

The natural entrepreneur

*The role of natural resources in sustainable
opportunity creation*

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Abstract

In the past, a gap has existed in the entrepreneurship literature regarding where future opportunities will come from. The finite nature of natural resources, combined with irresponsible human utilization, is affecting both economic and environmental prosperity more than ever before. Interestingly these issues have created big entrepreneurial prospects, for example as seen in the growing industry of alternative production of fuel and energy. Entrepreneurship is associated with problem solving, innovation and clever resource allocation, and when it comes to the natural resources environment the role of entrepreneurs could be that exactly; creating wealth and societal benefit through the sustainable recombination of resources.

In this study, the attention is focused on natural resources as a source of entrepreneurial opportunities and how they work in the entrepreneurial process from discovery to sustainable exploitation. Eight entrepreneurs, whose ventures rely on natural resources, were interviewed with the purpose of distinguishing how that type of resource affects entrepreneurial action, focusing on sustainable opportunity creation and entrepreneurial discovery.

The findings indicate that the choice to utilize natural resources was largely shaped by the individual environment context. It was apparent that the effect of locality and prior experience affected the opportunity discovery, where knowing the area and its possibilities proved important along with the needed know-how. The motivations derived from extrinsic and intrinsic factors like wealth creation, product streamlining, passion for pure route of produce and waste reduction, along with interest in sustainable organic production. Regulation proved both to be an incentive and hindrance, where well designed and stringent ones worked best, but faulty policies stood in the way of sustainable actions. Funds and grants did not play a big role in the exploitation of opportunities, and instead, the entrepreneurs relied on their own capital, developed the product slowly and utilized resources from previous productions.

Acknowledgements/Preface

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1 Introduction

Natural resources are an important part of the world's economy but their finite nature combined with irresponsible human utilization is affecting the earth and its inhabitants more than ever before. With climate change, increasing human population and economic threats the importance of sustaining our natural resources is becoming increasingly predominant. Since the problem has gotten so severe, the question is no longer if but how we can move towards more sustainable usage of our resources.

The United Nations' climate change conference took place in 2015 where the Paris Agreement was negotiated, which is a part of the United Nations Framework Convention on Climate Change (UNFCCC). The framework addresses how to deal with greenhouse gas emissions mitigation, adaptation, and finance starting in the year 2020. The European Union upholds the bioeconomy as Europe's answer to the environmental challenges, where dependence on natural resources is to be reduced, manufacturing transformed and sustainable production of renewable resources from land, fisheries, and aquaculture promoted (Horizon 2020I, 2014). Catalysts for actions needed are investments in research and development, with the participation of scientists and stakeholders. There has already been an exponential increase in environmental regulation over the past decades and a half, and in 2014 the EU spent 280 M€ in policy priorities such as *Innovative, sustainable and inclusive Bioeconomy*, *Sustainable Food Security* and *Blue Growth*.

The total worth of Europe's bioeconomy is believed to be 2 trillion Euros. The financial incentives and increased regulation are likely to create a push towards sustainable actions and interestingly, sustainable entrepreneurship has been claimed to be one of the likely catalysts. The innovations and actions needed will probably come from entrepreneurs who can identify opportunities while taking into account environmental challenges. An example of ingenuity in natural resource utilization is Kerecis, a biotech company established in 2009. The company uses the skin of fish, a usually tossed away excess material, in their patent pending acellular wound treating product (Yang, Polanco, & Lantis, 2016). The treatment is for example meant for chronic wounds, a side effect of diabetes which is an illness that affects millions, making it a growing niche market. In spite of becoming somewhat of an international company the production still takes place in the small town of Isafjordur, situated in the north-western part of Iceland. The high cost of labour in Iceland is overrun by the vast

supply of natural resources; the fish skin is retrieved from cod farmed close by, hot and cold water is abundant along with geothermal energy and pure environment.

For the most part, the focus in environmental sustainability research has been on understanding the ecosystems involved even though the unsustainable development was mainly caused by faults in the social system drivers (Diedrich, Upham, Levidow, & van den Hove, 2011). In other words not enough research has gone into what went wrong in society that caused the exhaustion of resources, pollution, and global warming. Research should also go into what can be done socially; how can entrepreneurs be ignited to find ways of utilizing resources in a sustainable way?

Access to resources, whether tangible or intangible ones, are necessary to build new ventures. It is interesting to take a look at how entrepreneurs utilize natural resources in a way that does not deplete them or pollute, thus sustaining the wealth created for years to come. An exciting take on that is to investigate how natural resources affect entrepreneurs, or how this type of resource affects sustainable venture creation.

1.1 Objective

The objective of this research is to determine the influence that natural resources have on entrepreneurial activities. The focus is on sustainable opportunity creation and entrepreneurial discovery.

1.2 Background and motivation

The motivation behind the study stems mostly from my background as a biologist. I did ecology research before attending this master's program that increased my interest in the sustainable usage of natural resources, and with it the protection of ecosystems. This program allowed me to look into the social effort that can aid towards the coexistence of protecting our planet and our way of life. I chose to do so by examining how natural resources affect sustainable entrepreneurial activities, to understand the mechanism that drives people into eco-friendly utilization.

1.3 Research question

How do natural resources affect sustainable opportunity creation and entrepreneurial discovery?

1.4 Outline of the thesis

The structure of this thesis leads the reader into the literature review in the next chapter. There, the definition of natural resources is covered, how the threat of their finite nature has produced a new breed of entrepreneurs, and regulations aimed at protecting them, along with the bioeconomy concept that spawned from those concerns. Next, the nature of sustainable opportunities is discussed and the course from discovery to exploitation. The literature review also addresses entrepreneurial processes and motivation, along with innovation models. Chapter 3 covers the methodology, explaining the research design, the nature of the data collection and coding methods. The findings follow in chapter 4, and the thesis comes to an end with the conclusions.

2 Literature Review

2.1 Natural resources

To create opportunities entrepreneurs need resources, and in fact acquiring them often becomes the “first” entrepreneurial problem (Jarillo, 1989). These resources can be intangible and tangible ones, whether it is funds, knowledge, networks, human resources or natural. Natural resources are those that occur in nature and can be used to create wealth and include land, forests, water, oil, minerals and so forth. More precisely the United Nations (1997, p. 612) define them as “naturally occurring assets that provide use benefits through the provision of raw materials and energy used in economic activity (or that may provide such benefits one day) and that are subject primarily to quantitative depletion through human use.” They are subdivided into four categories: mineral and energy resources, soil resources, water resources and biological resources. The utilization of natural resources varies, but the finite nature of them may have threatened economic growth since the “birth of the discipline.” (Baland & Platteau, 1996, p. 9).

Since the limited availability of natural resources is affecting the earth and it’s inhabitants more than ever before with climate change, growing human population and financial complications, the importance of sustaining them is becoming increasingly predominant. These concerns have affected today’s research and policy making, resulting in innovative ideas about the economic environment from which we derive our food and revenue.

Scepticism towards advances in ecological sustainability is changing; generally, it is no longer viewed as something that will have adverse effects on economic profitability, but rather as the continual answer that can balance economic health, social equity and environmental resilience (Cohen & Winn, 2007).

Still, access to resources alone is not enough for them to be utilized in a intuitive way since they must be discovered and recombined in innovative ways in order to build new ventures (Korsgaard, Anderson, & Gaddefors, 2016). This is where a new breed of emerging green or sustainable entrepreneurs comes in, who utilize natural resources in a more viable way than before. With the subject gaining more attention, new terms have emerged, such as green entrepreneurship, environmental entrepreneurship, ecopreneuring and social entrepreneurship (Pacheco, Dean, & Payne, 2010). This kind of entrepreneurship is believed to be the catalyst towards creating sustainable businesses in communities that are natural resource-dependent (Allen & Malin, 2008)

Cohen and Winn (2007) define sustainable entrepreneurship as an analysis of opportunity discovery. This entails how and by whom future goods and services are discovered, created and exploited and with what economic, psychological, social, and environmental consequences. They also suggest that “the addition of environmental consequences offers an expanded and significantly modified definition for the field of entrepreneurship” (Cohen & Winn, 2007, p. 35). Understanding the drivers behind entrepreneurial measures in the natural resource environment is important to be able to encourage similar actions where they are needed. Those incentives might for example be financial, related to personal achievement or care for the environment but many of the recent sustainable steps are regarding innovative measures in the green energy technology, which is becoming the driving force for growth in traditional industry sectors. According to Diedrich et al. (2011), it is although possible to question whether technological innovation is the key to responding to a particular problem, and that including civil society more actively in research agenda and providing a basis for substantively influencing the development of alternative solutions could be an attractive option. Entrepreneurs in South Iceland have for example found ways of adding value to their resources with non biotech innovations. This includes small-scale food products to be sold to tourists and visitors and in some cases to export, growing rapeseed (not usually grown in Iceland) while utilizing the by-products as well as using fish waste as fertilizer (Teräs, Johnsen, Lindberg, Perjo, & Giacometti, 2014).

A big part of the focus in environmental sustainability research has been on understanding the ecosystems involved, even though the unsustainable development was caused by faults in the social system drivers in the first place (Diedrich et al., 2011). In other words not enough research has gone into what went wrong in society that caused the exhaustion of resources, pollution, and global warming. Thus, it is vital to try and understand how entrepreneurs are kindled to find ways of utilizing resources in a sustainable way. Numerous factors, other than the resources themselves, can be mentioned in relation to this. Co-operation between actors has proven important, in Iceland the public R&D institute Matis, Innovation Centre Iceland and the private sector SMEs have worked together towards increased innovation activities by supplying physical location of food innovation centres in rural areas. Funding and synergies between sectors play an essential role alongside governmental regulations (Teräs et al., 2014).

2.1.1 Regulations and the Bioeconomy

Over the past decades there has been an exponential increase in environmental regulation, although the importance and their effect is debated (York & Venkataraman, 2010). Some view that political freedom and decentralized power make entrepreneurship most efficient while others point out the opposite (Anderson, 1998; York & Venkataraman, 2010). As Hudson (2009) draws attention to and is mentioned above, we are currently not only facing economic threats but also an imminent global ecological crisis. According to him, “the concept of resilience has found its way into the policy literature where it is seen as a normative goal of environmental management and a key component of sustainable development.” The modern consumerism where foodstuff and other products are transported a long way creates a vulnerable regional economy and has a negative ecological impact. Anderson (1998) recommends a more regionalized way of living to reduce these undesirable effects. That requires an entrepreneurial effort of utilizing local natural resources in a sustainable way, and Anderson suggests a change in the regulatory regime with increased government involvement to encourage a shift to processes practice and behaviours that are more ecologically sensitive.

These different perspectives on the connection between environmental policies and the environmental and competitive performance of firms have developed over the past 20 years. Theoretical questions regarding the debate have evolved, aiming at investigating whether, under what circumstances and how exactly environmental issues and firm activities are

related to competitiveness (Testa, Iraldo, & Frey, 2011). The traditional paradigm had until then viewed environmental regulation as unproductive from a business perspective, even though beneficial for the environment and society (Ambec, Cohen, Elgie, & Lanoie, 2013).

In the literature three major theoretical approaches can be identified:

The “traditionalist” view claims that the purpose of environmental regulation is to correct negative externalities and remedy a marked failure but it burdens companies with added costs (Testa et al., 2011).

The “revisionist” view or Porter hypothesis, argues that improved environmental performance prompted by regulation can be competitive advantage since it can lead to increased efficiency in processes, productivity improvements, lower cost of compliance and new marked opportunities (Jaffe & Palmer, 1997; Porter & Van der Linde, 1995; Testa et al., 2011).

