Nordic Business Incubators' Contribution to Sustainable Businesses Start-ups

A Multiple Case Study of Norwegian, Danish and Icelandic Business Incubators

Aalborg University

Department of Development and Planning

Theme:	Master thesis
Project title:	*Nordic business incubators' contribution to sustainable performance of business start-ups – Multiple case studies of business incubators in Norway, Denmark and Iceland*
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Time period:	*February 2010 – June 2010*
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Number of prints:	*2*
Number of pages:	*80*

Abstract

Business incubators' are established to assist and promote entrepreneurs in developing successful new businesses. This project has investigated in 6 business incubators' located in Norway, Denmark and Iceland and analysed their contribution to sustainable new businesses by assessing its operational processes and settings. In order to analyse business incubators' sustainability an analytical framework was developed with point of departure from the three principles of the triple bottom line, planet, people and profit. Both qualitative and quantitative methods are applied through questionnaires and e-mail correspondence to business incubator managers, graduated business incubators' and external advisors in related fields. This project has manifested how business incubators' can contribute to sustainable business start-ups by developing an analytical framework. Additionally, the project concludes that sustainability should be integrated into the business in a systematic and dynamic process, to adequately be able to respond to the various social and environmental challenges.

Acknowledgement

This project could not have been developed without the contribution from all the participating business incubators', start-up companies and external advisors. Special thanks to Morten Dahlgaard Andersen at the AAU incubator, John Hreinsson at the Innovation Centre Iceland and Allen Holst Development Consultant Region Midt-Jylland, for valuable information.

Special thanks to my supervisor David Christensen, for guidance, material support, and constructive criticisms. Also, special thanks to fellow colleagues at the 10th semester at Environmental Management. Thanks for your fruitful discussions, general support, encouragements and long lasting friendships.

Finally, I would like to appreciate my gratitude to my family, boyfriend and friends for loving me unconditionally.

June 19th, 2010

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Veslemøy Brandsnes Aurmo

Abbreviations

AAU - Aalborg University

AISHE - The Auditing Instrument for Sustainability in Higher Education

CSR – Corporate Social Responsibility

EMS – Environmental Management System

EMAS – Eco-Management Auditing Scheme

ETAP - Europe's Green Technology Roadmap

EU – European Union

GDP – Gross Domestic Product

ICI - Innovation Centre Iceland

ICT - Information Communication Technology

IPCC – Intergovernmental Panel on Climate Change

ISO - International Standard of Organisations

IT - Information Technology

LCT - Life Cycle Thinking

NBIA - The National Business Incubation Association

NSP - Narvik Science Park

NNI - Norinnova Northern Innovations

NSP – NOVI Science Park

OECD - Organisation for Economic Co-Operation and Development

OSP - Oslo Science Park

R&D - Research and Development

SEA – Supporting Entrepreneurs at Aalborg

SIVA - The Industrial Development Corporation of Norway

SME – Small Medium Enterprises

UNIDO - United Nations Industrial Development Organisation

WYEC - Wandsworth Youth Enterprise Centre

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1. Introduction

It is argued that integrating sustainability in new business start-ups results in positive benefits both for businesses and for the socio-environmental system as large. This chapter first provides an overview of the sustainability notion before it outlines how this can be interpreted. Further, this chapter provides a broad introduction to different notions such as entrepreneurship, innovations as well as the significance of new business start-ups in which are all important terms interlinked to business incubation. The notion of business incubators will then be briefly introduced, before the project outlines a need for sustainable business incubators as increasing social an ecological challenges are manifested.

1.1 Sustainable development

Led by Margaret Thatcher and Ronald Regan, during the 1980's, politics was highly influenced by neoliberal thinking such as privatisation, free markets, and deregulations. Within the neoliberal strategy, sustainability was seen as limited due to the quest for economic growth (Jamison, 2001). The neoliberal view has its roots from the expansion of the industrial revolution beginning in the early 1900's (Elliot, 2005). Here, Malthusian theory predicted that rapid expansion of the world's population would lead to increased food production and that this would eventually result in exhaustion of resources. However, the Malthusian theory could not forecast the technical advances of the industrial revolution. As technological progress resulted in increased production of food and manufacturing of goods, more was being produced using fewer resources. In the neo-classical view limited resources are recognised as existing, but it is believed that technological improvements can make up for the finite stock of natural capital. For instance this can be manifested with the introduction of the Green Revolution, which is a good example of how the introduction of better machines, use of improved crop varieties, pesticides and chemical fertilisers, increased food production and amount of human labour (Elliot, 2005: Allen and Thomas, 2000). Although, food production increased, the Green Revolution was considered a failure due to social and environmental shortcomings (Allen and Thomas, 2000).

During the 1960's and the early 1970s, increased awareness was directed towards the growth ideology which was followed by ecological critiques. Sustainable development emerged from the

attempt to reconcile the conflict of economy and ecology in Western societies, as wide attention was given to the earth's natural resource and its abilities to take up negative impacts (Parrish, 2008).

Sustainability was first internationally addressed at the United Nations Conference on the Human Environment in Stockholm, in 1972. From there on, environmental awareness and sustainability was further extended into businesses and governments (Jamison and Hård, 2005: Parrish, 2008). Many new niche companies evolved as a counter response to 'the invisible hand', specialising in energy conservations, ecological construction and design. Particularly in the US, some large corporations also started to establish environmental departments with focus on pollution prevention instead of end of pipe solutions. However, it was not until the Brundtland report in 1987 that focus was directed to linking "*economics to ecology and environmental issues to matters of income, poverty alleviation and resource distribution*" (Jamison, 2005 and Hård, 288). The link between environmental strategies and economic sustainability expanded from merely being focused on cost reductions and recourse savings, to developing clean and sustainable products for achieving competitive advantages and revenues (Remmen and Thrane, 2007). Adapting strategically environmental issues into businesses is argued as one way of achieving competitive advantage (Holmberg and Robèrt, 2000).

The European Union's strategy for sustainable development is defined as *"development that meets the needs of the present without compromising the ability of future generations to meet their own needs"* (WCED, 1987). In this sense focus is given to the integration of environmental protection, social cohesion and economic prosperity.

A brief description of the history of sustainable development is illustrated in figure 1 (see appendix 1 for an in-depth historical illustration of various interpretations of sustainable development).

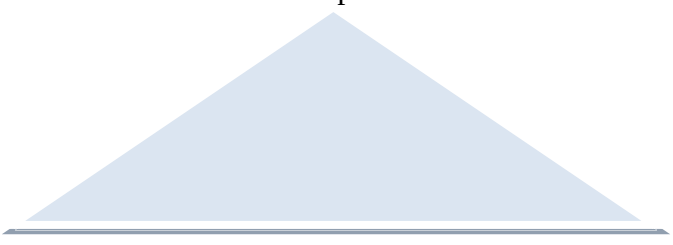
Figure 1. Illustrates the major events in the sustainable development progress

(Source: CSCP, 2009, 9)

The most common interpretation of sustainable development is based on the three spheres of economy, society and environment, which allows for interpreting and envisaging the sustainability notion more specifically (Parrish, 2008). Although these spheres have been variously presented these are three distinctive, but still interrelated spheres which have been used extensively amongst governments, academia, businesses and NGOs (Parrish, 2008). One of the different ways of presenting the three dimensions of sustainability is done by Elkington (1997). Elkington (1997) analysed business performance by indicators of the 'triple bottom line'. Similarly to Elkinton (1997), sustainability in this project is referred to as the triple bottom line and is presented in figure 2. Goodland (1995, 2) argues that defining each part distinctly may "*help organise the action needed to approach global sustainability in real life*". Dyllick and Hockerts (2002, 130) have another rational for interpreting sustainability in the three dimensions. They argue that "*as the quest for economic growth and social equity has been a major concern for most of the past 150 years, adding concern for the earth's carrying capacity sustainability thus ties together the current main challenges facing humanity*." However, as recognized by Giddings and colleagues (2002) and Thin (2002), some implications exist when distinguishing the economy, society and environment into separate spheres. The division between the three spheres is regarded as unhelpful due to the risk of tackling sustainability issues as single parts (Parrish, 2008). It is therefore argued that even though these dimensions are individually divided, they should not be seen as exclusively independent of each other.

Figure 2. Three dimensions of sustainability with an overview of aspects belong to each dimension

People



Planet Profit

People	*Planet*	*Profit*
Social – Cultures, consumption patterns, population growth, urbanisation, emancipation, poverty, prosperity, minorities	Environmental – Emissions, waste disposal, pollution, biodiversity, ecology, landscape, noise, ecological footprint	Economical – Sustainable businesses, production patterns, green investments, capitalism
Political/law - International treaties, laws and regulations, democracy, human rights, war and peace	Technology – Resources and energy, life cycles, reuse and recycling, system innovations, product development	Management – Company mission and responsibility, business ethics, strategy, human resources, marketing, environmental management systems

(Source: AISHE, 2001, 37)

1.2 The need for entrepreneurs and sustainable innovations

Albert Einstein once articulated that "*no problem can be solved from the same consciousness that created it. We must learn to see the world anew".* Following Einstein, entrepreneurship can be seen as the creators of new businesses (Callegati et al, 2005). As they have the capability to create innovations related to new products and production methods, innovation can also be developed in the appearance of new markets, and new forms of organisations (European Union, 2010). By innovating new sustainable products and services, entrepreneurs have the abilitiy to enable societies on a path towards sustainability and "*smarter growth*" (OECD, 2009, 9).

Following economists such as Marx, Rostow, and Schumpeter, the source of economic growth is driven by structural changes and technological and organisational innovations (Huggins and Izushi, 2007). Abuert (2004) highlights the need to clarify that the innovation concept embraces both technology innovations as well as non-technical forms of innovation, such as organisational innovations. Organisations are important elements in the innovation system. While they serve as vehicles for change, organisations can, in addition, influence new policies and incentives (Segura-Bonilla, 2003). It might be worth pointing out that the innovation literature distinguishes between organisation innovations and organisational innovations. While organisation innovations' constitute

a form of innovation in a system perspective, organisational innovations are referred to as the "*introduction of new management or marketing techniques, the adoption of new supply or logistic arrangements, and improved approaches to internal and external communications and positioning"* (Aubert, 2004, 6). In this understanding, business incubators can thus be perceived as constituting innovation in a system perspective, due to the interactive learning (i.e. consultants-entrepreneurial system, university-incubator-entrepreneurs system bureaucratic system).

Schumpeter[1] (1934) views entrepreneurship as creating disequilibrium in the economy. If disequilibrium is created, status quo in businesses can be transformed into future commercial realities, bringing about new opportunities and possibilities to businesses and to their surrounding environments. York and Venkatarman, (2010) argue that creative destructions would particularly be of significance to entrepreneurs in existing industries that are built on unsustainable practices. This, can, for example be seen in the coal, petroleum and mining industry, where new radical innovations within alternative energy can create destructions and alter changes in the existing setting (York and Venkatarman, 2010). An example can be taken from British Petroleum (BP). From solely being one of the largest oil producers BP has expanded its operations and established a subsidiary, BP Solar, as an integrated part of their energy business (BP Solar, n.d). However, BP's extraction of oil and energy use often entails sheer environmental impacts (e.g. recently seen in the Gulf of Mexico), but is even more significant from the actual use of BP's consumers. Consequently, it can be questioned whether these creative destructions in existing systems are capable of really altering the needed changes in existing consumption and productions patterns as BP's operations are a conflicting paradox.

In the Schumpeterian (1934) perspective, proactive entrepreneurs focused on radical innovations are able to open up opportunities for new entrants, in addition to actively changing or rewriting 'the rules of the game'[2]. As institutions can either hamper or promote innovations, 'rules of the game' refers to changing existing features of an institution. According to Scott, (2001) changing the 'rules of the game' entails changes in some of the primary building blocks of how the institution is set up. Many of the institutional features influencing entrepreneurship are inherently parts of the institutional system such as rules, regulations, norms and values, and cognitive or cultural values. Changing 'the rules of the game' happens when entrepreneurs introduce new radical products or

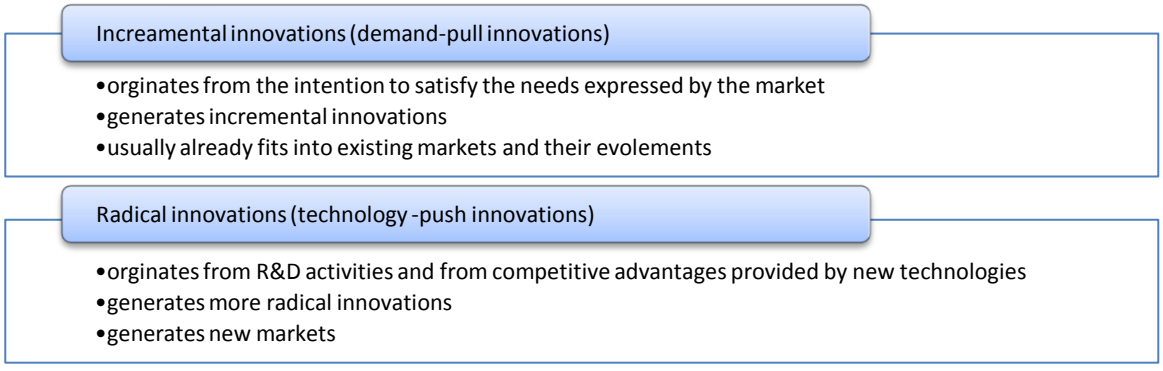
[1] Considered by many as the grandfather of contemporary entrepreneurship theory (Parrish, 2008)
[2] Besant and Tidd, (2007, 13) referrers this as a paradigm innovations which relates to changes in the "*underlying mental models*" changes the rules of the game

services that involve co-evolution of new socio-technical systems. This system is argued as being the most fundamental contribution to sustainable innovations (Bessant and Tidd, 2007).

Schumpeter's use of creative destructions assumes that entrepreneurs only foster radical innovations by creating disequilibrium in the economy. However, new innovative ideas created by entrepreneurs do not only necessarily need to be radical, but can also be incremental (i.e. doing what we do better). According to Hockerts and Wüstenhagen, (2009) incremental innovations can particularly characterise incumbents who often develop demand-pull innovations such as integrating sustainable managements systems, corporate social responsibility, and eco-efficiency. While incremental innovation usually fits into an already existing market, radical innovations can be developed by entrepreneurs to fulfil an unmet need which can open new market possibilities (European Union, 2010).

Based on Schumpeter´s notion (e.g. that entrepreneurs can, through producing new products and new processes, open up new markets, new ways of resource exploitation, and reveal new sources of supply) it can be proposed that while radical innovations entail reconstructions of technological products and systems, radical innovations compared to incremental innovations should be a prerequisite for environmental improvements. Holmberg and Robèrt (2000) stat that it is not simply a matter of reducing environmental impacts, as most often seen with incremental innovations. Supplementary, they argue that since sustainability relates to different socio-ecological systems the question of developing innovations should instead be seen in a system perspective.

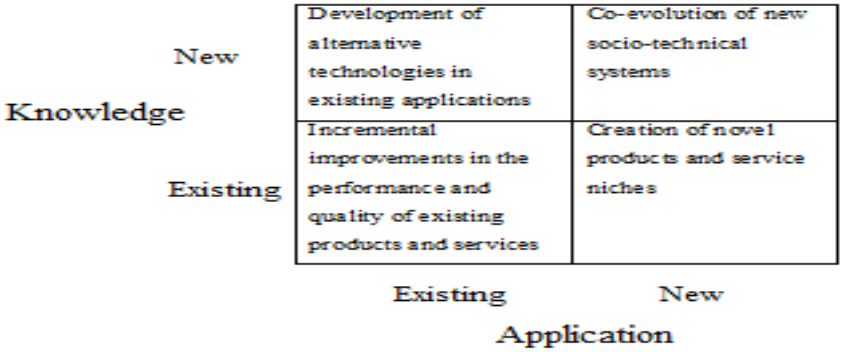
Figure 3. Shows characteristics of incremental (i.e. demand pull-innovations) and radical (i.e. technology-push) innovations.



(Source: European Union, 2010, 9)

While innovations often are associated with economic growth, innovations also play an important part in developing better solutions to many of the environmental problems occurring. Innovations can be placed in four different typologies with respect to their contribution to sustainability. Figure 4 depicts two dimensions, novelty of knowledge and novelty of application of that knowledge. Bessant and Tidd (2007) argue that the most important innovations for sustainability are in the right-hand column, which thus reflects technology-push innovations as mentioned in figure 3. The most common innovations are on the other hand, found in the left-bottom column, and address improvements of existing technologies in products or services (increased efficiency, production process etc), with the top-left column presenting the creation of new knowledge in an already existing application, like using different materials in packaging, new processes and/or technologies in production processes. As already argued, entrepreneurs dealing with innovations in the top-right and bottom-right column have the greatest possibilities to change the 'rules of the game' and disrupt markets by introducing new niches for sustainable innovations (Bessant and Tidd, 2007).

Figure 4. Four typologies of sustainable innovations



(Source: Bessant and Tidd, 2007, 325)

1.3 Dichotomy of new entrants vs. incumbents in developing sustainable innovations

Several academic researchers emphasise the importance of new entrant vs. incumbent capabilities for developing sustainable innovations. However, ambiguity exists amongst researchers regarding how well incumbents and entrants are in developing sustainable innovations (Hall et al., 2010). Quinn, (1992) argues that new businesses entering the market do little to ensure or increase

sustainability for social justice or environmental benefits for future generations. This could further be explained by Person (2003), who states that new small companies often lack financial and human resources to implement sustainability strategies into their business models, while large companies have access to both financial and human resources. In this view, sustainability is seen as an added cost for businesses and not a comparative advantage. This is in line with what Hockerts and Wüstenhagen (2009) propose, arguing that large companies often tend to minimise their production costs by lowering the sustainability quality of their products.

According to Bessant and Tidd, (2007), incumbents are not inferior in adapting to new markets and creating innovations in relation to new entrants. Hall and colleagues (2010) have outlined some of the advantages small company's posses. Small companies have better ability to comply with legal requirements, improved management, better access to certain markets, minimised costs, reduced pollution, better energy and material efficiencies, improved public reputation and image, and better access to capital from environmentally-sensitive investors. Casson et al., (2006) also place notice on innovation as a competitive advantage of young, entrepreneurial companies. It is seen more likely that innovation comes from new businesses than incumbents due to their organisational constrains and the nature of these companies (York and Venkatarman, 2010). This is further concluded from research by Acs and Audretch, (1988) who found younger companies introducing a larger proportion of innovations than incumbents compared to their share of employments. York and Venkatarman (2010, 7) further proposes that "*the higher number of entry rate of new firms providing environmental information and services supporting environmental superior products, the less perceived uncertainty there will be about these products, and more likely it is that new firms will emerge to offer such products*".

The establishment of new businesses is also seen as vital for job creation. In many cases, large companies are more than often outsourcing their production and jobs to obtain lower costs (Hockerts and Wüstenhagen, 2009). In EU, the Small Medium Enterprise (SME)[3] sector is viewed as significant in accounting for the majority of employment. This is manifested in the typical European business which operates within the SME sector and employs nearly "*88 million people"* compared to large companies which employ "*43 million people"*. For European nations, the average

[3] SME's are defined as employing less than 250 persons. Within the SME sector are micro enterprises - employing less than 10 persons, small enterprises - employing at least 10 but less than 50 persons, Medium enterprises - employing between 50 and 250 persons

SME employment share is 67%[4] (Audretsch et al., 2009, 19). All these factors show that SME's and new entrants have a massive economic impact in European countries.

Where entrant companies have disadvantages, incumbents most often have advantages and vice versa. Some of the characteristic of entrants and incumbents are illustrated in table 1.

Even though the division in research between new entrants and incumbents is often exaggerated, new start-ups are important for creating new sustainable products, and services which can open up new market structures and patterns of sustainable consumption and production (Hall et al., 2010).

Table 1. Main characteristics of entrants and incumbent

Entrants	***Incumbents***
Organisational flexibility	Rigid organisational structure
Technological openness	Technological and market capabilities
Easy adapt to market changes	Available internal resources
Exploring new knowledge	Managerial knowledge
Loose formalisation	Organisational routines
Products in the niche market	Products in the mass market
Informal communication strategies	Market power and position

Source: (Casson et al., 2006, 335: Hockerts and Wüstenhagen, 2009, 4,3)

1.4 Why business incubators?

In order for entrepreneurs to succeed, entrepreneurs are obligated to acquire information and skills about processing, new innovation opportunities, market potentials and changes, risk assessment, managerial skills and raising capital (Cason et al., 2006). In order to ease some of the entrepreneurial limitations, Johnsrud (2004) highlights the magnitude of setting up framework conditions for entrepreneurs that can increase the possibilities of new business survival and development. By assisting entrepreneurial activities, business incubators are distinguished as a part of the global economic landscape. Research shows that young and new companies are particularly

[4] Denmark has an average SME employment share of 66, 3%

fragile in their early start-up years, and many do not survive due to low productivity and lack of innovation. Therefore, establishing business incubators as a mechanism to enhance economic growth, and in particular to foster regional development and innovations, has evolved over the last couple of year's evolved into an important goal (Jonhsrud, 2004: Hackett and Dilts, 2004).

1.5 The need for sustainable business incubators

It can thus be argued that sustainable business incubators are needed to foster sustainable entrepreneurs. As argued by Foxon and Pearson (2007, 8) "*public-private institutions structures should reflect a targeted effort to stimulate and engage sustainability innovation incubators*". As business incubators assist entrepreneurs, sustainable business incubators can be divided into two major types, according to the entrepreneur's literature.

First, environmental entrepreneurs are defined as "*any start-up enterprise that promotes sustainable practices and meet a market demand for green products"* (Higon, 2005). As stated by the Intergovernmental Panel on Climate Change (IPCC, 2007) businesses are responsible for more than 21 % of global CO2 emissions. OECD (2009) argues that investments in clean technologies are a vital factor that can contribute to alleviate climate change and increase resource efficiency. Clean technology or technology non pollutants are defined by the OECD (2005) as production processes which are adapted so that less or no pollution is generated.

The aims and goals from European energy and climate change policies, like ETAP (Europe's green technology roadmap) and the Eco-innovation initiative[5], necessitate clean technology as a high international priority area (European Commission, 2010a, 2: Econ Pöyry, 2010). In 2008, EU policies on climate and energy suggested that countries should reduce emissions of greenhouse gasses by at least 20% compared to 1990 measures. Although the clean technology market dropped in 2009 subsequently to the financial crises, it is estimated that the world market for clean technologies is going to be approximately 550 billion Euros per year (Nordic Innovation Centre, 2010).

[5] "*The Eco-innovation initiative is a cross-cutting programme that supports eco-innovative projects in different sectors which aim at the prevention or the reduction of environmental impacts or which contribute to the optimal use of resources*" (European Commission, 2010, 2).

An example of a clean tech incubator is the CleanTech Inn Sweden. This incubator contributes to sustainability by only accepting projects and new ideas founded on 'the Natural Step[6]', which explains how nature and society can be maintained in balance. From this notion four principles are developed based on the idea that clean tech is likely to become profitable and is seen as an important contributor for a sustainable society (CleanTech Inn Sweden, n.d). Clean tech is here understood as technologies which are proactive, sustainable in the long term, and address the problem areas of our present society. While Schaltegger (2002) argues that entrepreneurs' abilities to produce new sustainable innovations can create new markets and eventually lead society into new patterns of consumption and production, it can thus be argued that business incubators are important for assisting entrepreneurs with commercialisation and internationalisation of new technology.

