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# VALUE CREATION IN THE GREEN ROOF BUSINESS WITH AND FOR STAKEHOLDERS

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# ABSTRACT

Emma Saramäki: Value Creation In The Green Roof Business With And For Stakeholders  
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As the world is changing and current megatrends such as climate change and decreasing biodiversity take place there is an urgent need for ecological reconstruction. Thus, the constructing field is also constantly developing. Green building and green solutions such as green roof business is becoming more popular, and it is one way of overcoming environmental challenges such as storm water management. There are many stakeholders involved in the green roof business and the objective of this study is to understand stakeholder cooperation and value creation in the green roof business. Thus, I seek to explain how value is created in the green roof business with and for stakeholders.

The literature for this thesis consists of stakeholder theory and value creation as well as articles of green roof business. There are both recent and historical literature in this thesis as stakeholder theory roots back to 1920s and the oldest references are from 1980s. However, most of the literature in this thesis stems from 21st century as it is only recently that stakeholder theory includes stakeholder value creation perspective. Together with the data, the literature enhances understanding of stakeholder value creation and enables the researcher to make sense of the research questions.

This is a qualitative study, and the data is collected by interviewing 12 stakeholders related to green roof business in Finland. The purpose of the interviews is to discover how stakeholders perceive stakeholder value creation in the field of green roof business based on their own experiences from different green roof projects and collaboration with other stakeholders. The data for this study is analyzed using both inductive and deductive content analysis techniques. In the latter analysis technique, the models of collaboration continuum and value creation spectrum are involved. With these two models, the nature of stakeholder relationship is analyzed with eight attributes to understand the stage of the stakeholder cooperation which is the starting point for understanding stakeholder value creation.

The findings show that there are many reasons for building green roofs. While environmental issues are seen important, green roofs also increase the beauty of cities and offer new places for leisure activities. Stakeholders have multiple reasons for being involved in the green roof business depending on their background, personal values, and organisation they work for. Stakeholder cooperation and teamwork is necessary in the green roof business and by combining expertise stakeholders can succeed in the green roof business. While stakeholder cooperation is inevitable in the green roof business, number of values are created presented in four categories: transferred resource value, interaction value, synergistic value and innovation. Most stakeholders enjoy working in the green roof business industry as it enables fulfilling one's personal ambitious such as working towards a greener future.

As a conclusion several notions were made. In the beginning of each green roof project, an extensive stakeholder analysis is desirable to ensuring the involvement of all the relevant stakeholders. Green roof business can deliver multidimensional values and thereby serve several stakeholders simultaneously. Having shared interests and effort in the green roof business enables the stakeholder cooperation to reach transformational stage and create stakeholder synergy.

Keywords: green roof business, stakeholder cooperation, stakeholder value creation

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# 1 INTRODUCTION

## 1.1 Research background

Organisations reflect our achievements in the past. They enable us to change for the future but also force us to change. Today, organisations face massive changes which calls for new thinking around business value creation as economic value maximization is not enough to describe value creation of an organisation. (Myllykangas, 2009). Stakeholder is traditionally defined as “any group or individual who can affect or is affected by the achievement of the organization’s objectives” (Freeman, 1984, p.46). The literature, however, is not unanimous about which stakeholder group is of most importance for a firm. Many blame that the most relevant stakeholder group is customers or shareholders whose value is generated by the creation of customer value, (Normann, 2001) and that is much researched matter.

I seek to understand the value creation process from the perspective of stakeholders included in the green roof business. Stakeholders in this study consist of different groups of actors working in the green roof business, such as consultants, constructors and suppliers. Thus, stakeholder value creation is analysed from a wider group of stakeholders, while traditionally only customers and shareholders are of interest and the existing literature emphasizes the financial stakeholders’ role in receiving economic value (Freudenreich et al, 2019). However, the stakeholder perspective challenges this view focusing on cocreation of value between stakeholders and sharing value.

In this study, I am interested in how value is created for stakeholders and how they perceive it. The field, in which this study takes place is green roof business. Therefore, the main literature for this research consists articles of stakeholder theory and value creation by (Austin & Seitanidi, 2012; Donaldson & Preston, 1995; Freeman, 1984; Freudenreich et al, 2019; Normann, 2001; Porter & Kramer, 2011; Priem, 2007; Roloff, 2008). Freeman (1984) is the first introducing stakeholder theory and since then it has been widely studied in the field of management. The theoretical framework of this thesis leans on Freeman’s theory yet it is supported and complemented with other scholars. In addition to Freeman (1984) views, Donaldson and Preston (1995) also approach

stakeholder theory from a traditional perspective, seeing the firm as a central actor. Normann (2001) presents a definition of value and Priem (2007) explained how value is created in firm-customer relations. Porter and Kramer (2011) introduce a concept of shared value and they speak about cocreation of value. Austin and Seitanidi (2012) supplement value creation discussion with two models focussing on the nature of stakeholder relations and stakeholder value creation. Freudenreich et al (2019) emphasize the relations with stakeholders and value creation processes and enrich value creation discussion by asking with and for whom value is created. In addition, an examination by Tapaninaho and Kujala (2019) indicates that an increasing interest has been placed on issues of sustainability and theory development within stakeholder value creation studies showing that these themes are topical and important. To connect the research to a broader concept, it links to the changes required by companies' practises in the fight against climate change with different solutions such as green roofs. This research only focuses on the green roof business from the stakeholder value creation approach and therefore other solutions and ways to overcome issues considering complex issues such as climate change are excluded.

As my intention is to study stakeholder value creation, it led me to choosing stakeholder theory as theoretical approach to my research. Stakeholder theory explains why stakeholders are of importance for an organisation and how stakeholder cooperation works. Traditionally, stakeholder theory is used to explain why firms need stakeholders and how they should include stakeholders in the firm decision making. I focus on the stakeholder perspective, namely, how stakeholders perceive value in the cooperation. The approach is chosen to form a theoretical understanding around the issue of green roof business' value creation and to guide the study through. The literature also helps to create the analytical framework which is used to analyse the data and finally to provide answers for the research problem.

Value creation is much studied research subject and this study contains literature amongst others from Normann (2001), Freudenreich et al (2019), Priem (2007) and Porter and Kramer (2011). Porter and Kramer (2011) have conducted research of shared value creation which is of importance in this research as my interest is to understand the ways in which value creation flows within stakeholder relations. In addition, Freudenreich et al (2019) focus on value creation for sustainability which connects this study as the

fundamental of green roof business is sustainability. Moreover, older research material is included as stakeholder theory has its roots back in the 1920s and is researched since 1984 by Freeman. Later, many other academics such as Donaldson and Preston joined in to study the theory. As said, there is already plenty of research conducted of stakeholder value creation, however, a specific study which takes it in the field of green roof business is missing. There is a massive number of research of green roofs however, with the perspective of value creation is rarely present. There are studies examining green roof business, however, they tend to examine the direct influence or benefits of green roof for different stakeholders or environment (Alexandri & Jones 2006; Jaffal, Ouldboukhitine & Belarbi, 2012; Shafique, Kim & Rafiq, 2018) or focus on the experiential benefits (Mesimäki, Hauru and Lehvävirta, 2019).

Green roof business and stakeholder engagement have a strong practical and societal implication. The world's urban population is estimated to surpass six billion by the year 2045 (United Nations, 2014). Consequently, urban development faces new environmental challenges such as waste management, flood control, air pollution, biodiversity and carbon sequestration (Collier et al, 2013). These trends create serious problems for the society and a real threat for human health due to the harmful gas accumulation and rise of the ecosystem (Djordjevic, Joksimovic & Jovanovic-Popovic, 2018). In addition, the lack of vegetation is one reason for the temperature rise in cities creating potential risks for humans due to extreme weather conditions (Alexandri & Jones, 2006). Thus, solutions for cleaning and cooling the air especially in big cities are considered. To tackle these wicked sustainability issues, stronger involvement from businesses and organisations is required. There is a growing need for mutual value creation, where stakeholders participate in the process together with the companies to reach common goal benefiting every party. (Tapaninaho & Kujala, 2019.) Solving these complex issues such as climate change requires transdisciplinary approach and collaboration to reach consensus and make positive change in the environment (Collier et al, 2013). As the space in these cities is already rather limited, roofs are suitable alternative for planting greenery (Djordjevic et al, 2018) and thus solutions of green infrastructure such as green roofs can be used for increasing the sustainability of built environments (Teotónio, Silva & Cruz, 2018). Over the past few years, several cities in Finland have taken green factor -tool into their urban planning strategy to increase the green areas in the urban planning

(Sucksdorff-Selkämä & Nikupaavo-Oksanen, 2020) supporting the timeliness of the topic.

The future of human society is linked to maintaining ecosystems in order to retaining ecological and social resilience. To add, public health is linked to life quality, green spaces and environmental conditions requiring long-term planning together with multiple stakeholders. Involving different stakeholders around the same challenge helps meeting the goals of urban development that must be met in order to ensure safe and healthy environment for the future. (Collier et al, 2013.) Sustainable development is traditionally defined using the UN (1987) definition: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Sustainability, according to its most profound definition is divided into three pillars: economic development, social development and environmental protection. These three pillars are interdependent and mutually reinforcing (UN, 2002.) Environmental protection contains areas of such as managing pollution, ensuring food safety and supporting biodiversity. This research considers sustainability as a surrounding context where green roof business links to. Although much has been researched on stakeholders’ role in companies’ strategy making and the influence of business to them, but to my knowledge, little has been studied on how green roof business creates value for stakeholders, which leads to the research gap of my study.

## **1.2 Research purpose and research questions**

Businesses on green roof sector serve as a practical example of the phenomenon of combining business and nature and thus providing solutions for wicked societal and environmental problems. On the one hand, green roof business is a topical field to research due to increasing discussion on sustainability issues. On the other hand, stakeholder value creation is involved in stakeholder theory which is often referred in management literature forming an interesting combination to this interdisciplinary study. The literature proves that stakeholder value creation is a much-researched perspective over the recent years and researchers around the world are interested in learning more about it. The aim of my research is to investigate the ways in which value is created with and for stakeholders in the green roof business. I seek to find out what is the role of stakeholders in the value creation process and how value is perceived in the process. Moreover, the aim is to understand how and where value flows in stakeholder relations.



Followed by the gap the literature review leaves and considering the aim of my research, the following research question is established:

How is value created with and for stakeholders in the green roof business?

Sub questions:

- 1) Why and how are stakeholders included in the green roof business?
- 2) How is value created in the stakeholder cooperation?

As said, the goal of this study is to understand the value creation in green roof business with and for stakeholders however, the research questions must be the kind that can be answered to through the theory and the data. I approach the research problem with the above-mentioned sub questions from which the first is presented for the data and the second for both theory and the data. An inductive analysis is provided to address the role of stakeholders in the green roof business. I conducted interviews for multiple stakeholders in the green roof business which gave me insights into the topic not addressed by the theory yet. The second sub question is approached deductively from both theoretical perspective and by using the insights drawn from the data to understand how value is created in the green roof business. A theoretical model for the analysis by Austin and Seitanidi (2012) is created based on the literature. The model is used to analyze stakeholder cooperation which enables deeper understanding of stakeholder value creation.

The research is limited to consider the key stakeholders involved in the green roof business in Tampere and Helsinki area in Finland. This category includes organisations from the following fields: landscape management, community planning, wholesale business, agency, property maintenance and apartment renting. In addition, stakeholder from higher level education in universities was included due to excessive knowledge and experience from green roof research. Although green roofs may influence the users of them as well, such as people living in the buildings with green roofs, this research leaves out the consumer viewpoint due to lack of resources. As said, the first sub question is presented for the data which is collected by interviewing different organisations related to green roof business. The objective of this question is to understand the reasons for stakeholders being involved. The reason for including these specific stakeholders in the

study findings from the first interview with a contractor whose long history with green roof business allowed the researcher to get a comprehensive understanding of the key actors in the field and to decide which stakeholders are or relevance.

The second sub question is then presented for the theory which consist of stakeholder theory and green roof business. I seek to understand the implications of stakeholder value creation, focusing on the ways in which value is created with and for stakeholders based on the theory as it provides a massive framework of the matter and makes it easier to answer to the main research question. The literature provided by these scholars discusses stakeholder-firm relationship and the stakeholder model by Donaldson and Preston (1995), transdisciplinary cooperation amongst stakeholder (Collier et al, 2013; Freudenreich et al, 2019) multi-stakeholder networks (Roloff, 2008) and stakeholder engagement (Collier et al, 2013; Greenwood, 2007; Harrison and Wicks, 2013).

Hence, the findings of the study will increase the understanding of the issue of green roof business and explain the values stakeholders create and perceive when being involved in the green roof business. Moreover, the findings examine the reasons for being involved in the green roof business and perhaps increase the understanding towards stakeholder value creation processes. Finally, the research seeks to provide more knowledge of the green roof business as a business field.

### **1.3 Defining the main concepts**

This research includes many terms and concepts which can be understood in many ways depending on the context. Therefore, a careful discussion of these terms is crucial.

*Value creation* is one of the main concepts of the study. Traditionally value creation focuses on economic value emphasizing financial returns received by financial stakeholders such as investors and shareholders (Freudenreich et al, 2019.) Priem (2007) complements the definition: “value creation involves innovation that establishes or increases the consumer’s valuation of the benefits of consumption.” This leads the customer to paying for a novel benefit or paying more for something he/she perceives to be better. In this research, value creation is analysed from the viewpoint of stakeholders as the focus is to understand ways in which the green roof business manages to create value for its stakeholders. Thus, value creation is seen from the viewpoint of stakeholder

utilities: what are the advantages and possibilities green roof business creates for the stakeholders involved. In addition, stakeholder value creation is defined by the ability of an organisation to create an enduring relationship with its stakeholders. (Kujala, Freeman & Lehtimäki, 2019).

*Value* is a broad term and can be used in economics, justice, aesthetics, social equity and fairness or ethics for example (Normann, 2001). Value often refers to economic productivity, which is traditionally measured by workers input which creates output. Higher productivity leads to increasing wealth of a company which results from economic value-creating activities. The increase in productivity has been achieved by efficient deployment of resources, which has led to more wealth shared between stakeholders. In this research, I am interested in how this value, created in the green roof business, is co-created and shared within stakeholders.

*Green roofs*, also called vegetated roofs, are multifunctional nature-based solutions (NBS) (Jauni et al, 2020) and they are considered constructed ecosystem, roofs with planted vegetation on their surface (Lundholm, 2015). Green roofs are built and used for multiple purposes such as garden, playground and roof terrace (Carter & Keeler, 2008; Oberndorfer et al, 2007.) The term green roof is rather vague and often misunderstood and therefore new terms are suggested (see Kotze et al, 2020) to clarify the meaning in each case. In this research, however, the generalized term green roof is chosen as it is an established term in the discussion.

*Green roof business*, in this research, refers to business activities regarding green roofs such as constructing, selling and marketing them, in short, making business out of green roofs. Thus, green roof business comprises any company working in the green roof field, instead of one firm. Green roof business is linked to sustainable business models of which is explained in detail in chapter 3.2.

*Stakeholder* is traditionally defined as “any group or individual who can affect or is affected by the achievement of the organization’s objectives” (Freeman, 1984). In this research the definition is only partially applied as the study focuses on the main groups and individuals who are concerned by green roof business in Finland. Thus, the focus is shifted from a single organisation to a whole business of green roofs and therefore a

stakeholder in this research refers to any group or individual who is included in the green roof business in Finland. This definition is called 'issue-focussed stakeholder management' (Roloff, 2008).

*Stakeholder cooperation* includes both stakeholder relations and stakeholder engagement. The first refers to ways in which a firm manages its stakeholders to collaborate towards the interests of both parties and it is part of a successful and responsible company's strategy. (Sloan, 2009). According to Greenwood (2007) stakeholder engagement includes the actions that an organisation undertakes to involve stakeholders in organisational activities.