The most recent interpretation of the impact of environmental policies on businesses is the “resource-based view.” It is an evolution of Porter’s approach, emphasizing that competitiveness of a company depends on the quality and quantity of available resources and the ability of businesses to optimise their tangible assets; such as know how, corporate culture and reputation (Helfat & Peteraf, 2003; Testa et al., 2011).

According to Porter and Van der Linde (1995) two broad forms of innovation in response to environmental regulation exist. One covers the situation where companies simply deal with pollution in a smarter way, once it occurs. An example of this is many companies that release toxic waste and develop extraction processes to comply with pollution control. The other form of innovation addresses the environmental impact but simultaneously improves the affected product or processes. Those innovation offsets can even exceed the cost of compliance, causing environmental regulation to increase industrial competitiveness (Porter & Van der Linde, 1995). Notably, this does not mean that all regulations lead to innovation, but only well designed and stringent ones (Testa et al., 2011).

Albeit difference of opinions, the importance of some push towards a sustainable utilization of natural resources has gained the attention of the European Union. The EU has prioritized the so-called *bioeconomy*, choosing it as key area of its new Horizon 2020 programme (Kircher, 2012). The bioeconomy concept dates from 2005 but its components have a long history with knowledge, understanding, traditional technologies, and infrastructure in the

relevant industries. According to the EU, “the bioeconomy encompasses the production of renewable biological resources and their conversion into food, feed, bio-based products and bioenergy” (Teräs et al., 2014, p. 11). The notion of bioeconomy puts emphasis on detecting opportunities and innovating to use natural resources in a sustainable way and relies to some degree on the EU’s aid and regulation, making it somewhat a centralized phenomenon. The EU considers the bioeconomy’s innovative ways of reaching sustainability to have the prospective to tackle some significant societal challenges, such as food security and sustainable natural resource management, as well as to reduce dependence on non-renewable resources, creating jobs and maintaining European competitiveness (Teräs et al., 2014). The EU emphasises that innovation and research as the core of the transition to a bioeconomy, that with its crosscutting nature can address complex and interconnected challenges while achieving economic growth (OECD.).

The bioeconomy rhymes well with the idea of the sustainable entrepreneur since it is an “economy where the basic building blocks for materials, chemicals and energy are derived from renewable biological resources” (McCormick & Kautto, 2013, p. 2590). The need for biological resources has never been greater, a need that according to Aguilar et al. (2008) can only be met in the advancement of knowledge and innovation in the sustainable management of biological resources. One must bear in mind that sustainability is not an automatic side effect of a product being bio-based, and a variety of other factors such as environmental effects, safety, health, and waste, need to be accounted for in the equation (Birch, Levidow, & Papaioannou, 2010). To develop the bioeconomy and find new ways to increase the added value of produce, innovation and/or entrepreneurship is essential. Innovation can build on local competencies and knowledge in rural areas (Teräs et al., 2014) and entrepreneurial competences make it happen. If the bioeconomy is applied intelligently it can meet the environmental, social and economic perspectives of the sustainability requirements. The purpose is to create a recycling economy with emphasis on the use of renewable resources and synergies between food, materials and fuels (McCormick & Kautto, 2013).

Apart from environmental benefits, the bioeconomy can create employment in urban and rural areas (Langeveld, Sanders, & Meeusen, 2012). The bioeconomy value chain often comprises of resources originated in numerous different industrial sectors, combining various stakeholders (Birch et al., 2010; Rönnlund et al., 2014). A good example of this is Chitinor a Norwegian SME, which produces chitin and the derivative chitosan, based on raw material from the shrimp peeling industry but alternative shrimp farming causes high environmental

load. There, an otherwise tossed away material is utilized and with it creating jobs and reducing environmental impact (Rönnlund et al., 2014).

The total turnover in 2014 of the key natural resource sectors in the Nordic countries was around €184,000M, constituting 10% of the total Nordic economy. This shows that the economic drivers are present but the share represented by the bioeconomy is different between countries. It is highest in Iceland and lowest in Norway, with Denmark, Finland and

Iceland forerunners in natural resource prioritization (Teräs, 2015). In Iceland the greatest potential for bioeconomy is in further processing of by-products from fisheries and agriculture. Also, algae is an abundant resource that has not been utilized to the extent it could. The central potential is therefore linked to a more efficient use of the existing resources as well as creating ways to utilize and process these resources to create higher value added (Teräs et al., 2014). The possibilities

also lie within increasing the value added in processing the products further instead of exporting the raw material straight away. In Iceland, the bioeconomy has a good potential for developing the regions located outside the capital region since 85% of the workplaces in the bioeconomy are outside the Reykjavik area, and these comprise a significant part of the total number of workplaces in the regions (Teräs et al., 2014).

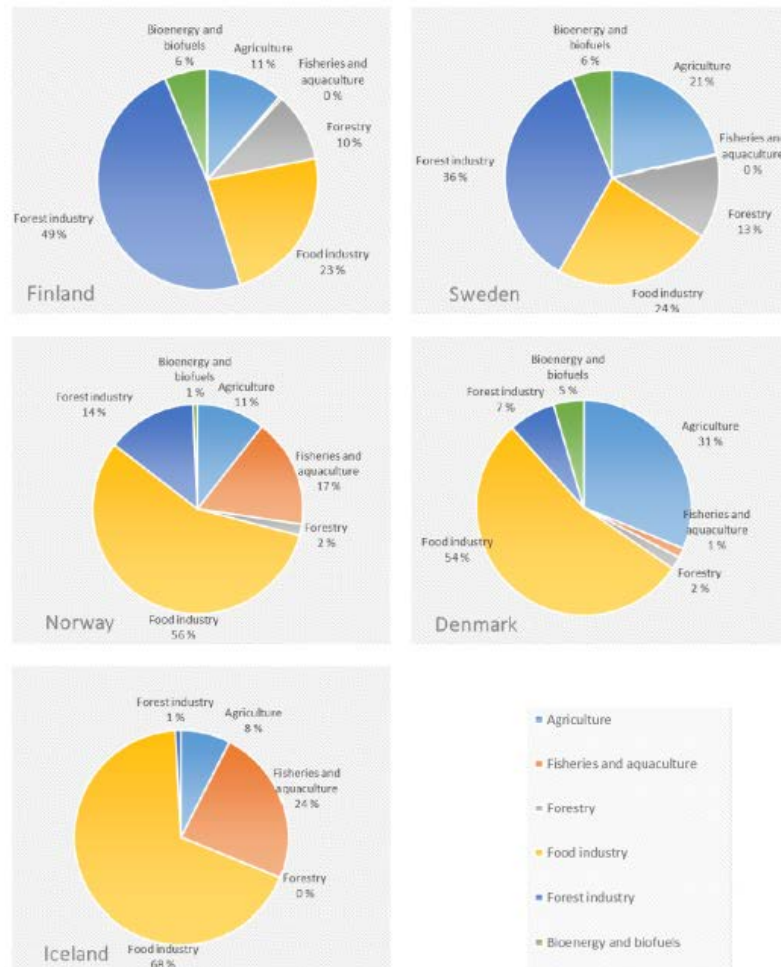


Figure 1 The share of the sectors included in the bioeconomy of the total bioeconomy sector in the Nordic countries 2011-12 (Teräs, Johnsen et al. 2014).

2.2 Sustainable opportunities

Entrepreneurial opportunities must exist for entrepreneurship to occur. An entrepreneurial opportunity consists of the development of a new idea that others have overlooked or have decided not to pursue (Alvarez & Busenitz, 2001). Those opportunities are the “situations in which new goods, services, raw materials, and organizing methods can be introduced and sold at greater than their cost of production” (S. Shane & Venkataraman, 2000, p. 220).

Entrepreneurial opportunities exist in numerous forms but this research will focus on those who stem from natural resources and their sustainable utilization. Natural resources can be used in ways that exhaust them and ruins others (e.g. via pollution), but more feasible is the route towards usage that can be sustained in the unforeseen future.

Sustainability refers to methods of utilizing resources thus they maintain their viability, by using techniques that allow for continual reuse. A sustainable opportunity is a part of sustainable development which involves meeting the needs of “today's population in terms of production and income without compromising the ability of future generations to meet theirs” (Butlin, 1989, p. 235). Shane and Venkataraman (2000) theorized four dimensions of opportunity: existence, discovery, evaluation and exploitation (implementation) (figure 2).

Opportunities that exist must then be discovered, evaluated and eventually exploited. When a person estimates that a set of resources could be put to a better use and profited from in another location, at another time, or in another form – entrepreneurial discovery occurs.

Factors that affect whether a person discovers a given opportunity are

1. the possession of the prior information necessary to identify an opportunity
2. the cognitive properties necessary to value it.

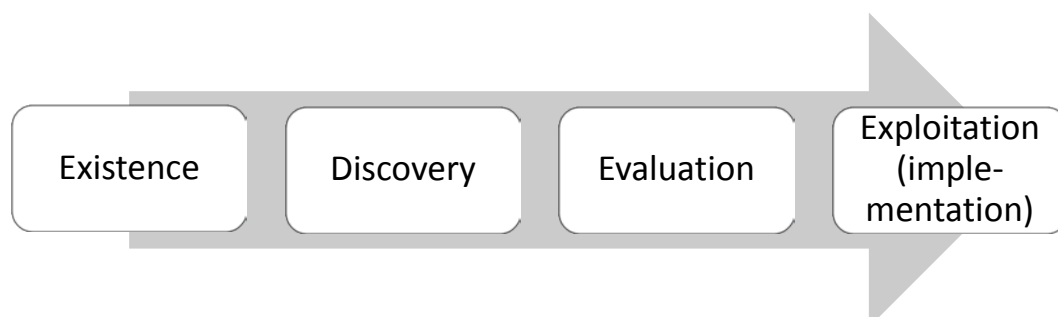


Figure 2 Four dimensions of opportunity

The act of evaluation begins with assessing if an exploitable opportunity does exist and if it can be discovered and exploited by certain stakeholders. Evaluation is an iterative designing

process and should be viewed as something that happens in unison with the discovery process (Hindle, 2010).

Interestingly, the growing attention to the natural environment and the negative changes surrounding it has generated new opportunities in the marketplace, since these effects have redefined firms and their markets (Cohen & Winn, 2007). Dean and McMullen (2007, p. 52) suggest that the “magnitude of potential opportunities for sustainable entrepreneurship corresponds to the level of degradation of economically valuable environmental resources”. Market failures have been suggested as generators of entrepreneurial opportunities. Cohen and Winn (2007) propose that there is a chance to present a more sustainable use of the natural environment if these market failures are recognized and exploited, and entrepreneurs are well fit to resolve these environmental issues (Dean & McMullen, 2007). This can be seen in the growing industry of alternative production of fuel and energy, as well as vehicles that run those alternative fuels. The examples do not have to be big scale. In New Zealand, two entrepreneurs created a company that sells and installs solar panels, running the business out of one of the owner’s home (Kirkwood & Walton, 2010).

2.2.1 Discovery is one thing, exploitation another

Discovering an opportunity is an important factor of entrepreneurship but the next steps towards exploiting it do not follow automatically. The decision towards implementation relies on a combination of the nature of the opportunity and individual differences. The expected value of the entrepreneurial profit has to exceed the costs to make it attractive. The difference between entrepreneurs is also a major factor since not all entrepreneurs will exploit opportunities with the exact same value. The bigger the financial capital and stronger the social ties to resource providers the higher the probability of exploitation (Evans & Leighton, 1989; Zimmer, 1986). Individual differences in perception of the chance of success and optimism also affect the likelihood of exploitation, as well as whether the person has developed useful information in previous employment and the transferability of said information (Carroll & Mosakowski, 1987; Cooper, Woo, & Dunkelberg, 1988; S. Shane, 2000).