Secondly, social entrepreneurs embracing social issues are defined as *"any person, in any sector who uses earned income strategies to pursue a social objective,"* (Boschee and McClurg, 2003). While social exclusion and poverty are primarily linked to developing countries, although not as severe, poverty and social exclusion in developed countries are present is nonetheless present (European Commission, 2010b). Amongst other international initiatives like the PORGRESS program[7], the European Commission has initiated 2010 as the year for combating poverty and social exclusion. While the world's economies are slowly recovering from the financial crises, Aubert (2004) contends that the so called 'Washington consensus' approach with its increased focus on privatisation, liberalisation, and deregulation policies, has limited the promotion of sustainable development. While there has been a pre-acknowledgment that European economic models are built around "*high welfare protection, high governmental public spending and inflexible labour markets*", more European countries are starting to adapt an Anglo-Saxon model consisting of "*liberal markets, flexible labour laws and limited government spending*" (Barysch, 2005, 2). According to Aubert (2004) many of the basic elements in the Anglo-Saxon model are implicitly features of the neo-liberal dogma.

As argued by Parrish (2008), for enhancing employment and job creation social entrepreneurs can be an important factor spurring development in particularly less favourable or economic depressed areas. Wandsworth Youth Enterprise Centre (WYEC) is such as example. Being located in a

[6] The Natural Step was founded in 1989 by Dr. Karl Henrik Robèrt.

[7] The PROGGRES program was established to support financially the implementation of the objectives of the European Union in employment, social affairs and equal opportunities, as set out in the Social Agenda

deteriorated neighbourhood, facing challenges of high unemployment rates, and high number of immigrants, the WYEC aims to help people with limited resource capacities such as the unemployed, minorities, students, and former prisoners (WYEC, 2008).

This project has recognised the growing demand for sustainable development, and the importance of establishing sustainable business incubators to combat many social and environmental challenges. Business incubators are, in addition to supporting entrepreneurs, seen as a significant infrastructure system and organisation innovation for spurring regional and national competitiveness. As there is an increasing demand to secure human welfare and develop new innovations which can alter society into more sustainable patterns of production and consumption, this project investigates how business incubators can contribute to the sustainable performance of new business start-ups. By assessing incubators sustainable performance, this project will reveal whether or not business incubators are contributing towards sustainable development.

2. Problem Formulation and Research Methods

2.1 Research question

A large part of the body of entrepreneurial research has been focused on the economic aspects of entrepreneurship e.g. economic growth and productivity. As there has been a rising awareness of social and environmental concerns, it has driven the entrepreneurial and non-entrepreneurial literature (e.g. particularly in related research fields such as business and management) to emphasise the significance of fostering and understanding the nature of sustainable entrepreneurship[8] (Parrish, 2008). As argued by Elkington, (2004) attention needs to be directed towards how more sustainable technologies, business models and industries can be fostered. Consequently, sustainable entrepreneurs hold an important position developing 'out of the box' strategies, technologies or business models emerging from the triple bottom line (Schaltegger, 2002). Following Sarasvathy and Venkataraman, (2010) and Parrish (2008) entrepreneurs should be encouraged to create new products and services by using the social and ecological context to construct new opportunities and new ideas.

The organisational function of business incubators can be perceived as supporting and assisting new entrepreneurs in developing viable businesses. This view is closely tied to overall objectives of business incubators as generating economic growth and development. According to Walsh et al., (2003) and Scott (2004) most organisational research[9] has, since the 1980s, been drawn upon the reasoning from economics where focus has been towards economic concerns of financial performance. Walsh et al., (2003,) further argues that there should be importance to find a link between "*corporate social performance and corporate financial performance*". One can say that the organisational literature has followed the historic division between sustainability and profitability. Due to the clashing interests between sustainability and profitability York and Venkataraman (2010) argue that the conflicting area has resulted in the current arisen of environmental problems, where the potential for developing sustainable solutions, has not fully been exploited. In this matter, this project argues for the need for sustainable business incubators. Business incubators can thus be perceived as an important factor for assisting both social and environmental entrepreneurs, and act in response to increasing environmental impacts and deficiencies in social welfare offerings.

[8] Parrish argues that there is today limited research on sustainable entrepreneurship

[9] Includes the discipline of organisational theory organisational sociology

The purpose of this project is to analyse how business incubators contribute to the sustainability of new business start-ups. As existing business incubation literature will reveal that sustainability concerns in terms of economic, society and environment assessments is lacking an analytical framework will be developed. The assessments will comprise an analysis of business incubators socio-economic and environmental performance. In addition, innovations can be classified in accordance to their contributions to sustainability. To further manifest how well business incubators contribute to the sustainable performance of new businesses, the degree of innovations from selected new start-ups will also be analysed.

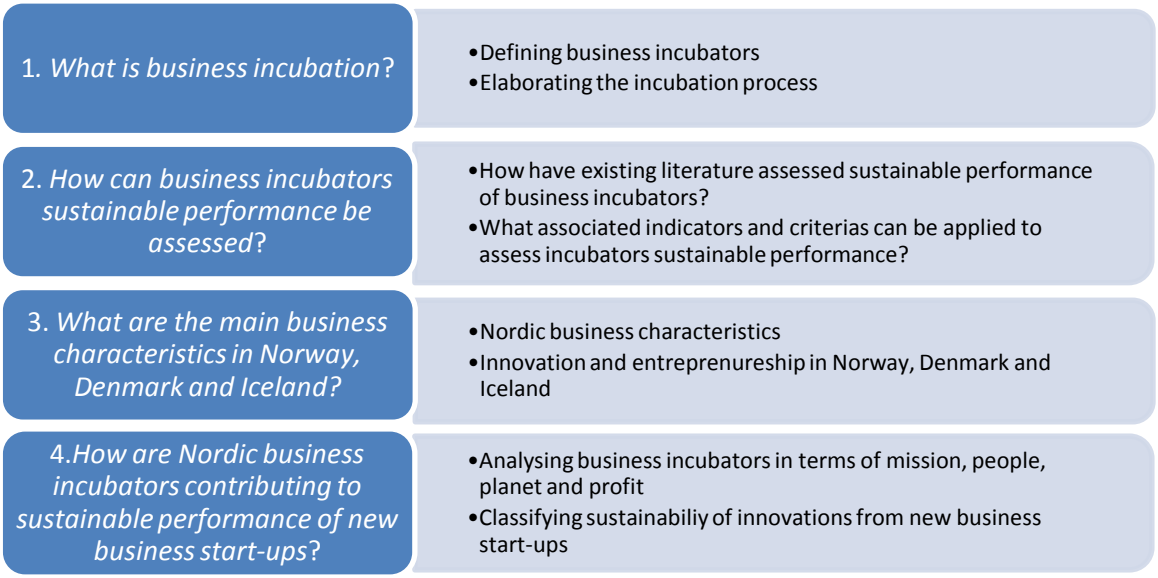
According to the Nordic Innovation Centre (2010) and the Nordic Innovation Monitor, (2009) the Nordic environmental image is perceived as in an excellent stage, where "*sustainability is incorporated as values in Nordic products and solutions as well as innovative solutions in climate technology and environmental production*" (The Nordic Innovation Monitor, 2009, 64). As the Nordic region is often seen as a pioneer in the expansion of clean production methods and efficiently utilising sustainable resources, this project proposes that Nordic business incubators are contributing to sustainable performance of new business start-ups. By either rejecting or approving the outlined hypothesis, this research can provide vital new insights into a research area which has had little light shed on it so far. The main research question with supplementary sub-questions is explicitly outlined as follows;

"How are business incubators in Norway, Denmark, and Iceland contributing to sustainable performance of new business start-ups?"

Some sub-questions have been outlined in order to answer the mentioned research question,

1. *What is business incubation?*
2. *How can business incubators sustainable performance be assessed?*
3. *What are business characteristics of Norway, Denmark and Iceland?*
4. *How are Nordic business incubators contributing to sustainable performance of new business start-ups?*

Table 2. Describes what the four sub-questions (1-4) intend to answer. The whole structure of the project can be viewed in table 3.



The first chapter have given an elaboration of the sustainability notion both in a historical perspective and as terminologies which have different interpretations. This project have however, envisaged sustainability as in accordance to the triple bottom line, namely people, planet and profit spurring economic, environmental and social benefits. The chapter additionally explores the close association between entrepreneurs, innovation, and the role of new start-ups in contributing to sustainability. These notions are closely tied to business incubators as the need for sustainable business incubators are evolving.

An in-depth description of business incubators will be further portrayed in chapter 3 as well as an overview of the various stages within the incubation process. With an outset from this, chapter 3 will continue to review the existing assessing literature of business incubators sustainable performance. In response to the limited literature on assessing business incubator social and environmental performance, an analytical framework was created in respond to this. This framework was based on the three sustainability criterias as well as general principles from cleaner production, life cycle management and existing incubator assessment research.

Chapter 4 intends to reveal business environment characteristic in the Nordic region. Based on a general overview of the economic-socio context of the Nordic region as such, more specific features will be viewed related to innovation and entrepreneurship in Norway, Denmark and Iceland. Assessing the business environment in a region specific context can thus contribute to explain possible factors operating at the macro level which might affect goals and missions of business

incubators' performance. It addresses the fundamental basis for explaining which external factors might influence Nordic business incubators' sustainable performance.

Next to the outline of the empirical findings in chapter 5, chapter 6 addresses how businesses incubators in Norway, Denmark and Iceland contributing to the sustainable business start-ups, by applying the analytical framework. Conclusions will then be drawn as to whether the reject's will either be confirm or rejected. Taking point of departure from the overall conclusion, reflections will be addressed in perspectives.

The following table presents an overview of the structure of the report including chapter headings with supplementary sub-questions.

Table 3. Presents the whole project structure with a brief overview of methods used for data collection

Sub questions	***Structure of project***	***Methods used***
	1. Introduction	Document review Historical review
	2. Problem formulation and research methods	
		Document review History review
Sub question 1 Sub question 2 →	3. Framework for assessing incubators sustainable performance	Document review Interview Historical review
Sub question 3 →	4. Business environment characteristics in the Nordic countries	Document review History review
	5. Case study of business incubators in Norway, Denmark and Iceland	Interview Archival record Questionnaire

Sub question 4	→	6. Analysis of business incubators in Norway, Denmark and Iceland	Interview Document review Questionnaire
		7. Conclusions 8. Perspectives	Document review

2.2 Research methodology

As this project has put forward a hypothesis that Nordic business incubators are contributing to sustainable performance of new start-up businesses, this will be either rejected or approved. According to Walliman (2006, 207), a hypothesis is a *"theoretical statement that has not yet been tested against data collected in concrete situation, but which it is possible to test by providing a clear evidence for support or rejection*".

The methodology applied for answering this project's hypothesis is based on a multiple case study design of 6 incubators in Norway, Denmark and Iceland. A multiple case study design is argued as a strengthened and improved theory building device; thus, one can therefore better argue for whether a theory will or will not hold. 6 cases were selected, since it is normally accepted that research from larger samples are more credible than research from smaller samples (Wallimann, 2006). The 6 selected business incubators illustrate what Yin (2003, 411) referrers to as a representative case, or typical case which allows for "*capturing the circumstance and conditions of an everyday or common situation*". The 6 business incubators were not selected due to being either unusual or extreme conditions but, can instead contribute to demonstrate a broader category of cases where generalisations can increase the projects validity. The rationale for choosing typical cases is grounded in seeking to investigate some of the implications related to the existing assessment literature on business incubators sustainable performance.

The project is primary following a standard deductive approach as presented in figure 6. On the other hand, as Bryman (2008) points out, the deductive process most often does not appear as a linear straight forward procedure. The process of deduction and induction often entails elements of each other. Therefore, an iterative approach also characterises this project, as it consists of both

elements from deductive and inductive reasoning. The project starts with a deductive reasoning, outlining a hypothesis which departs from existing literature on assessing incubators sustainable performance. While the literature review reveals that an appropriate framework for analysing business incubators' social and environmental performance is deficient, the project makes use of inductive reasoning. Inductive reasoning is used by going from observations towards theory or in this case developing a model for analysing incubators sustainability. After the analytical framework is established, the project follows deductive reasoning, were the hypothesis can be either rejected or confirmed.

Figure 5. Shows how deductive reasoning is applied to this project

2.3 Study sample of Nordic business incubators

3 incubators in Norway, 2 incubators in Denmark and 1 cluster of business incubators in Iceland were included in this research (see figure 5). In total, 38 business incubators in the Nordic countries where contacted by e-mail. The main reason stated for incubators not willing to participate was lack of available time.

Business incubators in Norway belonging to The Industrial Development Corporation of Norway (SIVA) were randomly approached, in addition to Google searches on business incubators in Norway[10]. Those who replied back and were willing to participate in a survey were chosen as case study objectives[11]. This procedure was also followed for business incubators located in Denmark. After being in contact with Allan Holst[12], a Danish development consultant in the region of Mid-Jylland, several business incubators were asked to participate. These business incubators were located within the Danish science park association and at the Danish development parks.

[10] Except from using business incubation, business innovation centers was also used as a buzz words in Goggle Search

[11] This will further be addressed later on

[12] See appendix 2

For choosing business incubators located in Iceland, Jón Hreinsson was contacted. Hreinsson was contacted due to his extensive experience as a business manager who has worked within and knows the Icelandic incubator environment profoundly. Hreinsson has worked for the Innovation Centre Iceland for several years[13].

The 6 participating business incubators are depicted below, and are referred to in accordance to their complementary location in science, research and innovation parks.

Figure 6.

In order to choose business incubators, some general requirements were considered. The criteria for incubators were:

1. Business incubators must be willing to answer a questionnaire
2. Business incubators must have incubatees present
3. Business incubators must have assisted graduated companies

Graduated companies[14] from all the participating incubators were randomly asked to contribute. They were selected from the incubators own homepage by directly asking incubator managers to get hold of former graduates. However, out of 22 graduate companies asked to participate, only 5 had a positive response. Most of the participating graduated companies were produced services and software programs for information communication technology (ICT). Only one was developing a physical product. Details and overview of graduated companies are portrayed in table 5. Although, requests were made towards the incubator managers, no former incubatees participated from the Norinnova Northern Innovation.

[13] Separate data on each incubator located within the Innovation centre Iceland was not available. Therefore the incubators within the Innovation Centre Iceland were not separately analysed.

[14] Graduated companies are the term used in this project and refer to companies who have taken advantage of the services the incubator is offering, and are independent company.

Table 4. Diversity of selected business incubators and graduated companies survey data

Incubators contacted for survey	*Incubators respondent to survey*	*Location*	*Graduated companies contacted for survey*	*Total gradated companies responded to the survey*	*Product/services of graduated companies*
38	Incubator at Narvik Science Park	Norway	5	1	IT/Software
	Incubator at Norinnova Northern Innovation	Norway	5	0	
	Incubator at Oslo Science Park	Norway	0	0	
	Aalborg University incubator	Denmark	5	2	IT/Sales, and Consultancy services
	NOVI innovation-incubator	Denmark	5	1	Telecom/Software
	Innovation Centre Iceland	Iceland	2	1	Fly fishing reels
		Total:	22	5	

Table 5. Overview and details of participating graduated companies[15]

Name of graduated companies	*ROSS ERP*	*Eating Aps*	*Andsvar*	*2Operate*	*Einarsson Fly fishing*
Establishment year	1978	2008	2009	2009	2005
Industry sector	IT/Software	IT/Sales	Consultancy	Telecom/Software	
Product service	ROSS ERPservice	Web parts for advance homepages	Consultancy services	Software for mobile network operators (troubleshooting process software)	Fly Fishing reels
Number of employees	3	NA	1	3	NA

2.3.1 Methods of empirical data collection

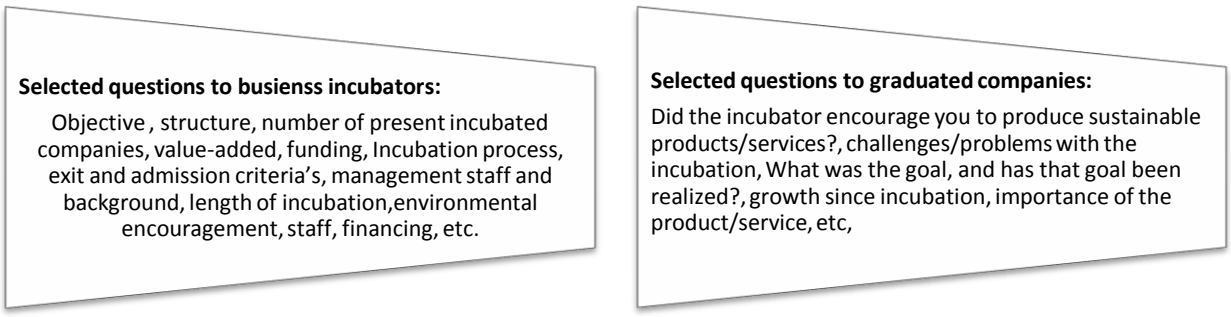
Different sources and methods of data acquisition have been applied for the empirical data collection. The empirical data was collected from three main sources: 1) A questionnaire and e-mail correspondence to incubator managers, graduates and external contact persons/advisors, 2) Archival

[15] See appendix 3, 4, 5, 6 and 7 for answers obtained from graduated companies

data extracted from websites, 3) A questionnaire to graduated companies. This is presented in detail in tables 6, 7 and 8.

In regards to understating the incubation processes and to explore the activities within the incubator both qualitative and quantitative questions were created. The majority of primary data was conducted by a self-administered questionnaire forwarded by e-mail to the participating incubators incubator managers/executives, and graduated companies. The reason or choosing a questionnaire was to collect large amount of data in a relatively short period of time. The creation of a questionnaire was also preferable due to the geographically dispersed location of incubators within Norway, Denmark and Iceland. To allow for more in-depth answers, some of the questions were open ended, while some were closed. The questionnaire included questions related to the incubators inputs and outputs. These questions enquired to reveal the socio-economic and environmental performance of incubators' operational processes. To be able to determine incubators' outputs, questions such involving survival rate, and expected community impacts were asked, in addition to assessing the graduates' products and services in terms of contributing to sustainable innovations.

Figure 7. Highlight some of the selected questions from the questionnaire to the participating incubators and gradated companies.



The questionnaire to graduated companies was distributed based on two reasoning's. First, to be able to analyse the sustainability of graduated companies' products and services; and secondly, to generate additional answers complementary to the information provided by the incubators. Other types of primary data were obtained by e-mail correspondence and one phone interview to the incubator manager located at Oslo science park. External advisors were contacted for supplementary information related to assessing the sustainable performance of incubators, as well as to reduce the possible danger of selective biases.

Supplementary to the questionnaire given to incubator at Aalborg University (AAU), one meeting was obtained with head of secretariat of the Engineering, Science and Medicine Faculties office at AAU and the head of section and manager for regional development also at AAU. The meeting was informal, concerning the AAU incubator and the work of the unit Supporting Entrepreneurs in Aalborg (SEA) role in the regional development of North-Jylland, Denmark. A broad understanding of the complex incubator environment as well as the incubator-university relationship was profoundly explained and discussed in-depth.

Secondary data was also gathered. This information was basically gathered from the incubators and graduated companies' homepages, various journals, books and web articles.

Tables 6, 7 and 8 show in detail the various methods applied for the primary data conduction.

Table 6 gives an overview of primary data obtained from incubators

Incubator	Incubator at Narvik Science Park	Incubator at Norinnova Northern innovations	Incubator at Oslo Science Park	Incubator at Aalborg university	NOVI Innovation-incubator	Innovation Centre Iceland
Incubator participants	Michelle Opshaug- Marketing and Incubator manager	Hilde Ludvigsen- Incubator and project manager	Åsa Waldemar- Incubator manager/investment leader	Morten Dahlgaard Andersen - Head of section - Regional development manager IDEA	Lisbeth Christensen- Directorial secretary	Jón Hreinsson – Investment manager
Semi-structured phone interview			•			
Structured questionnaire	•	•		•	•	•
Meeting				•		
E-mail correspondent for additional information				•		•

Table 7 presents an overview of primary data obtained from graduated companies

Graduated companies	*ROSSERP Service*	Eating ApS	Andsvar	2Operate	Einarsson fly fishing
Graduated company participant	Frode Strøm- Co founder	Theis Simonsen - Administartive director	Andres Christensen - Manager and director	Lars Moltsen - Managing director	Steingrimur Einarsson – Executive director
Incubator company	Narvik Science Park	AAU	AAU	NOVI	Innovation Centre Iceland
Structure questionnaire	•	•	•	•	
E-mail correspondent and additional information			•		•

Table 8 overview of primary data obtained from external advisors

External advisors	Jón Hreinsson – Economic executive of Innovation Centre Iceland	Teju Ravilochan - Co-Founder & Connections Extraordinaire of the Unreasonable Institute	Niels Maarbjerg Olesen- Head of secretariat of the Engineering, Science and Medicine Faculties office at AAU	Allan Hols - Development consultant, Regional development, Region Midt-jylland
Meeting		•	•	
Semi-structured phone interview		•		
E-mail correspondent for additional information	•			•

2.4 Delimitations and validity concerns

As outlined by Yin (1989) all research must give consideration to construct internal and external validity, and reliability. While validity addresses how accurate the means of the measurement are, and if they measure what they intended to measure, reliability is related to if the result can be replicable or not (Yin, 1989). With the intension of strengthened the validity and reliability concerns, this project has applied triangulation of evidence. This implied data integrity has been applied using a large range of sources whenever possible. As argued by Patton (2002, 247) "*triangulation strengthens a study by combining methods*". Patton is referring to the use of mixed methods in terms of qualitative and quantitative data collection. Even though triangulation has been recognised as strengthening validity concerns, this project is still under constrains from validity and reliability uncertainties.

To obtain external validity, it requires that generalisations can be made from the findings. As argued by Flyvbjerg (2006) a general misunderstanding exists about the problem of generalisation from case studies. It has been argued that one cannot make generalisations from an individual case. However, this project will make generalisations which should as stated by Flyvbjerg (2006), be read as narratives in their whole.

The empirical evidence was based on 6 business incubators located in Norway, Denmark and Iceland. In terms of selecting these business incubators there was made no difference between business incubators as such and innovation centres. Although the distinction between business incubators and science, research and innovation parks has been drawn, these are often closely

interconnected. This is based on the condition that both science/research/innovation parks and business incubators are described as "*important links in the entrepreneurial value chain at the national or environmental level of analysis"* (Phan et al. 2005, 179). Business incubators have been defined as targeting start-ups exclusively, while science parks and research parks often comprise all kinds of businesses and enterprises. It is important to highlight that even though sciences and research parks are distinguished from business incubators, they are most likely to have same overall objectives and aims.

While data collection was obtained by a questionnaire given to both incubators and graduated companies of the incubators, it would have strengthened the internal and external validity if several other incubators and graduated companies would have participated. This does not only indicate allocating the questionnaire to supplementary incubators and graduated companies in Norway, Denmark and Iceland, but also to incubators located in Finland and Sweden. However, due to limited time, lack of contact persons as well as low response from incubators in Sweden and Finland, incubators from these countries were omitted.

To better enhance the projects' validity and reliability, other types of primary data collection such as field observations in the participating incubators could have been obtained. Data was, in addition, not equally gathered from incubator and graduated companies in the Nordic countries, as there was different levels in comprehensiveness in the received responses. Some incubators and graduated companies answered comprehensively, while others only to a limited degree replied back. Lack of data is a large delimitation area and causes validity concerns for this project. This can also be seen for interpreting socio-economic and political features of the Nordic region. As particular attention was given to Norway and Denmark, Iceland was given less attention. This is particularly reflected in chapter 4.