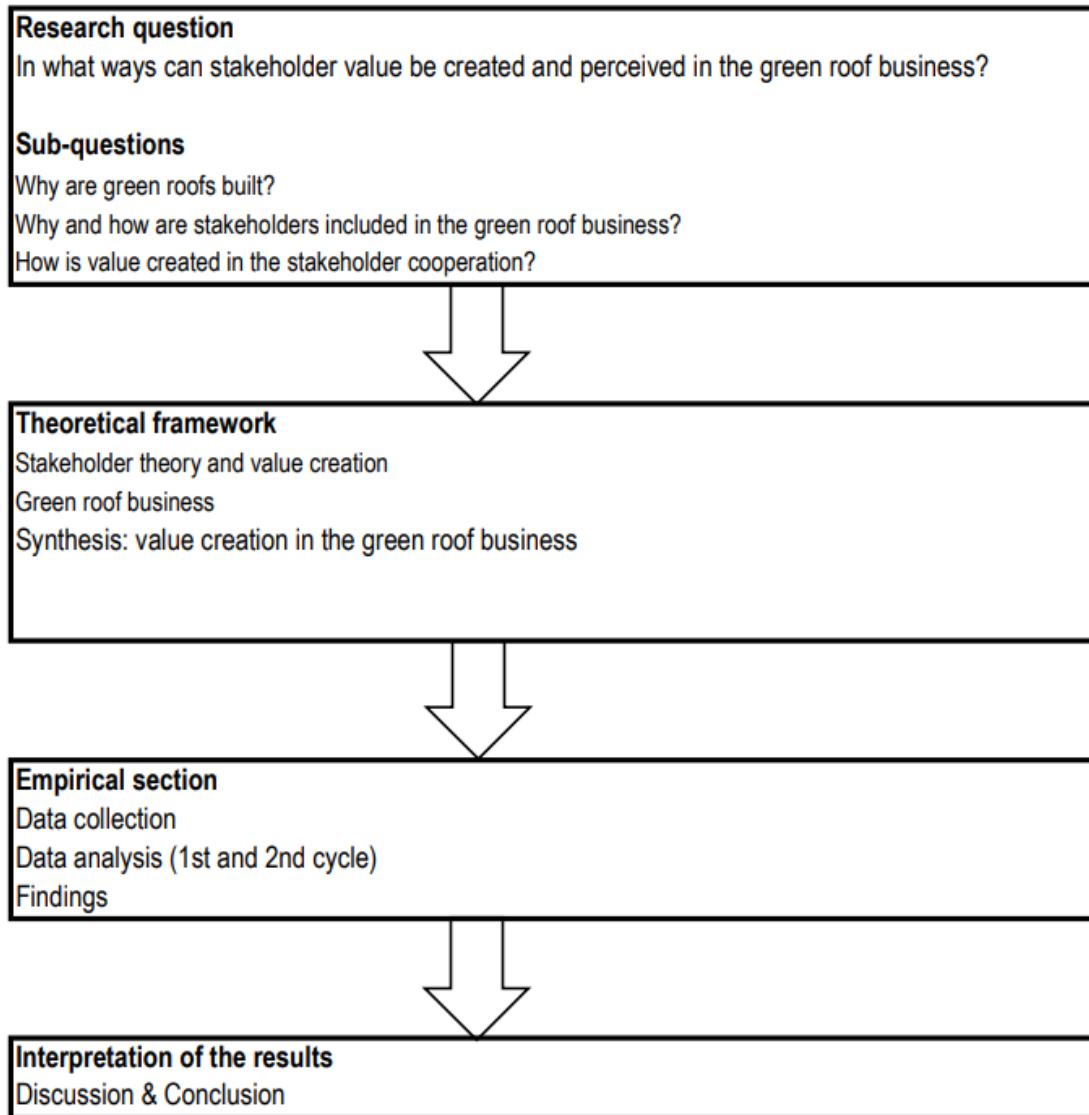
#### **1.4 Business 2 Nature -research team**

This research is a part of a larger project by Business to Nature -research group which is an interdisciplinary research project studying stakeholder-driven value creation in ecosystem services at the Tampere University. The aim of the research project is to develop a stakeholder-driven understanding of generating new ecosystems in urban areas. Moreover, the research project seeks to find the value creation business-stakeholder-nature relationships contribute to when developing new ecosystem services. The project is funded by the Academy of Finland group and it is ongoing between 2016 to 2020. The team consists of a professor, university researcher, postdoctoral researcher, senior lecturer, senior research and doctoral students. In addition to myself, there are several thesis writers involved in the team. Previous publications of the research team address inter alia, urban ecosystem services and stakeholders, stakeholder engagement in the generation of urban ecosystem services and stakeholder interests in ecosystem services (Business2Nature, 2020.) The lists show that the themes are closely related to this study, but a focus on stakeholder value creation in the green roof business is lacking.

#### **1.5 Research process and thesis structure**

The research process began by discussing the unexplored themes in the context of Business to Nature research team in spring 2019. At that time, an idea paper and research proposal were handed in and the process started to take shape. Thereafter, the actual writing process started in fall 2019 by providing the research problem, becoming

acquainted with the key concepts and theory and organizing the first interviews. All the interviews were completed by March 2020 and all the material was ready to be analysed. I started working on the analysing process during the spring 2020 as well as made some final touches in the theory section. The analysing phase went on until fall 2020. Lastly, the conclusion and discussion- section was written and the paper was read through several times for final edits. The research design is presented in figure 1.



*Figure 1. Research design*

This thesis consists of six main chapters. The introduction chapter provides the background and justification for the research. In addition, the main concepts are explained for the reader. The remainder of the paper is structured as follows: First, the theory chapter contains the main principles of stakeholder theory. I will explain what stakeholder theory is about and what it is used for. To add, the concepts of stakeholder cooperation and stakeholder value creation are explicated. The third chapter consists of a literature review combining previous research on green roofs. I will explain in detail what green roofs are, for what purposes they are build, what are the advantages and benefits of green roofs and provide an understanding of the green roof business. Thereafter, the methodology chapter focuses on the methodological choices and explains the collection and analysis of the

research data with a justification on the methods and data chosen. The fifth chapter, findings, reveals the main findings of the research by revealing citations of the transcripts and explaining the findings by the researcher. The discussion part takes a critical look on the research findings and evaluates the process by looking back at the study. In this chapter, the paper concludes by presenting the phases of the research project once more and critically evaluating the meaning of the findings. Finally, suggestions for further research are presented.

## **2 STAKEHOLDER THEORY AND VALUE CREATION**

### **2.1 Defining stakeholder theory**

Stakeholder theory originates back to 1960s where the roots of the theory are created in management literature however, there are some notions of stakeholders already in the late 1920s as General Electric Company defined stakeholder groups and company's social responsibilities (Schatz, 1987). It is commonplace in managerial literature that corporations have stakeholders. Regardless of its status in the literature it must be noted that the concepts stakeholder, stakeholder model, stakeholder management, and stakeholder theory are often described differently amongst scholars and supported with contradictory arguments. (Donaldson & Preston, 1995.) The core of stakeholder theory is the argument that the success of an organisation depends on how well it manages the relationships with the stakeholders (Freeman & Phillips, 2002). Stakeholder theory is general and comprehensive (Donaldson & Preston, 1995) and has so far focused on corporate responsibility laying emphasis on meeting the needs of stakeholders and considering their interests (Fassin, 2012).

Moreover, the theory has been suggested to be applicable in sustainable management by Hörisch et al (2014) who also created a framework to link the theory to sustainability. Sustainability has today and will have in the future a strong material impact on company strategies and operations. Many managerial leaders have realized that in order to be competitive they must include sustainability into their strategies (Dyllick & Muff, 2016.) and be aware of the social effects of their actions (Freeman & Phillips, 2002; Porter & Kramer, 2011). Thus, businesses should take an active role in providing solutions for societal problems by creating shared value where a company makes profit while creating value for the society (Porter and Kramer, 2011). To explain further, Porter and Kramer (2011, p.4) call for companies to adopt a bigger role in helping societies to progress: "Businesses acting as businesses, not as charitable donors, are the most powerful force for addressing the pressing issues we face." Stakeholder theory applies to when considering the duties and responsibilities of firms. As Freeman and Phillips (2002) put



it, firms are not solely responsible for the effects of their actions but other stakeholder groups such as employees, customers and communities have their responsibilities as well.

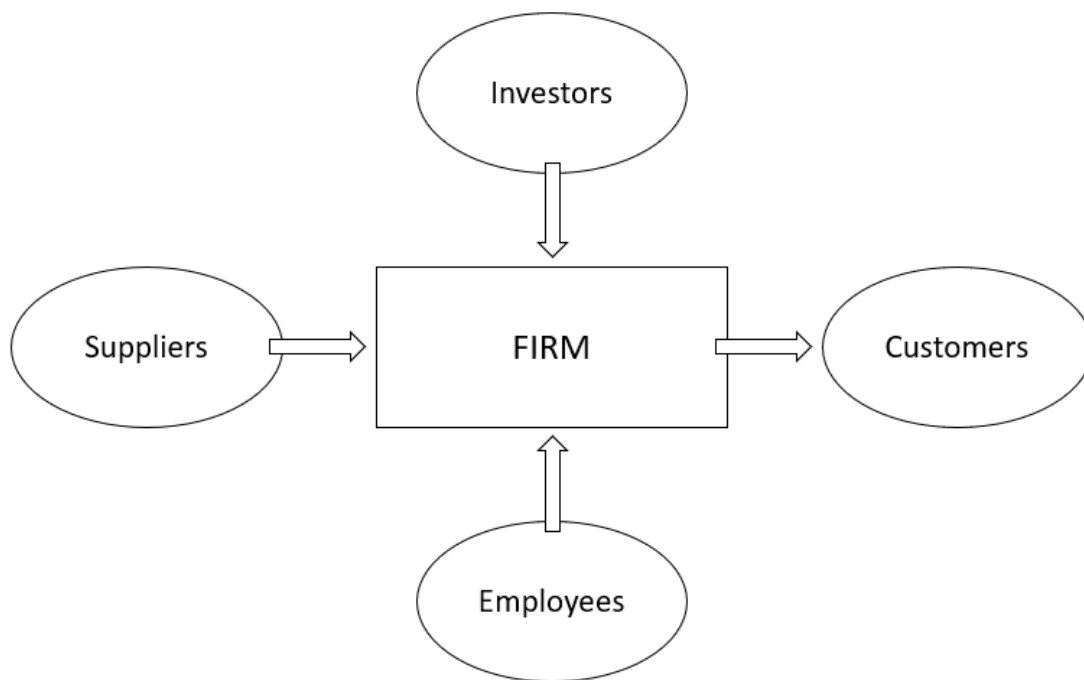
Before entering deeper into the theory, it is essential to define what a stakeholder is. A stakeholder can be defined as an individual or a group of people (Donaldson and Preston, 1995) or as a larger entity such as natural environment (Laine, 2010; Mitchell, Agle & Wood, 1997). On the other hand, when discussing involving stakeholders in business activities, nature as a stakeholder becomes complicated as it is not an exerciser of power per se. (Laine, 2010). When looking at the stakeholder literature, most mention power-dependence frame in the discussion. Some focus on the organisation's dependency on stakeholders for its survival while others focus on the stakeholder's dependency on the organisation for standing beside them. To add, some research focus on the mutuality of power-dependence relations, however no research emphasized mutual power. (Mitchell, et al (1997).

Early definition by Stanford Research Institute's (1963) as cited in Freeman (1984, p.31) for stakeholders goes "those groups without whose support the organization would cease to exist". Freeman (1984, p.46) elaborates the definition to "any group or individual who can affect or is affected by the achievement of the organization's objectives". Thus, stakeholder can be any person or a group that have or claim ownership, rights or interests in a corporation and its activities today or in the future (Grunig, 1992). The rights and interests may be moral or legal, individual or collective. (Clarkson, 1995.) Basically, a stakeholder can be any actor who is in touch with the company such as owners, suppliers, employees, customers and competitors. Stakeholders provide resources and influence the efficiency and impacts of the companies. The theory, however, does not imply that all stakeholders should be equally involved in all processes and decisions of a corporation. (Donaldson & Preston, 1995.)

Stakeholders can be roughly divided into two groups: primary and secondary stakeholders. The first group consists of stakeholders whose existence is necessary for the survival of the company such as shareholders and investors, employees, customers and suppliers. In addition, the public stakeholder group including community and governments is defined as a primary stakeholder group as they offer necessities such as infrastructure. The needs of those primary stakeholders must be met, or the company will be seriously damaged. Therefore, it is a continuing and important process for a company

to keep its stakeholders satisfied and create value for each of them. Secondary stakeholders on the other hand are those groups who affect or are affected by the actions of a company, but their existence is not critical for a company. Examples of secondary stakeholders are media and environment. Although secondary stakeholders are not seen as critical for company's survival, they can cause serious damage to a company (Clarkson, 1995.)

There are various ways to illustrate stakeholder-firm relationship. Donaldson and Preston (1995) suggest two models to explain the flow of benefits between firm and its stakeholders: Input-Output Model (figure 2) and The Stakeholder Model (figure 3.)



*Figure 2. The Input-Output Model. (Donaldson & Preston, 1995, p.68)*

Input-Output Model is a simplified figure where the firm is in the centre surrounded by its primary stakeholders: investors, customers, employees and suppliers. According to Donaldson and Preston (1995) the first model indicates transforming inputs from investors, employees and suppliers into outputs to benefit customers. In this process, compensation is expected from the contributors of inputs.

The Stakeholder Model by Donaldson and Preston (1995) represents a contrasting approach to stakeholder theory by addressing all persons or groups with legitimate interests in a firm to do so in order to benefit. Moreover, this model identifies all stakeholders equal of interests and benefits, where each group is equidistant from the firm in the centre box. One aspect clearly distinguishing these two models are the narrows between firm and its stakeholders. In the Input-Output Model, the benefits flow to one direction, from investors, employees and suppliers to customers via firm. In short, customers create the group who receive all the value created in the firm, with the effort of investors, employees and suppliers. The Stakeholder Model, on the other hand, starts from an idea where there is a large stakeholder group around the firm. The narrows between a firm and a stakeholder are bidirectional illustrating benefits and interests flowing both to and from the firm and its stakeholders. In this model, value creation flows to and from stakeholders and a firm. The latter represents more of the modern approach to stakeholder theory explained by academics such as Freudenreich et al (2019.)

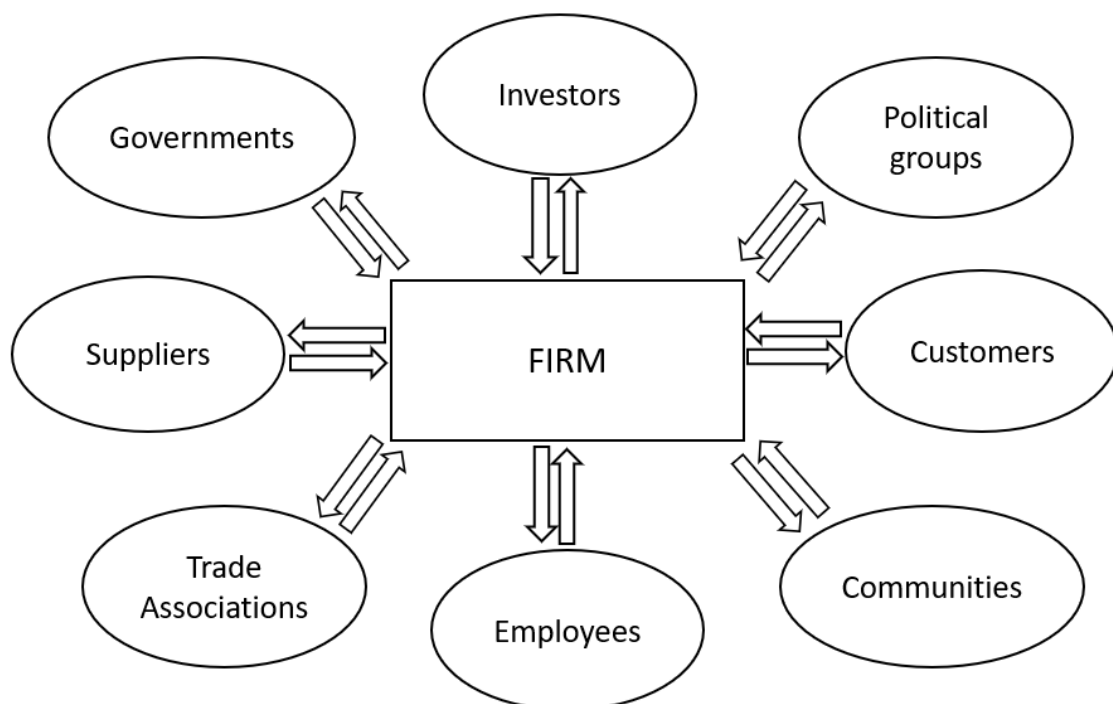


Figure 3. The Stakeholder Model (Donaldson & Preston, 1995, p.69)

Connecting stakeholder theory to urban planning Collier et al (2013) state, that the challenges of climate change to many urban areas are encouraging to take a transdisciplinary approach and closer collaboration between different actors with

different background and knowledge in order to reach the desired ends. Freudenreich et al (2019) propose that the factors stakeholders consider valuable must be reflected in value creation processes. To add, Collier et al. (2013) continue that communication plays a key role in the planning process in order to reach the sufficient collaboration level to achieve resilience and create healthier urban environments. Therefore, involving stakeholders (urban communities, local authorities and SMEs) in the planning process may create synergy towards green infrastructure and innovation. This idea can be applied to green roof business; it is not solely the firm planning or building the green roofs but also the people who use the roof, the ones who take care of the plants and everyone who is somehow affected to the area that are responsible for the success of the whole complex.