When looking to discover opportunities, entrepreneurs benefit from focusing on their existing knowledge instead of what is the popular trend at that time. This notion suits entrepreneurs looking to utilize local natural resources in an environment they know. This is apparent in Allen and Malin’s (2008) research on ecopreneurs. The research subjects described that for

many of the business owners locality and the importance of community were central, and also that their efforts would help instigate greater local awareness. This does not mean that the entrepreneur is forever locked within his or her own knowledge cage since tools such as clusters exist where know-how can be shared and spread. For example, the Icelandic Ocean Cluster is financed by member companies and was created to support cluster development, concentrating on market development and innovation support in all ocean related sectors: tourism, shipping, aquaculture, production of ocean related added value products. These can be for instance advanced fish derived biochemicals, food supplements or cosmetics (Vigfusson, Gestsson, & Sigfusson, 2013). This notion of clusters is along the lines of Shane's (2000) idea of opportunity discovery. According to him, it is a function of the distribution of information in society but also notably related to the information the entrepreneur already possesses. In his study, none of the entrepreneurs interviewed had searched for the opportunity prior to its discovery. Their success had revolved around utilizing what was within one's reach – having the ability to see something that nobody else did. Shane suggests that superiority in the process of discovery is not enough, but rather that the superiority is specific to each situation.

Of course, knowledge in a specific field is not the only factor needed to be successful in entrepreneurial ventures. Klein (2008, p. 185) proposes that ability to predict future prices and market condition is vital and also “internal and external transaction costs, their control over the relevant assets and how much of the expected return from experimental activity they can hope to appropriate.” Still, as Korsgaard et al. (2016) point out, the ability to predict the future is questionable, with the latest economic crisis as a pretty good example. Also, different characteristics of an individual affect the opportunities that people discover, how they organize their entrepreneurial efforts, and even how the government can influence this process (S. Shane, 2000). Building on that, it is important to realize that the challenge of environmental sustainability is being obscured by calls for economic growth and increased production. There is a risk of reaching a critical point where technological advances can no longer compensate for the imbalance between demand and supply of natural resources if these priorities continue to drive resource utilization (Diedrich et al., 2011)

2.3 The entrepreneurial milieu

Entrepreneurship is one of the fastest growing fields within economics, finance, management and interestingly, law (Klein, 2008). Entrepreneurship can be defined as a scholarly field that

“seeks to understand how opportunities to bring into existence future goods and services are discovered, created, and exploited, by whom, and with what consequences” (Venkataraman, 1997, p. 120). The fascination with entrepreneurs seems to revolve around how and why they create and spot new opportunities. Those opportunities exist because of the different value different people set upon resources when converting them from inputs to outputs, and entrepreneurship is about cognition, discovery, pursuing market opportunities, along with coordinating knowledge that leads to heterogeneous outputs (Alvarez & Busenitz, 2001).

The research gap that has existed in the past in the entrepreneurship literature regarding the future and where opportunities will come from as been somewhat addressed in tandem with issues regarding natural resources, since they have created big entrepreneurial prospects (Venkataraman, 1997; York & Venkataraman, 2010); a good example is the exponential growth of the clean technology industry. Entrepreneurship is associated with problem solving, innovation and clever resource allocation and when it comes to the natural resources environment the role of entrepreneurs could be that exactly; creating wealth and societal benefit through the recombination of resources (York & Venkataraman, 2010). Entrepreneurs discover and evaluate opportunities as well as creating them (S. Shane & Venkataraman, 2000), or as Sarasvathy and Venkataraman (2009) put it “environmental entrepreneurs may address the found world, but they can also make a new one” (York & Venkataraman, 2010, p. 452).

Sustainable entrepreneurship has been claimed to be the answer to the decline of earth’s ecosystems. The innovations needed will most likely come from entrepreneurs who can identify opportunities while taking into account environmental challenges (Cohen & Winn, 2007). This is an exciting new take on entrepreneurship since it has not always been looked at as something that goes well with environmentalism or sustainability, and as Anderson (1998, p. 135) puts it “it is possible to see them as intrinsically hostile.” Entrepreneurs have been viewed as the greedy capitalist in the past (Anderson, 1998) but now it has become more apparent that entrepreneurial way of thinking can indeed aid on the route to sustainable use of natural resources. This can be seen in new technology that makes all sorts of productions more environmentally friendly, for example pollution reduction by creating better equipment or utilizing waste as material for other products like fertilizer.

As mentioned above, entrepreneurship is about creating and extracting value from a given situation, making it ideal when utilizing natural resources. Natural resources have been

consumed to the point of exhaustion in the past and in fact environmental degradation along with recent economic crisis can be dealt with as a market failure (Korsgaard et al., 2016). Thus, it is understandable that authorities want to oversee to some extent how these resources are managed, however as mentioned previously it is debated to what extent governmental interfering should affect entrepreneurial discovery. Some views claim that political freedom and decentralized power make entrepreneurship most effective and that economically restrictive regulations are not sufficiently effective since they inhibit environmental entrepreneurship (Dean & McMullen, 2007; York & Venkataraman, 2010). Others find that change in the regulatory regime and increased government involvement will encourage a shift towards processes, practice and behaviour that are more ecologically sensitive (Anderson, 1998). On that note the EU emphasizes the concept of bioeconomy, where infrastructure, knowledge and technology are combined towards food security and sustainable natural resource management, as discussed above. Governmental and social pressure for entrepreneurial action that does not cause negative effects on the environment will only develop even further. In those conditions, an entrepreneurial strategy should be looked at as re-sourcing a more holistic view of resources. This includes endogenous use of resources instead of sourcing the most inexpensive ones globally, building regional level resilience and adding value to local resources (Korsgaard et al., 2016).

Natural resources are a valuable part of any economy, but their importance varies between countries, with revenue streams deriving from a diverse asset. Since environmental resources have such unique characteristics, obstructions to their efficient allocation exist and that has in some ways prevented entrepreneurial actions in the market system (Dean & McMullen, 2007). In order to make sustainable entrepreneurship more achievable Pacheco et al. (2010, p. 478) suggest “collectively approved rules of conduct, certification schemes, the assignment of property rights, and the promotion of legislation.” To implement new institutional arrangements collective actions are necessary in order to drive institutional change, and reduce costs. Trade associations and inter- or intra-industry alliances can be a way of exploiting opportunities and increase the power of the entrepreneur (Aldrich & Fiol, 1994).

2.3.1 Entrepreneurial process and motivation

A process based view of entrepreneurship has been described by many respected scholars (Bruyat & Julien, 2001; S. D. Sarasvathy, 2001; S. A. Shane, 2003). Sarasvathy’s model of effectuation entails entrepreneurs starting with a set of evolving means without assuming too

much about the future, and with little emphasis on goal orientation. Shane's model has been discussed above where a situation is perceived so that resources can be combined in a new way that could produce surplus over costs. This requires a vigilant individual to discover the opportunities, who then has to evaluate whether or not attempt to exploit them. To be successful in creating and managing a new venture, the entrepreneur has to obtain resources, develop strategies and design organizations. Moroz and Hindle (2012, p. 812) have criticised these models claiming them not to be "models of entrepreneurial process but models of how to do some very particular thing in a very particular way." Still, by viewing entrepreneurship as a process instead of focusing only on the entrepreneur, allows it to be something that is attainable for interested people, not only a selected few.

Hindle (2010) argues that the entrepreneurial process can not be conceived a-contextually since it is subject to the contextual constraints of the environment in which the it takes place. What defines the intermediate environment where entrepreneurial processes take place in, is the concept of community. Community factors are thus crucially important as the contextual constraint on entrepreneurial processes and must be taken into account and examined when those processes are studied. Hindle (2010) distinguishes between four units of analysis when addressing entrepreneurship as a process (Figure 3).

Human agent

- There must be a defined human actor (an individual or group of human beings) involved.

Object entity

- Objective that is cultivated, either or both a new venture or a business opportunity when entrepreneurship is the process under consideration.

Intermediate environmental context

- An area capable of some degree of control by the human agent but also exercising some degree of control over him or her.

Macro environmental context

- An influential constraint upon but uncontrollable by the human agent.

Figure 3 Four units of analysis when addressing entrepreneurship as a process (Hindle, 2010)

Distinguishing between the intermediate from the macro environment is vital when analysing a process, since both affect the entrepreneur but the amount of control differs. The *intermediate environmental context* is an area that is in some degree of control by the

entrepreneurs but also has some degree of control over him or her. The control a person utilizing a natural resource has over that area involves how and to what extent that utilisation is. The misuse of this control has caused environmental problems and resource drainage, resulting in negative economic effects. This negative effect is the control the environment has on the one who utilizes it, and the human control is although but limited.

The *macro environmental context* is defined as an influential constraint upon but uncontrollable by the human agent. It is impossible for an entrepreneur have full control over natural fluctuation of living things, the amount of oil in the world, or the economic state of a country. This lack of control requires adjustment and resourcefulness, which comes down to the human agent. That individual or group must possess a set of traits, like know-how, interest or drive, and access to resources, since an important influence in decisions making in the entrepreneurial process are the attributes of the person (S. Shane, Locke, & Collins, 2003). Aldrich and Zimmer (1986, p. 3) conceptualize entrepreneurial activity “as a function of opportunity structures and *motivated* entrepreneurs with access to resources.”

The achievement of success that entrepreneurs gain through exploiting an opportunity is often is believed to be only of a commercially oriented kind, i.e. money, power and/or status. This is not always the case, and motivations can derive from other aspects like goal accomplishment or simply survival (necessity entrepreneurs) (Bosma & Levie, 2010). According to the literature, motivations can be either intrinsic or extrinsic, or both (Carsrud & Brännback, 2011). Intrinsic motivation refers to a personal interest in the entrepreneurial task whereas extrinsic motivation is an external reward that follows a particular behaviour, but both can motivate the same entrepreneur (Elfving, 2009). Success and goal accomplishment is something that might motivate entrepreneurs internally while their external motivation is to obtain wealth and status (Carsrud & Brännback, 2011).

Personality traits that have been linked to entrepreneurial motivation are *the need for achievement, risk-taking propensity, tolerance for ambiguity, the locus of control and self-efficacy* (S. Shane et al., 2003). According to Collins et al. (2004) the need for achievement is an effective tool when differentiating between firm founders and the general population and also between successful and unsuccessful groups of firm founders. Firm founder also seem to have a higher tendency to take risk than other people, a trait that suits the entrepreneurial process well since it involves acting in the face of uncertainty. Starting a business is challenging and the potential for success is unpredictable. This is why tolerance for

ambiguity can be an important trait for entrepreneurs along with locus of control or the extent to which individuals believe that their personal characteristics or actions can affect outcomes (Schere, 1982; S. Shane et al., 2003). Being confident in your abilities to take on the task at hand, also known as self-efficacy is a trait that explains why people that possess equal abilities perform differently. People with high self-efficacy put more effort into their task for a greater length of time, persevere through setbacks, set and higher goals, develop better plans and strategies and use negative feedback to improve their performance. “These attributes of self-efficacy may be important to the entrepreneurial process because these situations are often ambiguous ones in which effort, persistence, and planning are important” (S. Shane et al., 2003, p. 269).