Another bias towards research validity can be seen related to selection of graduated companies. By asking incubator managers to give out contact information as well as by choosing companies stated on the incubators web-pages, this could imply an irregular sample of graduated companies and cannot be representative for all graduated businesses that have attained the incubation. Most validity concerns are related to the Icelandic Innovation Centre. All the information was gathered on general terms. Even though the Icelandic Innovation Centre is comprised of 8 incubators, all the data was obtained from one contact person, which makes it difficult to ensure validity claims.

Different approaches could have been used to answer this project's research questions. The most suitable methods for analysing incubators' sustainable performance would have been to develop sustainable strategies into business incubators' operational process and respective incubatees. This could only have been feasible with a close collaboration with an incubator providing social-economic and green products or an incubator wanting to become sustainable. Research by Blankenship et al., (2007) is one of very few examples where sustainability (e.g. integrating sustainable strategies in terms of economic, social and environmental benefits) is applied into the planning phase of new start-ups. Due to the comprehensive application of templates, limited time frame and most of all lack of business incubators willing to closely participate in such extensive research, this approach was not applied. Another approach would have been to investigate some of the already exiting sustainable incubators and analyse their approach compare to more general business incubators.

3. Framework for Assessing Incubators' Sustainable Performance

The main aim of this chapter is to examine how existing literature have assessed business incubators' sustainable performance. First, the terminology of business incubation will be broadly explained, as well as the incubation process. Based on the literature review, an analytical framework for analysing the sustainable performance of business incubators' has been developed.

3.1 Defining business incubation

One can clearly draw similarities to the origin of the business incubation concept with the terminology used in medicine. In a medical perspective, incubation has been a place where prematurely born infants are taken care of and nurtured. The concept originates from the belief that premature infants need provisional care under restricted surroundings to help the infants increase their chances of survival, grow and develop after they leave the incubator (Aernoudt, 2004).

There is however, no clear cut definition of business incubators. Conceiving, defining and characterising business incubators are interpreted differently depending on various studies (Hackett and Dilts, 2004: Hannon and Chaplin, 2003: OECD, 1997). One way to classify incubators is based on the incubator aims or purpose. As illuminated by Hannon and Chaplin (2003) incubator aims can range from technology transfer, to regional economic development or to particularly empower disadvantaged groups in the local community. The American National Business Incubators Association (NBIA, 2004) portrays business incubation in broader terms and argues that incubators is a dynamic process of business venture development with an aim to maximize the chances of start-up business, by generating a favourable environment. From this, Bayhan (2006) deliberates further on what a favourable environment could mean, portraying incubation as, "*a location in which entrepreneurs can receive pro-active, value-added support, and access to critical tools, information, education, contacts, resources and capital that may otherwise be unaffordable, inaccessible or unknown".*

The notion of business incubators as a physical location providing a defined set of services to entrepreneurs, is thus challenged by the development of virtual incubators (incubators without walls) trying to distribute support services to incubatees not collocated within the incubator (Hacketts and Dilts, 2004). Although, there is ambiguity within business incubation literature related to definitions and interpretations, it is nevertheless necessary to point out that business

incubators are not merely a shared-work space office and physical infrastructure. Accordingly, a more dynamic way of defining incubators is proposed, which is more suitable to characterise the various incubator structures present (e.g. virtual incubators). Rather, as Hackett and Dilts (2004, 57), highlights "the incubator is;

"a network of individuals and organisations including the incubator manager and staff, incubator advisory board, incubatee companies and employees, local universities and university community members, industry contacts, and professional services providers such as lawyers, accountants, consultants, marketing specialists, venture capitalists, angel investors, and volunteers".

This definition is also supported by the explanation outlined by the European Commission (2002), defining business incubation as;

"a business incubator is an organization that accelerates and systematizes the process of creating successful enterprises by providing them with a comprehensive and integrated range of support, including: Incubator space, business support services, and clustering and networking opportunities. By providing their clients with services on a 'one-stop-shop' basis and enabling overheads to be reduced by sharing costs, business incubators significantly improve the survival and growth prospects of new start-ups".

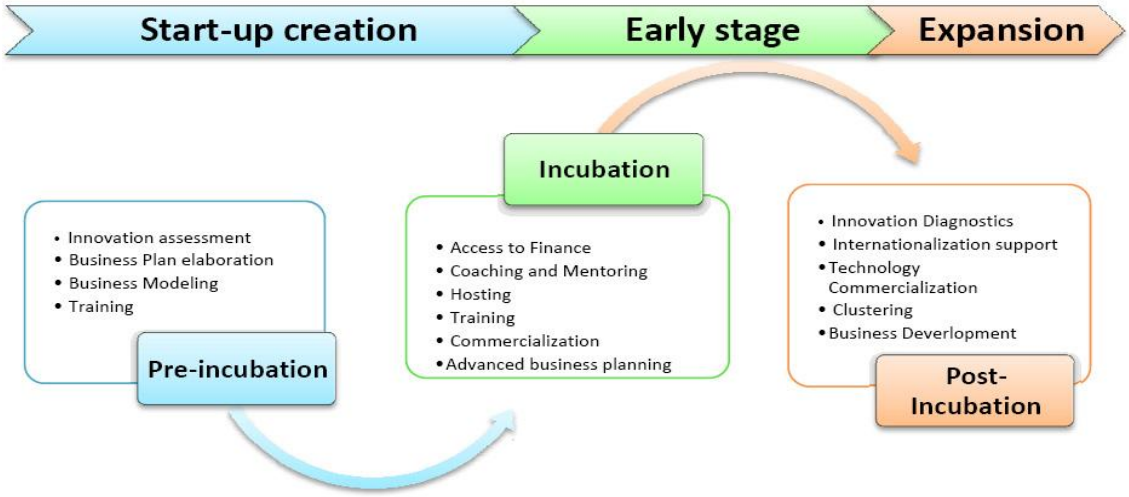
Business incubators are established to play an important part of regional development and are therefore often developed as a system embedded in a close cooperation between governments, universities and industry. Particularly many business incubators are established as part of research and science parks. The interlinked collaboration effort lies in understanding that various actors provide several value-added services which are mutually beneficial. These connections can generate knowledge and human resources, which have implications for scientific and technological innovations. One can therefore argue that many business incubators are important for the success of clusters, and create value by assisting entrepreneurs' ability to establish new companies (Malecki, 1997).

3.2 The incubation process

Business incubators' roles are important to reveal entrepreneurial actions and development of new businesses. When entrepreneurs chose to enter incubation, they usually receive assistance and support for formulating ideas, developing a business plan, advice and consultancy, finding

investors, networks, etc. Depending on the incubator structure, entrepreneurs goes through various processes and stages in the incubation. The incubation process and services offered are distinctive and depend on each incubator's purpose and goal. However, the incubation processes can often be distinguished into three phases with supplementary services under each phase (infoDev, 2000: European Union, 2010). The three stages are illustrated in figure 10.

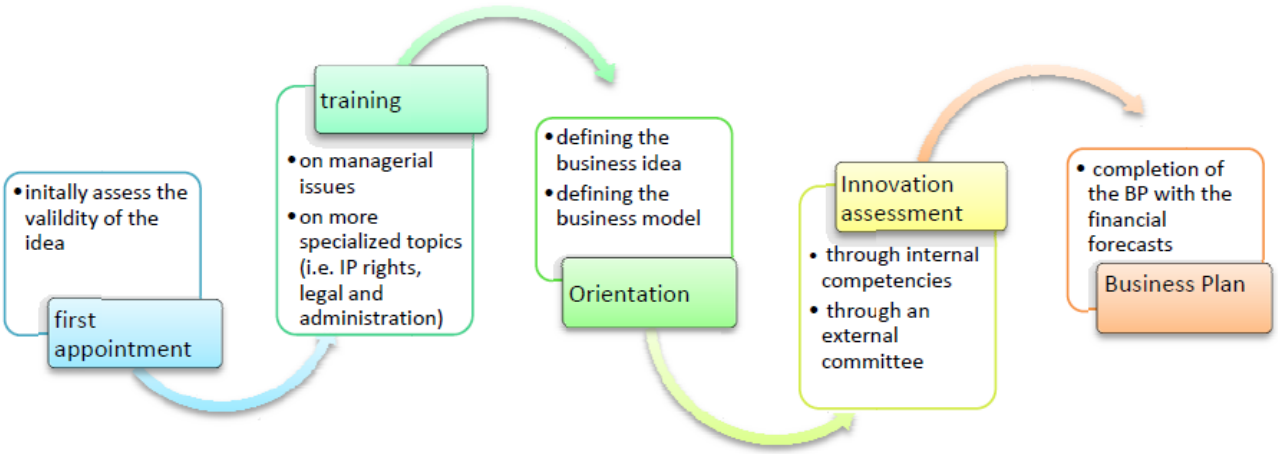
Figure 8. Three phases of incubation



(Source: European Union, 2010, 6)

Ideas need to go though several stages of learning and product development before reaching the stage of competitiveness. Ideas or projects are identified while screening is based in accordance to incubator criteria defining the incubators target markets (e.g. projects with a particular technology or design etc,). While some entrepreneurs may have a substantial background from business and management, others may lack this kind of knowledge. Some entrepreneurs who are starting from scratch are thus encouraged to go through a pre-incubation process. In the pre-incubation phase a combination of training, workshops, and general assistance in business planning is included, before proceeding to incubation (infoDEV, 2009: NBIA, 2002: European Union, 2010). Figure 9 highlights some typical services usually provided in the pre-incubation phase.

Figure 9. Typical services offered in the pre-incubation phase



(Source: European Union, 2010, 19)

The incubation process itself typically consists of business support services such as training, advice/coaching on business issues (managing, marketing etc), funding, (internally or from external provider), and technology support (e.g. Intellectual property rights, prototyping, etc). A key feature of business incubators is the fixed time period for assistance. Dependent upon the incubator requirements, incubatees usually do not stay within the incubator for more than a four-five year period. Other features of the incubation process may embrace provision of networks often between incubatees or with other organisations (e.g. universities, or companies). In many cases, the contact between the incubator and the graduated companies is retained. This is manageable since many incubators offer a so called post incubation phase, where the incubator provides services in relation to networking and partnerships for their former incubatees (infoDEV, 2009: NBIA, 2002: European Union, 2010).

Figure 10. Typical services offered within the incubation process

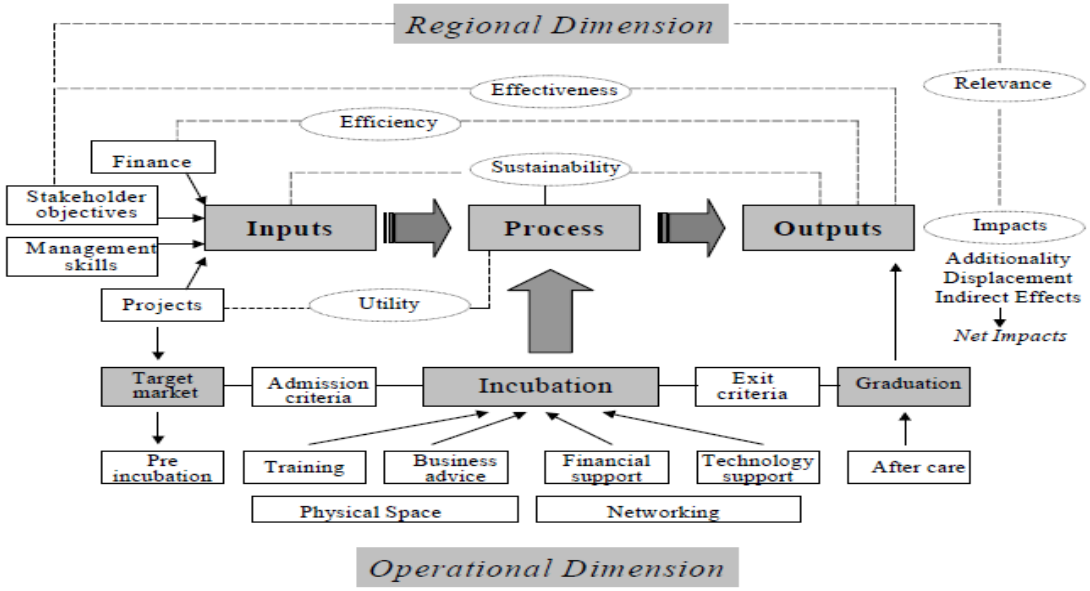
(Sources: European Union, 2010, 20)

3.3 Existing incubation literature on assessing incubator performance

The general literature on business incubators performance shows the difficulties of assessing their performance. This is seen in relation to the very nature of incubators such as cost and efficiency, goals and aims, and lack of long term effect of incubators (Hackett and Dilts, 2004). According to Lalkaka (2001), incubators have shown a performance regarding efficiency and job creation and this has become a serious problem for many sponsors and governments subsidising incubators. First of all, incubators performance is complex and it is difficult to assess the survival rates of incubator clients compared to survival rate of new businesses in general. In addition, many incubators have put forward admission criteria which makes it more likely that incubatees entering have already a diminished likelihood of failure, and would probably have survived anyway (Hackett and Dilts, 2004).

According to Hackett and Dilts, (2004) are Campbell et al., (1985) and Smilor (1987) provide some of the early literature depicting a framework of incubators operational processes. Campbell et al., (1985) addresses internal incubation processes (e.g. capital investments, access to networks, business expertise, etc), but fails to take external incubation processes into consideration such as incubator affiliations, impact of incubated companies, and support systems. While Smilor (1987) in his framework has included external incubation perspectives, the framework lacks an internal incubation overview (Hackett and Dilts, 2004). NBIA (2002) has developed a more comprehensive model compared to both Campbell et al., (1985) and Smilor (1987). The model depicted by NBIA (2002) illustrates business incubators' operational processes by an input and output model, where sustainability is addressed as an incubator's possibility to generate and pay expenses from reliable sources (NBIA, 2002). Further, the European Union, (2010) outlines that general costs for an incubator includes payroll, consultants and external experts, costs of incubator building, and subsidies to entrepreneurs.

Figure 11. NBIA's (2002) framework for addressing inputs and outputs of the business incubators operational procedures and its functioning's.

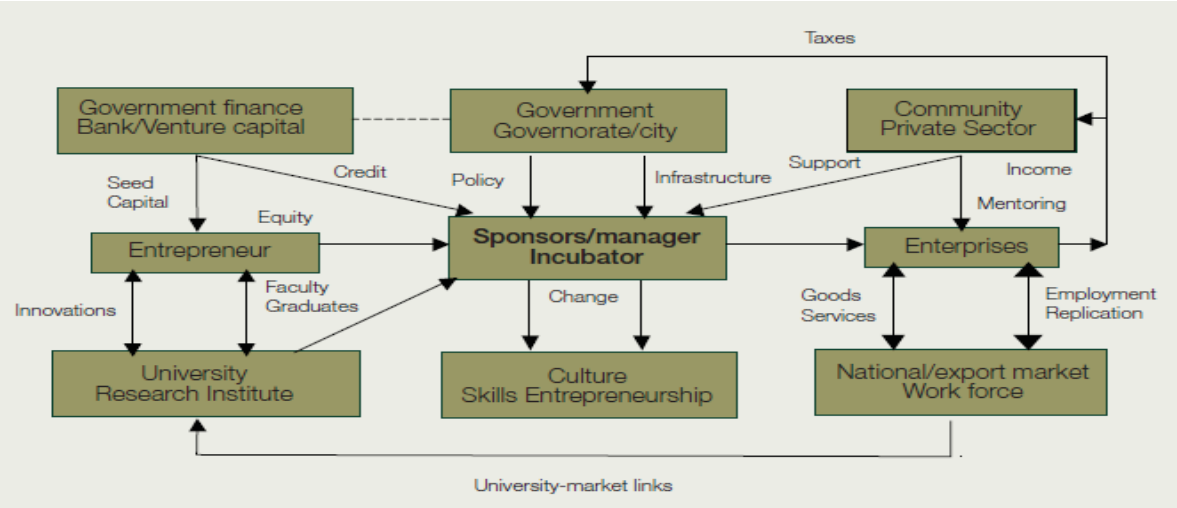


(Source; NBIA, 2002, 4)

A similar developed framework to the one illustrated by NBIA (2002), is proposed by Shalaby (2007). This model highlights business incubators' interactive weave of relationships. Shalaby (2007) outlines that sustainable performance of incubators should, in addition, be developed based on a linkage to a sound knowledge base. He also sees it as important to build a dynamic entrepreneurial management team, have a selective entry criteria, add value to clients' enterprises through delivery of quality services, monitor performance and evaluate outcomes, be financially self sustainable, monitor client progress and outcomes regularly, follow new trends and innovations, mobilise the needed investments and working capital for the incubator and its clients, etc.

While NBIA, (2002), Campbell et al., (1985) and Smilor, (1987) all have depicted a model for assessing incubators performance, their frameworks demonstrate incubators' basic functions and operational procedures. Shalaby (2007) has on the other hand placed more emphasis on the incubators' relation with the external environment such as government and taxes, community sector, and venture capital which cannot be dismissed as important.

Figure 12. Shows business incubator relationship with external environment



(Source: Shalaby, 2007, 53)

It is important to bear in mind that the overall assessment literature of analysing business incubators sustainable performance are founded on business incubators' ability to be financially self-sustainable, and not on the three principles defining sustainability as mentioned in section 1.1. When Lalkaka (2001) argues that business incubators' over the last years have been established without any regards to sustainable performance, sustainability has been understood in terms of establishing self-financial incubators were services can be efficiently delivered (Lalkaka, 2001). All the literature analysing business incubators performance views sustainability of incubators in terms of their ability to generate income from multiple sources. According to Boyd (2006) business incubators should preferably have 6 to 10 revenue streams. The source of income might "*include rents and service fees, income from contracts, cash operating subsidies or sponsorships, and investment income*" (Boyd, 2006). Cammarata (2004) states that a business incubator wanting to become self-sustainable takes time, and also argues that a general timeframe of between four to seven years before business incubators can achieve the goal of being self-sustainable.

When asking Jón Hreinsson, what are the most important factors for business incubators' sustainability in terms of social environmental and economic aspects, he addressed the importance of deal flow (e.g. flow of entrepreneurs and ideas and its ability to access financial means). He additionally argued that lack of capital for incubated companies can hamper entrepreneur's growth.

"Even though the ideas are founded on sustainability it does not matter if the idea is not supported by inventors and sponsors"[16].

Teju Ravilochan, co-founder of the Unpredictable Institute which is a business incubator located in the US, argues that sustainability within their incubator is mainly preserved by the entrepreneurs themselves. The Unpredictable Institute, targeting particular entrepreneurs with high social and environmental impacts is based on the notion from Albert Einstein saying, "*I don't teach my students, I'm mainly creating the conditions in which they can learn*". The Unpredictable Institute states they are promoting new sustainable entrepreneurs, but do not apply any specific curriculum to secure the integration of sustainability. Instead, it was argued that they "*bring together entrepreneurs, investors and high quality skilled advisors so that ideas can become financial self-sustainable, and have the possibilities to replicate in multiple countries within 3 years*"[17].

Based on existing reviews of assessing business incubators' performance, the literatures have revealed that attention solely is given to the financial dimension of sustainability. To be able to answer the outlined research question, the social and environmental dimensions must therefore be addressed. The project will now further elaborate on the development of an analytical framework.

3.4 Developing an analytical framework

Taking its point of departure from the existing assessment of business incubators presented in section 3.3, several criteria and indicators for assessing business incubators' sustainable performance have been taken from various theories. The Auditing Instrument for Sustainability in Higher Education (AISHE1.0 and 2.0) has been the main tool used for developing assessment criteria for this project's analytical framework. This has been used due to the many parallels seen with operations of universities and business incubators. The linkage between universities and business incubators will now be further addressed.

A knowledge based society has been placed as front runner by the EU, particularly with technology as the driving force. While research and development (R&D) is perceived as a key element in all welfare societies, one initiative to strengthen the development of research has been to expand collaboration between actors such as academics, governments, science institutions (also known as

[16] See appendix 8

[17] See CD

'the triple helix') and regional industries. Higher educational institutions are insolvably coupled to science and R&D, which is today an important means of generating competitive advantage and fostering innovations (Eriksson and Tromsø science park, 2001).

During the last couple of years, universities' role has changed (Maarbjerg Olesen, 2010[18]). Interest has been directed to universities' contribution to innovations and the establishment of knowledge and technologically based companies and regional industry development (Eriksson and Tromsø science park, 2001). As argued by Christensen et al., (2009) and Jamison and Hård, (2005) one increasing field of study is universities' role in sustainable development. Today, most universities have departments, which are involved in projects or offer whole degrees in environmental science and/or environmental management (Jamison, 2005 and Hård, 2005).

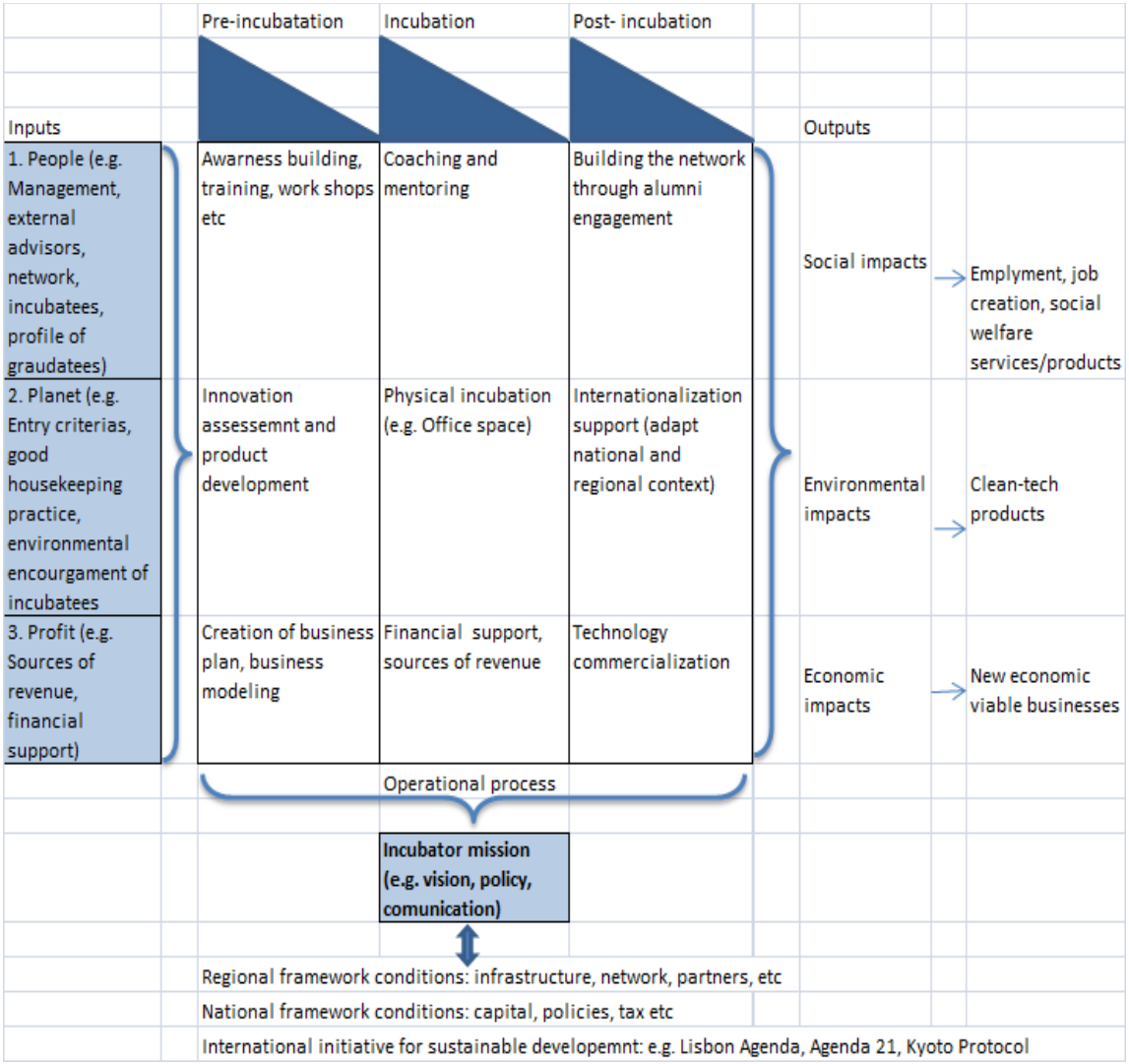
While literature on implementing sustainability in higher education is based on strategic actions in relation to operational processes of the university, some of these strategic concepts are transferrable to how business incubators operate. Although, it might appear as universities and business incubators are two highly distinguished units, they do posses some common features which are important to highlight. Universities and incubators are playing a significant part of regional innovation and competitiveness and development of cutting edge innovation and research. Both are assisting students/entrepreneurs with human and physical capital such as infrastructure (e.g. access to facilities and administrative supports, laboratories, works space, etc), competence building (e.g. provision of human capital, skills, education and training), R&D (e.g. create new innovation and knowledge), consultancy or professional services (e.g. legal advice, technology transfer). Sometimes, consequently, numerous incubators are located or interlinked within or to universities to gain value-added benefits (Mian, 1997).