## **2.2 Stakeholder engagement and stakeholder cooperation**

One of the relevant concepts of stakeholder value creation is stakeholder engagement. Greenwood (2007, p. 317-318) defines stakeholder engagement as “practices that the organisation undertakes to involve stakeholders in a positive manner in organisational activities.” Harrison and Wicks (2013) explain that stakeholder engagement is dependent on the amount of utility received by stakeholders. It can be of importance for stakeholders to have their values in line with the organisation’s values in order to be satisfied and engage in the organisation’s activities. Harrison and Wicks (2013) argue that stakeholder-based performance measure challenges managers to shift their focus on creating value for and with stakeholders. They go on by explaining that the main logic of this perspective relates pursuing an increased well-being of stakeholders engaged in value creation process that the firm manages. Fassin (2012) adds that stakeholder management, focuses on the fair treatment of stakeholders, emphasising the primary stakeholder groups, namely employees, consumers and stockholders (shareholders).

Stakeholder engagement can be defined as a process, where individuals and groups who affect firm actions or are affected by the firms’ actions (stakeholders) participate. Organisations and firms may have different views of managing stakeholder relations and different perception on stakeholder engagement. (Sloan, 2009). He approaches stakeholder engagement with control and collaboration model. The central idea in his model, is that firm either controls its stakeholders seeing them as risks or cooperates with them seeing the opportunities within the partnership. In the first case, the key engagement processes are monitoring, listening and telling and there is only limited potential for

corporate change. The latter uses collaboration, listening and partnering allowing transformational change in the corporation. Strand and Freeman (2015) emphasize that in order to succeed in the long-term it is necessary to engage stakeholders in firm activities and create business together with multiple stakeholders to reach communal advantage. Freudenreich et al (2019) sum that operating business models is impossible without workable relationship with both internal and external stakeholders.

In addition, it is also important to notice the indirect stakeholders such as the civil society and pressure groups, which may have impact in the firm business through defending the interest of certain stakeholder groups. Additionally, regulations such as the law, official institutions and control organisations are considered. Fassin's (2012) research focuses on the stakeholder reciprocity; discussing the stakeholder obligations to the firm as the previous research has ignored it. Pajunen (2006) provides a theory concerning the role of the most powerful stakeholders in organisational survival focusing on the identification and management of such stakeholders. His research is based on the resource dependency theory, focusing on the resource management and power in the stakeholder network. The findings reveal that even a minor-like stakeholder can play a key role in organisation survival if the resources are managed by that stakeholder. It reassures the complexity of stakeholder management. Collier et al (2013) add that it is important to consider the imbalanced power structure between different stakeholders involved.

### **2.3 Multi-stakeholder networks**

Originally, stakeholder management is focal firm focussed and the firm is understood as the main actor which other stakeholders are of influence (see Freeman, 1984). However, Roloff (2008) suggests a new term *issue-focussed stakeholder management* referring to a situation where a firm is not the centre of stakeholder management but a specific issue instead. Roloff (2008, p.246) continues that "successful issue-focussed stakeholder management has the potential to initiate more sustainable solutions, because it builds social capital like trust, mutual understanding, knowledge about the issue and the experience of collaboration."

This perspective can be applied to this study, as there is no single firm whose stakeholders are of interests but a business field, green roof business instead. Roloff (2008) focuses on an issue, which refers to a specific task or a project. Green roof business is a large and

time-consuming process including tens of actors and therefore it does not completely match the definition of an issue. However, this perspective has the same agenda as my study and therefore it is applied. Roloff (2008) goes beyond stakeholder theory by introducing an alternative viewpoint, multi-stakeholder networks, where firms are equal to other stakeholders in the process and do not necessarily control it. She explains that in multi-stakeholder networks actors from civil society, business and governmental institutions cooperate to find a common approach to an issue affecting all of them. In short, the focus is shifted from an organisation to an issue and stakeholder is now “any group or individual who can affect or is affected by the approach to the issue addressed by the network.” (Roloff, 2008 p.238). This approach expands the definition and enlarges the role of a stakeholder.

## **2.4 Stakeholder value creation**

Value creation is a dynamic process which changes as the stakeholder relationships evolve (Austin & Seitanidi, 2012). Value creation is not easily measured and it is often confused with the term value capture (i.a. Bowman & Ambrosini, 2000; Priem, 2007) even though these have different meanings. There are many reasons for misusing and misunderstanding these terms. First, value is a complicated term as different levels, types, and location of value are often “underspecified, vague, and unevenly assessed” (Austin & Seitanidi, 2012, p.728). Second, value is traditionally seen in strategic management from the suppliers’ side created by producers. According to this view, each firm adds value to a product striving to capture a share of the payments made by the end user (customer) (Priem, 2007.) The lack of common language challenges the correct use and may lead to misunderstandings, emphasizing the importance for careful definition of these terms.

Value creation can be defined from many perspectives such as shareholder, stakeholder, consumer and firm. Porter and Kramer (2011) define value creation, in the simplest form as follows: profit is revenues earned from a customer minus the production costs incurred. Bowman and Ambrosini (2000) explain it is the utility theory traditionally referred, stating that consumer’s income is used to maximize their satisfaction acquired from products. The key, according to Tantalo and Priem (2016) is the consumer’s willingness to pay the price for a product one sees worthy. Therefore, one can be more satisfied even if the price increases. Grönroos (2008) adds that customers use resources provided by a company and create value for themselves which is understood as customer service logic.

Priem (2007) specifies that value is only created when a product or service is consumed and therefore unconsumed items are left without value. He defines firms as intermediaries in value creation process but not consumers because they are not end users. However, firms can be consumers of other intermediaries (Priem, 2007) and in that way stakeholders can create 'firm-customer relations' where one purchases something from another, and value is created in the exchange process. The transition towards a greater focus on stakeholders has led to a situation where various stakeholder engagement strategies are being developed (Burchell & Cook, 2008). The focus of this study is on stakeholder value creation, where normally joint value between a firm and its stakeholders is created (Freudenreich et al, 2019.) Thus, albeit the traditional understanding of value creation focuses on shareholder viewpoint however, stakeholder dimension is gaining its popularity amongst scholars.

Austin and Seitanidi (2012) studied the collaborations between non-profits and business focusing on how they co-create value. They divided the types of collaborations into four categories: philanthropic collaboration, transactional collaborations, integrative collaboration and transformational collaboration (figure 4.)

	Stage I	Stage II	Stage III	Stage IV
<b>NATURE OF RELATIONSHIP</b>	Philanthropic>Transactional>Integrative>Transformational			
<b>Level of engagement</b>	Low <-----> High			
<b>Importance to mission</b>	Peripheral <-----> Central			
<b>Magnitude of Resources</b>	Small <-----> Big			
<b>Type of resources</b>	Money <-----> Core competencies			
<b>Scope of activities</b>	Narrow <-----> Broad			
<b>Interaction level</b>	Infrequent <-----> Intensive			
<b>Trust</b>	Modest <-----> Deep			
<b>Internal change</b>	Minimal <-----> Great			
<b>Managerial Complexity</b>	Simple <-----> Complex			
<b>Strategic Value</b>	Minor <-----> Major			
<b>Co-creation of value</b>	Sole <-----> Conjoined			
<b>Synergistic value</b>	Occasional <-----> Predominant			
<b>Innovation</b>	Seldom <-----> Frequent			
<b>External system change</b>	Rare <-----> Common			

Figure 4. The collaboration continuum (Austin & Seitanidi, 2012, p.736).

In philanthropic collaboration the resources flow is unilateral which means that resources flow from the company to the non-profit. In short, the company (funder) donates money to NPO (doer). This is a form of basic resource complementarity, where the nature of

resources is money. This collaboration enables the non-profit to go beyond its own capabilities, however, it is insignificant what is the source of the money. Nevertheless, there is associational value accruing to both partners: philanthropic company is also more attractive for employees and thus associational value is created. In traditional philanthropic collaboration value is sole-created as each stakeholder provides inputs. For example, a company donates funds and non-profit delivers service for social good. In this case, the degree of interaction is limited and there are benefits in meso, micro and macro levels but they are less robust than in the more evolved levels of CC2. (Austin & Seitanidi, 2012.)

In transactional collaborations the level of collaboration is rather premeditated including for example highly developed employee volunteer programs, CRM, event/sport sponsorship, name/logo licensing agreements, assigned responsibilities and timetables. Also, the resources flow to both directions from and to corporation; resource flow is bilateral. In transactional collaborations, there is an explicit exchange of resources and reciprocal value creation (Googins & Rochlin, 2000). Also, higher resource complementary and the nature of transferred resources the partners' are using is usually more specialized assets with their higher value generating potential (Waddell, 2000). Partners have linked interests meaning that one cannot create value for itself without creating value for the other. In this case, associational value is salient and organisational compatibility is more essential to value creation. Value creation is then more quantifiable and the benefits are immediate however, it is not certain that the societal welfare will improve. Associational relationship is greater and more visible which also causes more risks in case the organisations do not fit which results to negative value. Nevertheless, finding a good fit of organisations creates the potential for generating synergistic value. The better the organisations fit, the greater the value creation. In addition, as the relationship is closer and more resources are generated for the non-profit than in case of traditional donation, the potential for greater value creation exists. (Austin & Seitanidi, 2012.)

The third stage, integrative collaborations entail a deeper level of commitment. These collaborations are more complex and organic than transactional and allow change in the relationships including the value creation processes. As a result of successful cooperation, partners find greater congruency regarding one's missions, values, and strategies. In



integrative collaborations, a deeper level of relationship and greater trust is created (interaction value). There is huge potential in integrative collaborations as discovering linked interests and synergistic value creation allow the collaboration to enter a deeper level leading to even greater value creation. At this stage, collaboration is integrated to the strategic success of an organisation, however, even more priority is put on societal betterment. It takes much effort to reach this stage and it can be a result of a progressively evolving relationship or it can be reached over time within the integrative stage on the collaboration continuum. In integrative collaboration, partners combine their key resources and competences and as a result the directionality of the resource flow is conjoined. Thus, there is more potential for cocreating value for both partners and for the society through synergistic innovative solutions. At this stage, interaction value emerges as the relationship becomes closer and richer. In addition, the intangible assets, such as trust and knowledge are essential in co-creation of value. (Austin & Seitanidi, 2012.)

Transformational collaboration is the most advanced stage of collaboration where the aim is to create significant change in the society at large. Partners share the will to deliver transformation through social innovation to better the lives of afflicted. At this stage, shared learning concerning social needs take place. The result of collaboration is collaborative value creation (CVC) reflecting the outcomes of a collaboration with two or more actors. The key argument here is that different collaborations lead to different type of value creation. In their research Austin and Seitanidi (2012) categorize four types of value deriving from collaborations: associational value, transferred resource value, interaction value, synergistic value and innovation. Each one is explained in detail below.

First, in line with Austin and Seitanidi (2012, p.730) “associational value is a derived benefit accruing to another partner simply from having a collaborative relationship with the other organisation.” In other words, the collaboration with another organisation alone makes the firm look good in the eyes of others and associational value is created in the collaboration. An example of this type of value creation occurs when a firm is collaborating with a local food bank and gains media attention. Second, “transferred resource value” (Austin & Seitanidi, 2012, p.731) is a benefit stemmed from a partner when receiving resources from the other partner. The significance of value depends on the nature of the assets and also how they are used; cash is depreciable whereas know-how is durable asset but they both can be important in the collaboration. As the resource

exchange is somewhat concrete benefit for both stakeholders, the process needs to be repeated. In short, value renewal is essential for long-term stakeholder relationship. Third, intangibles deriving from the processes of collaboration is called “interaction value” (Austin & Seitanidi, 2012, p.731). Co-creating value requires and produces these intangibles such as reputation, trust, relational capital, learning, knowledge, joint problem solving, communication, coordination, transparency, accountability and conflict resolution. Fourth, “synergistic value” (Austin & Seitanidi, 2012, p.731) arises from all collaborations where more is accomplished together than alone. Synergistic value creation is driven by innovation and new forms of changes are formed due to the combination of the collaborator’s distinctive assets. There is potential for great organisational and systemic transformation and advancement in societal (macro), organisational (meso), and individual (micro) levels. (Austin & Seitanidi, 2012.)

Figure 5 illustrates the key idea of the collaborative value creation spectrum. It shows that collaboration enables the potential of both sources of value and types of value to increase. First, the four sources of value are presented: resource complementary, resource nature, resource directionality and linked interests.

	Sole-creation <-----> Co-creation
<b>SOURCES OF VALUE</b>	
Resource complementarity	Low <-----> High
Resource nature	Generic <-----> Distictive competency
Resource directionality	Unilateral <-----> Conjoined
Linked interests	Weak/Narrow <-----> Strong/Broad
<b>TYPES OF VALUE</b>	
Associational value	Modest <-----> High
Transferred resource value	Depreciable <-----> Renewable
Interaction value	Minimal <-----> Maximal
Synergistic value	Least <-----> Most
Innovation	Seldom <-----> Frequent
<b>STAGES</b>	Philanthropic>Transactional>Integrative>Transformational

Figure 5. Collaborative value creation spectrum (Austin & Seitanidi, 2012, p.745)

The matrix demonstrates what happens to sources of value and types of value when going from value sole-creation (on the left) to value co-creation (on the right). In addition, the stages change from philanthropic (on the left) to transactional, integrative and finally transformational (on the right).

Due to the importance of value creation in this research, it is necessary to define the concept of stakeholder value. In their paper, Harrison and Wicks (2013, p. 100) define stakeholder value as “anything that has the potential to be of worth to stakeholders”. Freeman (1997, p.287) presents ‘The Principle of Stakeholder Cooperation’ stating “value is created because stakeholders can jointly satisfy their needs and desires.” Harrison and Wicks (2013) add that individual differences in defining value are fundamental, however, the literature still focuses on the economic value emphasizing financial returns received by financial stakeholders such as investors and shareholders (Freudenreich et al, 2019.) Freudenreich et al (2019) propose two-fold perspective for analysing value creation (figure 6). Business model perspective considers value from a general viewpoint by asking what and how questions concerning value creation. Stakeholder theory focuses on stakeholder perspective in value creation and asks with and for whom value is created. Thus, value creation shows differently depending on which perspective it is analysed.

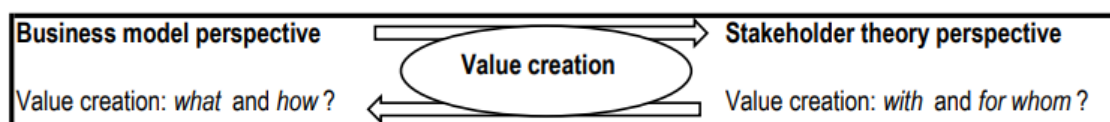


Figure 6. Stakeholder value creation (Freudenreich et al, 2019, p.4)

The more stakeholders included, the more actors there are in the decision making. According to Tapaninaho and Kujala (2019) it appears that including multiple stakeholders in decision making in organisation is of importance, however, their values may be clearly distinguished, and it is therefore important to define values of each stakeholder in question. This argument complements the theory by Kaptein and Van Tulder (2003) who claim that an organisation can show its trust for stakeholders by involving them in the dilemmas that the company faces. However, Tapaninaho and Kujala (2019) state that factors such as stakeholder status, director’s personal values and role and the organisational life cycle influence in the salience and decisions.

According to Bowman and Ambrosini (2000) organisational members create value and Priem (2007, p.220) continues: “value creation involves innovation that establishes or increases the consumer’s valuation of the benefits of consumption”. Normann and Ramírez (1993, p.68) add that “new methods of combining activities into offerings are producing new opportunities for creating value” which according to Freudenreich et al

(2019) requires a broad concept of stakeholders as “the support of each group is vital to the success of the endeavour and the outcomes are synergistic” (Freeman & Phillips, 2002, p.341). Tantaló and Priem (2016, p.315) continue by introducing “stakeholder synergy”. Stakeholder synergy is created as new utilities valued by stakeholder groups are identified. The creation of these new utilities can lead to greater value creation for all stakeholders included. When a strategic action creates value for two or more crucial stakeholder groups simultaneously, stakeholder synergy is achieved. At the same time, no obtained value is being reduced from other important stakeholder groups in the process and a win-win situation is created.

Tantaló and Priem (2016, p.323) present three ways for achieving stakeholder synergy. The first, defined as “single stakeholder value creation” means creating value by increasing the utility received by one stakeholder without decreasing the utility received by others. The second one is labelled as “complementary utilities”, where complementary needs across different stakeholder groups are identified, and the same actions taken can increase the utility received by several stakeholder groups. Third one is called “follow-on efficiencies” describing stakeholder synergy occurred as follow-ons to either single stakeholder or complementary utilities described above which is likely to lead to active cooperation with the firm in question. All these synergies may offer a way for top managers to increase the overall value created by the business for stakeholders involved. The theory of stakeholder value creation can be connected to green roof business as the projects serve as possibilities for value creation for several stakeholders at different stages of the process including researching, designing, constructing and using the roof for many purposes.

