://search.proquest.com/docview/236441610?accountid=11774

Saunders, M., Lewis, P., Thornhill, A. (2019). Research methods for Business Students. Eighth edition. Pearson Education Limited.

Scoblete, G. (2019). We Built This (Resilient) City. Twice. Retrieved on November 5, 2020 from https://www.twice.com/industry/ces-2019-how-smart-city-technologies-are-improving-urban-resilience

Shen, L-Y., Ochoa, J.J., Shah, M. N., & Zhang, X. (2011). The application of urban sustainability indicators e A comparison between various practices. Habitat International, 35, 17-29.

Sitra. (2013). Resource Wisdom. Retrieved on February 19, 2020 from
    https://www.sitra.fi/en/topics/resource-wisdom/

Sitra. (2016). Leading the cycle: Finnish road map to a circular economy 2016-
    2025. Retrieved on September 21, 2020 from
    https://media.sitra.fi/2017/02/28142644/Selvityksia121.pdf

Stenbacka, C. (2001). Qualitative research requires quality concepts of its own.
    Management Decision, 39(7), 551-555.

Sustainable Development Goals Impact. (2019). Retrieved on February 19, 2020
    from https://sdgimpact.undp.org/

Thomas, E., & Magilvy, J. K. (2011). Qualitative rigour or research validity in
    qualitative research. *Journal for Specialists in Pediatric Nursing*, *16*, 151-155.

Tolonen, O. (2017). Forming Ideal Public-Private Partnerships for Export Prac-
    tices - Case: Exporting Resource Wisdom. Master's thesis. Jyväskylä Uni-
    versity School of Business and Economics.

Tuomi, J., & Sarajärvi, A. (2009). Laadullinen tutkimus ja sisällönanalyysi. [Qua-
    litative research and content analysis]. Helsinki: Kustannusosakeyhtiö
    Tammi.

Tuomi, J., & Sarajärvi, A. (2018). Laadullinen tutkimus ja sisällönanalyysi. [Qual-
    itative research and content analysis]. Helsinki: Kustannusosakeyhtiö
    Tammi.

Turner, R.K. (1993). Sustainable Development and Climate Change. CSERGE
    Working Paper PA 95-01. Belhaven Press. https://pdfs.seman-
    ticscholar.org/4664/fa9b297744d909adb5983faafe6d5c3a17d2.pdf

UN. (2013). World economic and social survey 2013: Sustainable development
    challenges, UN, New York, https://doi.org/10.18356/d30cb118-en

UN. (2021). Sustainable development goals. Goal 11: Sustainable Cities and Com-
    munities. Retrieved on April 26, 2021, from https://www.un.org/sustain-
    abledevelopment/cities/

Vanolo, A. (2014). Smartmentality: The smart city as disciplinary strategy. Urban
    Studies, 51(5), 883-898.

WCED. (1987). World Commission on Environment and Development. Our
    Common Future. Oxford: Oxford University Press, 255.

Weichselgartner, J, & Kelman, I. (2014). Geographies of Resilience: Challenges and Opportunities of a Descriptive Concept. Progress in Human Geography, 39, 249-267. https://doi.org/10.1177/0309132513518834

Yin, R. K. (2009). Case study research (4. ed. ed.). Los Angeles, Calif. [u.a.]: Sage.

Zubizarreta, I., Seravalli, A., & Arrizabalaga, S. (2015). Smart City Concept: What It Is and What It Should Be. Journal of Urban Planning and Development. 142(1):04015005. DOI: 10.1061/(ASCE)UP.1943-5444.0000282

Zygiaris, S. (2013). Smart city reference model: Assisting planners to conceptualize the building of smart city innovation ecosystems. Journal of the Knowledge Economy, 4(2), 217-231.

Äyväri, A. (2006). Käsityöyrittäjien verkosto-osaaminen. Helsinki School of Economics. Acta Universitatis Oeconomicae Helsingiensis, A-276.

APPENDICES

Appendix 1: Interview questions for Koas

- Millainen työrooli sinulla on tässä organisaatiossa?

- Miten resurssiviisaus näkyy sinun työtehtävässäsi? (Koas strategian kautta?)

- Kuvaile miten tietyn rakennusprojektin eri prosessin vaiheissa resurssiviisaus näkyy vähemmän tai enemmän? Nykyiset ja tulevat resurssiviisauden haasteet omasta näkökulmasta?

- Miten näet eri toimijoiden prosessit ja päätökset vaikuttavan rakennusprojektin onnistuneeseen lopputulokseen? (Resurssiviisauden näkökulmasta ja Koasin strategian kannalta)

- Mitkä ovat mielestäsi konkreettiset toteuttamiskeinot, jotka Koas voi toteuttaa omassa prosessissa resurssiviisauden tai kestävän kaupungin edistäjänä?

- Miten Koas voi mielestäsi jatkossa seurata resurssiviisauden tavoitteiden edisty-mistä tulevissa rakennusprojekteissa?

Lisäkysymyksiä

Appendix 2: Interview questions for the City of Jyväskylä

Käsiteltävät teemat:

Resurssiviisaus:

Resurssien viisas käyttö ja vaikutukset liikkumiseen ja autoliikenteen vähentäminen Jyväskylässä.

Täydennysrakentaminen:

Keskusta-asumisen edistäminen ja uudet ja vanhat täydennysrakentamishankkeet.

Muutosjoustavuus:

Urbaania resilienssiä, kyky toipua ja palautua erilaisista kriiseistä mitä kaupunki kohtaa.

Haastattelukysymykset:

1. Minkälainen työrooli/työkuvaanne on?

2. Kuinka kauan olet työskennellyt nykyisen työn parissa?

3. Mitkä ovat ympäristöä koskevat päätavoitteet, jotka vaikuttavat työnkuvaanne liittyvissä hankkeissa?

4. Millä tavalla tietyt ympäristöasiat näkyvät käytännössä työsi kautta?

5. Kuvaile miten työsi eri vaiheissa resurssiviisaus on läsnä?

6. Miten resurssiviisaus näkyy mielestäsi kaupungin rakennustoiminnassa?

7. Mitkä voisivat olla resurssiviisauden haasteet omasta näkökulmasta?

8. Mitä kehittämissuosituksia resurssiviisauden ja yhden hankkeen pohjalta voisit nostaa esille?

9. Miten näkisit opiskelija-asumisen kehittyvän viiden vuoden aikana?

10. Millä tavalla liikkuminen (auto, pyörä, kävely) on kehittymässä keskustassa ja keskustan tuntumassa?