The AISHE is a quality management model for advancing sustainability in higher education first published in 2001 (AISHE, 2001). However, an updated version of AISHE 1.0 has been proposed, and is referred to as AISHE 2.0 (Rooda, 2008 in EMASU, 2008). As universities and business incubators share similar roles in society, they are being established to foster competitiveness, innovation and entrepreneurship. The similarities between these institutions can be related to their operational processes. The operational stage for business incubators can be portrayed as comparable to the universities as incubator is performing many operations and is an active consumer and producer of waste, energy, consultancy organisation, and being an investor and employer. As

[18] See appendix 18

parallels with business incubators and universities can be drawn to their operational processes, this project has applied some of the same input criterias as outlined in the quality management model AISHE 2.0[19] in an analytical framework. The framework is depicted in figure 13.

Figure 13. Framework for assessing business incubators' sustainable performance - *own elaboration based on AISHE 1.0 and 2.0., (2001 and 2008) and Christensen et al., (2008)* [20].



The input criteria applied from the AISHE 2.0 and are related to the sustainability principles of, society, environment and economy. It can be argued that defining each part separately may "*help*

[19] Appendix 9 for overview of criterias used in AISHE 21.0 and appendix 10 elaborates on the criterias used

[20] The illustrated analytical framework was inspired by applying the basic business incubation processes as outlined in section 3.2 and using the model developed by Christensen and colleagues (2008).

organise the action needed to approach global sustainability in real life" (Goodland, 1995, 2). Each criterion is applied to assess business incubators contribution to sustainable start-ups. It is thus believed that business incubators operational process should be sustainable before it can seriously contribute to the sustainability of new start-ups. While the developed analytical model allows for using similar assessment criteria based on universities and incubators' operational processes as outlined in appendix 3, this framework model has additionally adapted other input criteria. While the AISHE 2.0 assessments are based on a "Plan"- "Do"-"Check"- "Act" scheme, which is internally audited, the outlined input indicators shown in figure 16 are not solely taken from AISHE 2.0. To further strengthen the framework model additional, criteria are composed from the general assessment of business incubators' performance as illustrated by the NBIA (2002) and Shalaby (2007). In the existing assessment incubator literature, criteria for people and profit have been identified as important inputs particularly depicted in NBIAs (2002) figure (figure 11). Some of these criteria have also been applied due to their consistency in relation to input criteria such as management skills, objectives, and financial sources.

Principles of cleaner production as stated by United Nations Industrial Development Organization (UNIDO, 2008) and Remmen and Thrane (2007), have also been applied. To be able to assess the environmental dimension of business incubators some general criteria, were in addition, taken from pollution prevention principles.

It could also be argued that business incubators share similar features as banks. Associations can link business incubators to the functioning of banks, providing capital for entrepreneurs. As Bouma et al., (2001) argues green and sustainable banks are emerging[21], this further allows for an understanding that adapting sustainability into business incubators operational processes would be significant. For instance, one of the largest Danish banks in the field of sustainable financing is Merkur. Sustainability is ensured by facilitating financial advice and financing to different projects which involve economic, ethical, environmental and social assessments (Merkur, 2007). Based on the emergence of sustainable financing it can be argued as significant for business incubators to become involved in sustainable financing projects that benefit humans as well as eco-systems.

Figure 17 illustrates how these input criteria are placed in accordance to various services offered in the pre-incubation, incubation and post incubation phases. Some of the services include awareness

[21] Examples of sustainable banks worldwide are: Tridos Bank http://www.triodos.co.uk), Rabobank (http://www.rabobank.com/content/) and YesBank (http://www.yesbank.in/)

building, innovation assessment, coaching and mentoring, technological commercialisation, business modelling etc. However, it is recognised that activities within each individual incubator vary greatly and can be structured differently. Figure 17 is only one considered way of assessing business incubators' sustainable performance. Consequently, activities within each phase should not be seen as a linear process. The input indicators are perceived as constantly influencing the output factors. What is coming in reflects how sustainable the outcomes are. The framework model for analysing sustainable performance of business incubators shows a dynamic process of internal as well as external factors influencing incubators inputs and outcomes. Different factors and actions at international, national and regional levels highly influence the framework conditions for incubators.

In addition to criteria related to people, planet and profit, it has also been recognised that sustainability efforts are likely to be manifested in organisations' missions (Schaltegger, 2002). For any organisation integrating sustainability it should be communicated and subscribed into concrete policy documentations. As highlighted as one of the criterias in the AISHE 2.0 analysing a business incubator's mission can be assessed by identifying the business incubator's vision, policy and communication. A good reference point here would be to identify if any type of environmental management system exists. While environmental reporting like International Standard of Organisation (ISO) and Eco- Management Auditing Scheme (EMAS) are important as the quest for transparency has evolved, it has been argued that it is difficult to attribute environmental improvements directly to organisations adapting environmental managements systems alone, since these systems seem to be instrumental (Morrow and Rondinelli, 2002). Schaltegger and Peterson (2001) argue that environmental management systems such as ISO and EMAS are core activities in what they term environment administration. They further declare environmental management systems take a proactive approach to tackling environmental problems, which are focused on efficiency gains and not conservation.

The general Environmental Management System (EMS) framework for an analytical framework tool for incubators can be argued to have several advantages. As it allows the incubators performance to be audited systematically, verified and compared to specific standards, some of the advantages are related to overall improvements of environmental performance, improvements of environmental management processes, increased awareness of environmental issues and compliance with legal requirements. Also, while identifying environmental areas within organisations environmental problems can thus be avoided and costs savings generated (Thompson, 2002).

Table 9 shows that the four criteria used were based on the elaboration of the three sustainability principles.

Table 9. Sustainability indicators with selected criterias are listed as following

Mission	***People***	***Planet***	***Profit***
Vision and policy	Management/staff background	Good housekeeping practices	Financial expenditures
Communication	External advisors/ expert groups, networks	Efficiency considerations /process optimisation	Growth and survival rate of graduates
Environmental management systems	Encouragement of sustainability towards incubatees (profile of graduates)	Technological change and innovations	Sources of revenue and facilities offered

People – Output criteria under people are set to target social impacts such as job creation, and services and products which can increase social welfare. To achieve sustainable outputs input criterias should also reflect sustainability. Tilley (1998) and Palmer, (2000) have argued that one of the most important considerations in improving SMEs environmental performance is offer companies environmental information. The incubator management, staff, external advisors and networks are important parts of business incubators. The people, staff, and management constituting the organisation should preferably have a clear perception of how they can contribute to the incubator visions. The managers and advisors are the ones implementing the incubator's vision in practice, and should make sure that sustainability is managed throughout the incubators' operational processes, from the very idea of business development. It is also seen as vital that the incubator have a clear profile of what kind of graduate they want to have. This is related to the eligible and criteria for application (Blankenship, et al, 2007).

Planet – As all organisations, business incubators' consume energy, water, and produce waste. As Christensen et al., (2008) argues, universities have environmental impacts related to materials (electronics/IT, office equipments, and laboratory equipments etc), energy (heat and electricity, etc) and chemicals (laboratory chemicals, cleaning agents, etc). These impacts can also be said to relate

to business incubators. One relatively easy way to manifest environmental issues as well as awareness in business incubators' is to look at the 'low hanging fruit', also referred to good as housekeeping practices. This principle is not based on cutting edge technology as investments are minimal, but rather by cleaner production principles. By changing routines, the involvement of employees can significantly contribute to reducing the consumption of resources (Remmen and Thrane, 2007). Christensen el al., (2008) further argues that environmental impacts can be reduced by using green IT solutions, eco-friendly lightning, and isolation.

Other input criteria include looking into what products and services the incubator is assisting. Here, the degree of technology change and innovations should focus on sustainable innovations and hence radical innovations, which are as according to Hockerts and Wüstenhagen, (2009) more likely to disrupt the market and change patterns of production and consumption compared to incremental innovations (see section 1.2) (Remmen and Thrane, 2007). If business incubators are actively addressing these issues, it is most likely that the incubatees are affected and encouraged to consider environmental and sustainable factors in their production development phase (Blankenship et al. 2007). If these environmental inputs are secured, outputs are manifested in environmental impacts related to clean technology products.

Profit – As the existing assessment literature has emphasised, financial inputs are stated as one vital aspect of enhancing not only an incubator's sustainable performance but also assisting new viable businesses. If the incubator cannot generate income, it is likely that this will have effects on facilities offered, and the incubator's abilities to efficiently support the incubatees. Incubator's should attain income from various sources and not exclusively be dependent upon one. In addition, survival rate and growth of graduated companies will be an important estimation of economic impact and how well the incubator can contribute to new viable businesses (Lalkaka, 2002).

4. Business Environment Characteristics in the Nordic Region

This chapter provides background information of the Norwegian, Danish and Icelandic business environment. Introduction to some of the institutional similarities and differences are highlighted to be able to analyse possible influences at the macro level. Particular emphasis will be given to highlight some features of the Norwegian and Danish innovation polices.

4.1 Nordic business characteristics

Norway, Sweden, Denmark, Iceland and Finland are situated in the Northern part of Europe and belong to a wider economic regional unit. As illustrated in the picture below this is commonly referred to as the Nordic region.

Figure 14. Location of the Nordic regions

(Source: The Nordic Africa Institute, 2007)

The Nordic region as a whole has developed into one of the strongest economic regions in the world where the Nordic business environments are characterised by strong competitiveness, innovation, entrepreneurship, and the presence of SME's (Barysch, 2005: Lindgaard Christensen et al, 2005: Audretsch et al., 2009).

Although the Nordic region's economy is strong and stable, this does not entail solely the Nordic economy as resistant to international conjugation fluctuations. Iceland was and still is particularly hard hit by the financial crisis in 2008 (e.g. foreign currency regulations and inflations) while the Nordic countries were overall less affected in comparison to other European countries. The Nordic regions have had a gross domestic product (GDP) growth in wealth of 2, 6 % from 1997-2007,

which is the highest rate of wealth creation compared to other OECD-regions. Four other groups of regions have seen GDP per capita growth over 2 percent (Nordic Council of Ministers, 2009: World Economic Forum, 2009).

The Nordic socio-democratic welfare model has often been stated as a reason for the Nordic region's characteristics. Through its investments in infrastructure, education and research in social welfare the Nordic states have played a significant role in the public sphere. This model is often compared to the conservative-liberal Anglo-Saxon model as it stands in sharp contrast to this. While in a neoliberal model, high taxes on income are usually seen as discouraging productivity; high taxes in the Nordic model are viewed as a strengthening factor for achieving economic development as well being a contributing factor to high welfare services and a well established workforce. In combination with a stabile civil society, a strong democratic tradition and effective regulations, social capital has thrived and is one of the most important corner stone's the economy of Nordic countries (Nordic Council of Ministers, 2009).

The Danish economy consists to a large degree on human resource, since natural resources such as wood, water, and coal are quite limited compared to the other Nordic countries (Borup et al., 2009). While clothing, furniture and foodstuffs constitute the major products produced, Denmark has a high specialisation in low-tech industrial products. According to Nordic Council of Ministers (2009), the service sector has over the years, been highly important in experiencing a significant improvement in Danish innovations. Lindegaard Christiansen et al, (2005, 2) argues that "*it might be seen as a paradox that a high income country like Denmark with high wages, high taxes and a large public sector, a relatively low level of R&D activity, and a relatively low proportion of people with a higher education in science and technology, hitherto has been able to adjust to changing international market pressures and stay relatively competitive and rich*".

Salterbaxter (2009) argues that Danish companies have long been associated with sustainable innovations. Foremost, this can be associated to Danish wind power. The Danish turbine industry began as early as 1891 when the first wind turbine was built at the west cost of Denmark. However, before 1950's wind power was not particularly emphasised and it was not until two periods of oil crisis during the 70's that wind power was placed on the agenda (Vestergaads et al., 2004). A large part of the Danish wind power success can be explained by governmental regulations and various policies initiatives. For instance, to make wind power more attractive for other power companies renewable energy was partly refunded. According to Lindgaard Christensen et al., (2005) the

establishment of Risø Research Centre[22] in 1978 can also be seen as an important factor for the production, distribution and regulation of Danish wind power.

Compared to Denmark, Norwegian economy, and to some degree Iceland is much more dependent upon natural resources. While Iceland and Norway's economy have been strengthened by the fishery industry, the Icelandic economy has to a much further degree transformed its economy focused on the services sector. However, since 2008 and the entrance of the financial crises the service sectors such as computer software and biotechnology have been particularly hard hit (Nordic Council of Ministers, 2009).

Since the Brundtland Report in 1987, Norway has frequently been associated with sustainability (Nordic Innovation Monitor, 2009). However, a large part of the Norwegian economy is not based on sustainability. As Norway is the third largest oil exporter in the world, the establishment and use of oil platforms did not proceed without debates and protests (Jamison and Hård, 2005). The Norwegian oil adventure started in 1971, where 20 billion barrels of oil have since been pumped up from the Norwegian continental shelf. In addition to oil, Norway has also made use of its many waterfalls for power production. Norway's high dependency on natural resources can thus be one explanatory reason for why Norway has been ranked as the least innovative country in Nordic countries (Norwegian Ministry of Petroleum and Energy, 2009: Nordic Innovation Monitor, 2009).

As already illustrated in section 1.3, SMEs constitute the largest part of the European economy based on number of employees. This is consistent with data collected from Norway, Denmark and Iceland. While the average European SME employment share is about 67%, it is comparable with the SME's employment share of both Iceland and Norway which is approximately 70% (Audretsch et al., 2009, 12). These findings can be explained in a historical perspective as the Nordic welfare model has been built on social cohesion. This means that relatively equal income have been distributed based on comprehensive redistribution mechanisms (Lundvall and Tomlinson, 2002).

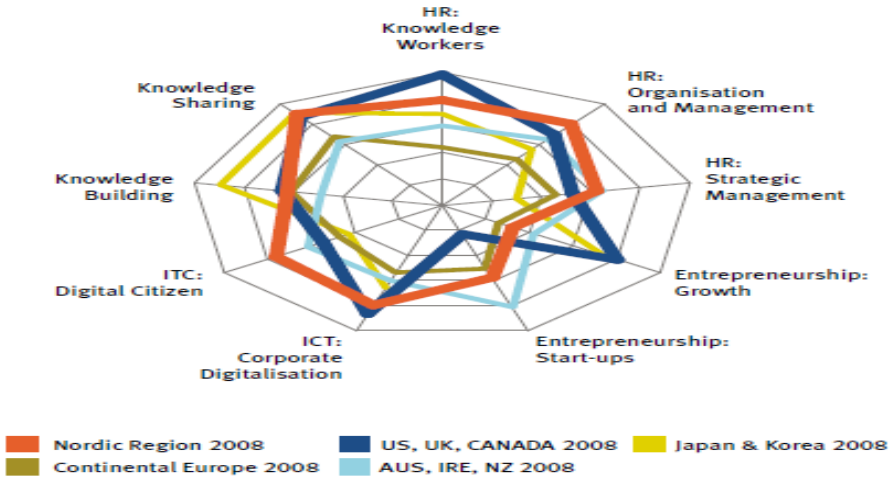
4.2 Innovation and entrepreneurship in the Nordic region

According to the Global Entrepreneur Monitor Norway, Denmark and Iceland are classified as having innovation driven economies (GEM, 2008). A comparative analysis of the Nordic region

[22] Today Risø Research centre is a leading research institute in terms of wind turbine technology and resource evaluations

portrays that in relation to other OCED countries, the Nordic region is the world's most innovative geographical area in the world[23] although behind US, Canada and the UK individually (Nordic Innovation Monitor, 2009).

Figure 15. Shows the performance of the Nordic regions innovation compared to selected OECD countries[24].



(Source, Nordic Innovation Monitor, 2009, 22)

From this figure weak entrepreneurial conditions are revealed. Particular challenges are related to entrepreneurial start-ups and entrepreneurial growth. OEDC (2008) argues that start-up rates in Denmark have increased in recent years. While the overall importance of high growth firms remains below the international levels it has still improved. According to the Organisation for Economic Co-Operation and Development (OECD, 2009) this is manifested as by the number of young enterprises reaching the threshold of ten employees which has expanded.

Since 2001, Norwegian business start-ups have steadily increased. The development of new companies has also grown steadily in Iceland, from about 30 00 in 1999 till almost 60.000 in 2009 (Statistisk Sentralbyråd, 2009: Statistics Iceland, 2009).

Table 10 presents business start-ups, survival and failure rate in Norway, Denmark and Iceland.

[23] See appendix 11 for full overview

[24] See appendix 12 for figure explanations

	Norway	*Denmark*	*Iceland*
Number of enterprises	460 000 (2009)	115,000 (2009)	59.700 (2009)
New start-up businesses	46 00 (2008)	17500 (2005)	NA
Failure of new start-ups	3600 (2008)	NA	NA

(Source: Statistisk Sentralbyrå, 2009: Danish Agency for Science, Technology and Innovation, 2007: Statistics Iceland, 2009).

Danish innovation features

The Danish state is responsible for establish of the regional innovation environment in Denmark. This is due to the interplay between research, financial intuitions, higher education and industry, as well as commercialisation of result research (Eriksson and Tromsø science park, 2001). In 1998, the Danish government through the Danish Ministry of Industry started an innovation program co-supporting innovation environments in Denmark with approximately 310 million DKK. This was directed to establish close connections to higher education and/or science institutions, which would decentralise responsibilities and decision making processes (Eriksson and Tromsø science park, 2001).

One important element with the Danish innovation system is science parks or business organisations promoting innovation (Rogova and Toivonen, n.d). The establishment of Innovation incubators was one of the main program initiatives by the Danish governments to support entrepreneur's access of capital particularly for high growth companies. 6 Innovation incubators have been established which are: CAT Innovation A/S, DTU Symbion Innovation A/S, Innovation Midtvest A/S, NOVI Innovation A/S, Syddansk Innovation A/S, and Østjysk Innovation A/S. With an objective to promote innovation and technology transfer, the innovation incubators aim is also to commercialise research results to the private sector and service as a link between various actors and institutions (Danish Agency for Science, Technology and Innovation, 2009: Rogova and Toivonen, n.d). According to the OECD (2009) Innovation incubators received state funding got subsidised with a total of DKK 141 million in 2007.

Norwegian innovation features

Research and development expenditures in Norway are to a large degree concentrated within a few industries (e.g. IT services, technical consulting and oil) (Wise and Høgenhaven, 2008). FORNY is a regional program with a goal to commercialise results from R&D. The program is supporting projects with an interesting business potential and a unique technological concept with possibilities for export and import. Within this program science parks, in addition to universities, are set up to contribute to infrastructure and motivation of research and development initiatives. Science parks have also the responsibility to stimulate and assist the R&D environment, universities and regional academies to create new commercial enterprises with basis in R&D results (Eriksson and Tromsø science park, 2001).

The Industrial Development Corporation of Norway, Innovation Norway, and the Norwegian Research Council are three state owned enterprises which play central roles in the implementation of both innovation and entrepreneurship in Norway. Innovation Norway is the key state owned actor offering financial support (in particular incubator grants,) to innovative firms, while SIVA was founded in 1968, with a goal to improve the national infrastructure for innovation. SIVA is co-owner of approximately 80 innovation centres in Norway. Its objectives are to exchange knowledge and expertise as well as to "*build networks between regional, national and international R&D environments"* (SIVA, n.d). In Norway, business incubators were made into a policy instrument in 2000. While many science parks in Norway are established with partly public ownership, several business incubators are established without any external support. In 2006, 19 incubators were established across Norway offering different services to businesses within industry, R&D, culture, food and nature (SIVA, n.d).

Icelandic innovation features

A part of the Icelandic strategy has been to make the Icelandic innovation system more effective. As a result, the Science and Technology Policy Council was established in 2003. Preparations and implementations of innovation policies are developed by the Icelandic Centre for Research (RANNIS). RANNIS is under the Icelandic Ministry of Education, Science and Culture with an aim to provide professional assistance and implementation of science and technology in Iceland. RANNIS is set out as a financial support system for R&D and innovation, in addition to providing services, information and analyses to the Council of Science and Technology Policies (Wise and Høgenhaven, 2008).

Several governmental actions have been developed to facilitate innovation such as the Technological Institute of Iceland with a mission to transfer technology and expertise to business and industry as well as assisting companies in innovation. This institute has also established a science park, the Biotechnology House, were several biotech related businesses have developed (The Science and Technology Policy Council Iceland, 2004).

As many government supported programs have been implemented, there are also a number of private initiatives. An example is the project called Klak, which is an incubator/accelerator assisting start-ups with "*access to facilities, equipment, consulting, business relations and financing*" (OECD, 2006, 24).

5. Case Study of Business Incubators in Norway, Denmark and Iceland

This chapter presents the main findings from the multiple case study design of 6 business incubators in Norway, Denmark and Iceland. While each case study is presented in two headings; set up and operational processes, they are further analysed according to the three sustainability criterias in chapter 6. The main findings from the questionnaire can be viewed in appendix 13. If not stated otherwise, the majority of information comes from primary sources as is elaborated in table 5 and 6, and can be obtained in appendix 14, 15, 16, 17, 18, 19 and 20.

5.1 Narvik Science Park

Incubator set up

Narvik science park (NSP) was established in 2000 as a non-profit organisation. Through the use of capital, competence and collaboration partners NSP's goal is to strengthen and establish new business activities based on latest science or knowledge based results.

The incubator at NSP was established in 2005 with an objective to incubatee highly technological ideas which have a high growth potential with target groups nationally and internationally. The incubator has currently 7 incubates.