To understand stakeholder relations requires changes in the perspective where it is studied from. Instead of focusing on stakeholder urgency, we should be interested in the cooperation and joint goals. (Kujala, 2014.) Myllykangas, Kujala and Lehtimäki (2010) suggest that the questions *who* and *what* should be replaced with *how* when analysing value creation in stakeholder relationships. Thus, the focus should be shifted from the classical theory of power, legitimacy and urgency (Mitchell et al, 1997) to history and the goals of the relationship, knowledge sharing and learning, commitment/engagement and trust (Kujala, 2014).

## **3 GREEN ROOF BUSINESS**

### **3.1 The concept of green roofs**

This chapter provides an overview of the research carried out on green roofs worldwide focusing on the green roof business, the benefits and technology of green roofs and key stakeholders included in the green roof business. Green roofs are natural solutions of green infrastructure (GI), which aims to protect and enhance nature and natural processes. (European Environment Agency, 2017). According to European Commission (2019) green infrastructure is “a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services.” These ecosystem services are i.a. water purification, air quality, space for recreation and climate mitigation and adaptation.

Practically, green roofs are considered as roofs with planted vegetation on their surface and they are considered as constructed, artificial ecosystems (Lundholm, 2015). In this study, green roofs are considered as those purposefully constructed roofs with vegetation on their surface. This can be for example a shopping centre, university campus or apartment building. Therefore, a roof painted green or a roof with natural growing moss on it is not a ‘green roof’ in this research as in those cases green roof does not include purposefully installed vegetation.

There are many names for green roofs as they are also called vegetated roofs, eco-roofs and nature roofs (Fioretti, Palla, Lanza & Principi, 2010) and lately the term ‘vegetated roof’ is suggested to replace the term ‘green roof’ (Kotze et al, 2020). Thus, the research field calls for a clear and standardized terminology to avoid confusion (Kotze et al, 2020). In this research, however, the term ‘green roof’ is chosen to be used as it is generally used to describe them and majority of the literature still recognizes the name.

Due to their versatility, green roofs are built and used for multiple purposes such as garden, playground and roof terrace (Carter & Keeler, 2008; Oberndorfer, Lundholm, Bass, Coffman, Doshi, Dunnett & Rowe, 2007.) Thus, people can simultaneously enjoy and benefit green roofs. Despite their vegetated surface, it is worth noticing that green roofs cannot be compared to natural ecosystems as they lack the complexity of nature

(Lundholm, 2015) however, they still offer various social, economic and environmental benefits for different stakeholders (Shafique, Kim & Rafiq, 2018). According to Oberndorfer et al (2007) the negative effects of buildings on local ecosystems may be decreased by covering roof surfaces with vegetation and soil. This may also reduce the energy consumption of buildings. Alexandri and Jones (2006) examined the thermal effect of green roofs and green walls on the built environment in cities, urban canyon geometries, canyon orientations and wind directions. They found that there is potential of reducing the temperature in the urban areas by covering the building envelope with vegetation, and for example in Hong Kong no additional cooling is required when green roof and walls are installed leading to massive energy savings. Another research conducted by Santamouris et al (2007) investigated and analysed the energy and environmental performance of green roof by measuring the indoor and outdoor air temperature and relative humidity of the buildings with green roofs. In the study, they focussed on energy consumption and as a result, significant energy saving was achieved during the cooling period due to installed green roofs. These findings support the theory that green roofs can provide significant benefits for the environment regarding the heat island effect in urban areas. In addition, remarkable savings in energy can be achieved with the use of green roofs.

Nevertheless, the influence of green roofs on the heating load at wintertime is not regarded important. Jaffal, Ouldboukhitine and Belarbi (2012) researched the impact of green roofs on the thermal performance of buildings and found that the impact of green roofs on the temperature inside the building is more significant in hot temperatures. In addition to the energy savings, green roofs are beneficial due the ability to absorb rainfall, reduce roof temperatures, improve the ambient air quality, and provide urban habitat (Carter & Keeler, 2008; Fioretti et al, 2010) and reduce noise (Jaffal et al, 2012). When it comes to the biodiversity of cities, green roofs increase the vegetal and animal biodiversity and reduce the carbon footprint of cities as they convert carbon dioxide to oxygen. Therefore, it can be claimed that green roof not only benefit single buildings but the whole urban area. (Jaffal et al, 2012.)

Although majority of green roof research focuses on the technical benefits provided by green roofs, Mesimäki, Hauru and Lehvävirta (2019) carried out a case study focusing on experiential benefits such as restorative and aesthetic experiences which reflect perceived

qualities of the environment. The research was conducted in Helsinki, the capital of Finland by a questionnaire with 178 people who visited a green roof in the urban area of Helsinki. The findings indicated that perceived restorativeness was high and even a small vegetated green roof in the urban area may provide recreational and experiential benefits such as feeling of freedom, joy, pleasure, love, sympathy, and admiration. As a conclusion, the researchers argue that co-designing and considering the needs of the user-groups may be useful for future green roof planning as people's experiences vary within the same environment.

### **3.2 Value creation in the green roof business**

As mentioned earlier, urban development faces major challenges such as flood control, air pollution and loss of biodiversity (Collier et al, 2013) where green roofs business can provide multiple solutions. Traditional business models stem from the ability to create benefits, value for customer, and capture part of the value for the firm itself. Its fundamental goal is to find out ways in which makes the customers become engaged with the firm and consume repeatedly to provide financial value for the firm. (Teece, 2010). Green roof business, on the other hand, is a part of sustainable business models or green business models taking a different approach to value creation. Evans et al (2017) explain that sustainable business models align economic, environmental and social aspects. Moreover, the focus is on the interests and needs of all stakeholder groups instead of merely shareholders. Rethinking the purpose of the firm and seeing it as a part of value network may enable new possibilities for sustainable business models. Green business models utilize new markets to create value by finding innovative ways to sustain their external environment seeking to maximize environmental benefits. (Noir & Paulose, 2014.)

As the scientific focus of green roofs has gained lot of attention, Teotónio et al (2018) claim that the economic value of green roofs is not being fully understood. In their study (2018, p.121) "a methodology to perform cost-benefit analyses of installing green roofs" is presented balancing costs and benefits at financial, economic and socio-environmental levels including e.g. maintenance and replacement costs, energy consumption, urban rooftop farming, property value, aesthetics, recreation, sound insulation, storm water management, noise reduction and public health. Looking at the literature on green roof investments, the financial benefits vary from a loss of 50% to gains of 25%, whereas

economic and socio-environmental benefits are between 24 – 40%. However, it must be noticed that if the non-economic benefits are ignored, the loss vary from 10 to 20% (Carter & Keeler, 2008). According to Teotónio et al (2018), quantifying green roofs benefits is challenging due to the influence of surrounding environmental conditions. The differences in climate, substrates and plants make it difficult to share the experiences and data when comparing environments between continents such as Europe and Australia (Williams, Rayner & Raynor, 2010). In short, regardless of the multiple advantages and benefits green roofs may offer, proofing them is challenging due to the surrounding circumstances.

### **3.3 Green roofs in practice**

Implementing a green roof requires specific knowledge as the technical barriers must be overcome highlighting the importance of multi-stakeholder network. Moreover, the type of green roof depends on the climate as different plants grow on different environments. (Williams et al, 2010) One way to categorize green roofs is intensive or extensive, depending on the use and maintenance costs of the rooftop (Carter & Keeler, 2008; Fioretti et al, 2010; Jaffal et al, 2012; Nicholas et al, 2010). Intensive roofs have deep growing media and high maintenance costs (Carter & Keeler, 2008) and they can be used as parks, gardens and other areas for leisure time activities. (Nicholas et al, 2010.) Extensive roofs, on the other hand, are thin by vegetation layer with limited number of plants, are more cost-effective (Carter & Keeler, 2008) but cannot be walked on (Fioretti et al, 2010) and therefore not used as leisure area. In addition, extensive green roof can be retrofitted to existing traditional roof without structural changes offering a way for climate change mitigation (Nicholas et al, 2010). According to a study by Gabrych, Kotze and Lehvävirta (2016) where 51 green roofs were examined, all roofs were characterized either sedum-moss or meadow roofs depending on the plant type. As a main finding, the researchers stated that the thickness of the substrates is a key when considering the beneficial characteristics to the urban area such as storm water management, noise abatement and air purification.

The studies mentioned above provide a summary of recently conducted research regarding green roofs. As a conclusion, green roofs serve for multiple purposes and can be beneficial to many stakeholders at the same time. Green roofs may decrease the energy demand for buildings, offer aesthetic value for visitors and ease the effects of climate



change in the urban area. In order to succeed, green roofs ought to be implemented in cooperation with various stakeholders on both local and expert level. Altogether the studies support the argument that stakeholder value creation in the green roof business remains unexplored and is thus important area to focus on.

### **3.4 Synthesis: stakeholder value creation in the green roof business**

I have now introduced the main principals of stakeholder theory, issue-focussed stakeholder management, green roof business and literature review of green roofs which form a theoretical framework for this thesis. First, understanding stakeholder value creation processes is a critical phase to evaluate the connections to green roof business. Second, without having a clear picture of the aspects of green roof business and the role of stakeholders in it makes it difficult to make sense of the study.

Stakeholder theory has evolved since 1960's and it is well applicable in today's business environment. As Freeman and Phillips (2002) argue, the success of an organisation depends on the ability to manage the relationships with its stakeholders. According to the traditional definition by Freeman (1984, p.46) stakeholder is "any group or individual who can affect or is affected by the achievement of the organisation's objectives". There are two categories in which stakeholders can be divided: primary and secondary stakeholders depending on their importance for firms: primary stakeholders are necessary for firm's survival while secondary stakeholders are those not critical for firms (Clarkson, 1995). Stakeholder groups and firms share the responsibility of firms' actions (Freeman and Phillips, 2002) and having a workable relationship with stakeholders is a key for success (Freudenreich et al (2019).

Stakeholder value creation approaches value creation from the viewpoint of stakeholders seeking to understand how stakeholders perceive value and what are the key phases in the value creation process. Value creation can be analysed from various perspective depending on the purpose of the analyse. Business model perspective considers value from a general viewpoint by asking what and how questions concerning value creation. Stakeholder theory focuses on stakeholder perspective in value creation and asks with and for whom value is created (Freudenreich et al, 2019.) Donaldson and Preston (1995) introduce an input-output model and the stakeholder model to explain the flow of benefits between firm and its stakeholders. In Input-Output model, the benefits flow from

investors, suppliers and employees to firm and finally to customers. In the latter model, benefits and interests flow both to and from the firm and its stakeholders. In this model, value creation is shared between a firm and its stakeholder. The main difference between the two models is the direction of benefits: while in the input-output model benefits flow to one direction, in stakeholder model the flow is bilateral emphasizing the perspective where all stakeholders offer and receive benefits from the firm.

Harrison and Wicks (2013) claim that stakeholder engagement is dependent on the amount of utility received by stakeholders. Sloan's (2009) control and collaboration model presents different ways for firms to collaborating with its stakeholders. Tantaló and Priem's (2016) stakeholder synergy emphasizes the importance of stakeholder collaboration as greater value creation for all stakeholders is created. Myllykangas (2009) discusses the meaning of stakeholder relationship in value creation of business. She approaches the issue from a single organisation's perspective as a case study. My thesis takes a slightly different approach by focusing on green roof business as a business field instead of a one company.

The value creation literature creates the analytic framework for this thesis which is used for the second cycle of analysing the data. The literature discusses the definition of value, the meaning of value creation and shared value and introduces different perspectives to value creation. It is crucial to have a comprehensive framework of value creation to make sense of the data in the light of that framework. Theoretical framework of value creation is used when designing the questions for the empirical data.

Identifying relevant stakeholders and their values is a key in the process of analysing stakeholder value creation (Tapaninaho & Kujala, 2019) and careful definition of value is critical to avoid misunderstandings (Austin & Seitanidi, 2012). When discussing stakeholder value creation, stakeholder cooperation, stakeholder engagement and stakeholder synergy are important dimensions. Austin and Seitanidi (2012) present collaboration continuum to explain different ways of collaboration. They divide collaborations into four categories: philanthropic, transactional, integrative and transformational. The level of collaboration depends on the nature of the firm-stakeholder relationship. The deductive analysis of this study is based on combining collaboration continuum model and collaborative value creation spectrum model (figure 7) by Austin and Seitanidi (2012).

My version is slightly altered from the original model as the two models are connected into one, to better form a framework for analysing stakeholder relationship and value creation. In the new model, there are eight attributes to analyse the nature of stakeholder relationship: level of engagement, importance to mission, type of resources, interaction level, trust, co-creation of value, synergistic value and innovation. Stakeholder collaboration is analysed focusing on these eight attributes and the ways in which these attributes are manifested in the stakeholders' interviews. The more right the attributes are, the more transformational the nature of the relationship is.

With this model, collaborative value creation spectrum is created to illustrate what type of value is created in the collaboration and whether the value is created alone (sole-creation) or together (co-creation). This depends on the sources of value: resource complementarity, resource nature, resource directionality and linked interests. The more right these sources are, the more co-created the value is. In addition, the type of value is also of importance and can be put into four categories: transferred resource value, interaction value, synergistic value and innovation. Again, the more right these are the more transformational stage is reached and more value is created in all these five categories: transferred resource value, interaction value, synergistic value and innovation.

**NATURE OF STAKEHOLDER RELATIONSHIP**

<b>Level of engagement</b>	Low <-----> High
<b>Importance to mission</b>	Peripheral <-----> Central
<b>Type of resources</b>	Money <-----> Core competencies
<b>Interaction level</b>	Infrequent <-----> Intensive
<b>Trust</b>	Modest <-----> Deep
<b>Co-creation of value</b>	Sole <-----> Conjoined
<b>Synergistic value</b>	Occasional <-----> Predominant
<b>Innovation</b>	Seldom <-----> Frequent

**STAGES**

Philanthropic>Transactional>Integrative>Transformational

**Values created in the green roof business**

	Sole-creation -----> Co-creation
<b>SOURCES OF VALUE</b>	
<b>Resource complementarity</b>	Low -----> High
<b>Resource nature</b>	Generic -----> Distictive competency
<b>Resource directionality</b>	Unilateral -----> Conjoined
<b>Linked interests</b>	Weak/Narrow -----> Strong/Broad

**TYPES OF VALUE CREATED IN THE GREEN ROOF BUSINESS**

<b>Transferred resource value</b>	Depreciable -----> Renewable
<b>Interaction value</b>	Minimal -----> Maximal
<b>Synergistic value</b>	Least -----> Most
<b>Innovation</b>	Seldom -----> Frequent

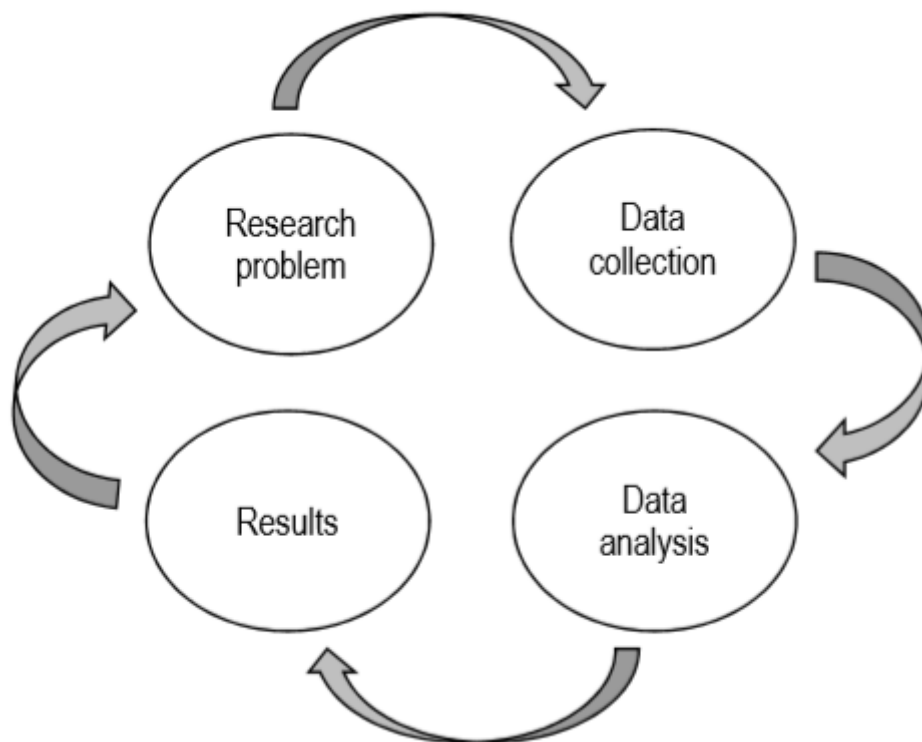
*Figure 7. Theoretical model for analysing value creation in the green roof business (Austin & Seitanidi, 2012, p.736-745, modified)*

In the green roof business, there are multiple actors who affect the process at different phases hence the construction field is under many regulations. Therefore, it is relevant to discuss multi-stakeholder networks to supplement the traditional stakeholder theory and provide a more comprehensive understanding of the issue. Understanding the fundamentals of stakeholder value creation is critical to applying it to the green roof business. The next chapter introduces the concept of green roofs and green roof business.