2.3.2 Innovation models

The relation between innovation and entrepreneurship is described by Hindle (2009) as the function of combining an inventive process with an entrepreneurial one to create new economic value for distinct stakeholders. Together invention and entrepreneurship can comprise innovation, but entrepreneurs do not have to be inventors and therefore the processes are indeed distinct (Hindle, 2010). Innovation can although be a useful tool when taking an advantage of opportunities. Different types of innovation exist and according to Rönnlund, et al (2014) it is imperative to understand the difference between linear and systemic innovation models in order to understand innovations in the sustainable environment (whether they are product, technology, services, societal or operational innovations):

Linear innovation model estimates the “development of products, technologies and services from the traditional linear perspective: research leads to more applied research and development activities, which in turn lead to piloting, demonstration and finally commercialization of developed innovations and wider diffusion in society” (Rönnlund et al., 2014, p. 11). The model is often considered to be either technology or market driven since it usually has technology or market as its one main force (Teräs et al., 2014).

The innovation models have different starting points since they are pulled and pushed by dissimilar forces. The starting point in market driven or market-pull innovation models is a market need, for which the best solutions are developed further and commercialized. When it comes to technology driven innovation models that are pushed by technology, the starting

point is a technological innovation, which is developed further and the best applications are developed and commercialized (Rönnlund et al., 2014).

Rönnlund et al (2014) point out the drawback of both approaches, where in the traditional model the view on innovation is often too narrow. This means that research questions can be scoped too narrowly, with interaction missing to the ever changing operating environment. To overcome this, open innovation and user-driven innovation models have been developed, bringing more advanced dynamics into innovation

Systemic innovation model takes a broader look at innovation. It targets “systemwide innovations, where innovation provides completely new ways of doing things: new value chains, new markets and radically more effective operations” (Rönnlund et al., 2014, p. 11). Open innovation cooperation of diverse actors in the value chains and markets is needed in the systemic innovation model, for the development and introduction of the innovations. This is useful since it can link together innovations developed elsewhere, and be taken into new markets (Rönnlund et al., 2014).

The advantages of systemic innovation are pointed out by Rönnlund et al. (2014). They mention the possibility to exploit potential synergies between different competencies, actors and value chains and also the possibility to generate value in a shorter time frame and reasonable development effort. This suits the sustainability model, where different actors come together from various sectors to find ways to increase value and diminish waste by combining their forces. Systemic innovations can be supported by “transformative innovation policy, which can be applied to support transformative systemic changes like low carbon society or green economy” (Rönnlund et al., 2014, p. 12). The model is especially interesting for bioeconomy or natural resource environment since it is fundamentally a systemic transformation in business and society.

When combining innovations from numerous actors and sectors into novel value networks, the open innovation model can be challenging to adapt in practice and management of intellectual property rights, creating difficulties for systemic innovation. In spite of this, it does suit entrepreneurial sustainability ideas of the bioeconomy for example quite well, and obstacles are to overcome them.

2.4 Summary

In the past, a gap has existed in the entrepreneurship literature when it comes to the future and where opportunities will come from, but issues regarding natural resources have led to big entrepreneurial prospects (Venkataraman, 1997; York & Venkataraman, 2010). To create opportunities entrepreneurs need resources and the growing attention to the natural environment and the negative changes surrounding it has generated new opportunities in the marketplace since these effects have redefined firms and their markets along with regulatory regime and funding systems (Dean & McMullen, 2007). The European Union emphasises the bioeconomy, where building blocks for materials, chemicals and energy are derived from renewable biological resources, a concept that rhymes well with the idea of a sustainable entrepreneur (McCormick & Kautto, 2013). A sustainable opportunity is a part of sustainable development which involves “meeting the needs of today's population regarding production and income without compromising the ability of future generations to meet theirs” (Butlin, 1989, p. 235). Factors that affect whether a person discovers a given opportunity are the possession of prior information necessary to identify an opportunity, and the cognitive properties necessary to value it.

The decision to exploit an opportunity is an interesting part of the entrepreneurial process, but it relies on a combination of the nature of the opportunity and individual differences. Hindle (2010) argues that the entrepreneurial process can not be conceived a-contextually since it is subject to the contextual constraints of the environment in which the process takes place. This means that the location of the entrepreneur must matter, taking into account the intermediate and the macro environmental context.

The achievement of success that entrepreneurs gain through exploiting an opportunity can be of a commercially oriented kind, related to goal accomplishment or simply be a matter of survival (necessity entrepreneurs) (Bosma & Levie, 2010). According to the literature, motivations can be either intrinsic or extrinsic, or both (Carsrud & Brännback, 2011). Intrinsic motivation refers to a personal interest in the entrepreneurial task whereas extrinsic motivation is an external reward that follows a particular behaviour but both can motivate the same entrepreneur (Elfving, 2009). Together invention and entrepreneurship can comprise innovation, but entrepreneurs do not have to be inventors, and therefore the processes are indeed distinct (Hindle, 2010). Innovation can although be a useful tool then taking an advantage of opportunities.

As mentioned above, a gap has existed in the entrepreneurship literature regarding where opportunities will come from. The attention has moved to natural resources as a source of entrepreneurial opportunities, and in this study the research gap addressed is how they work as such; namely how natural resources affect the entrepreneurial process from discovery to sustainable exploitation.

3 Methodology

3.1 Research design

3.1.1 Why a case study?

A case study is viewed as a useful research method when “a how or why question is being asked about a contemporary set of events over which the investigator has little or no control” (Yin, 1994, p. 13). A case study allows for a phenomenon to be investigated in its context as opposed to replicating it in a laboratory setting (Rowley, 2002). The fact that the research question in this thesis has the interrogative pronoun “how” and a present day emphasis, calls for a case study. Designing the research in a logical way is vital since it links the research question to the collected data.

A case study approach suits the nature and the context of the presented research question very well, where the information needed to answer it would be limited if attained via questionnaires or other quantitative methods. This is because of the difference in the type of ventures investigated, demanding an interview that can be adjusted in some ways to each case. The context is also important since the industry of sustainable products, foodstuff, fuel and energy is growing and changing rapidly.

3.1.2 Case study type

Understanding how natural resources have affected the entrepreneurs’ ventures, can best be done by a holistic case study with one unit of analysis. For this research a multiple case study, also termed collective case study was used (Stake, 1995; Yin, 1994). A multiple case design provides a robust study where it is vital that every case serves a “specific purpose within the overall scope of inquiry” (Yin, 1994, p. 45).

According to Yin the logic underlying the use of multiple-case studies requires that each case must be carefully selected so that it either

- predicts similar results (a *literal replication*) or
- produces contrasting results but for predictable reasons (a *theoretical replication*).

This case study relies on the former, where the purpose of the results is to shed a uniform light on the answer to the research question, where results are not predicted to contrast. This allows understanding similarities and differences between cases, with analysis across settings and within each one (Baxter & Jack, 2008).

Case studies can also be categorized as explanatory, descriptive or exploratory (Yin, 1994). The research aims to shed light on *how* the natural resources affect sustainable entrepreneurship, by retrieving information from people who currently have ventures built upon that kind of resource. The type of research question, the limited control the researcher has over behavioural events and the contemporary focus of this research categorize the study as an *exploratory* one.

3.1.3 Unit of analysis

For the research question:

How do natural resources affect sustainable opportunity creation and entrepreneurial discovery?

The unit of analysis is the entrepreneur and the independent variable the accessible proximal natural resources. Accessible proximal natural resources are in other words the natural resources in the study area that the entrepreneurs have access to. The case study is at a micro level, focusing on the relationship between resources and entrepreneurs, and the approach to the study was inductive research, where the interview questions are based significantly on the theory (Rowley, 2012).

3.2 Data collection

One strategy devised to increase the credibility of gathered data is triangulation of data sources, data types or researchers (Baxter & Jack, 2008). Using multiple sources of evidence enables the phenomena to be viewed and explored from multiple perspectives, enhancing data quality which should result in a more convincing conclusion (Baxter & Jack, 2008; Stake, 1995). In this research interviews are the primary data, accompanied with secondary

data derived from theory and a venture background enquiry, as well as a research position within a company examining innovation in the bioeconomy.

3.2.1 From research question to closure

The strengths that follow a theory developed from case study research are novelty, testability, and empirical validity, concepts that come from close linkage with empirical evidence. Conceptual framework is important in the process of building a theory from a case study research. By relying on Eisenhardt's (1989) approach this data gathering will entail the most preferred process for this type of study (Figure 4).

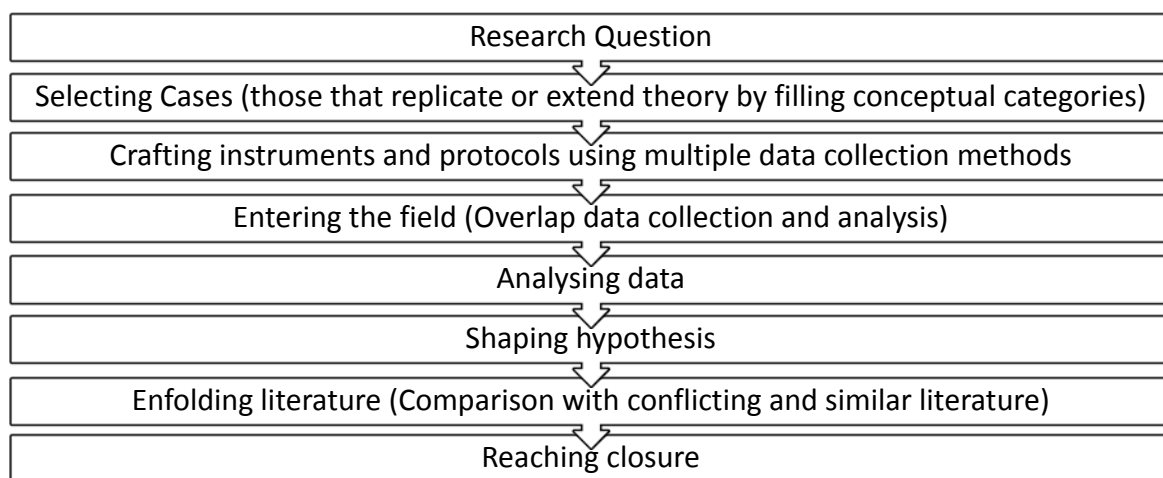


Figure 4 Data Study process (Eisenhardt, 1989)

The research question formulation can be seen in previous chapters and the last three steps in Eisenhardt's approach can be viewed in the Further research chapter below since this research does not include the shaping of new hypothesis. Case selection motives, data collection instruments and steps taken before entering the field are described in the following sections.

3.2.2 Research area

The research area had to include natural resources and entrepreneurs that utilized them in sustainable ventures, and for that Breidafjordur bay in Iceland was selected. The bay is situated in West-Iceland (figure 5) and is known in for its bounty when it comes to natural resources. The bay is relatively large (150 km deep and 50 km wide) with 6000 residents in several coastal villages and farming communities. While a large majority of the area's

industries are natural resource based, a clear distinction can be made between 3 different economic areas and local labour markets:

- The south coast is the most populous with a strong fisheries industry.
- The northern area, including the area up to Arnarfjordur on the central Westfjords is host to a growing ocean aquaculture industry.
- The eastern part is an agricultural area with a significant algae industry.

The marine wildlife in Breidafjordur is abundant and the biodiversity of the area is vast, ranging from large marine mammals to the smallest planktons. The population of the surrounding area has sustained over the centuries by utilizing these diverse resources.