Operational processes

Each entrepreneur is selected based on motivation and ability to run a business, in addition to several supplementary factors such as: the uniqueness of the idea/product, the market potential, competition and understanding of the market and the competitor situation, what links are there between the idea and existing competence, the quality of the company documents, the motivation/ attitude to become a "member" of the incubator team, the financial- situation, the need for funds and turnover, the ability to think long term and achieve growth, and the added-value. However, the specific admission criteria were mentioned as:

- The idea has a high technological level
- Has a growth potential
- Minimum national or international market.

Exit criteria are based on either expiration of the contract after 3 years or if incubatees do not achieve required progress during the contract period. Every incubator contract is made for 6 months

at a time, and the progress is evaluated after the 6 months. When the contract is signed the incubator agrees on 3-5 milestones that are to be evaluated during these months and at the end of the incubation process. Entrance and participation to the program is free of charge, and include an agreed amount of counselling services, while office, phone, electricity, and workshop are invoiced at a regular base. The incubator attains its financial sources of income from public and private investments such as SIVA, Norland Municipality, and Futurum AS (Narvik science park, n.d: Appendix 7).

Some of the main services supported by the incubators at NSP's are networking (e.g. a network with other incubator tenants, conferences, connect incubator network in Norway as well as towards investors) infrastructure (e.g. office, meeting room with facilities, internet access, telephone, copy, scanner etc + a workshop) and consultancy (e.g. economy, product and process management and development, engineering, internationalisation, sales & marketing, branding, applications to various governmental support programs, patent/ Intellectual Property Rights (IPR), board services). 7 management staffs are working related to the incubator. The staff at NSP has formal education and experience in among other topics; economy and finance, engineering, ICT, sales & marketing, internationalisation, technology production.

The incubator is not encouraging participants to develop environmentally friendly products or services. The focus is on developing ideas and to create them into a million dollar company, and in most cases this is seen as more than enough to focus on.

The incubator is obtaining value-added services from complementary research or science parks, respectively Norut Narvik AS and Høgskolen in Narvik. Norut Narvik AS and Høgskolen in Narvik are the reasons why NSP was intended to commercialise ideas from these institutions. The result was 44 ideas in 2009, and 1-2 established companies based on these ideas. With a survival rate of 55 %, the incubator at NSP has since supported 5 companies where 5 successfully have graduated with turnover of 10-50 MNOK per year. The expected community impacts are to create businesses with a growth potential and develop places of work.

5.2 Norinnova Northern Innovations

Incubator set up

Norinnova Northern Innovations (NNI) was established as a project within Norinnova AS. Norinnova AS was established in 2000 as a for-profit innovation company with an aim to commercialise new technology and science based business ideas from the university of Tromsø, Northern Norway university Hospital, and industry.

By developing and assisting a unique technology or business model, the incubator at NNIs is supposed to further create sustainable value through business development and strengthen the existing industry in Northern Norway (Norinnova Northern Innovations, n.d). The incubator at NNI is a non-profit unit with 9 incubatees currently present.

Operational processes

The incubation period is set at maximum 2 years. Selection of ideas is based on companies or persons that have a unique business idea, model or technology. Additionally, should the business idea have a high growth potential with possibilities for internationalisation. Criteria for entering is evaluated based on the person (team), product (uniqueness), market positional, and risk-taking and funding. Exit is when end of the period has expired (up to 2 years) or else whenever the company has matured. Evaluation is based on regular meetings. The incubator at NNI is still in contact with some of their graduated companies. Some of them are still renting offices in the science park, while all graduates are invited once a year to a meeting.

The incubator receives financial support from various public and private actors. While the main services such as space and business advisory is free of change, the participant fees plus rent of various facilities are about 70.000 NOK a year.

The incubator has currently 4 staff members working in relation to the incubator which have background from various business and administration education, experience from consulting etc. Since establishment, the incubator has grown by members of staff present. In addition, it is also facilitating a distributed incubator in Troms as well as a food-incubator (Norinnova Northern Innovation, n.d)

Some of the value-added services are knowledge awareness and seminar arrangements related to commercialisation, innovation and general entrepreneurship.

The incubator is not assisting or encouraging incubatees to develop environmentally friendly products.

Since establishment, this incubator has contributed to assist 30 graduated companies with a survival rate of 86 %. Expected community impacts are related to creating new businesses and creating new jobs.

5.3 Oslo Science Park

Incubator set up

Oslo science park (OSP) is a centre for innovation, science and development and was established in 2001. OSPs goal is to commercialise ideas and results from different science surroundings and contribute to create a favourable place where business development and growth, are likely to succeed. OSP is divided in two: real estate and incubation. While the former is for-profit seeking, the incubator is a not-profit demanding unity.

The incubator has 5 incubatees present. Its objective is to assist and commercialise high-technology, mainly within ICT and biotechnology (Oslo science park, 2010).

Operational processes

The incubation period is 3 years, where only 5 projects are chosen each year. The ideas are selected based on their ability to generate value and their potential to become a viable business. It is stated that ideas should be based on their potential to span into an international market which can turn to over 50 million NOK within 5 years. The incubatees commitments are discussed in the screening phase, while evaluation and monitoring is based on a close work with participating companies each month. It was mentioned that some reporting is done to evaluate incubatees performance.

The main services for the incubator are competence building, commercialisation and development. Some capital is also invested in companies. The incubator is closely tied to the OSPs innovation centre. At the OSPs innovation centre companies have the possibilities to rent work-and office space which are set up to assist with IPR, technology transfer, patent and commercialising (Oslo science park, 2008).

The incubator does not require participating fees, but in return, they require holding a small part of shares in the company. Oslo University, SIVA and Oslo municipality are some of OSP many private and public shareholders which contribute financial support. Approximately 70,000 NOK derives from SIVA.

There are currently 2 managers working directly with the incubator program, while a total of 6 are present within in the OSP innovation centre. The management of the incubation and innovation centre has background from higher education in entrepreneurship, engineering, economy, marketing and business. The incubator is strongly linked to the Oslo University. Different arrangement from the Centre for entrepreneurship at Oslo University, are offered to incubatees at the incubator at OSP.

The incubator is not assisting or encouraging incubatees to develop environmentally friendly products. However, it was stated that OSP, as a whole, contributes to reduce its environmental impacts. In addition, to have established photovoltaic cells, OSP also has heat recovery ventilators. Further, it was mentioned that there is a common awareness amongst the OSP staff to use public traffic instead of private cars and taxies. The incubators do not select project which might be harmful to environment or have ethical implications. But no formal demands or requirements are developed. The expected community outcomes are companies that have great chances to succeed and create new jobs.

5.4 Aalborg University Innovation

Incubator set up

The incubator at Aalborg University is a part of the overall innovation strategy at Aalborg University. It is stated that, through entrepreneurship and the communication and exchange of knowledge ideas that can develop into growth based businesses, AAU should contribute to the technological, economic, social, and cultural innovation (AAU, 2010).

The incubator at Aalborg University can, in international terms be called a pre-incubator. The incubator is part of Supporting Entrepreneurs at Aalborg (SEA) which was established in 2003. The SEA is one of three units driving Aalborg University innovation. The other two units of Aalborg University innovation comprise the networking centre and commercialisation centre. SEA's goal is to create and provide optimum settings for the start-up of new knowledge based companies by

influencing the framework conditions for knowledge based entrepreneurs (SEA, n.d). The incubator operates as non-profitable, and has currently 40 present incubatees.

Operational processes

The incubation process lasts for 6 months and is divided into 5 phases or modules; start-up, trend and business perspectives, consumer and market identification, innovation and development of business idea, and testing of potential business ideas in the relevant market. Enrolments take place 2 times a year following the AAU semester with entry two - February and September. The incubatees are granted access to the program based on commitment to the idea, level of innovation, growth potential and market relevance, and to a milestone plan agreed with the project management. The incubatee can stop anywhere in the process. The incubatees are evaluated and monitored through milestone planning and regular meetings with project management and coordinators. Based on the commitment of the incubatees, project management can expel the incubatees.

Two groups of people can apply to the AAU incubator. The first group is related to students, PhD's, teachers and researcher from AAU, while the second group is corporate participants such as companies. While the former group is not charged any participating fees, the later must pay a small amount of fees. The incubator is funded by EU-regional funds and a few small contributions from various national programs and organisations.

Some of the main services provided by the incubator are access to different infrastructure located at different institutions around the university, supporting/administrative staff, coaching/mentoring and a network to other entrepreneurs and regional support programs. There are currently 2 staff members working with the incubator at AAU holding backgrounds in business and sociology. In addition, AAU incubator has several student helpers which are contributing to assist the incubatees.

In addition to natural close ties with the AAU University, the incubator is also attached to NOVI science park, also located at the AAU University. The AAU incubators central office and courses are placed in NOVI science park.

It was argued by Niels Maarbjerg Olesen that sustainability is addressed based on social and economic development, but has not embraced an integration of environmental considerations[25]. The

[25] See appendix11 for full interview

incubator is not assisting or encouraging incubatees to develop environmentally friendly products. The reason for not including sustainability within its operational processes is stated as due to a lack of resources available to focus on sustainability. The SEA does not have any environmental considerations, such as good housekeeping practices e.g. energy efficiency, recycling and waste management. The incubator stated that they are operating under the general principles and applications of AAU's missions in these areas. The incubator is currently working to develop goal oriented activities directed towards developing countries, but is only in the development stage and presently lacks funding.

There have been approximately 300 potential entrepreneurs who have taken part in the incubation programs at the AAU incubator. For 2008, 46 people have graduated (23 starting up companies) and in 2009, 70 persons graduated (33 starting up companies). Moreover, as argued by the AAU management, the incubator has been a valuable tool for highlighting the importance of entrepreneurship as by providing a platform where knowledge based entrepreneurs can test and improve their business idea. It was said that many of the graduated companies have created value and jobs, while quite a few have acquired new competencies that will help them create relatively more value in being employed in future companies or organisation.

5.5 NOVI Science Park

Incubation set up

NOVI Innovation incubator AS (NII) is part of the NOVI science park located as a separate unit at Aalborg University. NOVI science park was established in 1989 with a mission to be an attractive and future-oriented research park with a professional innovation environment. The science park was set up by a property and financing fund for the North-Jutland science park as a for-profit fund set up by the University of Aalborg, Aalborg municipality and North-Jutland region (NOVI, n.d).

Since its beginning in 1998, NOVI Innovation has evaluated more than 1,000 ideas for new companies. 434 preliminary studies have been carried out which have resulted in the establishment of 91 companies in all. NII was established in 1998 and had 10 new incubatees in 2009, while the expected number of incubatees this year is between 7 and 8 (NOVI, n.d). NII is established by the Danish Agency for Science, Technology and Innovation and is a state-supported innovation incubator. NII are assisting high-tech research projects to move from concept to company with an

goal to develop businesses that can become the growth companies of tomorrow, which means creating more knowledge-intensive entrepreneurial businesses with unique competencies.

Operational processes

The incubation takes place at a four stage development process from idea registration till company establishment (NOVI, n.d). For entering the incubator the idea must be viable and entrepreneurs must have driving force. Only clients with high technology based ideas can enter. It was further stated that the idea should be sustainably viable, which entails; value-generative, unique market function, should be protected, and have a large international market potential. The entrepreneur is expected to take initiatives, be willing to implement, have the ability to organise, communicate and motivate, as well as being willing to accept risks and keep a sense of perspective in stressful situations (NOVI, n.d).

NOVI Innovation can invest in pilot projects for approximately 1, 7 million DKK, but investments in each project are stated to not constituting more than 40 % of the total investment capital in a company. This implies that additional funding is needed (NOVI, n.d).

There are 5 staffs working with activities related to the incubation. NOVI innovation is physically connected to Aalborg University where a strong relationship has throughout the years been fruitful.

Some of the firms in NOVI are related to environmental and energy in the field of developing, selling, building and implementing combined heat and power plants, wind power installations, and consultancy company in the field of project design, planning and documentation of environmental friendly energy projects (NOVI, n.d). However, the NOVI Innovation is not assisting or encouraging incubatees to develop environmentally friendly products.

5.6 Innovation Centre Iceland

Incubation set up

The Innovation Centre Iceland (ICI) was established in 1999 as non-profit centre and operates under the Icelandic Ministry of Industry and Commerce. ICIs overall aim is to "*increase innovation, productivity and competitiveness of Icelandic business by doing innovative technology research,*

diffusing knowledge and giving support to entrepreneurs and start-up companies" (Innovation Centre Iceland, n.d).

ICI is a cluster of 5 incubators where each incubator has its specific goal and aims. Amongst the 5, the incubators are promoting highly innovative ideas operate in the area of medicine and biotech, as well as rural development. One of the incubators was particularly established as a reaction to the economical crises. 3 of those are run in cooperation with the municipalities

Operational processes

The incubation period in all the 5 incubators lasts from 1 month till 4 years. Criteria for entering, is that entrepreneurs should have innovative ideas. When companies become profitable or if they do not deliver the incubatees can be requested to exit. Some of the main services offered are writing a business plan, finding and applying for grants, finding investors, finding staff and specialists to help, marketing, finding partners all over the world, finding producers all over the world, provide a specialist to help in R&D etc. Services depend on needs. Evaluation is randomly based on each case. For the graduated incubatees, meetings are held on a regular base, while contact is maintained by visits of former graduates. In some cases former graduates are part of ICI present clients in R&D.

ICI receives their largest financial income from governmental support. Other support is given from regional support and through grants and rent. Financial expenditures for participating are from 200 NOK (25 EURO) to about NOK 3200 (40 EURO) a month. ICI has currently one fulltime employees and about 10 who help out part time. The management have a background in business and engineering.

ICI states they contribute to encourage participants to develop environmental friendly products or services, since this is becoming part of what is needed and the requirements in that field are becoming stronger. This was particularly emphasised in the product development phase. They do not offer any special training programs for environmental encouragement or awareness, but said they had a lot of qualified staff assisting and helping out when needed. This is always on a personal or company basis.

ICI have assisted 35 start-ups in total with a survival rate of 83%. Since the economical crises in Iceland it is expected that the activities of the ICI has been very positive and created a lot of

opportunities for highly educated people that used to work in big companies, and are now pursuing their dream to start on their own.

6. Analyses of Nordic Business Incubators Sustainable Performance

The findings of Norwegian, Danish and Icelandic business incubators will now be analysed based on the analytical framework outlined in section 3.4. First, the mission of the 6 business incubators will be addressed to see whether sustainability is directed in the organisation's vision, policy, and communication means. The next three headings intend to assess business incubator's performance based on the people, planet and profit.

6.1 Business incubator mission

In the visions, policies and communication of business incubators in Norway, Denmark and Iceland sustainability is not reflected. No public documents, policy or environmental management systems exist which relate to incubators sustainability. As all the participating incubators' are part of a larger organisational setting such as science and research parks, the incubators goals are reflected through the broader organisational activities and objectives of these. This is, for instance, manifested by the incubator located at Narvik science park pursuing the same goals as NSP, which are to actively use capital, competence and networks to strengthen companies and establish new business activities based on new research and development results. The Nordic business incubators are required to operate in accordance to the general vision and recommendations outlined from the governmental institutions such as the Norwegian Ministry of Trade and Industry and Danish Ministry of Science, Technology and Innovation. As the general comprehension and establishment of business incubators' can relate to innovation policies at the national context, innovation is treated as a means to enhance economic growth and competitiveness.

The economic perspective and goal in business incubators can be said to exist. It is portrayed when incubators state their goals to commercialise preferably high technological ideas and creating new workplaces. An example can be taken from the goal of NNI which is to create sustainable value through business development and strengthen the existing industry in the region. Sustainable values are here referring to the economic-socio perspective. Socio relates to being able to generate new jobs and new workplaces, but does not include any concerns regarding labour rights, health and safety issues for works nor any concerns for producing safe products for consumers.

As business incubators foremost have been established to promote innovations and economic growth, this can explain why environmental and social concerns are not reflected in incubators as well as the associated science and research parks' vision and policy goals.

6.2 People

Sustainability or environmental considerations were not analysed as strategically reflected amongst the management or incubator staff. According to Schapter (n.d) if environmental information and awareness are going to be easily introduced and quickly applied, companies require consultants and advisers who understand environmental issues and how to adopt sustainable business practices within new businesses. The incubator management and staff did not hold higher education in the field of environment or sustainability. Instead their background reflected higher education in business and economics, consultancy, ICT, sales and marketing, engineering, and sociology, making the focus on the economic dimension of sustainability even further more apparent. Many of the incubator managers stated to have a background as former entrepreneurs. As entrepreneurial literature has only to a limited degree focused on sustainability issues, it is more likely that management with entrepreneurial backgrounds have the knowledge and experience to give superior guidance regarding economic aspects, and is a strengthening factor for enhancing economically viable start-ups.

Only OSP stated that environmental considerations were present within their staff. Additionally the ICI argued that their staff are qualified enough to assist and help entrepreneurs in these issues, although the incubatees are not provided with any specific sustainability training programs. Efforts from the incubator staff to enhance attention for sustainability were not present. Einarsson Fly Fishing a former graduated company at ICI stated that no emphasise from the ICI was directed towards sustainability, even though sustainability was explicitly outlined in the company's project description. Sustainability never came up in discussions; neither were the graduated companies encouraged to take advantage of their sustainable ideas. Instead, ICIs target was first and foremost to create jobs.

It has previously been mentioned that a close connection to research and science parks gives incubators value-added benefits. This association is manifested for the 6 incubators, since all are set up in relation to research and science parks. As argued by Mian (1997), the close relation between incubators and research/science parks is said to be beneficial for incubators and incubatees in terms of getting value-added benefits, such as being updated to the latest researches new innovations, and getting connected to a large network. The 6 incubators stated that while universities contribute to foster entrepreneurship and development of new ideas, the incubators role was seen as significant in order to commercialise these ideas into markets.

6.3 Planet

Few of the 6 incubators stated any specific actions for environmental initiatives within the organisation in terms of practicing good housekeeping performances[26]. OSP stated they are doing a lot to reduce their environmental footprint, such as using photovoltaic cells, using heat recovery ventilator uses public transportation as much as possible. In addition to fresh air and climate control, installation of heat recovery ventilators is particularly seen as increasing energy efficiency. Since the organisation as a whole obviously is aware of its environmental impacts, it seems remarkable that the incubator at OSP is not taking this into further considerations as a strategy in their incubation process.

There are no environmental (or social) criteria for who can apply for the incubation. The general entry criterias outlined is based on incubating ideas having high possibilities to grow and expand. Common entry criteria for all were mentioned as the entrepreneur's motivation, commitment and ability to run a business, product innovation (uniqueness), market position, risk-taking, and opportunities for funding. When asked whether the incubators think of themselves as encouraging or supporting incubatees in producing environmental friendly products and services, the answer was no. Except for OSP expressing that projects causing harm to environmental or are unethical are not selected into the incubator, the incubators stated they did not contribute to environmental friendly productions. However, when analysing the OSPs eligible criterias, no environment or social considerations were requested as entry criteria. Since no written policies relating to environmental contributions exist, no demands are placed to incubatees. Lack of concrete policies makes the choice of defining ideas or projects which are not causing harm to environment or are viewed as un-ethical difficult to interpret, and will be subjectively determined based on the existing knowledge of incubator managers. Expect from OSP, the ICI argues that their incubatees are encouraged to produce environmentally friendly products in the production development stage. As already addressed this was not manifested by ICIs staff or management according to the former graduated company.

Only two answers were given regarding why sustainability or environmental issues was excluded and not taken into consideration during the operational processes of business incubators. The AAU incubator mentioned lack of resources while Narvik science park articulated that the incubatees have more than enough to focus on without including sustainability as well. The AAU incubator

[26] Lack of data was seen severely hampering this argument

argument for not having enough resources to focus on sustainability cannot be said to be a viable reason. Especially, when a large amount of courses taught at AAU are related to sustainability and environmental management. The AAU incubator stated that they are following Aalborg University principles and applications in the areas of energy reductions and the University's overall sustainability targets. However, these strategies were not familiar to the incubator manager.

However, one of the graduated companies at AAU incubator stated that the incubator had assisted them to develop a sustainable business model. The attained assistance was affirmed indirectly by one of the courses offered by the AAU incubator. The other company incubated at the AAU (Andsvar consultancy company), was given social advisory from an expert with a focal point on social activities. This demonstrates that sustainability is not systematically integrated in the incubators operational process, but might however be done tacitly. Both statements from the AAU incubator and the NSP prove that sustainability is perceived as an extra expenditure for the incubator or the incubatees. This notion can be interpreted as deriving from the neo-classical terminology arguing that integrating sustainability in business is viewed as costly, and implies an additional burden for start-ups or companies in general. This can be disputed according to Vaten (2006), who says burdens of not implementing sustainability are manifested in the longer terms

Lack of strategic implementation of sustainability is also apparent in NOVI Innovation. Although NOVI Innovation did not express any particular focus to encourage entrepreneurs to develop environmental or sustainable product or services, NOVI Innovation is assisting entrepreneurs and companies in producing products or services with a particular environmental focus. This means that environmental considerations are only fragmentally incorporated into the operational processes. In addition, NOVI science park, was the only science and research park which could anticipate a sustainable certificate as a CO2-neutral homepage. This certification was only obtained for NOVIs homepage. No other green IT initiatives were stated. Although PCs and computers are a significant contributor of CO^2 emissions, these emissions can bee see as contributing a rather small proportion of NOVIs total energy[27] use including PC use, in offices, and electricity use in buildings and laboratories etc.

In accordance to the proposed model for classifying typologies for sustainable innovations (figure 9), none of the products or services from the graduated companies can be placed in the two typologies observed as most important for sustainable innovations (i.e. niche innovations and

[27] No quantitative data was obtained to support this statement

innovations for new socio-technical system). While most of the start-ups products and services in this project were analysed as offering services for ICT systems, producing software services usually does not have implications for society and environment. In an overall production system perspective, they can be seen as having a positive impact on environment, since physical products and materials needed to extract these are not utilised. To what degree these software system contribute to sustainability is on the other hands difficult to assess.

One of the graduated companies at AAU incubator offers customised corporate social responsibility (CSR) or social responsibility consultancy to companies and organisations. Personal gains were stated as to why the service was developed, no statements were addressed to social and environmental benefits and advantages from the service.

Einarsson Fly Fishing produces fly fishing reels and is aiming to develop their business operations in accordance to LCT (i.e. life cycle thinking) and eco-design principles. Einarsson Fly Fishing company states in their vision that the "*core idea is to produce high quality, durable Fly Fishing tackle with the least possible impact on the environment*". The fish reels remain the same, but where the qualities of its performance are improved are in the reduction of energy and waste, by minimising consumable supplies. Thus, their offers can be identified as incremental improvements as their performance and quality improvements are headed for already existing products and services.

One of the graduated start-ups at NSP was analysed as developing alternative technologies in existing applications. ROSS Proaktive AS is using new technology to develop a new accounting system. In this new accounting system businesses are capable of reducing more than half of its time and costs related to accounting. It is believed that companies using this system can reduce its employments by half in this area. Reducing the need for human labour could indicate a trade-off in terms of benefiting the social dimension which is related to generate job creation and employment.

6.4 Profit

In terms of the economic dimension of sustainability, all the graduated companies stated that economic sustainability and gains were obtained, and that the incubators actively contributed to establish and plan an economically sound business.