## 4 METHODOLOGY

### 4.1 Qualitative research

This chapter provides an overview of the research data and methods used for generating, categorising and analysing the data and the process of the methodology is explained. In qualitative research, the process starts when the researcher chooses a problem or phenomenon that is of interest and relevant to study and turns it into something that can be analysed (Flick, 2018). However, the research problem is not necessarily specified at the beginning, but it becomes more precise along the process. Qualitative research is also described as a learning process for the researcher as it allows the researcher to increase the understanding of the chosen phenomenon as the process evolves (Kiviniemi, 2018). This research seeks to understand the value creation in the green roof business from the viewpoint of stakeholders. The steps of the research process are illustrated in the figure 8 below.



*Figure 8. Making a qualitative research*

Due to the empirical approach, the research method of this study is qualitative as it is mostly used in research concerning understanding and interpreting reality as socially constructed (Eriksson & Kovalainen, 2008) and it is approaching the world out there; experiences and interactions rather than laboratory samples (Flick, 2018). This study is conducted from both deductive and inductive approach. Deductive approach is theory-driven, and the analysing model is build based on the previous knowledge (Elo & Kyngäs, 2008). Inductive approach on the other hand means that the theory emerges from the data without having preconceptions of the research problem (Mills, Durepos & Wiebe, 2010; O'Reilly, 2009). However, purely inductive approach is impossible since there are always some previous knowledge or prejudices on the matter. (Silverman, 1998). In the following chapters, the phases of data collection and analysis techniques are explained in detail.

## **4.2 Data collection**

When conducting a research, it is crucial to choose the most suitable methods for data collection concerning the research problem. Thus, the data for the study are not “raw” data but selected and limited. (Flick, 2018). This chapter presents the ways in which data for the study is collected. Flick (2018, p. 14-15) defines qualitative data collection as “the selection and production of linguistic (or visual) material for analysing and understanding phenomena, social fields, subjective and collective experiences and the related meaning-making processes”. Collecting qualitative data aims to provide materials to conduct an empirical analysis of a chosen phenomenon. Data, in qualitative research, result from the interaction between researcher and people in the field (Flick, 2018). The data collection is related to analysis by an iterative approach, which refers to an interplay between data collection and analysis (Kennedy, 2018) allowing the researcher to change the data gathering methods between along with the process and decide where to find the data next.

As the aim of this research is to find out how green roof business create value for stakeholders, the most suitable way to conduct the primary research data is due semi-structured interviews which is, according to Eriksson & Kovalainen (2008) often chosen in business research. They continue that semi-structured interviews usually follow a certain theme and include ‘how’ and ‘what’ type questions. Keenan (2018) adds that these open-ended questions allow the interviewees to provide wide answers and go beyond the researcher’s experiences by offering more information than asked. She continues that open-ended questions help to overcome the bias of leading the respondents to a certain

direction and making them answer as the researcher expects. One of the advantages related to this form of interview is the informal and conversational tone while remaining systematic. (Eriksson & Kovalainen, 2008). As Slayton (2018) puts it, a good interview is a conversation with a purpose. When conducting an interview, the importance of objectivity is usually highlighted however, Andersen et al (2003) argue that objectivity may lack us from receiving rich interview data as the interviewer shelves his or her experiences, values and beliefs.

In this research, the data collection process started by identifying the stakeholders included in the green roof business. Although the traditional stakeholder definition by Freeman (1984) is extensively used in stakeholder research, it does not fully serve in this study, where the focus is in the value creation from the viewpoint of stakeholders in the green roof business instead of a single organisation. Therefore, Roloff's (2008 p.238) stakeholder definition: "any group or individual who can affect or is affected by the approach to the issue addressed by the network" is applied as a complementary to that of Freeman's. The process began by searching for green roof projects in Finland and companies involved in them and contacting the representatives of those companies by email. As I found the first stakeholder to be interviewed and had the interview, I soon became aware of the central actors in Finland regarding green roof business and contacted them by email as well. This "snowball effect" ended up being a useful and practical way for finding the right organisations and people to be interviewed as the professionals in the field of green roof in Finland are rather scarce. All the proposed people agreed on the interview.

In total, the data was generated for four month -period and it included nine interviews with 12 interviewees between December 2019 and March 2020. Seven of the interviews were one-on-one and two were group interviews with more than one respondent. In addition, two interviews were conducted together with another researcher from Business2Nature -research group. Interviews were held in three ways: face to face, by Skype and by phone from which face to face interviews took place in the interviewees' premises and at the University of Tampere. The interviewees held positions as managers, entrepreneurs, researchers and specialists representing nine different organisations related to green roof business in landscape management, community planning, wholesale business, retail business, property maintenance, apartment renting and research in

Southern Finland. The interviews were held in Finnish to minimize the language barriers, as all the participants and the researcher has Finnish as their native language. In the beginning of each interview, the interviewer explained shortly the purpose of the research and the interview and asked whether or not it was acceptable to use a recorder. This part is called briefing (Brinkmann & Kvale, 2018). The details of the interviews are shown in Table 1 below.

*Table 1. Details of the interviews*

Interviewee	Organisation	Industry	Date	Place	Duration (min)	Transcripts (pages)
H1	Landscaping company	Landscape management	13.12.2019	Face to face, Tampere	128:00:00	19
H2 & H3	Landscape architect office	Community planning	13.1.2020	Skype	54:00:00	9
H4	Landscaping and consultation	Wholesale business	17.1.2020	Phone	81:00:00	10
H5	Landscaping and consultation	Retail business	27.1.2020	Phone	33:00:00	5
H6	Green space management	Property maintenance	30.1.2020	Face to face, Tampere	43:30:00	9
H7	University of Helsinki	Higher level education in universities	3.2.2020	Face to face, Helsinki	88:00:00	13
H8	Gardening and consulting	Landscape management	3.2.2020	Face to face, Helsinki	36:00:00	5
H9, H10 & H11	City of Tampere	Community planning	4.2.2020	Face to face, Tampere	57:00:00	14
H12	Property management	Apartment renting	3.3.2020	Face to face, Tampere	35:00:00	6
Total:					555:30:00	90

The structure of the questions remained similar throughout the interviews however, some questions were edited to better match the purpose of each interview and the background and the organisation of the participant (see the question pattern in the Appendix A.)

A deductive approach was chosen for designing the interview structure as the themes followed the theory of green roofs and stakeholder theory. In total, five themes were



introduced: background of the interviewee, green roof business, stakeholder involvement and stakeholder cooperation, challenges regarding green roof business and the process of building green roofs. The exact questions varied depending on the interviewees position and role in the green roof business. Furthermore, some questions were explained to the interviewee in the interview situation and the meaning of the questions was clarified when seemed unclear. Altogether approximately 25 questions were applied in each interview and some spontaneous questions were added when seemed necessary. The interview length varied between 33 to 128 minutes, with the average of 62 minutes. Also, recording was applied during all the interviews. In total, the interviews resulted of 556 minutes of recording and 90 pages of transcripts. The transcription process was outsourced to a professional transcription service. Next, the data analysis process is explained.

### **4.3 Qualitative data analysis**

After the transcription was completed, the analysis process began. I decided to apply qualitative content analysis for this study as the purpose is to understand an extensive concept. According to Elo & Kyngäs (2008) content analysis can be used for both qualitative and quantitative data in either inductive or deductive way. The analysis method is chosen depending on the purpose of the study. There are many different approaches for analysing qualitative data (Elo & Kyngäs, 2008) but the aim, however, is to produce a systematic and detailed recording of the interview content and make sense of it by linking the themes together under a category system (Burnard, 1991). Although content analysis allows flexibility for the researcher and is blamed for its simplicity, it is challenging due to the fact, that there are no simple guidelines to follow when doing the data analysis. Despite its so called easiness, it has its challenges (Elo & Kyngäs, 2008.) It is also noted that the researcher should be aware of the possible complications during the analysing process especially when analysing people and their sayings. People are not numbers which could be analysed systematically as it may not be reasonable to compare person's utterance with those of another. (Burnard, 1991.)

Qualitative content analysis is an intellectual process, but the outcomes of that thinking must be somehow recorded. The analysis can be accomplished using low-tech materials that are easily available such as a pencils, paper and coloured sticky notes. These tools are useful for relatively small amounts of materials such as a small number of interview transcripts. (Given, 2008). There are three phases in the analysing process in both

inductive and deductive approaches: preparation, organizing and reporting (Elo & Kyngäs, 2008). Despite the approach, the researcher must become fully familiar with the data (interviews) before starting with the analysis (Polit & Beck, 2004).

### 4.3.1 Inductive content analysis

Inductive content analysis is recommended for new phenomenon which is not studied before or when knowledge is fragmented. (Elo & Kyngäs, 2008) Thus, it was chosen for the first cycle of analysis as the purpose is to address the stakeholder cooperation in the green roof business. This is conducted by starting from the issue, green roof business, and identifying the relevant stakeholders. The transcripts of the interviews totalled of 90 pages so the content analysis method with pencils and sticky notes was suitable. First, the transcripts were read through several times to provide an overall picture of the data content and to make remarks and underlines of the most repeated or surprised things that stood out of the transcripts. Each reading deepened my understanding of the data and allowed me to familiarize the data more and make better sense of it as well as see certain patterns, similarities and differences between the interviews. The familiarization process is illustrated in figure 9.

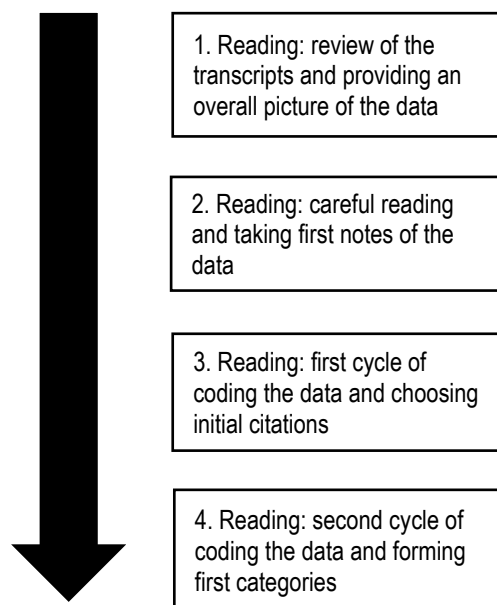


Figure 9. Familiarization with the data

Colourful marking was applied for different codes and post-it notes were organized to form different categories. Along the third cycle of reading the notes, first citations were

picked and translated into English although some citations were dropped later in the process. Fourth reading included second cycle of coding as well as choosing the initial categories that later illustrated the research findings. Thereafter, 15 codes were invented in order to sort out the transcripts and make sense of it, allowing the researcher to better familiarize with the data. The initial codes are explained in Table 2.

*Table 2. An example of the codes and categories*

<b>Code</b>	<b>Explanation of the code</b>	<b>Explanation of categories</b>
1	The environmental benefits of green roofs	The benefits of green roofs
2	The social benefits of green roofs	The benefits of green roofs
3	The function of stakeholders in the green roof business	Stakeholder cooperation in the green roof business
4	The role of stakeholders in the green roof business	Stakeholder interests
5	The challenges of stakeholder cooperation	Stakeholder cooperation in the green roof business
6	Reasons for building green roofs	Stakeholder interests
7	Reasons for not building green roofs	Reasons hindering green roof business
8	Benefits of green roofs for stakeholder (in question)	The benefits of green roofs
9	Stakeholder interests in the green roof business	Stakeholder interests
10	The risks/problems of green roofs	Reasons hindering green roof business
11	The reasons for the risks/problems	Reasons hindering green roof business
12	The prejudices of green roofs	Reasons hindering green roof business
13	The reasons for the prejudices	Reasons hindering green roof business
14	General benefits of green roofs	The benefits of green roofs
15	The future of green roofs in urban planning	The benefits of green roofs

After coding the data, I created categories in which the codes are divided to. This allows me to make sense of the data and organize the materials by topic. The categories are formed inductively from the data. Followed by the process, I first ended up with four categories:

- Benefits of green roofs
- Stakeholder cooperation in the green roof business
- Stakeholder interests
- Reasons hindering green roof business

The first category indicates the benefits green roofs offer for environment and people. The second category includes stakeholder cooperation in the green roof business which is one of the main focuses of this research. Stakeholder interests form the third category showing why stakeholders are included in the green roof business and what are the motivators and reasons for their involvement. Last, reasons hindering green roof business

indicates risks and problems related to green roof business and prejudices of stakeholders towards green roofs. This category, however, was left out later as it is controversial to the research objectives. The implications of the categories are explained in detail in chapter 5.

#### **4.3.2 Deductive content analysis**

With content analysis, I seek to describe the value creation processes in the green roof business in a conceptual form. After providing the initial findings it became clear that a second cycle of analysis is needed for getting more implications of the stakeholder value creation. Therefore, a theoretical framework for value creation was created by using a collaboration continuum and collaborative value creation spectrum models by Austin and Seitanidi (2012). This method is known as deductive content analysis and it is based on the previous knowledge of value creation. Thus, the structure of the analysis is operationalized, and a model is built first and then the analysis is conducted based on the model (Elo & Kyngäs, 2008).

The second analysis is built based on the first cycle of analysis, and using the same codes and categories made from the interview transcripts. The analysis began by reorganizing the existing codes and categories to match the model built. The nature of stakeholder relationship is analysed based on two categories: stakeholder cooperation in the green roof business and stakeholder interests which are led from codes 'stakeholder interests in the green roof business' and 'the function of stakeholders in the green roof business'. Level of engagement is analysed by focusing on why stakeholders are involved in the green roof business. In other words, participants of the study were asked what the role of stakeholders is in the green roof business. The code for analysing the level of engagement is 'the role of stakeholders in the green roof business'. Importance to the mission relates to engagement, however, while level of engagement measures the interest of which stakeholders have for the cooperation, importance to the mission relates more to the green roof business, asking how important the mission is for stakeholders. The resources used in the cooperation are also analysed focusing on the utilities and ways of stakeholder cooperation. Interaction level and trust are main elements when analysing stakeholder cooperation. The first focuses on the extent while the latter focuses on the depth of the cooperation. Lastly, co-creation of value, synergistic value and innovation are analysed based on stakeholder interests, stakeholder cooperation and what are the outcomes

stakeholders get from the cooperation. With these attributes above, the stage of collaboration can be analysed.

*Table 3. Sample of codes and categories for analysing the nature of stakeholder relationship*

<b>Code</b>	<b>Explanation of the code</b>	<b>Explanation of Categories</b>	<b>Nature of Stakeholder relationship</b>
1	The function of stakeholders in the green roof business	Stakeholder cooperation in the green roof business	Interaction level
2	The challenges of stakeholder cooperation	Stakeholder cooperation in the green roof business	Co-creation of value
3	Ways of stakeholder cooperation	Stakeholder cooperation in the green roof business	Type of resources / Interaction level
4	Utilities of stakeholder cooperation	Stakeholder cooperation in the green roof business	Type of resources/ Innovation
5	Depth of stakeholder cooperation	Stakeholder cooperation in the green roof business	Trust
6	Reasons for building green roofs	Stakeholder interests	Importance to the mission
7	The role of stakeholders in the green roof business	Stakeholder interests	Level of engagement
8	Stakeholder interests in the green roof business	Stakeholder interests	Importance to the mission/Synergistic value/Co-creation of value
9	The prejudices of stakeholders	Stakeholder interests	Importance to the mission
10	The reasons for the prejudices	Stakeholder interests	Importance to the mission

Analysing the nature of stakeholder relationship leads to analysing the type of value created. Transferred resource value relates to the question what happens in the stakeholder cooperation and who provides the resources for whom. Interaction value includes non-material values which may be created in the cooperation. These are related to synergistic

value, with the emphasize on creating more together than alone. Last, innovation is the impact for interaction value.

## 5 FINDINGS

### 5.1 Benefits of green roofs

This chapter represents the main findings of the research regarding to stakeholder value creation in the green roof business based on a qualitative content analysis of the data. To illustrate the findings and prove the data, quotations from the interviews are shared. First, an overview of the general concept of green roof business is provided to shed light on phenomenon. According to the data, green roofs are understood as vegetated surfaces mainly placed on top of buildings and there are multiple reasons for building them. In addition, green decks are mentioned in several interviews and due to similar purposes, they are combined with green roofs in this study.

The findings are presented as follows. Based on the categorization explained in the methodology chapter, three categories are created to present the key findings: 1) benefits of green roofs 2) stakeholder cooperation in the green roof business and 3) stakeholder value creation. Diverging from the initial categorization, stakeholder interests were revised to stakeholder value creation to better match the findings. These categories form a comprehensive understanding of the process of green roof business and discovers stakeholder value creation and involvement in it. To understand the value creation of green roofs and stakeholder involvement, it is logical to understand the reasons for building green roofs in the first place. I approach the issue by analyzing the benefits of green roofs. It is of importance to explain what green roofs are built for and to specify how green roofs are implemented in the sustainable value creation process. The reasons are analyzed from approaching the issue by looking at the benefits from environmental and social viewpoints.