Figure 5 Study area: Breidafjordur in Iceland

3.2.3 Sampling

Data was principally gathered through face-to-face interviews with eight entrepreneurs, who were chosen based on their ventures. The criteria included that they:

1. Were situated in the research area
2. Exploited natural resources in their ventures
3. Had sustainability emphasis or environmental awareness.

The specific location was chosen and the criteria closely followed as a measure of preventing the case becoming too broad. Usually the interviewees were visited on their location so observation and field notes were a part of sampled data. Additionally, web research on the ventures was used along with annual reports on the situation in the area. Information about the ventures and the entrepreneurs can be found in Table 1.

Table 1 Information about the entrepreneurs and their ventures

| Company/ Entrepreneur | Operations | Found ed | #employ ees | Total turnover/ Total assets (Thousand Eur) | | Background of the entrepreneur(s) |
|---|---|---------------|--|--|----------------------------------|---|
| Leir 7/ Sigridur Erla Gudmundsd. | Sigríður Erla Guðmundsdóttir of Leir 7 uses Icelandic clay (from Ytri - Fagridalur) for production of practicable ceramic and art work, but the clay is not used as such by any other artist. | 2007 | 1 | 10,24 (2014) | - / 10,28 (2013) | Graduated from the Icelandic College of Art and Crafts in 1990, working with clay ever since. First trial with the Icelandic clay in 2002 making floor tiles. |
| Narfeyrarstofa / Saethor Heidar Thorbergsson | A restaurant in Stykkishólmur focusing on local produce (meat, vegetables, seaweed) and Icelandic culinary art, with emphasis on utilizing the whole animal and throwing away as little as possible, thus reducing waste. | 2001 | Winter: 5-6 Summer: 14 | 227,2 (2014) | - / 239,1 (2013) | Culinary chef for 25 years. Expert meat cutter. |
| Midhraun / Bryndis Gudmundsd./ Sigurdur Hreinsson | Midhraun is an organic farm in the south of Snaefellsnes, where the residents are experimenting with organic fertilizer from fish entrails and seaweed, and fuel made from bio-waste. | 2001 | 2 (in current fertilizer ad- vances) | - / | - | Farmers since 1987, fisheries production, organic sheepfarming, honey production, biofuel production, fertilizer experiments |
| Agustson/ Sigurdur Agustson | One of the leading producers of seafood in Europe, emphasising self-sustaining utilization of natural resources, raw material as well as sources of energy and reducing the volume of refuse from production and ships. | 1933/ 1990 | 50 | 5341 (2014) 6003 (2013) / | 9368 (2014) 6775 (2013) | Studied entrepreneurship in the USA. The company is family owned, with the current chief focus on production of Coldwater Shrimp and Salted fish. His father was the entrepreneur that started scallop catching in the bay, which became one of the cornerstones of the area's economy until it crashed due to a viral infection. |
| Thorisholmi/ Olafur Orn Asmundsson | A small fishing company focusing on sea urchins, a marine species rarely caught in Iceland, developing methods for wild catching and cultivation. | 2005 | 10 | - / | 1580 (2013) | Has been in the fisheries business for decades. Attended school for first mates and worked as a fisherman from a young age. Nowadays he does not work on the boats but in the office. His father's experience had a lot to do with the venture since he had caught scallop in the past and knew the area and methods. |
| Islensk blaskel og sjavargrodur/ Simon Sturluson | A small fishing company focusing on blue mussel and new methods for utilizing seaweed. | 2007 | 5 | 178,0 (2015) 134,0 (2014)/ | 170,3 (2015) 157,4 (2014) | Originally an electrician and worked as such. Then started working as a fisherman on a small boat. I sold his quota in 2005 and then "had a lot of money he needed to put in use." |
| Islenskur Aedardunn / Erla Friðriksdottir | A company that collects eiderdown and sells as a raw material as well as products, developing new methods for the processing of the down as well as novel marketing approaches. | 1991 | 1 fulltime Seasonal variation of 5 | 433,6 (2014) | - / 400,5 (2013) | Has a B.A. in business administration, and was marketing manager and later a CEO in big companies in Reykjavík and banks. Moved back to the bay when asked to take the position of town mayor. After 5 years she fully got into the family business which she had always attended to it alongside other projects since 1991. After quitting as a mayor she decided to try if she could get into the down business fulltime. |

3.2.4 Tools

Several tools were used to collect different types of data, in the effort of making sure of triangulation. Those were interviews, published literature and archival data.

Interviews

A well designed interview along with the appropriate interviewees can provide a variety of insights and useful understanding (Rowley, 2012).

Interviews are useful when:

- The research objectives centre on understanding experiences, opinions, attitudes, values, and processes.
- There is insufficient knowledge about the subject to be able to draft a questionnaire.
- The potential interviewees might be more receptive to an interview than other data gathering approaches.

(Rowley, 2012, p. 262)

For this case study semi-structured interviews were conducted with people that had personal experience within the research topic. Semi-structured interviews “take on a variety of different forms, with varying numbers of questions, and varying degrees of adaptation of questions and question order to accommodate the interviewee” (Rowley, 2012, p. 262). Semi-structure interviews provided flexibility whilst keeping the conversation flowing.

Eleven topics were chosen with the purpose of generating data that would answer the research question and the questions adapted to each participant. First, the entrepreneurs’ background, as well as the story behind the venture was established with the purpose of understanding the entrepreneurial motivation. Discussing the product and the venture organisation along with conversation about what resources are utilized, and views on the environment or sustainability further shed light on the entrepreneur’s mindset. Also, regulations were addressed to better understand their effect as, for example, hindrance or encouragement. These factors helped to understand how opportunities were identified or discovered.

Published literature

This study relies among other things on several sources of published literature, mainly scientific articles, and reports. The scientific articles established most of the theory and understanding of the material. That entails literature on entrepreneurial opportunity

creation/identification, the effect of governance and regulation on natural resources and innovation models. Also, reports regarding the bioeconomy in Europe, along with reports from the EU and OECD.

Archival data

Archival data includes background research about the entrepreneurs and their ventures along with investigation on available natural resources in the research area.

3.2.5 Interview protocol

For this research eight entrepreneurs were interviewed, whose ventures relied on natural resources in the research area. The entrepreneurs were located through suggestions via several sources; a biotech company that had worked with entrepreneurs from the research area, representatives from the area's regional park and town councils. Preliminary interviews were done with those parties with the purpose of getting an idea of the entrepreneurial activities in the area and resources available. When choosing interviewees, it was made sure that they utilized different resources, marine and land based, and had a varied background. The preliminary interviews and literature review helped create a base for the semi-structured interviews to come.

Guiding principles

All the interviewees were contacted beforehand and the purpose of the interview explained. It was made sure that just enough about the research was revealed to prevent any effect on the answers. The key guidelines were:

1. The goal of the research is to ascertain how natural resources affect entrepreneurs in their discovery and opportunity creation.
2. In order to define boundaries as recommended by Yin (1994), the research focus is on a certain predefined area which encompasses natural resources. This will prevent the case from becoming too extensive.
3. The interviewees must utilize natural resources from that area in relation to their ventures, in a sustainable way. Sustainability refers to methods of utilizing resources thus they maintain their own viability, by using techniques that allow for continual reuse.

Questions

The questions were guided by two goals:

1. To understand how the entrepreneur spotted opportunities or created them
2. To understand how the natural resources in the area affected the entrepreneur

The first part encompasses questions regarding the venture, the entrepreneur's background and motivations, and the second one covers questions about regulations, the entrepreneur's incentives to work with natural resources along with views on natural resources and the proximity to them. The interviews included a description of the resources the entrepreneur uses and how he/she has utilized them in the past along with the entrepreneurs' goals and reasons for using the material. Factors like regulations and funding/grant availability were also part of the question set, with the aim of better understanding resource availability.

Yin (1994) emphasises that the questions should distinguish between different types or levels of questions:

Level 1: questions asked of specific interviewees

Level 2: questions asked for the individual case

Level 3: questions asked of the pattern of findings across multiple cases

Level 4: questions asked for an entire study

Level 5: normative questions about policy recommendations and conclusions.

The level 2 questions should be concentrated the most for the case study protocol. An outline of the interview questionnaire can be seen in Appendix A.

3.3 Coding

The interviews were transcribed and then coded using a mix of emergent and a priori coding. With emergent or inductive coding, categories are established following an examination of the data while priori coding entails the categories being established prior to the analysis based on the theory.

Most of the categories for the codes in this research were decided based on the interview questions and theory while the rest came up when the data was inspected. Recurring patterns were detected in the so called first cycle coding and then relations between these patterns in the second cycle coding. For some passages descriptive codes were used, which summarize the primary topic with one word (Saldana 2008). Sometimes propositional units were used as a coding unit, in spite of being perhaps the most complex method of defining coding units. This type of unit works by breaking down the text to examine underlying assumptions.

To paint a comprehensive picture of the drivers behind entrepreneurial discovery and the effect of natural resources, recurring words, phrases or meanings were organized and interpreted in relation to the theoretical framework. These drivers can be recognized by identifying a pattern in the data and exploring the relations between them. Table 2 outlines a simple view of the codes and code category used.

Table 2 Codes and their categorization

| | Background and process | Code category | |
|-------|------------------------------------|---------------------|----------------|
| | | Resources | Infrastructure |
| Codes | Experience/background | Environmental views | Funds/grants |
| | Process | Local effects | Regulation |
| | Idea discovery | Sustainability | |
| | Motivation | Waste | |
| | Possibilities of natural resources | Resources | |
| | Ability to adjust | | |

3.4 Establishing validity

The quality of a case study research depends greatly on its validity, which can be constructed by using multiple sources of evidence and cross-verifying them.

Internal validity is the extent to which a study's results can be interpreted accurately and thus has to do primarily with the quality of the interviews (Yin, 1994). To construct internal validity a test interview was conducted, with the purpose of making sure the interview guide and question topics were solid. The results from the interviews were cross-analysed with the literature and other secondary research. Also, additional online research about the companies and entrepreneurs was done to prepare even further. The sampling strategy is also important and the interviewees were chosen in order to represent different usage of natural resources and different backgrounds.

External validity is based on the research design. For this research, seven cases were used, but for external validity and generalization it is essential to realize it is limited to the case of a rural area with few inhabitants, certain types of resources and level of education. The external validity of the findings in areas outside of that particular part of Iceland might be limited but still applicable, especially to areas that are similar when it comes to natural resources availability.

3.5 Ethics

All participants agreed to the interviews beforehand and gave consent to them being recorded. All interviewees were aware that they might be quoted in the text of this thesis. Since the interviewees are asked about their ventures that can be personal or family tied they were offered full anonymity if they preferred that.

4 Findings

4.1 Motivation and process

An apparent reason for establishing a company of any kind is to make a living. There are easier ways of doing so than starting a venture, with all the uncertainty and hard work that follows. So why do entrepreneurs still pursue their sometimes far-fetched ideas?

All of the entrepreneurs interviewed had prior experience in the field or similar field as their venture. Most of them had grown up in the area and knew it well, both natural resources and human. They had in common a long process of evolving their product and methods or approaches.