As defined in the incubation literature on self-sustainable incubators, in addition to available data, incubators cannot be addressed as being fully economically sustainable. Although limited

information was obtained in relation to how much the incubators achieved in financial support from different actors and how the money was used to cover different costs, this argument is based on lack of multiple sources of income (preferable 7 sources). However, the incubators can be said to obtain some degree of economic sustainability generating income from more than 3 resources where all are funded by both private and public institutions, making the incubator more reliable. How successful the incubators are related to their financial mission to produce economic viable businesses can be reflected through survival and growth rate of graduated companies. Nordic business incubators overall survival rate is calculated at 74,6 %[28]. Compared to the overall survival rate of Norwegian start-ups, estimated at 21% in 2008, the survival rate from Nordic business incubators' can thus be seen as highly contributing towards increasing the survival rate of new start-ups. Although many of the graduated companies stated it was likely that their company would have been established regardless of being in an incubator. One of the graduated companies (2Operate) was relatively newly established, and had not reached breakeven due to the financial crises, which was seen as a barrier for raising money.

One major source of income for all the incubators was derived from governmental funding through both regional and some national programs. The AAU incubator was the only stated incubator receiving funding through external supporting programs such as from the EU fund. One can thus state that most of the incubators were receiving public support in addition to relying on revenues from participating fee, services, and rent. Some incubators relied more on renting fees and participant fees that others. The highest costs were stated as 70.000 NOK a year (including rent and participating fees), while the lowest fees was 2400 NOK a year. For incubators who did not choose to have participating fees, other revenues and income was attained. NSP stated that entrance and participation in the program is free of charge including an agreed amount of counselling services. Income was instead generated through payments from office, phone, electricity, and workshop at a regular base. While OSP is a private share company, the incubator at OSP received income by requiring incubatees to invest capital in the real estate, which made the incubatees share holders in Oslo science park. Being located within the private share company of OSP, the incubator offered investment capital for the incubatees. By having this arrangement, no participating fees were outset, which can be viewed as a path towards becoming self-sustainable.

[28] Survival and growth rate was not obtained from the incubator at Oslo science park and NOVI Innovation. Survival rate from graduated companies in 2009 was used for the AAU incubator.

The service at the AAU incubator is similar to the rest of the incubators (only shortened) even though the incubatee does not go through the three standard phases of pre-incubation, incubation and post incubation. One of the graduated companies argued that the major challenge was that the mentor needed to always ensure that everything happens as planned. This had implications, due to spending more time on less relevant issues (at least not the issues that provides best "value for money/effort"). While many of the incubators provide a range of services, the graduated company's stated that the major benefits were financial capital, getting hold of investors and the network. This shows that provision of financial capital and investors is one of the most significant services offered by incubators. Therefore, it can be argued that incubators should contribute to responsible lending and leasing money to incubated participants as greening of business has evolved. It was also argued by ROSS ERP service that the only reason for them being in an incubator was to receive legitimacy to obtain funding. As science parks/incubators mostly are public instruments it was stated that it is almost impossible for entrepreneurs to obtain public funding from elsewhere. It was stated that incubators have some kind of public monopoly that works as a political means for allocation of financial support. Ideas and projects incubated are only present for obtaining financial legitimacy to their surroundings. In this way the services and support from incubators cannot be seen as being very efficiently used.

Not all incubators focused on or had a target to assist entrepreneurs with a high-tech or science based ideas (e.g. life science, ICT, biotech and medicine). The AAU incubator was the only incubator where high-tech was not a requirement. Having a strategy similar to that of the AAU incubator, where any entrepreneur can apply, could imply that more resources such as time, staff and money are likely to be used on ideas that might not be very viable. This can be estimated looking at the overall survival rate for 2008 and 2009 which is respectively 50 % and 47 %. Compared to the other incubators, this is well below the average[29]. However, positive features from having open eligible criteria are that more entrepreneurs can be promoted and assisted to develop new businesses. OSP and NNI were the only incubators demanding that new ideas should have a growth potential which reaches at least national or international markets. These requirements make it likely that only very high potential ideas are chosen, meaning that capital may be directed more efficiently towards ideas with the greatest chance of gaining a competitive advantage

[29] Except from Narvik science park, but however, this should be explained in related to NSPs ambitions to develop ideas with growth potential targeting groups nationally and internationally

7. Conclusion

With an aim to address business incubators' contribution to sustainable performance of new start-ups, this study has assessed how 6 business incubators, located in Norway, Denmark and Iceland, contribute to assist sustainable business start-ups using a novel assessment framework. Generally, business incubators have most commonly been established to promote new business growth and increase regional competitiveness. However, as sustainability is part of wider national and international strategies, there is a growing need to support sustainable entrepreneurs. On the basis of the Nordic region's being the front runners for promoting innovation and sustainability, the project has proposed a hypothesis that Nordic incubators contribute to assist sustainable new business start-ups. The hypothesis has framed the overall research question which is;

How are business incubators in Norway, Denmark and Iceland contributing to sustainable performance of new business start-ups?

To be able to answer this research questions several sub questions were developed. One major part of this project has been directed to sub question 2. As existing business incubation literature has failed to assess incubators' sustainability in terms of the three sustainability dimensions, this project has developed an analytical framework to assess business incubators' contribution to sustainable new business start-ups.

The analysis shows that neither business incubators nor the associated science or research parks have defined documents, policies, and objectives related to sustainability practices. Sustainability has not been analysed as being systematically integrated into incubators operations and activities. Even though some sustainability initiatives were manifested at the level of the associated science, research and innovation parks, (i.e. photovoltaic cells, awareness amongst the staff, use of heat recovery ventilators, public transport), this is not exclusively seen as a holistic strategy incorporated into business incubators or science, research or innovation parks. The analyses showed that Nordic business incubators are fulfilling the economic dimension of sustainability, and that they contribute to the development of economically viable businesses. To some degree, business incubators' contributes to the social dimension as employment is provided. However, this is not exclusively targeted, and rather expands from the economic dimension.

The analysis of 6 business incubators clearly shows that, except for the economic dimension, wider social and environmental considerations are not adequately incorporated in their operational processes, nor are they an integrated strategy for new businesses start-ups. Therefore, this project

can reject the outlined hypotheses that Norway, Denmark and Iceland business incubators are contributing to sustainable performance of new business start-up. Nordic business incubators' contribution towards sustainability can instead be perceived as decoupled from the notion of economic growth and innovation.

8. Perspectives

As showed in this project, and as argued by Hockers and Wüstenhagen, (2009) organisations and new start-ups often fail to integrate a broad range of sustainability issues in their business model. It should be mentioned that this is not exclusively related to business incubators. For instance, micro financing institutions generate large social impacts, but have limited understanding of how their loans impact the environment (Hockerts and Wüstenhagen, 2009).

Several reasons can be interpreted for why business incubators as well as new start-ups have not adapted sustainability into their operational processes or as part of their mission. First, one can position that new start-ups often are hampered and reluctant to develop new sustainable innovations. The role and motivation of already existing market actors are likely to obstruct new start-ups willingness to adapt new radical practices, due to their innate integration of norms and rules already existing.

Secondly, the basis for which business incubators' are built upon can be question. Business incubators as well as science and research parks can be perceived as deriving from the traditional understanding of development, as embracing societal changes while constraining the ecological dimension of sustainability (Lélé, 1991). Therefore one can argue that business incubators have a paradoxical role as being exclusively set up to generate economic growth and innovation. Economic growth and sustainability are not apparently two interconnected terms, as argued by Foxon and Person, (2007) polices for sustainable development may have different or even antagonistic objectives to the fundamental economic growth imperative, which usually underlies innovation policy. Most often, innovation policies are directed to increase economic growth while objectives for sustainable development are at the same time targeting environmental problems which are associated to capitalism. It should thus be stressed that while a strong economy is a prerequisite for welfare and other social assets, economic efficiency and growth could have problematic social, political and environmental implications if not sufficiently taken into consideration. As according to Olson (2004) a competitive economy is a necessity, it should be made explicit that this is not an adequate condition for developing a strong and sustainable society.

As the basic notion for the majority of business incubators' can be reflected in the saying "*I don't teach my students, I'm mainly creating the conditions in which they can learn*", can thus contribute to explain why business incubators' have not adapted or integrated sustainability strategically within its processes. While business incubators' have the functional role to promote entrepreneurs

in developing a viable business, they do not contribute to shape entrepreneurs towards embracing sustainability issues. Developing sustainability is instead entirely dependent on the individual entrepreneur and his/her motivation and willingness to enfold these issues. One can argue that business incubators should not only assist entrepreneurs and new start-ups, but additionally contribute to play a significant role as shaping entrepreneurial actions towards sustainable development. As argued by Schapter (n.d) the role of universities may here hold a critical role as contributing to knowledge creation and change mindset of entrepreneurs. Since business incubators most often are affiliated to universities, there is a big potential for exploiting this connection in favour of educating sustainable entrepreneurs. While several entrepreneurial initiatives in Europe have focused on educational awareness for students and locally driven start-ups e.g. Oslo Agenda for Entrepreneurship in Europe[30], initiatives in developing countries are particularly focusing on educating entrepreneurs for sustainable development (European Commission, 2006: CSCP, 2009). For instance, business incubators could take advantage of universities potential for generating sustainability, by providing entrepreneur's with courses, workshops, raining sessions, and consultancy from professor's and teaches. As Schapter (n.d) argues "*the inclusion of environmental information within such courses can help develop a greater sense of environmental awareness amongst students, and so encourage them to apply this knowledge to improving processes within their own firm*" (Schapter, n.d, 530).

[30] "*The Agenda is an outcome of the Conference on "Entrepreneurship Education in Europe: Fostering Entrepreneurial Mindsets through Education and Learning*"

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Appendix 1 - Sustainability learning curve

(Source: Blankenship et al., 2007, 69)

Appendix 2

E-mail contact with: Allen Holst

Development consultant for the region of Mid Jylland

E-mail sent: January 11th 2010

Hei,

Jeg er en norsk studerende ved Aalborg Univeristet. Jeg skal dette semestere skrive min master oppgave. Detaljer rundt oppgaven er enda ikke formulert, men hovedtrekkende er som følger: Jeg har valgt å gjøre en case study på en eller flere bærekraftige business inkubatorer og målete er se på hvordan tradisjonelle inkubasjons centre kan istedet bli om bærekraftig business inkubatorer samt hvordan disse kan bidra til en positiv vekst og utvikling i utviklingsland.
Spesielt av interesse er å innhente data som forklarer i detalj hvordan inkubasjons prosessen foregår (e.g. management support, technical support, financing, partners, admission requierments, etc.). Det hadde derfor vært ønsklig å få innhentet data fra dere om dette, evt i praksis få lov til å observere hvordan dette blir gjort (ønskelig å være tilstedet 3-4 dager).

Jeg stiller meg helt åpen hvis dere har andre forslag eller interesser ang denne oppgaven. Håper på et positivt svar.

Mvh,

Veslemøy

Replied back : January 15th 2010

Hej Veslemøy

Tak for din henvendelse. Det lyder som en spændende opgave du skal igang med.

Hvis jeg forstår det rigtigt, er din interesse at komme tæt på inkubationsprocessen og se hvordan processerne i inkubatorerne foregår og hvordan virksomhederne hjælpes fremad. Derfor tror jeg du vil få mest ud af at kontakte nogle udvalgte forsker- og udviklingsparker og se hvordan de arbejder. I Nordjylland kunne du fx kontakte Forskerparken NOVI og høre, om det er muligt.

En oversigt over forskerparker i Danmark findes på www.forskerparkforeningen.dk og en liste over udviklingsparker findes på www.danskeudviklingsparker.dk

Du har muligvis set, at vi fra Region Midtjylland er tovholder på et nyt projekt i Kattegat-Skagerrak området, hvor inkubatorerne er omdrejningspunktet. Projektet hedder "KASK Inkubator" og er tre-årigt. Projektet indeholder bl.a. programmer for inkubatoransatte og for

virksomheder i inkubatorerne. Vi er endnu i opstartsfasen, hvor nogle arbejdsgrupper forbereder igangsættelse af aktiviteterne, men i løbet af foråret kan projektet måske give input til din opgave.

Du er velkommen til igen at kontakte os senere – så vil jeg give dig en status på, hvor langt vi er med aktiviteterne i projektet.

Med venlig hilsen

Allan Holst

Udviklingskonsulent

Tel. +45 8728 5273

Mobil +45 2913 5686

Regional Udvikling ▪ Region Midtjylland

Skottenborg 26 ▪ DK-8800 Viborg

E-mail sent: 5 April, 2010

Hei igjen Allan,

Er det mulig å få en oppdatering på KASK prosjektet så langt?
Jeg lurte også evt på om kan svare meg på om det er fellestrekk ved inkubatorer i Norden? (hvordan de er strukturert, inkubasjons prosess etc,) Evt hvis du har literature du kan anbefale ville dette blitt satt stor pris på!

Mvh,
Veslemøy Aurmo

Replied back: 20 April, 2010

Hej Veslemøy

Jeg beklager det langsomme svar, men der er lidt travlt for tiden.

Vores projekt er stadig i det jeg vil kalde en udviklingsfase: 4 arbejdsgrupper er i gang med at teste og detailplanlægge, hvilke aktiviteter vi skal sætte i gang efter sommerferien.

Så på denne side af sommerferien udvikles projektets to store programmer for virksomheder og ansatte hos inkubatorerne.

Derudover arbejder vi i Region Midtjylland på at kortlægge erhvervsfremmesystemet i

Region Midtjylland. Dvs. give et solidt overblik over aktører, målgrupper og samarbejdsrelationer. Ideen er her at inkubatorer ikke lever i et vakuum, men er afhængig af et velfungerende innovationssystem med mange medspillere for at optimere betingelserne for virksomhederne. Vi er inspireret af tidligere analyser fra Sverige og Norge. Jeg vedhæfter den ene fra Oslo og måske kan følgende links også bruges til inspiration.

Den svenske rapport er ret tung og kan også hentes via dette link:

http://www.vgregion.se/regionutveckling/rapporter
Titlen er "Innovationssystemet i Västra Götaland" fra 2008

Fra Norge er der også en interessant nyere rapport, som kan hentes her:

http://www.akershus.no/tema/naering/regionale-forskningsfond/

Mht. dit spørgsmål vedr. fællestræk for inkubatorer i Norden kan man generelt sige, at inkubatorprocessen er sat meget i system i de svenske inkubatorer bl.a. via Innovationsbrons inkubatorprogram og et lignende nationalt program findes ikke i Danmark. Med det lidt anderledes setup i Danmark, hvor de regionale Væksthuse spiller en stor rolle i erhvervsfremmesystemet, kan der være andre fordele. Det vi har set hos Forskningsparken i Oslo virker også meget professionelt.

Du er velkommen til at skrive lidt om, hvor langt du er med din opgave og også lidt nærmere om indholdet. Så skal jeg se om der evt. er nogle relevante tips mht. litteratur eller andet, som vi kan bidrage med.

Med venlig hilsen

Allan Holst

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-----Oprindelig meddelelse-----
Fra: Allan Holst
Sendt: 30. april 2010 22:05
Til: 'Veslemøy Brandsnes Aurmo'
Emne: SV: Business incubation - Master thesies

Appendix 3

ROSS ERP Service former incubate at NSP

Thank you for answering this questionnaire. This research could not have been established without your participation and it is highly appreciated.

*It is requested that answers are returned back as soon as possible, and no later than **20 of April**. Still, if someone for any reasons is not able to forward the answers before this deadline, please let me know in advance.*

To avoid misinterpretation, this questionnaire is written in English. It is therefore preferable, although not a requirement that answers are stated back in this language.

General:

Product/services offered: *ROSS ERP Service*

Industry sector: *IT Software (inkubatorprosjekt)*

Establishment year: *1978*

Nr of employees: *3*

---

1. What was your goal when entering the incubation?

Formålet var kursvirksomhet og utvikling av IT-systemet (ROSS ERP Service).

2. Has that goal been realized?
   2.1. If yes, how has it been realized?
   Kursvirksomheten har vært stabil I alle år I forhold til kapasitet.

   2.2. If no, why has it not been realized?
   Utvikling av ROSS har tatt tid pga små ressurser, vi har hatt stor suksess i utviklingen av system og er snart i pilotfasen.

3. Did the incubator contribute or encourage you to develop products/services that are economic, social and environmental sustainable?

   3.1. If yes, how did the incubator contribute/encourage you to create sustainable businesses model?

   3.2. If no, was there any reason for not considering this?

Vi ser det slik at inkubatoren ikke har den kompetansen vi trenger støtte til, men at vi er avhengig av å være i en inkubator for å oppnå offentlig støtte fra andre enn Skattefunn. Vi har i tillegg oppnådd støtte fra Innovasjon Norge. Vi må dokumentere legitimitet fra offentlige institusjoner for å bli vurdert positivt. Det er "kosmetikken" som må på plass for å komme videre i prosjektet!

4. What were the major challenges/problems with the incubation?

   Vi viste hva vi kunne få av støtte til og hadde ingen andre forventninger.

5. What were the major benefits deriving from the incubator?

   Inkubatoren har nettverk og legitimitet mot finansiører som kommer til å bli nyttig for oss i finansieringsfasen for kommersialisering.

6. Do you think your company would have been established regardless of attaining assistance from the incubator?

   Ja, men slik det offentlige systemet er konstruert politisk ville det ha vært risikabelt. Uten samspill med det etablerte støtteapparatet er det nesten umulig å få støtte.

7. Have your company experienced growth since graduation?

   7.1.1. If yes how much has the company grown (e.g. annual turnover, employees, rate of export, etc)?

   7.1.2. If no, what has been the major obstacle towards growth?

   Vi har stabil inntekt på kursvirksomhet som finansiører utviklingen av IT-system.

   Vi vil vokse betydelig når vi er i markedet med mange nye system.

If any additional comments or information, please state below

Vi er spesielle I forhold til miljøet og kompetansen i inkubatoren.

Støtteappatatet vil være mer nyttige for oss når vi i er modne for finansiering og kommersialisering.

Thanks for your time!

Appendix 4

Eating ApS – former incubate at AAU incubator

Thank you for answering this questionnaire. This research could not have been established without your participation and it is highly appreciated.

*It is requested that answers are returned back as soon as possible, and no later than **14 of April**. Still, if someone for any reasons is not able to forward the answers before this deadline, please let me know in advance.*

To avoid misinterpretation, this questionnaire is written in English. It is therefore preferable, although not a requirement that answers are stated back in this language.

General:

Product/services offered: Web parts for advance homepages,

Industry sector: IT/sales

Establishment year:2008

Nr of employees:0

---

1. What was your goal when entering the incubation?
   To learn how to establish a healthy business, develop our competences and build a network of entrepreneurs.
2. Has that goal been realized?
   That is very difficult to answer, because do we thing the goals have been fully reached – then no, because we learned so much and learned that, we still are rookies. But if you look at the goals before we started then yes, because we learned a lot, which in many ways have contributed to we still are going concern.
   2.1. If yes, how has it been realized?
   Through the meetings and seminars we have built a network and meet people from the business world, which has helped our business in many ways. Our competences have also evolved.

   2.2. If no, why has it not been realized?

   We still need to learn a lot about running a business and are still depended of help from extern parts.

3. Did the incubator contribute or encourage you to develop products/services that are economic, social and environmental sustainable?

   3.1. If yes, how did the incubator contribute/encourage you to create sustainable businesses model?

   Yep, we had discussed business models at a seminar but it was indirect through one of the teachers later, that our business model got sustainable.

   3.2. If no, was there any reason for not considering this?

4. What were the major challenges/problems with the incubation?
   We are all at different levels and need different consulting.

5. What were the major benefits deriving from the incubator?
   The network without a doubt, where we did met some indispensable business people and other entrepreneurs, who have helped us and believed in us.

6. Do you think your company would have been established regardless of attaining assistance from the incubator?
   Maybe, but no, because then we haven't got the right counseling, but maybe we have gotten better or worse counseling another place then.

7. Have your company experienced growth since graduation?
   7.1.1. If yes how much has the company grown (e.g. annual turnover, employees, rate of export, etc)?

   7.1.2. If no, what has been the major obstacle towards growth?

The finance crisis, which have slowed the process of raising money, and we also have some issues concerning a key collaborator, but all are being solved now.

If any additional comments or information, please state below

---

Thanks for your time!

Appendix 5

Andsvar former incubate at AAU incubator

Thank you for answering this questionnaire. This research could not have been established without your participation and it is highly appreciated.

To avoid misinterpretation, this questionnaire is written in English. It is therefore preferable, although not a requirement that answers are stated back in this language.

General:

Product/services offered: Consultancy

Establishment year: 2009

Nr of employees: 1

1. How did you get involved in the incubator provided by the incubator? (did you additionally get support elsewhere?) I started in the program called: Entrepreneurs with mentor and continued at the incubator the year after.

2. What was the goal when entering the incubator? and has that goal been realized?
Getting more basic knowledge – and yes.

3. Did the incubator encourage you to produce products/services that are economic, social, environmental sustainable?

- If yes how? My consultancy has a focal point on social activities
- If no, was there any reason for not considering this?

4. Was the incubator initiating any environmental activities? (such as emphasizing recycling, energy efficiency, waste management etc)

I am thinking no.

5. What were the major challenges/problems with the incubation?

?

6. Do you think your company would have been established regardless of attaining assistance from the incubator?

Yes

7. Have your company experienced growth since incubation?

Yes

8. Why was it important for you to produce your product?

Personal gain

If any additional comments or information, please state below

---

Thanks for your time!

Appendix 6

2operate former incubate at AAU incubator

General:

Product/services offered: Software for mobile network operators (troubleshooting process software)

Industry sector: Telecom

Establishment year: 2009

Nr of employees: 3

---

1. What was your goal when entering the incubation?

To build a company with a specialized product in a market where it would typically be bought by a big company within 3-5 years.

2. Has that goal been realized?

1. If yes, how has it been realized?

2. If no, why has it not been realized?

Only one year has passed. Product is ready, but we still need to generate a reasonable amount of sales to be an attractive company to buy.

3. Did the incubator contribute or encourage you to develop products/services that are economic, social and environmental sustainable?

1. If yes, how did the incubator contribute/encourage you to create sustainable businesses model?

2. If no, was there any reason for not considering this?

Primary focus is to build a product that has value to customers. Software typically does not have environmental or social problems.

4. What were the major challenges/problems with the incubation?

The major challenge is that the contact person is typically an employee of the incubator organisation (not an investor himself) who needs to always ensure everything happens as planned. This means that you sometimes need to spend time on less relevant issues (at least not the issues that provides best "value for money/effort"). A person with own money at stake will be more interested in "value for money/effort", whereas an employee of a public incubator will be interested in "covering his ass" (doing something else than what is in original papers means taking a personal risk for that person).

This is not at all criticism of our contact person, but a general fact about the incentive model.

5. What were the major benefits deriving from the incubator?

Simple and practical setup, standard procedures, documents, templates for many things (although the incubator should work on this to make it better).

6. Do you think your company would have been established regardless of attaining assistance from the incubator?

Yes. Possibly slower and with some other side business.

7. Have your company experienced growth since graduation?

7.1.1. If yes how much has the company grown (e.g. annual turnover, employees, rate of export, etc)?

7.1.2. If no, what has been the major obstacle towards growth?

Not sure exactly what you mean by "growth since graduation", but the size of the company is the same as when it was started. The turnover has of course grown (since it was 0 before establishment), but we have not reached breakeven.

The major challenge is to convince potential customers that our product really provides what we promise - and that they need it (there is no good competing product, so we need to build the market). Secondly, the ongoing financial crisis causes some problems: Although we get the budget allocated with a customer to run a trial project (approx DKK 100k), they may back

out because they do not have the necessary human resources to participate in the trial - because they have just reduced staff by e.g. 25%! We have seen this happening 3 times.

If any additional comments or information, please state below

---

Thanks for your time!