#### 5.1.1 Environmental benefits of green roof

During the data analysis, two themes stood out regarding the benefits of green roofs: 1) environmental benefits and 2) social benefits, presented separately in the following chapters. First, environmental benefits of green roofs are explained. The most emphasized individual benefit of green roofs mentioned amongst stakeholders is *storm water*

*management.* Storm water, including rain and snow melt, soaks in the vegetated surface (green roof) allowing less runoff on the streets. Thus, green roofs play an important part in managing the storm water and preventing floods especially in city areas. Without green roofs, more water would flood in the streets causing harm for infrastructure and people. However, many stakeholders mention that in order to manage storm water, the green roof must be large enough since a stamp size roof does not fill the purpose. Although stakeholders agree on the importance of green roof for storm water management, there is variety between stakeholders about the priority. Some stakeholders see storm water management as the most important function of green roofs and claim that all the other aspects of green roofs are only adding value to it. Some stakeholders mention storm water management as one advantage of green roofs among others. The following quotations highlight the stakeholder view on storm water management of green roofs.

*“The absolute superior function of green roofs and green decks is storm water management and everything else is completely subordinate to it, but that is another thing. The optimal way to build these (green) decks and roofs is having the storm water management and calculation as a thread and then all the other functional and aesthetical values adds to it.”*

*(”Aivan ylivoimainen funktio viherkatoilla ja -kansilla on hulevesien hallinta, että kaikki muu on täysin alisteista sille, mutta se on sitten toinen asia - - ku optimaalinen tapa tehdä näitä kansia ja kattoja on se että, siinä pidetään punasena lankana se hulevesien oikea hallinta ja laskenta, ja sitten sen lisäksi tulee sitten tietysti nää kaikki toiminnalliset ja esteettiset arvot päälle.”)*

- H4

*“Another thing is storing the water. For real, that we get to store the water for little longer on the yard and soak the water into the soil. And not just through the pipes, on the asphalt. Seriously the problems of constructed environment, heat island -effect and all that.”*

*(”Ja toinen on vedenpidätys. Ihan aidosti se että me saatat vähän aikaa niitä vesiä viivytettyä siinä pihassa ja imeytettyä ne ihan oikeesti sinne maaperään. Eikä vaan putkia pitkin, asfalttia pitkin pois. Et ihan aidosti ne semmoset rakennetun ympäristön ongelmat, lämpösaarekkeet ja kaikki semmonen.”)*

- H6

Storm water management can be also used as one supporting argument when proving the importance of green roofs in town planning. When implementing green roofs in town



planning, it requires plenty of arguments and proofs of the benefits. Moreover, storm water management is an important weapon when tackling challenges facing constructed environments, such as floods. It seems that the stakeholders take this matter seriously and seek for the best possible ways to overcome those challenges, where green roofs play a key role. The next quotation emphasizes the importance of having reasonable arguments for implementing green roofs in the town planning.

*"We cannot [plan green roofs] just for fun, we must have sort of relevant arguments for it, such as storm water management or supporting biodiversity - -."*

*("et ei me voida huvikseen, että meillä täytyy olla ikään kuin, hyviä perusteluita siihen. Et hyviä perusteluita on se, että saadaan hulevedet järjestymään tai tuodaan biodiversiteettiä - -.")*

- H11

Even though storm water management is the key benefit of green roofs regarding to the environment, there are many other ways for green roofs to tackle the obstacles facing environment. *Biodiversity* and *air purification* were pointed out several times when discussing the environmental benefits of green roofs. The ability for cleaning the air is considered as a crucial argument for choosing green roof as the following quotation argues.

*"And then it purifies the air when, of course, there are plants and living organisms, it (green roof) works as a layer filtering dust and impurity."*

*("Ja sitten se puhdistaa ilmaa, eli tietenkin kun siellä on kasveja sekä eliöstöä, niin siinä se toimii semmosena pölyä ja epäpuhtauksia suodattavana kerroksena")*

- H5

Green roofs, together with other built green environments, support the biodiversity as they allow vegetation to grow creating more space for animals to live and nest. The findings show undeniable the various environmental benefits green roof have to offer and all stakeholders agree on them. Some stakeholders point out specific aspects as more important, but the common opinion was still in harmony and there was a clear agreement of the benefits. In other words, throughout the data, only positive aspects regarding the function of green roofs for the environment are found and there are no contradictions between stakeholders regarding the matter.

### 5.1.2 Green roofs' benefits for people

Another aspect emerging from the data were multiple benefits for people regarding the pleasure and joy for the humans who see and use green roofs. These benefits are an important aspect as green roofs are, in many cases, built for decorative purposes, not for people to make use of. Many stakeholders highlight the *aesthetical pleasure of green roofs* as well as *the experimental function*. *Aesthetical pleasure* refers to the appearance of green roofs including beautiful plants and colours. These may delight people as they look at them and bring joy to passing byers. Stakeholders agree upon the importance of having nature nearby living areas and being able to see greenery. Having piece of nature in the neighbourhood allows one to see the changes in the colours of the plants along the four seasons. Thus, green roofs can offer this “nature feeling” for people living in the city centres allowing more individuals to enjoy the scenery.

*Experimental function*, on the other hand, covers everything from relaxing on the green roof area to growing vegetables and organizing celebrations. It also occurs that green roofs can work as noise abatement as the vegetation soaks in noise allowing the building inside to remain peaceful (Jaffal et al, 2012). These aspects are considered in the data when green roofs are addressed in the social context, within people. Moreover, people already know what they want from the living environments and can therefore demand green areas in the neighbourhood. The following quotation proves that people today express themselves about what they want to have in their living areas.

*“People nowadays can say, what is the environment and lifestyle they want. It is not necessarily a summer house, but they want to have the possibility to have a view, grow (vegetables) and spend time together. Cool off after sauna on the green roof.”*

*(“Et ihmiset osaa jo sanoa. Et minkäläistä ympäristöä ja minkäläistä elämänmuotoa ne haluaa. Et ne ei välttämät halua mökkejä mut ne haluaa et siinä heidän kerrostalossa ois mahollisuus, nähdä pitkälle ja vähä viljellä ja olla yhdessä ja. Mennä saunasta vilvottelemaan viherkatolle - -”)*

- H8

Green roofs, from stakeholder's perspective, enable a relaxing environment in the city for one to enjoy the peace of nature, without having distractions around. In addition, green roofs can serve as peaceful and safe environment; when being higher in the air, one is able to control the surroundings and there is nothing to threaten oneself. This

gives the person the possibility for a total relaxation, which is nothing like in a public place. The next quotation expresses these environmental psychological dimensions of green roofs.

*“All the visuality, it (green roof) is delightful and regenerative. When you are up there, safe and having the control over the environment, it is one of the most regenerative experiments one can have. When nothing threatens and they offer a place where you are practically locked in the building, preventing a random person to jump out of the bushes allowing oneself to relax a whole new way compared to being in a public park for example.”*

*(“Ja sitte tietysti kaikki visuaalinen et kylhän se on ilahduttava ja elvyttävä.- - Ja ympäristöpsykologisestihan semmonen, et on korkeammalla turvassa et hallitsee ympäristöä nii sehän on yks elvyttävimmistä kokemuksista ihmisellä. Et sitä ei uhkaa mikään et nehän tarjoo semmosen paikan missä sä oot käytännös omas porrashuonees lukkojen takana et sielt kuka tahansa hyppää puskista et se ihminen voi rentoutuu eri tavalla ku, vaikka mennessään johonkin, julkiseen puistoon.”)*

- H2

There is a common understanding of the fact that green roofs offer several social benefits however it must be mentioned that the opinions on this matter are highly subjective and difficult to generalize. Nevertheless, it can be said that from stakeholders' viewpoint green roofs are positive and delightful areas to see and use while they offer multiple environmental advantages. To add, no stakeholder mentioned negative effects of green roofs to anyone or anything.

## **5.2 Stakeholder cooperation in the green roof business**

The second category represents stakeholder interests, seeking to explain why different stakeholders are involved in the green roof business. By understanding the reasons for building green roofs, it is possible to make sense of the role of different stakeholders in the process. Thus, after providing an overall picture of the reasons for building green roofs, this category explains the reasons why stakeholders are involved in the green roof business and what is the cooperation like. It is important to understand what the stages of the cooperation are and who the main actors in the process regarding the end goal are.

Also, by understanding each stakeholder's interests and efforts, it becomes possible to see the challenges and possibilities in the stakeholder cooperation in green roof business.

This research includes stakeholders from different organisations related to green roof business: landscape management, community planning, wholesale business, retail business, property maintenance, apartment renting and research. All the stakeholders are connected to green roof business in Finland through their roles in the companies they work. Despite the common working environment, green roof business, the interests and efforts vary between stakeholders. Constructor's job is to build and to create living environments for people. They do so to get economic value, money, for exchange as it is business for them. However, some constructors choose to work in green roof business based on their personal background and values while putting the financial advantage aside. Consultants have the know-how and they are responsible for delivering the information needed in the process of creating green roofs. In this research, most stakeholders hold several roles and many consultants are also in the role of constructors, researchers and landscape architects sharing their knowledge in cooperation for the sake of every party. Landscape architects focus on the visual and functional side which can have contrasting objectives with the customer, who might have no realistic understanding of which is possible regarding to planning green roof. These type of conflicts of interests may create tension in the planning process but also ensure that every aspect is considered.

Wholesalers sell green roof material and their interests is to sell sustainable and qualitative material for the need of customer when installing green roofs. Researchers represent objective voice as their purpose is to provide and deepen academic research for common good and not to get advantage of it. Therefore, including researchers in the green roof business prevents the process for getting biased, allowing trustworthy information regarding green roofs to be implemented and acknowledged. Lastly, city officials work for bigger institutes, towns and regions, and their interests are to provide safe and functional living environments for citizens. The key when working in a narrow business such as green roofs, is finding the right partners and stakeholders to work with. The group of professionals in green roof business in Finland is rather narrow allowing lowkey information sharing. Everyone knows the main actors in the field and therefore it is effortless to find help when needed.

The findings show that building green roofs is a challenging project and requires extensive stakeholder cooperation as there are no specific guidelines related to green roof business making the process simple. Due to the challenging nature, information and idea sharing is a common practice when proceeding and the importance of cooperation increases when trying to solve different problems facing the process of building green roofs. In the desired occasion, each stakeholder group does their own job to complete the project and to reach the common goal while sharing knowledge and supporting one another. To add, having respect and trust for each other's expertise is crucial in the cooperation as this quotation below shows.

*"The most important thing is the common will and understanding - -. It is the blowing into one coal, and also the trust and respect for others professional skills. Sharing information, what is very important in projects - -. It goes through the entire planning sector. And also afterwards, to remember everyone's part in it - -that everyone's knowledge is needed."*

*("Niin kyl se tärkeintä on se tahtotila ja ymmärrys myöski siinä että. - - Kyl se on se, yhteen puhaltaminen ja, myöski semmonen luottamus toisen ammattitaitoon ja, sen kunnioittaminen ja. Tiedon jakaminen, mikä on projekteissa hirveen tärkeetä - -. Se menee läpi sen koko suunnittelusektorin. Ja myöski jälkikäteen muistetaan sitte jokaisen osa siinä, - - että kaikkien osaamista tarvitaan.")*

- H8

Brainstorming and sharing knowledge is one key aspect of stakeholder cooperation. Each stakeholder has expertise in some area and together there is potential for great change. The following quotations show how the stakeholder cooperation works in the daily level and which stakeholders are included.

*All the designers and architects and so on, whom we think these solution with, not only green roofs but other forms of constructing such as slope building and any other environmental construction projects, they might invite us then and we think together how we could carry out some projects, those are the most important (stakeholders), construction firms and green building firms and designers, towns."*

*("Kaikki suunnittelijat ja arkkitehdit ja näin joiden kanssa sitten mietitään näitä eri ratkaisuja että, ei pelkästään viherkattoja vaan ihan sitten vaikka jotain rinnerakentamista ja minkälaisia muita vaan ympäristökohteita - -, he saattavat sitten*

*kutsua meitä ja sitten, mietitään yhdessä miten voitais toteuttaa jotain kohteita - -, siinä ne varmaan tärkeimmät on sitten ne, rakennusliikkeet ja viherrakentajat ja suunnittelijat, kaupungit.”)*

- H5

*“ - - often the customer organisation does not necessarily have so much of the knowledge related to the type of [green roof]. - - we have to, quite a lot, bring our own knowhow that what we recommend and what is realistic - -.”*

*(“ - - usein tilaajaorganisaatiol ei välttämät oo sit sitä omaa, osaamista niin hirveesti just liittyen siihen et minkälainen. - - aika paljon me joudutaan siin tuomaan sitä omaa, osaamista että. Mitä me suositellaan ja mikä on realistista - -.”)*

- H2

Although stakeholders have a crucial role in the green roof business and their focus is considered, the customer has the critical vote. Many stakeholders highlight the will of customer showing that although green roof projects are about exchanging ideas and working towards a common goal, the customer's opinion is of importance because that is where the revenue comes from. Even if the designers have great visions of the upcoming green roof, the customer can decide how much money there is for the project and that defines the direction and frame for the process.

Stakeholder cooperation is necessary in the green roof business, as in many cases it is about trying and failing and doing something new that perhaps has never been accomplished before in Finland. The stakeholders in the green roof business field in Finland often know each other rather well due to limited number of experts in the field. Having rather selective group of experts in the green roof business can lead to years of cooperation. By knowing the person from before and 'speaking the same language' might ease the cooperation. Having mutual interests and will to trying out new things may lead to testing new operational models if everyone has the courage. Thus, cooperation can be rewarding for every stakeholder in the process. The following quotations show how stakeholder cooperation works in practise and how the history of the cooperation affects the future.

*“ - - we have a good cooperation. - -. We often have think tank, that we saw something out there, that how it could be done here in Finland and still control the risks.”*

*(“ - - meil on hyvä yhteistyö. - - . Monesti pidetään semmosta think tankiä että nyt nähtiin jossain maailmalla tää, että mitenkä tätä vois kokeilla Suomessa ja silti hallita ne riskit. ”)*

- H1

*Sometimes, if the customer is an acquaintance it is a lot easier, when you have already argued it there. Then it is not an issue anymore. ”*

*(“Välillä jos se on se tuttu tilaaja niin sinne on paljon helpompi kun sen on kerran saanu perusteltua. Sitten se ei oo enää semmonen issue - - .”)*

- H6

Although stakeholder cooperation is about negotiating, making compromises and sharing ideas, it is also a way to influence other stakeholders and the whole business environment which some stakeholders take more advantage of. Being an active party in different organisation allows one to influence and develop the whole business field as this quotation proves.

*“ - - we try to of course influence in many ways. - -. One strong partner as well, since we seek to improve the industry, is different organisations. - -. The partnership is about trying to influence the business environment politically and regionally, nationally and even internationally. ”*

*(“ - - me pyritään tietysti vaikuttaa monella tavalla - -. Yks vahva toimikumppani myöskin, koska pyritään kehittää koko alaa, on erilaiset järjestötoiminnot. - -. Kyllä se kumppanuus tulee et me pyritään poliittisesti ja alueellisesti, valtakunnallisesti, jopa kansainvälisesti vaikuttaa siihen toimintaympäristöön. ”)*

- H1

The findings show that stakeholder cooperation is necessary to create a desired end however, the form of cooperation varies. What is common throughout the stakeholder answers, is that an open dialog from the beginning to the end of the project allows stakeholders to keep up with the process in all the stages and to be more active when needed. By making an extensive stakeholder analysis in the beginning of a new project allows all relevant actors to be involved from the start. This protocol may delay the decision-making however it most likely makes the process more successful. The larger the group of stakeholders, the better all different aspects are taken care of since there is more competence included. However, sometimes stakeholders are excluded from critical

stages of the green roof process leading to a situation where some parts of the process are not fully considered or understood. This may cause problems later when the green roof has been in use for several years. There might be for example situations where some critical parts in the planning process are ignored due to lack of certain competence. The findings show that some stakeholders, especially consultants and researchers who have the academic knowledge of the green roof wish to be included in the planning process from the start in order to have the ability to influence the decisions at early stage.

### **5.3 Stakeholder value creation**

This part of analysis focuses on stakeholder value creation. I approach stakeholder value creation with stakeholder interests as it explains why stakeholders are involved in the green roof business. By understanding the reasons for stakeholders to be involved in the green roof business and the cooperation of stakeholders allow to analyze how value is created and what the value is.