As mentioned above, Shane and Venkataraman (2000) posited four dimensions of opportunity: existence, discovery, evaluation and exploitation (implementation). The act of evaluation begins with the questioning of “whether an exploitable opportunity exists and can be discovered for defined stakeholders contemplating the creation of new value” (Hindle, 2010, p. 609). The entrepreneurs in this study either had the knowledge that a said resource was there or were informed by local people. It was in their hands to evaluate the possibility of achieving new value from it. Shane suggests that researchers should use motivation as a perspective on entrepreneurship to distinguish those who give up in different stages of the process: “(...) motivations could separate those individuals who positively evaluate opportunities from those who do not, those who obtain outside funding from those who do not, those who continue to pursue opportunities from those who abandon the effort, or those who pursue rapid rather than slow growth” (S. Shane et al., 2003, p. 273). The entrepreneurial processes in this case study were characterized by motivations such as interest in the resource, “thirst for adventure,” political views on sustainability, wanting to uplift the local produce to a higher level, profit incentives and product streamlining. Still, there was a

noticeable difference between the entrepreneurs when it came to those drives, where some had been pushed more by the business or profit side while others had a more environmental or social reason. These motivations can be described as either intrinsic or extrinsic (Carsrud & Brännback, 2011). Intrinsic motivation refers to a personal interest in the entrepreneurial task whereas extrinsic motivation is an external reward that follows a particular behaviour but both can motivate the same entrepreneur (Elfving, 2009). Success and goal accomplishment is something that might motivate entrepreneurs internally while their external motivation is to obtain wealth and status (Carsrud & Brännback, 2011). An overview of the entrepreneurs' motives can be seen in Table 3.

Table 3 Overview of the entrepreneurial motives

| Company | Motivation | |
|---------------------|---|---|
| | Intrinsic | External |
| Leir 7 | Passion for ceramic | A will to uplift an Icelandic material |
| | Interest in local material | Interest in pure route |
| | Interest in this particular medium | |
| Narfeyrarstofa | Passion for local food, farm food direct and slow food. | A will to protect/sustain local production. |
| | Interest in utilizing the raw material to its fullest, minimizing waste | Passion for introducing/being able to offer local produce to tourists |
| Midhraun | Interest in organic sustainable production | A will to utilize waste material as fertilizer/fuel – minimizing waste and cost. |
| | Political view | |
| Agustson | I thirst for adventure | Organic food pays more (or used to) |
| | | Product streamlining |
| Thorisholmi | | Sustain the family business |
| | | A reaction to losing their job; used what and whom they knew to create a new venture. |
| Islensk blaskel | Interest in trying new things | Sold a former business and had money to spend Expected this to be “quick and easy money” |
| Islenskur Aedardunn | Started as an interest/hobby and is a family sport interest in seeing if this could be a full time job | |

Evaluating opportunities requires planning what needs to be done to transform a possible opportunity into a some kind of outline for action, whether the form it takes is purposive

planning (causality), or re-thinking and recombination of existing resources (effectuation and bricolage) (Hindle, 2010). The interviewees described a long process of try and fail, some in the product development, others in their dealings with authorities. The trial and error is another term for evaluating a range of possibilities and revisiting them. This evaluation process is then in the sense the act of discovery and to determine if a one particular design suites for subtracting value from a possible opportunity. The interviewee from the entrepreneurial team of Thorisholmi described the beginning and motivation of their venture as a reaction to losing their jobs. They decided to have one go before giving up, turning to catching sea urchin, using their experience in fishing, connections and equipment. This is along the lines of Sarasvathy's (2001) model of effectuation, where they started with what and whom they knew and went on from there, creating a successful business with 10 employees.

All of the ventures had a sustainable production, some because of sheer interest or political views, and others by default because of fishing quotas and regulation. The entrepreneurs of ceramic production Leir 7, organic farm Midhraun and local food restaurant Narfeyrarstofa all described this interest in working with local natural resources:

"We have a general interest in those things (organic farming/fertilizer) and also the waste material was there. It's a political view really and also it suited us well since we have a big land but a small farm and a lot of waste material. This waste, the fish entrails was not enough though, resulting in the seaweed ideas." - Bryndis, Midhraun

These entrepreneurs all mentioned the importance of utilizing local material, for both economic and environmental reasons. Bryndis and Sigurdur, the entrepreneurial team of Midhraun described the massive cost of imported fertilizer and the absurdity of local fishing companies throwing away tons of fish entrails, and the apparent vastness of unutilized kelp, both of which have proven to be excellent fertilizers. The owner of Narfeyrarstofa, Saethor, had a similar story:

"Why should we be cooking tuna here that is caught somewhere in the Mediterranean when we have good local fish. Also, people that are aware of this and travel make this requirement to taste what happens here." - Saethor, Narfeyrarstofa

Saethor also described an ambition for utilizing the raw material to the fullest, for example by offering deep fried fish skin as a side dish. He was also passionate about the possibilities of Icelandic products like lamb meat he felt had the potential of becoming gourmet foodstuff

because of the care the farmers put into it. Sigridur of Leir 7 shared this passion for local material and talked about the importance of pure route, instead of importing clay from far away countries, and her interest in utilizing something local and unique. Studies indicate that those who have high mastery needs and work orientation but low interpersonal competitiveness are the ones that perform best as entrepreneurs (Carsrud & Brännback, 2011). Sigridur has for example even spread the word and inspired other ceramicists to try out the clay, through her teaching at art schools, and has no intention of keeping her discovery secret.

The entrepreneurial duo of Midhraun probably had the most versatile background in experimenting with sustainable product and methods. This includes organic sheepfarming, production of biofuel from animal fat, fish farming, creating fertilizer from fish entrails and kelp, setting up a beefarm, and more. As describe above, their motivation stemmed from interest in utilizing waste and shortened shipping routes. Both of those factors are in their economic favour with less cost for fertilizer and more income from organic foodstuff, but the incentives were also political and environmental:

“Yes. We always wanted to become sustainable. We have experimented a lot, making our own fuel for example. We find this vision beautiful, that everything goes back into a circle and we don’t pollute or ruin anything and give back what we took.” Bryndis, Midhraun.

The hassle the team went through in their efforts of sustainability has been such that economic dynamics alone would not have sufficed. This includes disagreements with neighbours and battling authorities and regulations or lack there of, an issue that will be addressed below in the infrastructure chapter.

Another venture that had a connection with the care of the environment was the eiderdown selling Islenskur Aedardunn. The company had started as a hobby of the interviewee’s father:

“It was mostly an interest, hobby. Before he bought the island he used to go angling, so this was next. Those who are in this business are mostly in it because of interest than anything else. More enjoying nature than looking at it as a second job – attending to the land. We have been growing the islands that were in a bad state, my dad has also been breeding special sheep that eats plants that are otherwise bad for other vegetation. So spending time outside, taking care of the eiders, the nature, and the houses. This is sort of a family sport” – Erla, Islenskur Aedardunn.

Erla then took on the full time job of marketing the company, mostly as a test of if it could be done, since it had always been a part time job. Erla has an education and background in marketing and by focusing all her time on the company it tripled its revenue in one year. This shows different motivations behind the same company, tied together with family bonds.

Another example of a family owned company is Agustson, which was founded by the interviewee's father. The interviewee, Sigurdur, studied entrepreneurship and his motivations lie in the success of the company, with most entrepreneurial emphasis on product streamlining and furthering the venture abroad. The company puts value on being environmentally friendly, a factor not emphasised greatly by the interviewee, perhaps since it comes automatically as fisheries in Iceland are regulated towards sustainability.

People that choose careers of entrepreneurship can also be doing so in search of independence (Hisrich, 1984). Sustainability was not the motive that pushed entrepreneur Simon of Islensk Blaskel to go into the blue mussel and kelp business. His venture began when finding a clever way of investing the profits from selling his fishing quota. Growing blue mussel on strings in the ocean was supposed to be an easy way to do so but as it turned out the process was way longer and complicated, entailing a lot of work around figuring out the best methods, tools and so forth. Even though little emphasis was put on the sustainable factor, the production is exactly that, with side production of kelp utilization, usually a tossed away nuisance for mussel farmers.

The entrepreneurial process does call for this kind of commitment as described in the above ventures and also, according to Hindle (2010), the need for achievement, mandating a nexus between novelty and value. The entrepreneurs in this research did come across failure, had to rethink their approaches, and some had been working on their idea for years. Sigridur of Leir 7 took two years of just figuring out how to work her material since no one knew the best technique for this exact type of clay. Saethor of Narfeyrarstofa has been developing his ideas for fifteen years and the farmers at Midhraun have been testing different methods over the last twenty, a process characterized by resourcefulness:

“Also what you throw away one day can be valuable the next; we could not rely on the fish waste as a fertilizer since someone wanted to pay for it and also we needed other chemicals that were not in that fertilizer. That’s why we looked into the seaweed. It does lack nitrogen but contains minerals and strengthens the roots of plants so it is overall a very good substance.” - Sigurdur, Midhraun

Sigrídur of Leir 7 established her company, using a material that is abundant but no one else utilizes, even developing a new method of doing so. Still, artist and craftsmen do not necessarily define themselves as entrepreneurs even though they want to make a living based on their art/craft, but rather by what motivates them (Elfving, 2009). Motivation and goals can change over time, i.e. from a need of proof that he or she can do it, to economic reasons when that proof has been established (S. Shane et al., 2003). “In fact, being capable of changing goals, motives, and goal-specific intentions is a way for people to adjust to changing situations. This is frequently the case for entrepreneurs whose intentions, goals, and motives change over time” (Carsrud & Brännback, 2011, p. 16).

The motivations of the entrepreneurs were different, whether they stemmed from interest, profits or environmental concerns but all of them had in common turning to natural resources for their ventures. Their background and means led them to that type of resource. The process was often time-consuming and many of the entrepreneurs in this research were years developing their products, methods and ideology, a process that sometimes is constant and truly never ends. This calls for determination and ambition for the project at hand but obstacles like funding and regulation, a factor addressed in the next chapter of infrastructure.

“It’s easy to have dreams but when it comes to making them happen you’ll hit many walls.”
Sigrídur, Leir 7

4.2 Infrastructure

All the entrepreneurs believed that regulation is important when it comes to natural resources. Interestingly they found it not to be too stringent and some thought it could be even stricter, especially when it comes to waste. In the past, the traditional paradigm has viewed environmental regulation as unproductive from a business perspective, even though beneficial for the environment and society. This view is changing and nowadays regulatory regime and increased government involvement are believed to encourage a shift to more sustainable practices and with it economic growth (Ambec et al., 2013; Anderson, 1998). This does not mean that all regulations lead to positive effect on entrepreneurship but only well designed and stringent ones (Testa et al., 2011).

An example of a faulty regulation that stood in the way of sustainable efforts was in the case of the entrepreneurial team of Midhraun. The pair wanted to utilize animal fat as biofuel but had trouble attaining it, even though the way the slaughterhouses were dumping it was illegal

according to the European Union and not to mention costly. Regional (Icelandic) regulation was missing, causing a hindrance to the process:

“According to EU regulation it is forbidden throw away organic material by burying it into the ground, something that is broken all over Iceland since the last exemption (to EU regulation) expired in 2012 and nothing has been done. So the government should try to fix this and become leading in these matters. (...) In this case the authorities should have let them know that their way of dumping is illegal; then they would think what can we do instead, and what is the cheapest way of doing it. Because the way they do this now is expensive, and that cost always ends up in the price for the customer.” – Sigurdur, Midhraun

The research conducted by economics Porter and van der Linde (1995) introduced into mainstream business the idea that a properly designed and more stringent regulation can trigger a (well beyond cost effective) innovation. This goes hand in hand with their argument that pollution is often a waste of resources, and by reducing pollution, improvement could be made in the productivity with said resource (Ambec et al., 2013; Porter & Van der Linde, 1995). This notion was apparent within some of the ventures investigated. At Midhraun they utilized fish production waste as a fertiliser but had to stop due to regulation confusion among other things.