Appendix 7

Einarsson fly fishing former incubate at ICI

Product/services offered: Fly Fishing reels

Establishment year: 2005

Nr of employees: NA

1. How did you got involved in the incubator provided by Innovation centre Iceland? (did you additionally get support elsewhere?)

We had previous experience with the ICI. Jon Pall worked with them in another company from 2000. initial support from elswhere in Fossadalur was limited.

2. What was the goal when entering the incubator? and has that goal been realized?

The goals can be divided into two. First was to get financial aid to finish the R&D projects within the company to enable us to start production and marketing. Second goal was to get R&D knowleedge and knowhow into the comapny... transfer of knowhow so-to-speak.

3. Did the incubator encourage you to produce products/services that are economic, social, environmental sustainable?

no, it never came up. the main objective was to create jobs. that was their target

- how did the incubator contribute/encourage you to create sustainable businesses model?
- If no, was there any reason for not considering this?

As mention above, their aim (as it appeared to us) was to create jobs. sustainability was never mentioned and it never came up even if we put it in all of our project descriptions.

4. What were the major challenges/problems with the incubation?

There is very little technical knowledge within ICI, so sometimes we had difficulty in discussing our projects on that basis. Apart from the head of "Department of Materials, Biotechnology and Energy" at ICI we had very little technical support.

5. Do you think your company would have been established regardless of attaining assistance from the incubator?

it´s difficult to predict the outcome on "what if" :). What we know for sure is that the finance we recived in grants in the beggging would have been very difficult to obtain elswhere and would have been very expensive for the company. I think we would have gain the technical know how elswhere and that would not damage the comapny too much.

6. Have your company experienced growth since graduation?

We have growned quite a bit since we started working with ICI, but that is normal as we started working with them, before we even started considering export or international marketing. i don´t think we have graduated, and hopefully we never do!

7. Why was it important for you to produce your product?

We love fly fishing and feel strongly towards environmental issues. our product combines our passion for both.

From our vision
"Einarsson Fly Fishing builds its brand on values close to the founder´s heart. The core idea is to produce high quality, durable fly fishing tackle with the least possible impact on the environment."

Appendix 8

Email correspondence to:

Jón Hreinsson - Financial Investor

Innovation Centre Iceland

Email sent: March 17th 2010

Hi,

I'm a master student currently in the process of writing my
master thesis at Aalborg University in Denmark. My colleague and friend from Island Guðrún Anna Finnbogadóttir told me to contact you.She thought that you could be able to help me in my research.

My master thesis is about how Scandinavian incubators can contribute to generate sustainable start-up businesses.
To do this I will assess different incubators by various analyzing their input, process and outputs. By the early-mid April I will have prepared a questionnaire based on different indicators. Examples of such questions would be such as management skills, tenants firms survival and growth, financing, exist and entry criteria, stakeholder objectives, jobs created, number of tenants, etc,

I therefore wondered if you would be able to answer this or if you know somebody that are better suited, it would be highly appreciated?

Hope to hearing from you!

Best regards,
Veslemøy Aurmo

Answer received: March 18th 2010

Hi and thank you for this mail.

I would be honored to participate in your study and if needed I can arrange for my collage to help me to do so. I have been around managing incubation centers for about seven years. Also I have been helping entrepreneurs to finding investors, applying for grants and r&d programs, so I hope I can help you.

If you have any questions do not hesitated to be in touch. I will not be in vacation from 22. April to 3 May, so in that time I will not b able to answer you.

Looking forward to hear from you

Best regards
Jón Hreinsson

Jón Hreinsson
Fjármálastjóri, CFO
Nýsköpunarmiðstöð Íslands
Keldnaholti
112 Reykjavík

Email sent: March 23th 2010

Hi again,

Thanks again for contributing to this research.

Attached are the questionnaire.
Do not hesitate to contact me if any of the questions are unclear.

Best regards,

Veslemøy Aurmo

Email sent: March 23th 2010

Hi agian,

Sounds very good and thanks for participating!

I wonder if you have any reflections upon what you think is the main challdenges in developing incubators that contributes sustainable start-up's? In this matter I'm referring to sustainability in terms of economic, social and environmentally sound start-ups?

I also wonder if you know any other incubators as well as incubateed companies (who have graduated) in Island that might want to participate in answering a questioniare as well?

Best regards,
Veslemøy Aurmo

Email sent: March 25th 2010

Hi again,

Thanks again for contributing to this research.

Attached are the questionnaire.
Do not hesitate to contact me if any of the questions are unclear.

Best regards,
Veslemøy Aurmo

Answer received: March 25th 2010

Whooooo this is a huge question???? "developing incubators that contributes sustainable start-up's? In this matter I'm referring to sustainability in terms of economic, social and environmentally sound start-ups?"

The quick answer would be the deal flow, e.g. flow of new entrepreneurs and ideas is one of the key parts. If you don't have good flow that you can't pick companies that you will believe to be winners, you will get along way. I have seen both limited and today overflow of deals and that is one of the most important parts. You can have the best facility and staff, have line of invertors and sponsors but if you don't have the deal flow you are lost.

Then it is the question of support, what kind of support is offered. In our experience this is very important. The staff will have to offer something more and be a value added to the companies. The network, the contacts, how to solve and how to move forward, is vital for those companies. So experience, hand on knowledge and staff that has walked this way have been in business, not the newly graduated people, it has at least to be a mixture of experience.

Then is the business model for the Incubator, is it for profit or non profit, is it going to take part of the company as a payment. It is my experience and many others that Incubators should not invest or be run as a part of investment. There should be clear line between investments and support. When the start-up company has a "rainy day" and needs more money it is no wise to have the support and investments on the same hand.

To be looking at the "economic, social and environmentally sound start-ups?" In a economical crises like the world is in to day some might look at this as a "luxury problems" . Fist it is always about creating wealth jobs, turnover, taxes……. But this is all matters of chose's if you have great deal flow you can pick the winners that will follow you criteria of social, environmental, economical and some might add ethical sustainable business. Personally I am in favor of this but it makes it tougher to find companies and entrepreneurs that will deliver great results, and that means again the flow of new ideas have to be great.

Hi again,
Hope you had a nice Easter holiday.
And thank you for answering the questionnaire, and the comprehensive answer I got in the previous mail.
I wonder if there would be any possibility to get in contact with some of the graduated companies from the 8 different incubators? I would thus like to sent them a questionnaire as well to attain their perception of the incubator.

I also wonder if I could obtain some more information about the general structure of the particular incubator. You said the incubator was running 5 other incubators + 3 in cooperation with others. Who are your partners? and how is the assignments and tasks arranged?

Thanks again!

Best regards,
Veslemøy

Answer received: April 07, 2010

Hi

At the moment we are about to send out a survey to those companies, so I am reelected to send two surveys in a short period without contacting the companies first. I shall look in to what I can do about that.

"I also wonder if I could obtain some more information about the general structure of the particular incubator. You said the incubator was running 5 other incubators + 3 in cooperation with others. Who are your partners? and how is the assignments and tasks arranged?"

In all those cases it is the municipalities e.g. in Hafnafjörður we are running the Incubation but the municipalities in Hafnafjörður, Garðabæ and Álftanes are paying all the cost. In the two other cases it is only on municipality and us who are paying for each one. On Friday we are signing agreement with property development company about training there staff in running incubation in next 6 months and helping them out in building that incubation for the next 12 months. Hopefully we will finish agreement in next few week about a specialist incubator in the rural aria that will be financed in the coloration of municipality and the industry in that area, but it is a bit too early to tell you more about that now, it is still a secret and in a delicate state .

I hope this will explain a little more for you how we do things.

Best regards

Jón Hreinsson

Email sent: April 07th 2010

Hi again,

Hope you had a nice Easter holiday.
And thank you for answering the questionnaire, and the comprehensive answer I got in the previous mail.
I wonder if there would be any possibility to get in contact with some of the graduated companies from the 8 different incubators? I would thus like to sent them a questionnaire as well to attain their perception of the incubator.
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I hope this will explain a little more for you how we do things.

Best regards

Jón Hreinsson

Email sent: 27 April, 2010

Hi again Jon,

Thanks again for your additional comments!
I do have another question relating to one of the questions in the questionnaire.
You mention that your trying to assist or encourage incubates to develop environmental friendly products or services in the product development process. I just wonder in what way this is done? E.g. are you providing courses for the incubates particularly in how to produce a sustainable product/services, or through workshops or external consultancy??

Best regards,
Veslemøy

Answer received: May 3rd, 2010

Hi

We do not offer any special training programs for this. But we have lot of qualified staff that can assist or help out if and when is needed. This is always on a personal or company bases.

Best regards

Jón Hreinsson

Appendix 9 – Criterias for AISHE 2.0

Mission

 Mission and vision on ESD
 Policy on ESD
 Leadership
 Communication on ESD (internal and external)
 SD and quality management
 Stakeholders' appreciation of ESD policy
 Assignment of a sustainability coordinator (staff function related to the Board)
 Transparency: SD and CSR reporting

Operations

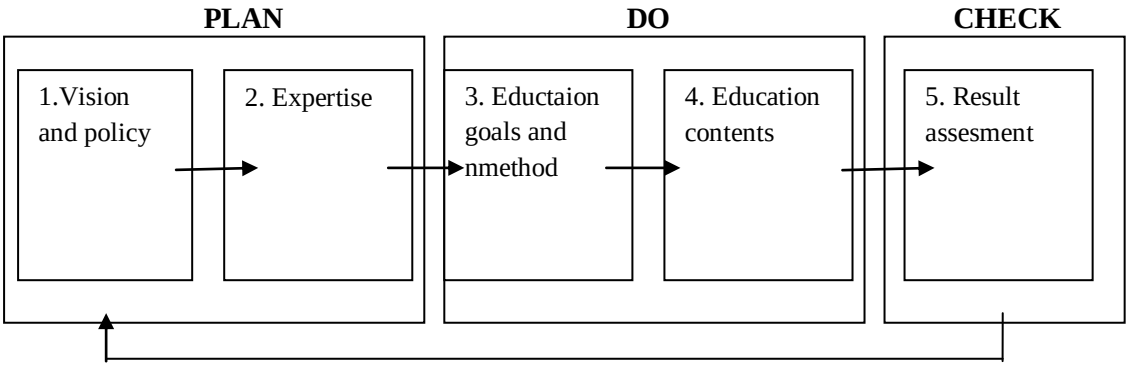
People:
 Care for personnel, human resource management
 Working conditions
 Staff and student policy regarding women, immigrants, disabled
 Protection against sexual intimidation, violence, discrimination
 Policy regarding health of staff and students
 Employment policy, relation with mission
 Appreciation assessment among staff and students (in general, as well as regarding ESD policy)

Planet:
 Sustainable building (new and existing buildings)
 Energy consumption (savings, use of sustainable energy)
 Water consumption (incl. 'grey' water system)
 Effects on the neighbourhood (smell, sound, safety, traffic and parking nuisance)
 Traffic (of staff, students, goods)
 Procurement (paper, laboratory equipment, catering, etc.)
 Waste (separation, prevention, reuse)
 Garden management
 Communication on environmental management (inventory of wishes and complaints; appreciation assessment)
 Effectiveness of environmental policy
 Overall (environmental reporting, environmental management system, certification based on
e.g. ISO 14000 or EMAS)

Profit:
 Investments for SD; possibly longer cost recover periods
 Savings (e.g. through reuse or economical use of energy and materials)
 Long term strategy
 Accreditation: realisation of the HEI mission; special recognition or certification
 Effects of SD on image, PR, marketing

Appendix 10

AISHE 1.0 – Auditing Instrument for Sustainability in Higher Educations



	The criteria list
PLAN	**1. Vision and policy**
	1.1. Vision 1.2. Policy 1.3. Communication 1.4. Internal environment management
	2. Expertise 2.1. Network 2.2. Expert group 2.3. Staff development plan 2.4. Research and external services
DO	3. Educational goals and methodology 3.1. Profile of the graduate 3.2. Educational methodology 3.3. Role of the teacher 3.4. Student examination
	4. Education contents 4.1. Curriculum 4.2. Integrated problem handling 4.3. Traineeship, graduation 4.4. Specialty
CHECH	5. Result assessment 5.1. Staff 5.2. Students 5.3. Professional field 5.4. Society

Criterion 1.1 Vision

Stage 1: Activity oriented	Stage 2: Process oriented	Stage 3: System oriented	Stage 4: Chain oriented	Stage 5: Society oriented
The organization or at least the management has a vision on sustainable	The management vision on sustainable development has been formulated in	The organization vision on sustainable development has been expressed in	The vision development and translation of it in a concrete policy takes place in	The organization vision on sustainable development

development	documents	the mission statement and is translated in a concrete policy	interaction with the professional filed and with the secondary education	and education is integrated with the vision on long term development of society and the role therein of the organization
	The management offers opportunities and facilities to work out the vision as concrete consequences for the organization	The result of the policy are evaluated regularly, using these goal		The vision is constantly kept up to date in interaction with many actors on society
		Staff and students are involved in the vision development		

Criterion 1.2 Policy

Stage 1: Activity oriented	Stage 2: Process oriented	Stage 3: System oriented	Stage 4: Chain oriented	Stage 5: Society oriented
The policy with respect to sustainability is developed mainly top-down by the management	Staff members have a visible role in the development of a policy with respect to sustainability	Staff members and students are involved in systematically in the development of the policy with respect to sustainability	Also, external organizations (secondary education and the professional field, e.g. via graduates) are involved in the policy with respect to sustainability	The sustainability policy is developed and carried out in close cooperation with many actors in society, and contributions explicitly to the policy realization of these actors
Much of this policy is only implicit	The sustainability policy is made explicit in documents	This policy is translated in assessable goals and evaluated and (if necessary) adjusted	Activities related to this policy are developed together with these external parties on a regular basis	In these contacts, the organization has an active, anticipatory role, based on a deep expertise and experience
This policy development is usually motivated by individual situations or events	The policy plans are related to short term development	The sustainability policy is middle long term related	The sustainability policy is long term related	

Criterion 1.3 Communication

Stage 1: Activity oriented	Stage 2: Process oriented	Stage 3: System oriented	Stage 4: Chain oriented	Stage 5: Society oriented
Efforts and individual	Sustainable	The management	Secondary	A wide variety

members of the staff or of parts of the organization to enlarge the attention for sustainability take place	development in education, research and operations is a regularly appearing subject in meetings and in internal and external publications	has a knowledge of the options about sustainability and education of staff members and students	education and the professional field are involved actively in the communication about sustainability: the communication is in both directions	of societal actors are involved in the communication bout sustainability: the communication is in both directions
		The information is used to shape the communication about sustainability	The communication is about sustainability in a "broad sense": not only referring to the own subjects but in a transdisciplinary way	Publications by the organization, by the staff members and/or students, are leading

Criteria 1.4 Internal environmental management

Stage 1: Activity oriented	Stage 2: Process oriented	Stage 3: System oriented	Stage 4: Chain oriented	Stage 5: Society oriented
Individual staff members and/or students look after certain aspects of the internal environmental management.	Environmental management is a part of the policy and the management of the organization. Certain aspects of the internal environmental management are managed (rather) effectively: - Material flows - Catering - Energy efficiency - Waste prevention and Separation The entrepreneurs' are involved in some way in the environmental management.	There is a functioning environmental management system. Annually an environmental report is published. The environmental management is used intentionally for the education, e.g. as an example of good practice and as an object for exercises.	The environmental management system includes demands for suppliers, a traffic plan for the personnel, and a long term vision on the buildings and the surroundings. The environmental management system is certified Students have an active role in the continuous improvement and the performing of the environmental management plan.	The environmental Management system is an integral part of the total quality management of the organization. There is an optimal embedding in the surroundings and the natural environment. In the development of this, the organization, represented in part by entrepreneurs, had an active role.

Criterion 2.1 Network

Stage 1: Activity oriented	Stage 2: Process oriented	Stage 3: System oriented	Stage 4: Chain oriented	Stage 5: Society oriented
Individual staff members have contact with companies and/or centers of expertise in the professional field, and so enlarge their knowledge and expertise about sustainability	The organization has contacts within the professional field	From the perspective of the curriculum contents, regularly the need is investigated for expertise about sustainability. Based on this results, a network of external relations is maintained	Regularly, exchange takes place between staff members of the organization, of secondary education, and of the professional field	The network of expertise is international and interdisciplinary
	The education benefits from the expertise about sustainability that is present here: directly, e.g. through appearances of guest teachers, and indirectly, through enlargement of the knowledge of the teaching staff	The expertise in this network is transferred to the organization and the education	This happen e.g. as a secondment, in which the role of sustainability has been made explicit. Together, practical projects are done, education is developed, and guest colleagues are given	Societal organizations are part of it
				The organization itself has a clear role in it as a centre of expertise with respect to sustainability

Criterion 2.2 Expert group

Stage 1: Activity oriented	Stage 2: Process oriented	Stage 3: System oriented	Stage 4: Chain oriented	Stage 5: Society oriented
One or some members of the staff, with a special interest in developments around sustainability within their own course, take	There is a group of staff members who, facilitated by the organization, keep their knowledge about sustainability within their own and related fields up to date and	An institute (or a department, a group, etc) forms a permanent centre of expertise within the organization	The institute has an integral vision on sustainable development and the consequences for education	Members of the institute (inter)nationally leading with respect to sustainable development and the way this is integrated in

initiatives to integrate elements of it in the curriculum	exchange it amongst them			education
	The group is involved with education development	This institute participates in the educational development, and has a direct relation with the management	It forms a permanent connection with the permanent field and with centers of expertise, and it sees to it that knowledge from them researches the management and the staff, everywhere where it is needed	The organization propagate this expertise actively, nationally and internationally

Criterion 2.4 Research and external services

Stage 1: Activity oriented	Stage 2: Process oriented	Stage 3: System oriented	Stage 4: Chain oriented	Stage 5: Society oriented
The profile of the graduate contains some visible aspects of sustainable development	Sustainable developmentis mentioned explicitly in the profile of the graduate	The students are also actively involved I the determination of the sustainable elements in the profile of the graduate	The professional field is also actively involved in the determination, evaluation and improvements of the sustainable elements I the profile of the graduate	Many actors in society are also actively involved in the determination, evaluation and improvements of the sustainable elements in the profile of the graduate: a transdisciplinary approach
	The staff is actively involved in the determination of the sustainable elements in the profile	Sustainability in a broad, multidisciplinary sense is recognizable in the profile	The profile contains all or most of the aspects of sustainability in a broad interdisciplinary sense , in a balanced way	Compared with sister-institutions the organization fulfils a leading role with respect to the determination of the profile
	Within the own professional fields, the profile contains a fairly complete image of knowledge and skills within respect to sustainability, according to the organization itself	Regular evaluations and adjustments of the profile take place		

Appendix 11 - Shows the OECD Countries' individual ranking in the Nordic Innovation Monitor Performance

Performance	Ranking 2008	Index 2008	Index 2003	Change in rank 2003-2008
Korea	1	73	63	3
United States	2	73	71	0
Japan	3	72	55	5
Denmark	4	71	52	8
Sweden	5	68	56	1
Iceland	6	66	56	1
Finland	7	66	66	-4
Canada	8	65	49	6
United Kingdom	9	64	55	0
Netherlands	10	63	53	0
Germany	11	60	44	5
Switzerland	12	60	53	-1
Australia	13	58	57	-8
New Zealand	14	57	73	-13
Norway	15	56	40	2
Ireland	16	55	50	-3
Belgium	17	52	45	-2
Austria	18	43	29	2
Spain	19	42	38	-1
France	20	41	35	-1
Portugal	21	36	14	2
Turkey	22	17	8	2
Italy	23	15	19	-2
Greece	24	11	14	-2
Mexico	25	8	7	0

(Source: Nordic Innovation Monitor, 2009: FOR A, n.d)

Appendix 12 – Explaining figure 14

Figure 14 - Regional innovation performance

The spider web illustrates the five regions' performance on 9 policy areas composing innovation performance.

There are no available data on Start-ups in Japan and Korea. Thus, they do not figure on this indicator.

Australia, Ireland and New Zealand perform well on Start-ups. However, there are no data available on this indicator for Ireland and Australia. Thus, this indicator should be evaluated with care.

Appendix 13 – Main findings from questionnaire

	Features	Incubator at Narvik Science Park	Incubator at Norinnova Northern Innovation	Incubator at Oslo Science Park	Incubator at Aalborg University	Novi Innovation-incubator	Innovation Centre Iceland
Incubator set up:							
	Establishment year:	2005	2000	2001	2003	1998	1999
	Legal status:	Non-profit	Both for and non-profit	Non-profit and for profit	Non-profit	For-profit fund	Non-profit
	Managements staff:	7	4	6	2	5	11
	Present incubatees:	7	9	5	40	8*	80
	Objective:	Technological ideas with a growth potential that has target groups nationally and internationally	High technology	High-technology, mainly within ICT and biotechnology. Ideas must span into an international market and have the possibility to turn over 50 million NOK within 5 years	Knowledge based ideas.	Helps high-tech research projects move from concept to company.	Highly innovative ideas (biotech, medicine)
	Financial sources of income and amount:	SIVA Nordland Fylkeskommune Futurum AS	SIVA, Innovation Norway and the regional municipality in Troms	SIVA (NOK 70, 000 each year) and generating income from the Science park's real-estate	Funded by EU-regional funds and a few small contributions from various national programs and organizations	NA	Mostly government support, regional, grants and rents from participants
	Value-added services from	YES, Norut Narvik AS and Høgskolen i	University in Tromsø Some of the	Yes , collaborating ideas and	The Incubator central	Yes, - the incbuator is adjacent	Yes

	complementary research or science parks:	Narvik. Norut Narvik AS and Høgskolen i Narvik are the reasons why Forskningsparken was established in 2000 – to commercialize ideas from these institutions. The result is 44 ideas in 2009 and 1-2 established companies based on these ideas	value-added services are knowledge awareness and seminar arrangements related to commercialization, innovation and general entrepreneurship.	knowledge coming from Oslo university	office and courses are placed in NOVI science park, and offers the possibility to network with other entrepreneurs and staff of the science park and university.	to the Aalborg University campus, and a strong and fruitful cooperative relationship has developed between NOVI and the university over the years	
	Growth of incubator since establishment (e.g. budget, space, expansion of services, staff members)	Yes growth of employees	Yes 4-5 people working with incubator related activities				
Operational process							
	Incubation period:	Max 3 years	Max 2 years	Max 3 years	6 months	NA	From 1 month to 4 years
	Selection criterias:	Entrepreneur motivation and ability to run a business * The uniqueness of the idea/product * The market potential, competition and the understanding of entrepreneur of the market and the competitor situation * What links are there between	Entry is evaluated based on the person (team), product (uniqueness), market positional, risk-taking and funding	Ideas should be able to span into an international market which can turn to over 50 million NOK within 5 years. Selection criteria are based on choosing ideas which can generate increase in value in terms of	Anyone can apply. Ideas need to be knowledge based business while the university (AAU) has a knowledge that will contribute to bringing the idea forward. The incubatee is granted access to the	The idea must be viable and the owner must possess driving force. Clients with high technology can enter	Entrepreneurs and start ups with innovative ideas.

		the idea and existing competence * The quality of the company documents * The motivation/ attitude to become a " member" of the incubator team * The financial situation and development, the need for founds and turnover * The ability to think long term and achieve growth * Our added value to the company through a potential share of the company		viable business ideas.	program based on commitment to the idea and to a milestone plan agreed with the project managemen t.		
	Exit criterias:	Either expiration of the contract after 3 years or not achieved required progress during the contract period if this is to expect.	Exit is when end of the period has expired (up to 2 years) and else whenever the company has matured	Exist point is discussed in the screening phase. Exits can be in terms of getting venture capital	The incubatee can stop anywhere in the process. Based on the commitment of the incubatee, project managemen t can expel the incubatee.	NA	Entrepreneu rs and start ups with innovative ideas. When companies become profitable or if they do not deliver they must exist the incubation
	Main services:	Networking, Infrastructure, consultancy	Office space and business advisory	Competence and some investment capital	Supporting/ administrati ve staff, infrastructur e coaching/me ntoring and a network to other entrepreneu rs and	Reception/ telephone services, meeting rooms, intranet and communit y, accounting services,	Services depend on needs. Writing a business plan, finding investors, networking, provide a specialist to help in

					regional support programs	marketing assistance etc	marketing, staff, R& D etc.
	Monitoring and evaluation of incubatees:	Every incubator contract is made for 6 months at the time, and the progress is evaluated along and after the 6 months. When the contract is signed we agree on 3-5 milestones that are to be evaluated along these months and at the end.	Regularly meetings.	Work closely with the companies. In contact each month. Some reporting is done	Through milestone planning and regular meetings with project managemen t and coordinators	NA	Evaluation is randomly based on each case
	Participating costs**:	Free	About 70.000 NOK a year (8700 EURO)	Shares in Forskningsp arken AS's real-estate	Free	NA	200 NOK (25 EURO) to about NOK 3200 (40 EURO) a month
	Environmental encouragement:	No	No	No	No	No	Yes
Outcomes:	Graduated companies:	9	30	NA	300***	91	35
	Survival rate of graduated companies:	55% (turnover of 10 – 50 million	86%	NA	NA** * *	NA	83%
	Expected community impacts:	To develop ideas that are of a high degree of complexity and that no other organization locally is able to develop 2) Create businesses with a growth potential and develop places of work.	Creating new businesses and creating new jobs	Create companies that have great changes to succeed and to create new jobs	Providing a platform where knowledge based entrepreneu rs can test and improve their business idea. Many of the graduated companies have created value and jobs, and a lot of the incubatees have	Synergy effect and job creation	. Since the economical crises in Iceland it is expected that the activities of the Innovation Centre Iceland has been very positive and created a lot of opportunity for highly educated people that used to work

		acquired new competencies that will help them create relatively more value in the company or organization where they are employed afterwards Moreover, the incubator have been a valuable tool for highlighting the importance of entrepreneurship as being part of a universities operations, and have helped in getting more entrepreneurship into the educational program	in big companies e.g. banks, and are now pursuing their dream

* Incubated companies in 2008

* *Participant costs were stated in Norwegian and Icelandic currency (5.000 – 700.000 ISK pr. month) and was then transferred into EURO, April, 22. 2010.