The approach used for value creation in this research is twofold: value creation *with* stakeholders and value creation *for* stakeholder. The first represents the ways in which stakeholders create value in cooperation with one another and how the cooperation adds value to the process. The second, on the other hand, takes the stakeholder approach looking at the ways value is created for stakeholders, i.e how stakeholders perceive value in the green roof business. As green roof business is known for its issue-focused stakeholder approach and it is rather impossible to build green roofs without stakeholder cooperation, however, it is interesting to find out what are the interests concerning each stakeholder and what are the mechanisms for creating value.

According to the findings, one common stakeholder interest in the green roof business is the will to help customers and work according to one's best knowhow, reaching one's own potential. This quotation indicates the feelings of a stakeholder when being involved in creating green roofs.

*I can create really fantastic living circumstances for the people as well as for the nature. On the other hand, also from my (designer's) viewpoint, there is an endless treasure of possibilities. - -. I do get very much out of these projects and also from the cooperation."*



*(”- - mä pystyn niiden avulla luomaan todellakin upeita, asuinolosuhteita niin ihmisille kun - - muulle luonnolle. Ja toisaalta myöskin sitten, eli ihan näin suunnittelijan näkökulmasta nii siel on, loppumaton tällöinen mahdollisuuksien aarreaitta. - -. Kyl mä, saan todellakin erittäin paljon siitä, näistä hankkeista ja plus myöskin tästä yhteistyöstä.”)*

- H8

This citation also well represents the meaning of green roof business for a stakeholder. This stakeholder is a consult, who co-creates green roofs with many other stakeholders. The stakeholder is involved in project planning and works as an advisor at any stage of green roof building. The collaboration between a consultant and an architect or a constructor is a good example of transformational stage where the level of engagement is high and importance to the mission is central. The main resources stem from core competences of the partners such as strong knowledge and experience within the green roof business. It is of importance to be familiar with the values and mission of other stakeholders as it strengthens the feeling of being in the process together. Having a long-term professional relationship also ensures the trust between the partners. In those relationships, co-creation of value is conjoined in the process and the potential for creating something significant is high. With like-minded partners, synergistic value is pre-dominant and innovation is frequent in the green roof business. Therefore, value is created in the cooperation with stakeholders who share the same interests and goals. Values, stakeholders perceive, are subjective and mostly immaterial. Value can be connected to cooperation and innovation and those are always co-created instead of sole-created.

The findings indicate that many stakeholders are also being inspired by the ‘bigger picture’, doing something to develop the planet through green roof business into a more sustainable future. Green roofs are one part of sustainable solutions and by being involved in the green roof business, stakeholder does its duty for the greener and more sustainable environment. Having the necessary resources such as knowhow and experience enables stakeholders to be useful in the green roof business and share their expertise. It is clearly something more than purely monetary values most stakeholders perceive in the green roof business. These are for example individual development, core competencies and creating

something new. As the following quotes show, stakeholders perceive value when guiding the way for others.

*"Well, it is, of course, one of today's developing part of our field and therefore, being involved in the development always creates additional value."*

*("No se on tietysti, tän hetken yks tämmönen, kehittyvä osa sitä meidän, alan toimintaa ja sinänsä, kylhän nyt siinä kehityksessä mukana oleminen tuottaa lisäarvo.")*

- H2

*"By all means, it is this nature contra construction and this climate change - - this combination is not sustainable. - - this is the big picture that inspires me madly - -."*

*("Siis ilman muuta on tää luonto kontra rakentaminen ja tää ilmastonmuutos - - tää yhtälö ei, kestä. - - tää on se iso kuva mikä inspiroi mua ihan mielettömästi - -.")*

- H4

*"We have quite an extensive knowledge of green roofs in different sizes and types and we can quite well offer solutions for many challenges in the planning process. - - we can do different projects and our firm has the knowhow for designing almost any green roof."*

*("Meil alkaa olee kuitenkin aika laaja osaaminen erikokoisista ja, -laatusista viherkatoista. Et, tai osataan vastata aika hyvin monenlaiseen suunnitteluongelmaan - - me pystytään sit tarjoamaan aika monenlaista projektia ja myös osataan ihan talon sisällä suunnitella [viherkatto] ja melkein millanen vaan.")*

- H3

Another value stakeholders perceive in the green roof business are the endless possibilities and potential. Regarding to city space there is great potential in the regular roofs in a city. If all the roofs were taken into use and transformed into green roofs, the living area of people would increase by 30 percent. That is one source of inspiration for stakeholders as the following quote indicates.

*"Maybe it is the possibility. That how many possibilities the unused space in towns hides - -. The calculations on how much of the town area is roof is somewhere between 8 to 30 percent. We could get third, in the extreme case third, more area in towns if we took all the roofs to use - -. How many people there are who could perhaps enjoy having a peaceful yard to retreat or. Some beautiful green scene where to go during the day - -."*

*(”Ehkä nimenomaan se mahdollisuus. Et miten paljon, mahdollisuuksia siihen käyttämättömään kaupunkitilaan - -. Ne laskelmat siitä et paljonks kaupungin pinta-alasta, on kattotilaa niin ne vaihtelee jossain 8– yli 30 prosenttiin, huitteilla et. Voitais saatas kolmannes, ääritapauksessa kolmannes lisää kaupunkipintaa jos. Otettas kaikki ne katot hyötykäyttöön - -. Kuinka paljon on ihmisiä jotka, vois ehkä nauttia siitä että niillä olis joku hiljanen piha mihin vetäytyä tai. Joku kaunis vehreä näkymä, jossa vois käydä päivän mittaan - -. ”)*

- H7

In addition, for some stakeholders, value creation is perceived when being able to change things, influence others and work towards one's vision of a better world. Having a clear vision enables to find the necessary solutions for the change and acts as an impulse for innovation. Thus, empowerment and personal mission are regarded as values of stakeholders. The next quotation describes the ability to change things when something is important enough.

*”I want to change things because I feel that they are done the wrong way. - -. Everything can be changes, everything. There is nothing in the world one cannot influence. It is just about finding the way to do it. - - For me, it is the living material that is closest to my heart. I just have the vision. I see there is a chance.”*  
*(”Mä halun muuttaa niitä asioita sen takia että kun mä koen että niitä tehdään väärin. - -. Kaiken voi muuttaa, ihan kaiken. Ei oo mitään asiaa mihinkä ei vois vaikuttaa. Kyse on vaan siitä, että täytyy ymmärtää tapa mitenkä sitä voi tehdä. - - kyllä mulla toi elävä materiaali on kaikista lähinnä sydäntä. Mul on vaan se visio. Mää nään että tos ois tsäänsi.”)*

- H1

Despite the will to make change in the world and being inspired by the green roof's potential for people and environment, there is also the marketing value. Green roof business is also a way to make profit and one reason for any firm to sell green roofs is to get financial value. Thus, money is an example of material values perceived in the green roof business. At last, for some stakeholders, green roofs are not superior to other products but one option in the stock as one stakeholder puts it:

*“It is a marketing element just like any other.”*

*(“Kyllähän se meille on markkinaelementti ihan yhtä lailla kun moni muukin”)*

This quotation proves that even if green roof business is often seen as something stakeholders do with passion, it is also a source of financial benefit and a product to sell.

#### **5.4 Synthesis of the empirical findings**

The overall findings show that there are various reasons for building green roofs. Green roof business is versatile, and many benefits of green roofs can be identified. First, environmental benefits are obvious and three main ways stand out of the data. Green roofs manage storm water preventing run-off water from creating floods and other harm for cities. In addition, green roofs support biodiversity and purify air. Biodiversity is supported by green roofs as they allow more plants and animals to grow, creating more green space in the city areas. Green roofs also filter dust and other impurities making the air cleaner. Despite environmental benefits, green roofs offer benefits for people. Green roof can be relaxing places to spend time and enjoy a piece of nature. Moreover, green roofs spread joy for people who see them from their offices or who walk by them. These aesthetical and experiential functions are important as not all green roofs are meant for people to use but to see.

Another focus in the findings is stakeholder cooperation. I approach this category by asking how and why stakeholders are included in the green roof business. The study includes stakeholders of different roles from constructors to local authorities and researchers. Some stakeholders also hold more than one role as one can be a consultant but also a supplier in the field. The stakeholders are individuals and they are involved in the green roof business through the organisation they work for. Some stakeholders have chosen the organisation based on their will to work with green infrastructure and green roofs and some are drifted in the field. Despite their reason to work for the organisation, each stakeholder is included in the green roof business according to one's organisation's objectives. Stakeholder cooperation is based on extensive and continuous communication which includes brainstorming sessions ('think-tanks'), negotiations, consulting and sharing information, ideas and recommendations about what is supposed to be done. Often stakeholders consult and support each other at different stages of the process and in the ideal case there is an open and rich dialog between stakeholders all the time. Green roof business is multidimensional and there are many ways to proceed. Therefore,

compromises are made along the way and problem solving requires every stakeholder's effort. For some, stakeholder cooperation is also a way to influence the green roof business field and other stakeholders.

Although green roof business includes stakeholders with mutual interests, there are various reasons for stakeholders to be part of green roof business. Green roofs make economic value for a company as it is a business element amongst others. In addition, green roof business attracts stakeholders due their personal background and personal values. Some stakeholders are keen on trying out new ideas which green roof business well enables. Due to small group of experts in the green roof business in Finland, the stakeholders often know each other which makes it easier to continue to collaborate in the future. Lastly, there is also the mental side of cooperation: encouraging and trusting each other, knowing that the other will do what is best for all and perhaps most importantly having the feeling that "we are all in this together". Extensive cooperation is a key when working towards the desired end in the green roof business: the more stakeholders included in the project the more benefits for environment and people are generated.

Stakeholders mostly enjoy great value when being involved in the green roof business. Due to different reasons for being involved in the green roof business, value creation also distinguishes from one stakeholder to another, depending on one's personal goals and values. Thus, it is difficult to draw one conclusion to what creates value for stakeholders. Value is created with stakeholder when the process is managed equally from the beginning to the end, including all relevant stakeholders to the decision making. Value is co-created in every step of the green roof project: in the planning, in the building and in the finishing phase.

Value is created for stakeholders by giving them a chance to fulfil their professional and personal potential while creating sustainable living environments for people. Stakeholders involved in the green roof business choose to be part of it and they each have their reasons to be in the business. Therefore, despite monetary values, green roof business is not only business for some stakeholders, but a way to create something extraordinary. However, for some stakeholders, value is only created when they feel being really understood and respected. In addition, having linked interests with other stakeholders increases the depth of the cooperation and allows it to continue in the future.

When this stage of cooperation is achieved, synergistic value is created and innovation takes place. Thus, it can be said that stakeholders perceive value from the cooperation, feeling of belonging to a group of doing something good for the whole planet. Change is easier to conduct in a group than alone. Having a group of experts in the green roof business working towards the same vision and seeing 'the bigger picture' of more sustainable future empowers stakeholders. Thus, value is created during the process, as compromises are made, and obstacles are overcome in cooperation with other stakeholders. All in all, most stakeholders find green roof business meaningful and important as it is rewarding to be involved in business that changes the world.

## **6 DISCUSSION AND CONCLUSION**

### **6.1 Theoretical contributions**

This chapter connects the findings with the theoretical framework of the research. In order to structure the chapter, research questions are repeated below.

How is value created with and for stakeholders in the green roof business?

Sub questions:

- 1) Why and how are stakeholders included in the green roof business?
- 2) How is value created in the stakeholder cooperation?

The theoretical part of this research provides an overall picture of green roof business, value creation and stakeholder theory. According to the theory, the key advantage regarding green roofs is storm water management and positive effects on air quality in cities. All stakeholders agree on the importance of green roofs for the environment, including storm water management, air purification and support of biodiversity and some stakeholders even rate environmental benefits over others. In that regard, the data analysed for the study was in accordance with the theory by (Carter & Keeler, 2008; Fioretti et al, 2010; Jaffal et al, 2012) which emphasize that green roofs are beneficial in absorbing rainfall, reducing roof temperatures, improving the ambient air quality, and providing urban habitat. Another important advantage of green roofs is experimental benefits which also is according to the theory by Mesimäki, Hauru and Lehvävirta (2019). Green roofs offer a place to rest, enjoy piece of nature and they bring joy for people who see them. However, perhaps surprisingly, none of the stakeholders mentioned economical benefits of green roofs although the researches by Oberndorfer et al (2007) and Alexandri and Jones (2006) highlight it. There can be many explanations for this. First, many stakeholders are involved in projects where small green roofs are installed and a small green roof does not make significance financial benefit through energy savings, or savings in the maintenance and replacement costs. Second, economical value bringing elements

such as farming on green roof or advantages for public health are difficult and time consuming to measure.

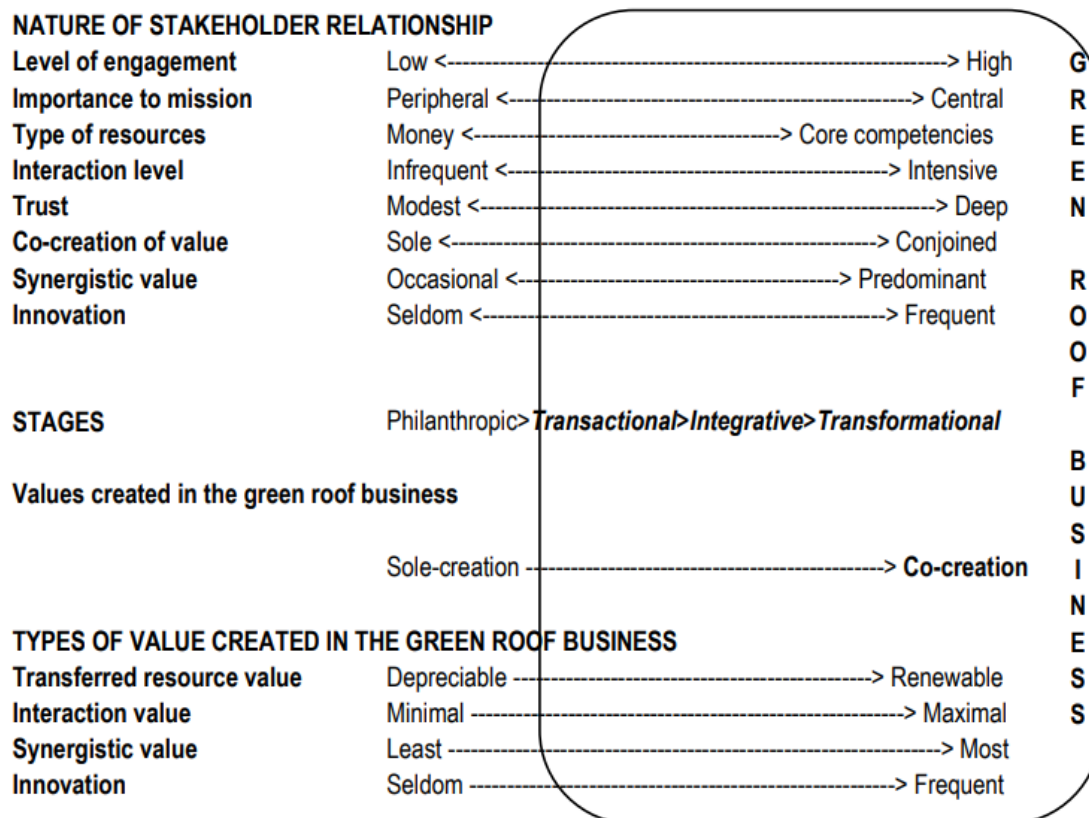
Stakeholder cooperation is a key in stakeholder value creation in the green roof business. In line with Sloan's (2009) control and collaboration model, this research highlights that in the green roof business, stakeholder cooperation is in place as firms embrace the relationship with their stakeholders in multiple ways based on collaboration, listening and partnering. The findings indicate that there is often an on-going open dialog between stakeholders allowing every stakeholder to join the conversation and be aware of the progress of the green roof project. Stakeholder cooperation is essential in the green roof business as no stakeholder can have all the resources such as knowledge, understanding and materials needed. Thus, it can be said that green roof business includes collaborative teamwork where each stakeholder has an important role. According to the findings, stakeholder management is not clearly firm-centered in the green roof business, as there are many mutually powerful actors in the business working together towards the desired end. Instead, features of issue focussed stakeholder management can be identified. The issue is green roof and all stakeholders focus on making it successful. However, it is worth noticing that not all stakeholders necessarily share the same objectives in the project. Some may focus on economical values such as profit for the organisation while others focus in making the green roof as sustainable and beneficial for people as possible. However, as a result, a multidimensional green roof is created. Each stakeholder seeks to make sure the decisions made in the negotiations in the green roof business serve their own interests, however, the findings show that all stakeholders share a common desire to do greater good. This is perhaps the most important individual reason for stakeholders to be involved in the green roof business. The findings support Freeman's (1997, p.287) "Principle of Stakeholder Cooperation", which states that value is created for stakeholders when they can jointly satisfy their needs and desires.