“The fishing companies have difficulties getting rid of their waste; they are not allowed to dump it into the sea, not bury it in a landfill. Meanwhile farmers are fighting bankruptcy because they get so little for their products and are buying extremely expensive fertilizer from abroad, polluted with cadmium. I am sure of it that the marine companies could pay farmers for taking their waste, measures just need to be taken. But the problem is that the local government is in charge of waste so it is hard for private companies to get involved.”
Sigurdur, Midhraun

The EU considers the bioeconomy to be prospective way of undertaking some large societal challenges, such as food security and sustainable natural resource management, as well as to reduce dependence on non-renewable resources and creating jobs (Teräs et al., 2014). The bioeconomy concept puts emphasis on detecting opportunities and innovating in order to use natural resources in a sustainable way and relies to some degree on the EU’s funding and regulation, making it somewhat a centralized phenomenon. Iceland is obliged to uphold the regulations that the EU puts forth, and not doing so has caused halted the actions of some entrepreneurs in this study. The purpose of the bioeconomy is to create a recycling economy

with emphasis on the use of renewable resources and synergies between food, materials and fuels (McCormick & Kautto, 2013). In Iceland fishing is guided by stringent regulations with control supported with scientific data from the National marine institute. Thus, the fisheries are considered sustainable by default, due to the regulation. The government is currently working on a bill where kelp utilization will be handled in a similar way with a quota system. The entrepreneurs in this study who utilized kelp had different opinions on the implementation of the legislation, since the fishing quota system is quite controversial, so concerns were expressed that the kelp one would end up the same way, in the hands of few.

Even though the entrepreneurs concluded that environmental regulation could be more stringent it did not apply to regulation regarding other parts of their business. When it comes to foodstuff for example, regulation could be more lenient according to the interviewees, especially for new start-ups with minuscule productions. In spite of the small manufacture scale the amount of paperwork and permit applications was very disheartening for the entrepreneurs, even standing in the way of some products. This stems from the cost relating to permits and paperwork (i.e. creating a quality handbook), lack of knowledge about these matters and the time it takes to attend to them.

“We developed kelp pesto also. The kelp pesto did very well in the beginning, the taste was good and everybody were excited. But when it was released in shops the health authority came to us and said that we didn’t have a permit and needed to recall all the jars and announce it in the papers. This had cost us a lot of money. We had to have a special kitchen and a refrigerator for this. But this incident sort of put us off and we did not carry on with it.” - Simon, Islensk Blaskel

It seems that the confusing nature of the regulation is not the only thing that entrepreneurs come across but even the attitude of the institutions is a hindrance:

“For example when we bought the boat I contacted the Icelandic transport authority to get help. That help was very lazy and limited. (...) So this is the biggest issue. The institutions do not have the law ready or the will to help. So this is an extra hassle fighting the system. There should be an agent of some sorts that takes your issues to the right places.” - Sigurdur, Midhraun.

Other described this as something that is simply rooted in the system:

Here you get the feeling that they think that a company's main goal is to break or bend the rules. (...) I think it has to do with obstinacy that started somewhere and has infected every part through the system. (...) and this is what needs to be done more in Iceland, changing the view that private companies and public institutions are two complete opposites. Also law, regulations, procedures etc. could be clearer. We are so much more powerful if we work together.” - Sigurdur, Agustson.

“Governmental influence causes everything to be so centralized. All slaughterhouses had to have their protocols adjusted to export, even though not all of the meat was exported. The system is very difficult. And the big players underbid small ventures right away and kill off the little man.” Saethor, Narfeyrarstofa

Another aspect of the infrastructure that often caused the interviewees distress was something that is designed to aid them, mainly the funding or grant system. Since one of the biggest obstacles when starting and growing a new business is obtaining adequate access to capital, many start-ups rely on funding or grants (Kerr & Nanda, 2009). Entrepreneurship is thought to have a positive effect on economic growth, and funding is therefore available in many forms and importantly, the European Union and OECD encourages the availability of risk capital financing for entrepreneurs (OECD).

Almost all of the entrepreneurs interviewed for this research had received funding or grants of some kind but for none had that been the stepping stone in their venture. All described a frustration with the immensity of the process, lack of know-how, and that small grants were not worth the trouble.

“Mostly more information is needed. We have been working on this for four years and people come and ask us why we haven't applied for funds or grants and then it turns out that we have gotten too far with the project to make it eligible for them; we should have applied earlier in the process but we didn't know about them then.” Sigurdur, Midhraun

“(...) it has helped people that are starting and also I have seen people depend on it again and again. Also, this cannot be a too complicated process; if an entrepreneur receives funding the paperwork around it cannot become so complex that he or she cannot handle it.” - Olafur, Thorisholmi

Olafur also expressed that factors that followed grant applications like meetings and cooperation with others were not attractive for them:

“We also don’t want to share too much of our information to newcomers, we are the most experienced ones, starting ten years ago.

Competitors have tried to underbid us but our relationship and reputation with the customers have kept us afloat – the first mover effect.”

Since grants and funds were not so easily obtainable and some were not interested in them other measures were taken to make the ventures a reality. Instead of depending on grants the entrepreneurs:

1. Relied on their own capital
2. Developed the product slowly
3. Utilized resources from previous productions

“There is a good atmosphere regarding it but the funding system is faulty, it is so much trouble to apply for them” – Simon, Islensk blaskel

“I don’t really like applying for them. It is a lot of work and also you need to have time to do the thing you applied for the money to do. For example I received a grant in tandem with a clothes designer to create a business plan to make clothes from the down but we have not gotten around to it because we lack time.” -Erla, Islenskur Aedardunn

Table 4 Measures taken by the entrepreneurs instead of relying on grants/funds

| Company | Measures instead of grant dependence | | |
|----------------|---|---|--|
| | Relied on their own capital | Developed the product slowly | Utilized resources from previous productions |
| Leir 7 | | X (Did not receive funding applied for, took 2 years in development) | |
| Narfeyrarstofa | X (Had the restaurant) | X (Gradually added more local and fully utilized produce) | |
| Midhraun | X (Had numerous productions at their farm, fishing, sheep, mink fur) | X (Have tried new things for 20 years, adding to their production) | X (The farm with its land, facilities and equipment) |

| | | | |
|----------------------------|---|--|------------------------------|
| Agustson | X (Company already established by father) | | X (Equipment and facilities) |
| Thorisholmi | X (funds from previous job) | | X (Equipment and facilities) |
| Islensk blaskel | X (Sold fishing quota) | X (Has been developing the method for years) | X (Equipment) |
| Islenskur Aedardunn | X (Had another job alongside in the beginning) | | |

Table 4 shows what measures the entrepreneurs took instead of relying on grants or funds. By developing the product over time the process was less expensive, allowing the entrepreneurs to utilize their own capital. Many of those who did not take a long time in development had resources from previous productions, like equipment and facilities, making it easier to move faster. The capital relied on, ranged from slowly developing the business, previous ventures or other jobs. The choice to develop the product slowly did not solely stem from the lack of funds but also developing the best methods and actions. Retrieving the right chemicals from kelp has, for example, taken the entrepreneurs from Midhraun time and money, with necessary facilities and scientific consultation from the capital and abroad. The owner of Leir 7 had to figure out a new technique that suited her medium, a two year process. Simon of Islensk blaskel is still finding the optimal way of keeping the mussel growing on the lines they are kept on, trying out different equipment. Still, there is no denying that these processes could have taken less time with unlimited funds

Most of the grants or funding the entrepreneurs received were from public institutions. According to Sorenson and Stuart (2001) VC firms are much more likely to fund entrepreneurs located within a short geographic distance from where they are based (or to provide funding on the condition that entrepreneurs move closer to the VC firms). The area chosen for this research does not have a vast number of VC firms and that might explain why the ventures did not receive that type of funding. This fact is a part of a concept that kept resurfacing during this research: the importance of location.

4.3 Resource proximity

According to Carsrud and Brännback (2011) motivation is shaped in the individual-environment context. This notion kept reappearing throughout the interviews, namely the effect of the vicinity to the resources had on the entrepreneurial activity. This entails the knowledge about local resources gained from living in the area and experiencing what is

possible and available, even from a young age. Also, benefiting from the knowledge of others, simply by being acquainted with experienced people and living close to them. Some were carrying on a family “hobby,” evolving it into a business. It seems that the proximity to the resources evokes interest in utilizing them and the know-how evolves alongside with it. The interest did not only involve aspiration for financial profit but also sustainability, environmental concerns and positive effects on the community and area.

“This has always been what I want, I was raised here in Breidafjörður and have spent a lot of time on the island; my parents have a few of their own, hunting bird and fish. The material we have here is of such high quality and the “hottest” thing now in the restaurant business is to avoid transporting produce between continents. It’s expensive and pollutes, shipping foodstuff long distances.” Saethor, Narfeyrarstofa

Commonly, the price of products is lower when they are sourced externally, a factor that might dissuade usage of local material and labour. On the plus side, being close to the raw material offers a short shipping route to where it is further handled and processed along with creating local jobs. This can even create a mini closed economy, an example in this research where Sigridur of Leir 7 purchases clay from a local landowner and sells her processed product (ceramic) to local restaurants, supplying them with crockery. This particular entrepreneur thanks not only the natural resources for her success:

“It is not only the natural resources that I have experienced here. But also the resource of moving here. I used to have a shop in Hafnarfjörður, but when I opened one here I spotted this resource of being here. (...). This connection I had never felt in Hafnarfjörður. – Because you have this vicinity here, you are familiar with the next person.” – Sigridur, Leir 7

This local small town effect can be a quality, but when moving the product outside of that comfort zone more emphasis has to be on marketing. Some of the entrepreneurs created a demand for their product by introducing it to customers as a better option, whilst others moved in more slowly and relied on the quality of their product and reputation. The venture utilizing eider down went the less travelled road and opened an eider centre where the origin of the product is introduced with trivia about the birds, as a way of reaching new customers.

“The idea is to have a place where we can promote the eiderdown, and provide biological knowledge about the bird and also how the down is processed. (...) The aim of the centre is to promote and introduce the material, eiderdown, and get one step closer to fully process it

into a product here in Iceland. So there we have a place or a scene where we can introduce it to foreign buyers and also to those who are just passing through. People can then buy duvets there and educate themselves about eiders.” – Erla, Islenskur Aedardunn

Proximity to resources and previous usage of “traditional” ones can also aid in discovering new ones. This relates both to experience and access to facilities and equipment. Starting costs can be high and sometimes a great hindrance for start-ups and as mentioned above, previous knowledge in said industry is usually one of the key elements for success. The entrepreneur of Islensk blaskel describes how he started using the kelp that got stuck on the lines the blue mussel grew on:

“But this alone would never have paid off as a single venture but because we had the boats, infrastructure and employees from the mussel production. It is basically utilizing something unwanted that would be thrown away. This is similar to how fish was once treated; everything used to be thrown away except for the meat but now every single thing is used.”

Infrastructure from one operation can lead to another, and that also applies to waste from those operations. For many of the interview entrepreneurs their current venture spawned from thoughts revolving around how their waste could be managed in a more profitable and sustainable way. This resolved in organic fertilizers and new innovative products like kelp salt. It seems that being close to a natural resource makes the entrepreneur see opportunities in every corner. The interviewees mentioned marine animals like starfish that have not been utilized in Iceland, along with kelp and seaweed that is becoming more trending. The question is the profitability, a part of the evaluation process mentioned above. A strong belief in the local material also aids in the commitment to it

“Why should we be cooking tuna here that is caught somewhere in the Mediterranean when we have good local fish. Also people that are aware of this and travel make this requirement to taste what happens here.” - Saethor Narfeyrarstofa

The intermediate environmental context is an area that is of some degree of control by the entrepreneurs but also has some degree of control over him or her. The control the interviewees have over their area is the utilisation of the resources and to what extent. The misuse of this control has caused environmental problems and resource drainage, resulting in negative economic effects, which are ultimately the control the environment has on the one who utilizes it. The human control is although but limited. The macro environmental context

is an influential constraint upon but uncontrollable by the human agent. The entrepreneurs had little control over the strain fluctuation of marine animals or kelp strains due feed availability for example, or the economic state of the country. Those are factors that require adjustment and resourcefulness.

Vicinity to other natural resources also helped those who depended on seasonal ones. Thorisholmi relies on sea urchins which are only caught during the winter is able to focus on fish during the summer months, using equipment and facilities at hand. Bridging that gap could have been more difficult if the venture had relied on another type of resource or one that is gathered from a location far away.

4.4 Human resources

The local physical resources the entrepreneurs depended on were not only natural but also facilities or buildings for their productions. Old workshops and former brewery were among those structures, along with houses that had a long history intertwined with the town they were situated in. The entrepreneurs also enjoyed the fact that the towns in the area are so small and found that it paved the way in many cases. People were easier to reach and the route from decision to action was shorter than in a big complex city or community, and this human factor proved to be of value to many of the entrepreneurs.

“I think it’s how few people live here that is the key. It was very satisfying how it worked out. Outsiders marvel how well we have worked together around here.” Sigridur, Leir 7

“Yes it is a small town effect. And also karma, those who you have been nice to will do you favours.” Islensk blaskel

This factor of human resources is important for entrepreneurs but the interviewees expressed different views on how accessible they were. Sigridur of Leir 7 was very pleased with the vicinity to small businesses and how easy it was to establish collaboration in such a small community as seen in the quote above. Simon of Islensk blaskel emphasised the positive affect the small community had when needing favours or discounts for a small growing venture. However, the level of education tends to be higher in bigger cities due to brain drain from rural areas. The entrepreneur of Islenskur Aedardunn described this as a problem when it comes to marketing and business aspects of her venture, with higher education and “freshness” missing, something she said was enough of then working in the capital.

“Firstly average age is high, few people have higher education. (...). There is some “freshness” missing, and that dialog regarding marketing matters. Also, creative environment.” - Erla, Islenskur Aedardunn

Ventures that needed scientific measuring and methods for their production had to get that from companies in the capital, some even seeking foreign scientific assistance. This could be due to the brain-drain problem and the fact that few young educated people are interested in moving from the city to rural areas. Yet, in spite of the brain drain, one entrepreneur described a “battle of the resources,” where a resource that was not given much notice before, moved to a wanted stage as soon as someone discovered it could be valuable. This is the case with the kelp harvesting, a material that was not considered much more than a slimy nuisance a few years ago. The popularity has now pushed the government to come forth with a quota bill that is currently under preparation. In this research the interviewees that utilized kelp or marine animals had different opinions on this bill. Some found it dangerously similar to the quota on fish that created a monopolized market for few individuals but those who depended on marine animals were worried that too much harvesting of the kelp would affect the prospect of larvae for example and wanted it to be controlled. The first movers in this case have had the upper hand, but the question is what will happen when the regulations hit.

5 Conclusion

The purpose of this research was to distinguish how natural resources affect entrepreneurial action, focusing on sustainable opportunity creation and entrepreneurial discovery. An exploratory case study was used to try and answer the research question, where eight entrepreneurs of seven ventures utilizing natural resources were interviewed. The literature review covered natural resources, how the threat of their finite nature has produced a new breed of entrepreneurs, regulations aimed at protecting them and the bioeconomy concept that spawned from those concerns. Sustainable opportunities and the route from discovery to exploitation were also covered, along with the field of entrepreneurship and its processes.

To understand how the natural resources affected the entrepreneurs it is useful to understand their motives. These motivations can be described as either intrinsic (personal interest) or extrinsic, focusing on external reward (Carsrud & Brännback, 2011). All of the interviewees relied on their venture to make a living, so all had somewhat financial extrinsic motives. The

intrinsic ones were however more diverse. The interviewees of Narfeyrarstofa, Leir 7 and Midhraun shared a passion for pure route of produce, local products, minimizing waste, great interest in sustainable organic production. The entrepreneurs of Thorisholmi were reacting to a lost job while the ones from Islenskur Aedardunn and Agustson were developing a family company in new directions. Simon of Islensk blaskel was motivated by adventurism, looking for an interesting way of investing his money. These different types of motives, environmental, financial and personal ones were usually somewhat mixed. Sigridur of Leir 7 was interested in ceramics before she started emphasising the pure route. The entrepreneurial duo of Midhraun had a farm and then moved into a more organic production.

It is interesting to look at the choice to utilize natural resources, and also the choice to do so in a sustainable manner. It seems that those who went for the sustainable usage did so out of interest and care for the environment. Those who were sustainable by default due to regulation liked to use that eco-friendly value to further their product, by using it in their marketing. The choice to utilize natural resources was largely shaped by the individual environment context, influenced by the entrepreneurs using what they knew, depending on prior experience. For some, it was an obvious option, originated from the proximity to the resources and experiencing others utilizing the natural environment. The opportunities went from being discovered to exploited, with the process driven by the motives mentioned earlier.

A well designed and stringent regulation is said to favour innovation. The European Union is setting a course towards a more resource-efficient economy, also known as the bioeconomy and the strategy put forth to achieve these goals is, among other things, pushing policymakers and stakeholders to work more closely together. The entrepreneurs in this research all described the same view that environmental regulation could be stricter. This leniency, or in other terms the government failing to uphold European regulation standards, even stood in the way of some sustainable efforts. Regulation regarding the production of foodstuff was on the other hand too heavy for smaller ventures, resulting in a product being cancelled in one case. Other described a obstinacy in the system, sometimes working against them. This shows that regulation and policies need to be updated, as well as shaped and made more accessible so that smaller ventures have a chance.

Fund accessibility was somewhat a frustration for the entrepreneurs interviewed. Most of them had received some type of grants but most were small and the application process troublesome. As expressed by the owner of Narfeyrarstofa, no production should rely solely

on external funding system. Still, access to funds could be better and the team from Midhraun expressed the need for more information and assistance with grant applications. Instead of depending on grants the entrepreneurs relied on their own capital, developed the product slowly and utilized resources from previous productions. By developing the product over time the process was less expensive, allowing the entrepreneurs to utilize their own capital. Infrastructure from previous production such as facilities and equipment and not to mention knowledge also aided the process.

The knowledge the entrepreneurs possessed and their drive to further their ventures might be why all of them saw unutilized potential in the area, a sort of “opportunity in every corner.” Proximity, knowledge, interest and financial drive seemed to matter the most in this utilization but additional research is needed for validation, and to make that applicable to other countries, areas or situations.

5.1 Further research

This study addressed the effect of natural resources on entrepreneurship. Along with somewhat interesting results the research led to ideas about further possible inquiries.

Of course, more research in that particular study area would be interesting. A discussion with local entrepreneurs that did not utilize natural resources in their ventures could shed more light on what pushed the interviewees in this study to do so. This could be factors like background and motivations, access to resources, funds and so forth. Or even just different interest altogether.

A research looking at an area with a different combination of natural resources could prove informative, in order to isolate the resource variable and its effects. Isolating it even further by examining the effects of for example only marine based natural resources, or investigating separately the four natural resources categories as set forth by the UN: Mineral and energy resources, soil resources, water resources and biological resource.

For me, the effect the proximity to the resources and knowledge of the area had on the entrepreneurs was interesting. This variable could be investigated further, focusing more on the affects of vicinity to resources. This of course is related to the idea of clusters, but instead the area researched could be looked at as such. The study could address what a geographic area needs for natural resource based entrepreneurship to spawn. These factors could be

resources, motivated people, funds from authorities or venture capitalists, regulation and infrastructure.

5.2 Implications

From this study I have realized that suggestions for implications for future work can be derived from it.

When it comes to regulation and policy making there is a need to:

- A. Update environmental regulation
 - a. This entails keeping all regional regulations in tandem with current guidelines of the European Union. This pushes people and companies towards sustainable use of resources by for example minimising waste and utilizing it in a more prosperous manner.
- B. Shape regulation so that smaller ventures have a chance
 - a. Even though regulation is important, some parts of the heaviness of regulation regarding foodstuff and the paperwork following was too much for the smaller ventures. Maybe this could be shaped in a more venture friendly way, without threatening safety or quality.
- C. Be more accessible
 - a. Starting a business takes a lot of work. Knowing every bit of regulation that follows is even more troublesome, something that could be aided with increased regulation accessibility and simplification.

When it comes to entrepreneurs that intend to utilize natural resources

- A. Seek guidance from local people
 - a) Proximity to resources provides valuable knowledge about its existence, position and possibilities regarding utilization. This knowledge could be made more accessible through information sharing, via clusters, scheduled meet-ups, publishing and so forth.
- B. Consider reusing waste
 - a) Waste seems to be a massively unutilized resource that offers a lot of potential, for example as a fertilizer. Also, putting waste into circulation instead of landfills complies with current and possible emerging regulation.
- C. Make sure former knowledge matches the project

- a) Since the utilization of natural resources requires knowledge and sometimes expertise, prior experience or knowledge is important. Also being ready for slow product development and relying on existing capital.

D. Use regulation as guide

- a) Another way of spotting opportunities is by considering emerging and recent regulation, since they often revolve around resources that are valuable.

In conclusion, most of this study's findings were coherent with the literature. Other emerging points might prove useful for policy making intended for sustainable use of resources, entrepreneurs that look towards natural resources, and also those who want to investigate this concept further.

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Appendix - Interview Questionnaire

Following is the interview questionnaire. The interviews were semi structured so the topics were followed but the questions varied depending on the interviewee. This list is to give an idea of questions asked, according to the topics.

1. Company

- a. Questions entail: Operations, product, facilities

2. Product organization

- a. What is the process of your product, from unutilized resource to produce?

3. Background

- a. What is your education?
- b. Did you have prior experience in this field?
- c. What did you do before starting this venture?

4. Entrepreneurship

- a. What is an entrepreneur to you?
- b. Do you see yourself as an entrepreneur?

5. Motivation

- a. Why did you establish this company?
- b. Why do you use these particular resources?

6. Opportunity creation

- a. How did you come up with your idea?
- b. How did you access the resource?

7. Opportunity discovery

- a. How was the process from idea to reality?
- b. How long did it take you?

8. Resources

- a. What natural resources do you utilize?
 - i. Why?
- b. How did you access them?
- c. How did you know about them?
- d. What effect did the area have on that choice?
- e. Did you receive funding or other grants to start or further your venture?
 - i. What is your view on current funding/grant system

- f. What factors have aided in the utilization on the resources?

9. Environment/sustainability

- a. Do you have/what is your environmental agenda?
- b. What are your views on environmental protection?

10. Regulations

- a. What regulations affect your business?
- b. In what way do they encourage or hinder your business?
- c. What is your view on regulation?
 - i. Environmental
 - ii. Other

11. Sustainability

- a. What are your thoughts on sustainability?
 - i. Does it affect your business plans?
- b. What happens to the waste from your production?
- c. Do you utilize excess biomass from other businesses/is your excess utilized by others?