Previous research on value creation highlights that value creation is not easily measured (i.a. Bowman & Ambrosini, 2000; Priem, 2007). In this research, stakeholder collaboration and value creation are analysed using the categorization by Austin and Seitanidi (2012) where collaboration is divided into philanthropic collaboration, transactional collaborations, integrative collaboration and transformational collaboration. With this categorization, the nature of stakeholder relations could be analysed followed



by analysis of value creation. Figure 10 represents the whole concept of value creation in the green roof business. This figure is a combination of Austin & Seitanidi (2012) collaboration continuum and collaborative value creation spectrum models. When analysing the stakeholder collaboration stage with the above four categories, the findings show that philanthropic collaboration does not take place in the green roof business as it is related to charity. Instead, features of transactional, integrative and transformational stages of collaboration can be found. In the green roof business, stakeholders often have linked interests as the aim is to make a successful green roof. However, distinguishing interests exist as well: some stakeholders emphasize the aesthetic side such as the number of plants and colours while some aim for financially inexpensive result. In the green roof business, resource flow is bilateral as the knowhow and materials are exchanged between stakeholders. As a result, value is created to both parties. Reaching transformational stage of collaboration requires stakeholders to share the will of making significant change to society at large. It seems to me that there is a will for great change in some stakeholder thoughts, but it is not yet generic.

Regarding to the findings of this research, stakeholder collaboration is continuous and intense in the green roof business. To add, resources are combined amongst stakeholders with distinctive competencies allowing massive amount of knowhow to be harnessed. Based on the findings, different types of values created in the green roof business: transferred resource value, interaction value, synergistic value and innovation are created due to intense stakeholder collaboration. Innovation is frequent as green roof business requires new thinking and there is potential for extraordinary creation that have never been accomplished before in Finland. Transferred resource value is renewable in the green roof business as in order to be continuous collaboration, the value, such as knowhow, must be renewed according to Austin and Seitanidi (2012). The findings show that value is created and captured at many phases of the green roof process from designing to finishing the roof. Often green roof business can deliver multidimensional values and thereby serve several stakeholders simultaneously. The findings indicate that stakeholder synergy is often achieved in the green roof business.



When the stakeholder level of engagement is high and trust is deep, transformational stage is approached, where resources are conjoined and synergistic value is at its most.

Main type of resources in the stakeholder cooperation is expertise, which is harnessed for common use.

Stakeholder interaction is continuous in the green roof business in the form of 'think tanks', project meetings and consultation.

Figure 10. Values created in stakeholder cooperation in the green roof business (Adapted from Collaborative value creation spectrum and Collaboration continuum models by Austin & Seitanidi, 2012, p.736-745)

There is no specific research on stakeholder value creation in the green roof business making this study meaningful and interesting. Nevertheless, stakeholder value creation is a much-studied subject amongst scholars. This study expands the existing stakeholder analysis by connecting it to green roof business. As Porter and Kramer (2011, p.15) estimated almost a decade ago: “the opportunity to create economic value through creating societal value will be one of the most powerful forces driving growth in the global economy.”

Stakeholders in the green roof business share a mutual positive opinion concerning green roofs and based on the findings, it can be said the trend of green building is growing. As

a business field, green roof business is still rather new. Stakeholder cooperation in the green roof business includes number of actors and as in any project, there are conflicts during the planning and constructing. Prejudices towards green roofs and careless attitude amongst some actors cause frustration amongst other stakeholders.

## **6.2 Practical contributions**

This chapter presents the practical contribution of the study, indicating how the findings could be of use for organisations and stakeholders related to green roof business. The aim of this research is to provide an understanding of value creation in the green roof business through stakeholder interviews and theoretical study. The research is carried out by using inductive method as the theory was followed by the empirical data allowing the researcher to reform the research questions along the analysis process. Altogether 12 stakeholders were interviewed for this study forming the empirical data to this study. The data was transcript and then analysed using qualitative content analysis techniques allowing the researcher to understand the data through careful reading, coding and categorizing.

The main conclusion of this study highlights the importance of extensive stakeholder analysis in the beginning of each green roof project. The key stakeholders ought to be identified and included in the green roof project from the beginning. This is a way of mapping the required knowledge and resources which enables more successful results. The research findings show the meaning of mutual trust and appreciation for each other's work and knowhow in the green roof business. Being involved in the green roof business creates value by giving the possibility to be a part of something bigger and meaningful. The findings reveal that stakeholder cooperation is necessary yet fruitful in the green roof business. Green roof business is versatile business field as it includes any business activities linked to green roofs from designing, constructing, supplying, consulting and marketing. Teamwork, consulting, and brainstorm are ways to proceed and in green roof business it is rather impossible for one stakeholder to have all the required knowhow and that is why extensive stakeholder cooperation is desirable. Value creation is multidimensional and constantly changing as it differs between stakeholders depending on the stakeholder's personal perspective on green roofs and sustainability. Those stakeholders in favour of sustainability and green values perceive more value when being involved in the green roof business. That is why having a large group of stakeholders with versatile interests ensures that all the dimensions are considered and the green roof better

serves the interests of majority of stakeholders. Understanding value creation processes allows decision-makers in the green roof business to better involve stakeholders in the process. By including more stakeholders in the decision-making process, the result is perhaps more sustainable as increasing value creation for each stakeholder increases the total value created. Thus, stakeholder synergy can be achieved Tantalo and Priem (2016).

As the findings indicate, stakeholder cooperation is preferable in the green roof business. The stakeholder engagement, trust, respect for each other provides the base for continuing cooperation and enables different stakeholders to join the process. It is important to share the knowhow regarding green roofs while the constructing work is in process as each stakeholder is expert in different field and everyone's knowledge is needed when working in a multi stakeholder network with a project perhaps new to most of them. At the same time, it may connect stakeholders to something bigger allowing transformational change to occur. There is enormous potential in the field of green roof business, which stakeholders wish to harness for common good and they should be given the possibility for that. Stakeholders are also involved in the green roof business as part of their profession and monetary rewards is applied but it is clear, that money is not the biggest driver for stakeholders. Green roof business distinguishes from many other businesses in its nature to create benefits to everyone and to everything, to both people and planet. It takes an unselfish person to be involved in the business as the monetary return is not controversial to the time consumed, but there is something more in it. Stakeholders are involved in the green roof business for multiple reasons: individual background, personal values and strive, and professional duties, but also because today it is desirable to think ecologically and environmentally.

The findings also show that green infrastructure, including nature-based solutions such as green roofs is a hot potato in the constructing field. It is important for stakeholders to be able to offer products matching the current trends and demand. There are associations such as Green Building Council which strives to gather information of integrating green substances into construction field. This includes ia. energy efficiency, healthy buildings and environmental solutions. As the theory and data suggest, green roof business requires extensive knowledge where technological, biological and social aspects must be considered. A firm that does not have the sufficient knowhow but still works in the field, may end up causing bad reputation for the whole business field. All organisations working

in the green roof business ought to hold responsible for their work and understand the value of the investment for the owner and other stakeholders.

There are alternative interpretations for the data as the interviews included a lot of material not analysed as meaningful for the purpose of this study. The data revealed that there is an ongoing conversation about the importance of green roofs. Not all stakeholders in the green roof business are in favour of the roofs and some are even strongly against green roof business. The prejudices and careless attitude amongst some stakeholders cause frustration among other stakeholders. When discussing the reasons hindering green roof business and factors affecting it, it was clear that the topic is sensitive for some stakeholders. Focusing on these matters may have given the research a completely different viewpoint, leading to more pessimistic findings. However, due to the objective of this study, which is the value creation in the green roof business, the reasons hindering green roof business are not explicitly expressed.

### **6.3 Evaluating the research**

This master's thesis is a project of one student and due to lack of a comprehensive study on the value creation of all stakeholders in the green roof business in Finland is impossible. Therefore, some limitations are presented here. First, the people interviewed are not within the same projects, which makes it challenging to generalize the findings as they might understand the phenomenon of green roof differently. For example, when discussing green roofs, there is a difference between sedum roofs that cover the building and an oasis on roof top inviting people to spend time there. Therefore, a more specific definition of a green roof before interviews might have been justifiable. Another point regarding the interviews, concerns memos. To remember all the emphasizes, facial expressions and gestures, the memos would have given support to the analysis. Each stakeholder interviewed only speaks for the stakeholder's personal viewpoint or for the organisation they work for, not necessarily representing the whole field. Green roof business is a rather new business field in Finland, and therefore there is not much evidence of projects to provide concrete examples and for that reason stakeholder often referred to one or two best known cases in Finland. That leads to having a limited amount of cases to be discussed which supports the claim that generalization is challenging.

Ethical responsibilities and obligations are constantly present when doing qualitative research (Iphofen & Tolich, 2018). According to Given (2008) the access to research participants must do no harm in qualitative research. This means that the inquiry for the research ought to be done formally. For this research, I invited the participants for the interview by email invitation. In the email I carefully explained the objectives of my research and emphasized that the participation is voluntary. Moreover, in the beginning of each interview situation certain questions regarding to recording and anonymity were proposed. Although all the participants except one gave permission to mention their names in the study, coding was applied as revealing the names would not give any additional value to the research.

When conducting a research, respecting confidentiality is central and must be applied through the study. Confidentiality enhances the validity and quality of the research as participants are then more willing to share their opinions (Given, 2008). In my study, neither research participants nor their organisations are public information. Thus, all the quotations and research participants presented in this study are coded so that the reader may not discover an individual participant.

It is also important to maintain accuracy in the research process regarding to all the choices made along the process. An example of such choice is participants involved in the study and the methodological choices made for analysing the data. Explaining these choices enhances the credibility of the research for both participants and readers. (Given, 2008.) I seek to justify all the methodological choices in the chapter 4 where the steps of data collection and data analysis are accurately stated. In addition, reasoning for these choices are explained throughout the study starting from the introduction.

It is clear, that no method is perfect, but it is important to choose the best possible method for the study, according to the research aim and research questions. Inductive approach allows the data to provide new ideas for the theory and thus allow the researcher to conduct areas where existing theory is minimal (Mills, Durepos & Wiebe, 2010). In this research however, also deductive approach is applied when analysing the data with the model by Austin & Seitanidi. Finding respondents for the research seemed challenging as the process started however, the 'snowball effect' proved to be an effective way to contact the potential stakeholders. According to interviews, a semi-structured interview protocol is applied due to its flexibility (i.a. Keenan, 2018; Slayton, 2018) enabling the

researcher to gain knowledge of the subject beyond specific questions. Moreover, the interview sessions are conversational allowing both the researcher and the respondents to feel relaxed and trusted while providing useful information. Conducting face to face interviews allows to be more focused and present in the moment and sense the emotions of the respondents (Brinkmann & Kvale, 2018).

The definition of qualitative research varies from one country to another (Flick, 2018) and there is no certain protocol to follow when doing qualitative research. In addition, the findings of qualitative research are difficult to measure as it lacks the possibility for systematic calculations. However, in this study, careful qualitative content analysis is applied to the researcher's best knowledge. Another limitation concerning the method is the possibility for the researcher's own interpretations to influence the findings as the analyzing process is highly subjective. Perhaps multiple methods should be used to draw a deeper understanding of the phenomenon and to provide a more comprehensive answer to the research problems.

#### **6.4 Suggestion for future research**

This study provided an overview of stakeholder value creation in the green roof business, based on nine interviews with 12 different people representing different stakeholder organisations. However, this study only focuses on the stakeholders who are a part of the green roof building process and the user perspective is excluded. It would be interesting to continue the research by studying the public and the consumers' views on green roofs and perhaps carry out a case study by observing the focus group. The study could approach the issue from questions such as: for what purposes they use the green roof, how does it affect their life, in what regard does green roof improve the quality of their life and ultimately seek to address the value creation of green roofs for consumers. This research could be carried out in one of the residential buildings where green roof are already being implemented, such as the Greenest of the Green in Helsinki, to provide exact results from the field. In addition, having consumer arguments and opinions enables the constructors to improve their performance and better meet the consumer needs in the future.

Another interesting possibility is to conduct a research by using grounded theory of stakeholder cooperation via filming or observing different occasions where stakeholder

cooperation occurs such as meetings and worksite negotiations. Additional data could be gathered by interviewing the stakeholders and using the project documents and minutes of the meetings for example. This methodology allows the researcher to get inside information which gives deeper meaning to the study. As green building and sustainable solutions increase, more research in master's level and upper levels are justified and of importance. Natural based solutions including green roof business is a growing business field and it is becoming less extraordinary. While firms are traditionally prospering at the expense of greater community (Porter & Kramer, 2011) is it time for firms to give something back?



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# APPENDICES

## Appendix A: Interview questions

- 1. Yleiset kysymykset tutkimusetiikkaan liittyen/General questions on research ethics**
  - 1.1 Sopiiko sinulle, että haastattelu nauhoitetaan? Do you accept recording the interview?
  - 1.2 Haluatko pysytellä anonyymina tutkimuksessa? Do you wish to stay anonymous in the study?
  - 1.3 Jos sinulla on jossain kohdalla sellaista, mitä et halua nauhoitettavan, voit sanoa sen ja leikkaamme sen pois nauhalta. / If, at some point, there is something you wish not to be recorded, we will cut that off the tape.
- 2. Taustakysymykset haastateltavasta ja organisaatiosta/Background questions regarding the interviewee and the organisation**
  - 2.1 Kerrotko nimesi ja missä tehtävässä olet yrityksessä jota edustat? (Could you tell me your name and position in the organisation?)
  - 2.2 Kuinka kauan olet työskennellyt tässä yrityksessä? (For how long you have worked for this organisation?)
  - 2.3 Kertoisitko yrityksen toiminnasta? (Could you tell me a little bit about the activities of the organisation?)
- 3. Viherkatot organisaation toiminnassa/The role of green roofs in the organisation**
  - 3.1 Kuinka suuri rooli viherkatoilla on yrityksen liiketoiminnassa? (How big role do green roofs play in the organisation's operations?)
  - 3.2 Mihin viherkattoja rakennetaan? (Where are green roofs built?)
  - 3.3 Mitkä ovat tärkeimmät syyt siihen, että rakennatte viherkattoja? (What are the main reasons for your organisation to be involved in the green roof business?)
  - 3.4 Millä tavoin viherkatot tuottavat arvoa ja hyötyjä organisaatiolle? (How do green roofs benefit and create value for your organisation?)
  - 3.5 Millaista palautetta olette saaneet viherkatoista eri toimijoilta? (What kind of feedback have you received from different stakeholders concerning green roofs?)
  - 3.6 Mihin organisaationne on rakentanut viherkattoja, voitko kertoa niistä projekteista? (Where your organisation has built green roofs, can you tell me about those projects?)
  - 3.7 Mikä projekti on ollut erityisen onnistunut/jäänyt mieleen? Miksi? (Which project has been particularly successful/memorable and why?)
- 4. Sidosryhmät/Stakeholders**
  - 4.1 Mitkä ovat organisaation tärkeimmät sidosryhmät? (Can you name the key stakeholders of your organisation?)
  - 4.2 Millä tavoin organisaatiosi tekee yhteistyötä yllä mainittujen sidosryhmien kanssa? (How does your organisation cooperate with the stakeholders mentioned above?)
  - 4.3 Miten asiakkaat hyötyvät viherkatoista? Entä muut sidosryhmät? (How do customers benefit from green roofs? How about other stakeholders)
  - 4.4 Millaisia hyötyjä koette organisaationne saavan toimimalla juuri näiden sidosryhmien kanssa? (How does the cooperation with the stakeholders mentioned benefit your organisation?)
  - 4.5 Onko sidosryhmien toiminnassa/yhteistyössä jotain, mikä hidastaa/haittaa organisaation toimintaa? (Is there something in the stakeholder cooperation that hinders the organisation's operations?)
- 5. Viherkattoliiketoiminnan haasteet/The challenges in green roof business**
  - 5.1 Millaisia riskejä ja ongelmia viherkattoihin ja viherkattorakentamiseen liittyy? (Could you name risks and problems regarding green roof business.)
  - 5.2 Millaisia ennakkoluuloja olet kohdannut viherkattoihin liittyen? (Could you name prejudices you have faced regarding green roofs?)
  - 5.3 Miksi viherkattoja ei rakenneta enemmän? (Why are green roofs not more common?)
- 6. Rakennuttamisprosessi/The construction process**
  - 5.1 Voisitko kuvailla miten viherkattorakentamisen prosessi etenee ja ketkä toimijat ovat siinä mukana? (Could you describe the process of building green roof and how stakeholders are involved?)



5.2 Millä tavoin asiakas vaikuttaa viherkattoprojektin lopputulokseen? (What is the role of a customer in the process of building green roofs?)

## **7. Tulevaisuuden näkymät/Future perspective**

6.1 Miten näet viherkattojen tulevaisuuden Suomessa? (How do you see the future of green roofs in Finland?)

6.2 Onko jotain muuta mitä haluaisit kertoa viherkattoihin tai organisaation toimintaan liittyen? (Is there anything else you would like to tell regarding green roofs or your organisation?)