** *This does not imply that 300 have gone through the whole incubation program of 6 months. Instead, it indicates that 300 potential entrepreneurs have to some point relating to the process.

*** *For 2008, survival rate of 50 %. 2009, survival rate of 47%

Appendix 14

Email correspondence to:

Michelle Opshaug – Marketing and incubator mangers

Narvik Science Park

Email sent: March 17th 2010

Hei,

Jeg er master student ved Dep. for Plan og Miljø ved Aalborg
Universitet i Danmark. Jeg skal skrive min master oppgave om hvordan
inkubatorer i Scandinavia bidrar til bærekraftig performance av start-up's selskaper.

For å analysere dette vil jeg bruke ulike variabler som inputs (e.g. management skills,finance, stakeholder objects etc), prosessen (e.g. selve inkubasjons prossesen som sådan, exist og entry criterias etc,) og outputs (e.g. survival of tenants, job creation etc,).

Jeg lurte derfor på om dere kunnne tenkte dere å svare på noen av de nevnte spørsmålene iform av et spørrreskjema?
Dette vil først bli distribuert i begynnelsen av April og forventes returnert innen 2 uker.

Påforhånd takk!

Mvh,
Veslemøy B. Aurmo

Answered received: March 18th 2010

Hei Veslemøy,

Vi bidrar gjerne til din masteroppgave innenfor temaet inkubator. Send oss spørreskjema, så skal vi besvare det etter beste evne.

Vennlig hilsen

Michelle Opshaug

Markedssjef/ Inkubatorleder

Forskningsparken i Narvik

Email sent: March 25th 2010

Hei,

Takk for at dere er villige til å delta.
Vedlagt er spørreskjemaet.

Vennligst ta kontakt hvis noen av spørsmålene er uklare.

Mvh,
Veslemøy Aurmo

Email sent: April 15th 2010

Hei!

Jeg har fått lite respons på spørreundersøkelsen som skulle vært innlevert i går.
Siden jeg trenger data og helst utfyllende svar settes ny frist til den 22.04, alså 1 uke f.o.m i dag.

Håper dette er et bedre tidspunkt.

Takk igjen for at dere er villige til å svare!

Mvh,

Answered received: April 26th 2010

Hei Veslemøy,

Beklager litt sen levering, men vedlag kommer besvart undersøkelse.

Lykke til med det videre arbeidet!

Answered questionnaire

Thank you for answering this questionnaire. This research could not have been established without your participation and it is highly appreciated.

*It is requested that answers are returned back as soon as possible, and no later than **14 of April**. Still, if someone for any reasons is not able to forward the answers before this deadline, please let me know in advance.*

To avoid misinterpretation, this questionnaire is written in English. It is therefore preferable, although not a requirement that answers are stated back in this language.

1. **Questions related to the incubator set up**

1.1 When was the incubator established?

The incubator was established in 2005, and became a SIVA FoU incubator in 2007.

1.2 What is the incubators goal/focus area?

The goal is to commercialize technological ideas with a growth potential that has target groups nationally and internationally. Ideas are to be taken from Norut Narvik (R&D institute) from Narvik University College as well as from already established companies in the region + local/ regional entrepreneurs.

1.3 How many employees are working within the incubator?

In Forskningsparken there are 7 employees; one person is head of the incubator program, and three others work with the incubator companies depending on the different subjects and cases.

1.4 How is the incubator structured?

The incubator program is part of the process from commercialization towards independent company. Everything is located under the "Forsknigsparken umbrella".

The process starts with the FORNY/ SPINNY program where the ideas are collected and considered before the entrepreneur is guided in the process of establishing a company. If this is successful the company/ entrepreneur may apply to participate in the incubator program under certain criteria. They may stay in the program for maximum time of 3 years, before they are on their own.

Another part of Forskningsparken may facilitate to obtaining funds from professional investors that, in most cases, is crucial for further survival.

1.5 What is the incubators legal status (e.g. for or non-profit)?

Forskningsparken as an institution is a non-profit organization.

1.6 Have the incubator grown since its establishment?

From the time Forskningsparken was established in 2000 up to today – 1 – 7 emploees.

1.6.1 If yes, how much (e.g. budget, space, expansion of services, staff members, etc)

1.7 How many incubatees/tenants are currently present within the incubator?

There are currently 7 tenants in our incubator program.

1.8 From what sources are the incubator receiving financial support/sponsors, and how much?

Forskningsparken is financed by:

SIVA

Nordland Fylkeskommune

Futurum AS

1.9 Is the incubator in the presents of a complementary research part/Science park or R& D facility? YES, Norut Narvik AS and Høgskolen i Narvik

1.9. 1 If yes, please state the type of interaction or connection and what the value- added services/outcomes?

Norut Narvik AS and Høgskolen i Narvik are the reasons why Forskningsparken was established in 2000 – to commercialize ideas from these institutions. The result is 44 ideas in 2009 and 1-2 established companies based on these ideas.

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2. Questions related to the incubators operational process and management practices

2.1 What type of services is the incubator offering?

Infrastructure: office, meeting room with facilities, internet access, telephone, copy, scanner etc + a workshop

Consulting services: economy, product and process management and development, engineering, internationalization, sales & marketing, branding, applications to various governmental support programs, patent/ Intellectual Property Rights (IPR), board services.

Network: a network with other incubator tenants, conferences, Connect, Incubator network in Norway as well as towards investors.

2.2 What is the available space offered (in size)?

Office space: approximately 190 m2

Workshop. 386 m2

2.3 How long is the incubation process?

Maximum 3 years.

2.4 How are the incubatees/tenants evaluated or monitored during the incubation process?

Every incubator contract is made for 6 months at the time, and the progress is evaluated along and after the 6 months. When the contract is signed we agree on 3-5 milestones that are to be evaluated along these months and at the end.

2.5 What are the incubators client focus/who can apply for the incubation?

Criterias for application is that the company meets with the required demands:

- The idea has a high technological level
- Has a growth potential
- Minimum national, or international market

2.6 How are the incubatee selected (what are the admission criteria)?

* Entrepreneur motivation and ability to run a business

* The uniqueness of the idea/product

* The market potential, competition and the understanding of entrepreneur of the market and the competitor situation

* What links are there between the idea and existing competence

* The quality of the company documents

* The motivation/ attitude to become a " member" of the incubator team

* The financial situation and development, the need for founds and turnover

* The ability to think long term and achieve growth

* Our added value to the company through a potential share of the company

2.7 What are the exit criteria's?

Either expiration of the contract after 3 years or not achieved required progress during the contract period if this is to expect.

2.8 How much are the financial expenditures for participating in the incubation?

Per today this entrance and participation in the program is free of charge including an agreed amount of counseling services. Office, phone, electricity, workshop are invoiced at a regular base, although sponsored according to EØS regulations.

2.9 Do you consider the incubator as assisting or encouraging incubatees to develop environmentally friendly products? NO

2.9.1 If yes, how is this addressed?

2.9.2 If no is there any particular reason for not addressing this?

The focus is on developing their idea, to create an idea to a million dollar company, and in most cases this is more than enough to focus on.

2.10 What kind of background does the management team/staff hold?

The team in Forskningsparken who work with the tenants has formal education and experience in among other topics: economy and finance, engineering, IKT, sales & marketing, internationalization, technology production

---

3. Performance outcomes/impacts

3.1 How many tenants have graduated since the establishment of the incubator?

9 tenants have graduated and 5 are up and running with turnover of 10 – 50 MNOK per year.

3.2 What is the growth and survival rate of those previous incubatees/tenants?

3 companies/ idea no longer exist.

3.3 Is the incubator still in contact with its previous incubatees/tenants to some point?

Several companies are located with the current tenants, and contribute to the development of those tenants.

Forskningsparken also do certain consulting jobs for them paid pr hour, as well as holding certain positions in their boards.

3.3.1 If yes, how is the contact maintained?

See above.

3.4 Do you consider the incubator has positively contributed to community impacts and how?

Definitely,

1) to develop ideas that are of a high degree of complexity and that no other organization locally is able to develop

2) Create businesses with a growth potential and develop places of work.

If any additional comments or information of importance please state below

Thank you for your time!

Appendix 15

Email correspondence to:

Hilde Ludvigsen - Incubator and project manager

Norinnova Northern innovations

Email sent: April 15th 2010

Hei!

Jeg har fått lite respons på spørreundersøkelsen som skulle vært innlevert i går.
Siden jeg trenger data og helst utfyllende svar settes ny frist til den 22.04, alså 1 uke f.o.m i dag.

Håper dette er et bedre tidspunkt.

Takk igjen for at dere er villige til å svare!

Mvh,
Veslemøy Aurmo

Answer received: March 18th 2010

Hei,

det kan vi helt sikkert. Bare send spørreskjemaet til meg.

Med vennlig hilsen
Hilde Ludvigsen

Email sent: April 15th 2010

Hei!

Jeg har fått lite respons på spørreundersøkelsen som skulle vært innlevert i går.
Siden jeg trenger data og helst utfyllende svar settes ny frist til den 22.04, alså 1 uke f.o.m i dag.

Håper dette er et bedre tidspunkt.

Takk igjen for at dere er villige til å svare!

Mvh,
Veslemøy Aurmo

Answer received: April 19th 2010

Hei,

er min besvarelse. Det var alt jeg har tid til nå. Hvis du ønsker med utfyllende svar er det best at du tar kontakt pr telefon.

Mvh,
Hilde Ludvigsen

Answered questionnaire

Thank you for answering this questionnaire. This research could not have been established without your participation and it is highly appreciated.

*It is requested that answers are returned back as soon as possible, and no later than **20 of April**. Still, if someone for any reasons is not able to forward the answers before this deadline, please let me know in advance.*

To avoid misinterpretation, this questionnaire is written in English. It is therefore preferable, although not a requirement that answers are stated back in this language.

1. Questions related to the incubator set up

1.1 When was the incubator established?

2000

1.2 What is the incubators goal/focus area?

Business ideas from University, University Hospital and industry with a unique technology or business model.

1.3 How many employees are working within the incubator?

Norinnova AS is the "hostess" of the Business Incubator and four persons are working to related activities to the incubator. All in all 1,3 man-laybour year (årsverk)

1.4 How is the incubator structured?

Internally in Norinnova: One incubator leader, team of incubator staff; employed by Norinnova or hired (one is hired).

1.5 What is the incubators legal status (e.g. for or non-profit)?

We are a project within Norinnova AS

1.6 Have the incubator grown since its establishment?

1.6.1 If yes, how much (e.g. budget, space, expansion of services, staff members, etc)

Yes, we are now a team of 4-5 people working with activities related to the incubator. Besides Incubator Tromssø we are also facilitating a distributed incubator in Troms and a food-incubator.

1.7 How many incubatees/tenants are currently present within the incubator?

9

1.8 From what sources are the incubator receiving financial support/sponsors, and how much?

SIVA, Innovation Norway and Troms Fylkeskommune.

1.9 Is the incubator in the presents of a complementary research part/Science park or R& D facility?

1.9. 1 If yes, please state the type of interaction or connection and what the value- added services/outcomes?

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2. Questions related to the incubators operational process and management practices

2.1 What type of services is the incubator offering?

Office space and business advisery

2.2 What is the available space offered (in size)?

18 to 22 m2

2.3 How long is the incubation process?

Up to 2 years

2.4 How are the incubatees/tenants evaluated or monitored during the incubation process?

Regulary meetings.

2.5 What are the incubators client focus/who can apply for the incubation?

Companies or persons with a unique business idea, model or tecnlogy.

2.6 How are the incubatee selected (what are the admission criteria)?

We are evaluating the person (team), product (uniqueness), marketpotentional, risk-taking and funding.

2.7 What are the exit criteria's?

End of the period and maturity of the company.

2.8 How much are the financial expenditures for participating in the incubation?

About 70.000,- a year for rent and participating fee.

2.9 Do you consider the incubator as assisting or encouraging incubatees to develop environmentally friendly products? No, not particularly

2.9.1 If yes, how is this addressed?

2.9.2 If no is there any particular reason for not addressing this?

No

2.10 What kind of background does the management team/staff hold?

Various business and administration education, experience from consulting etc

---

3. Performance outcomes/impacts

3.1 How many companies have graduated since the establishment of the incubator?

30

3.2 What is the growth and survival rate of those previous incubatees/tenants?

4 of 30 does not exists anymore.

3.3 Is the incubator still in contact with its previous incubatees/tenants to some point?

3.3.1 If yes, how is the contact maintained?

They rent offices in the Science Park and we invite them once a year to a meeting.

3.4 Do you consider the incubator has positively contributed to community impacts and how?

Creating new businesses and creating new jobs.

If any additional comments or information of importance please state below

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Thank you for your time!

Appendix 16

Email correspondence to:

Åsa Waldemar – Incubator manger/investment leader

Oslo Science Park

Email sent: April 22th 2010

Hei

Etter mye frem og tilbake er nå oppgaven min er rettet mot hvordan inkubatorer bidrar til bærekraftige oppstarts-virksomheter med spesielt fokus på 'input' og 'output' fra ulike inkubatorer i Norden.

I den forbindelse har jeg utviklet et spørreskjema som jeg håper du kan være behjelpelig med å besvare?

Jeg lurer også på om det er mulig å få kontakt med noen tidligere inkuberte virksomheter for å finne ut av hvor mye de evt. har vokst samt deres oppfattelse av inkubasjonen?

Påforhånd takk!

Answer received: April 26th 2010

Hei Veslemøy

Vi har omorganisert og det er nå jeg og min kollega Alexander Woxen som har ansvar for inkubatoren. Monika er leder for en avdeling som blant annet har ansvar for store programmer.

Jeg har sett på ditt spørreskjema og ser at det er veldig omfattende, og jeg har ikke mulighet å bruke så mye tid på dette. Jeg kan dog sette av 30 min på telefon så kan du få stille de spørsmål du ønsker. Håper dette er en god nok kompromiss.

Send forslag på tlf tidspunkt så setter jeg det inn i kalenderen min.

Med vennlig hilsen

Åsa

Email sent: April 27th 2010

Hei,

Takk for tilbake melding.
Det hadde passet fint med fredag rundt. Passer kl. 12?. Jeg er tilgjenngelig hele fredagen så hvis et annet tidspunkt passer bedre er det også mulig.

Mvh,
Veslemøy

Answer received: April 28th 2010

Hei

Fint. Jeg har lunsjmøte på avdelingen kl 11.30-12.30, og går direkte til et annet møte da ut dagen.

Kunne vi ta det kl 11-11.30?

Email sent: April 28th 2010

Ja det er greit!
Da kontakter jeg deg fredag kl 11.00

Mvh,
Veslemøy

Answered questions per telephone

Thank you for answering this questionnaire. This research could not have been established without your participation and it is highly appreciated.

*It is requested that answers are returned back as soon as possible, and no later than **April 30**.*

To avoid misinterpretation, this questionnaire is written in English. It is therefore preferable, although not a requirement that answers are stated back in this language.

Phone interview 30 April.

1. **Questions related to the incubator set up**

1.1 When was the incubator established? 2001

1.2 What is the incubators goal/focus area? Ideas that comes from high technology

1.3 How many employees are working within the incubator?

2 + (6 people working in the innovation department which assists with IPR, technology transfer, patent and commercializing

1.4 How is the incubator structured?

See below

1.5 What is the incubators legal status (e.g. for or non-profit)?

Forskningsparken AS divided in two: real-estate and the incubator – incubator is not dependent upon profit each year. There is no profit demand.

1.6 Have the incubator grown since its establishment?

1.6.1 If yes, how much (e.g. budget, space, expansion of services, staff members, etc)

1.7 How many incubatees/tenants are currently present within the incubator?

5

1.8 From what sources are the incubator receiving financial support/sponsors, and how much?

SIVA 70, 000 each year

Income from real-estate (each project can apply for money)

1.9 Is the incubator in the presents of a complementary research part/Science park or R& D facility? Yes collaboration with ideas and knowledge coming from UIO

1.9. 1 If yes, please state the type of interaction or connection and what the value- added services/outcomes?

2. Questions related to the incubators operational process and management practices

2.1 What type of services is the incubator offering?

Mainly competence and some investments capital

2.2 What is the available space offered (in size)?

2.3 How long is the incubation process? Up till 3 years

2.4 How are the incubatees/tenants evaluated or monitored during the incubation process?

Work closely with the companies. In contact each month. Some reporting is done

2.5 What are the incubators client focus/who can apply for the incubation?

- Ideas with a high tech and have a viable business plan

2.6 How are the incubatee selected (what are the admission criteria)?

- Selection criteria is based on choosing ideas which can generate increase in value in terms of viable business ideas

2.7 What are the exit criteria's?

Already discussed in the screening phase. Exits can be in terms of getting venture capital

2.8 How much are the financial expenditures for participating in the incubation?

The companies have joint shard stocks in Forskningsparken AS's real estate.

2.9 Do you consider the incubator as assisting or encouraging incubatees to develop environmentally friendly products?

2.9.1 If yes, how is this addressed?

Do not select ideas which is harming the environment or are socially unethical

2.9.2 If no is there any particular reason for not addressing this?

2.10 What kind of background does the management team/staff hold?

Higher education in entrepreneurship, engineering, economy, marketing and business

---

3. Performance outcomes/impacts

3.1 How many companies have graduated since the establishment of the incubator?

3.2 What is the growth and survival rate of those previous incubatees/tenants?

3.3 Is the incubator still in contact with its previous incubatees/tenants to some point?

3.3.1 If yes, how is the contact maintained?

3.4 Do you consider the incubator has positively contributed to community impacts and how?

Yes, companies have great changes to succeed to create new jobs

---

If any additional comments or information of importance please state below:

How much time is used for each project: approx. 100 hours each year

Challenges for the incubator: to get money. Have enough human competence knowledge and networks, but lacks private capital to put into new companies

Incubator is sort of on the lowest range on the value chain in terms of getting money for its actions.

Thank you for your time!

Sent email: **May 30, 2010**

Hei igjen Åsa,

Takk for samtalen og informasjonen jeg fikk fra tlf intervjuet.

Jeg har et tilleggspørsmål som jeg håper du kan være behjelpelig med å svare på. Dette omhandler miljø hensyn i inkubatoren/forskningsprken (eks, resirkulering, energi effektivitet, etc). Er dette evt nedskrevet i forskrifter eller rapporter?

Mvh,

Veslemøy Aurmo

Answer obtained: May 31st 2010

Hei

Vi har ikke noe slik policy i inkubatoren. Men vi gjør mye slikt, men har det ikke nedskrevet og det er ikke krav om det. Derved ikke heller krav til våre inkubatorselskaper.

Forskningsparken gjør masse, blant annet solceller på taket, bruker T-bane istedenfor taxi, gjenbruk av luftvarme osv.

Håper dette hjalp

Åsa

Appendix 17

Email correspondence to:

Morten Dahlgaard Andersen - Head of section, regional development manager IDA

Incubator at Aalborg University

Email sent: March 23rd 2010

Hei Morten,

Takk for et hyggelig og interesant møte i forje uke.

Jeg er i prossesen av å utarbeid et spørreskjema som jeg håper du er villig til å svare på. Håper å få distribuert dette i løpet av denne uken.
Det jeg lurte på var om jeg kunne få kontaktet noen som har benyttet seg av inkubator tilbudet ved AAU og som har startet egen virksomhet?

Mvh,
Veslemøy Aurmo

Answer received: March 26th 2010

Hej Veslemøy

Selv tak for mødet. Jeg håber du fik noget ud af det, og jeg svarer gerne på dit spørgeskema. Jeg vil dog gøre dig opmærksom på at jeg holder ferie de kommende 2 uger!

Du kan kontakte Theis Simonsen der er direktør i Eating. Han ved du vil kontakte ham og han kan nås på 29916220 eller theis@eating.dk

Mvh

Morten

Email sent: April 06th 2010

Hei igjen Morten,

Håper du har hatt en fin påske.
Vedlagt er spørreskjema.

Mvh,
Veslemøy

Answer received: April 14th 2010

Hei Veslemøy

Har ikke haft tid efter ferien til at kigge på skemaet men skal nok gøre det i indeværende uge.Faldt lige over dette som måske har din interesse;
http://www.aau.dk/Nyheder/Vis+nyhed//ekspert-i-baeredygtig-virksomhedsledelse-bliver-aau-professor.cid9072

Mvh

Morten

Answer received: April 16th 2010

Det er greit.

Takk for interssant link!

Mvh,
Veslemøy

Answer received: April 16th 2010

Hey Veslemøy

Hermed skema retur. Håber du kan bruge det, og ellers er du velkommen til at ringe eller skrive igen.

God weekend

Morten

Answered Questionnaire

Thank you for answering this questionnaire. This research could not have been established without your participation and it is highly appreciated.

*It is requested that answers are returned back as soon as possible, and no later than **20 of April**. Still, if someone for any reasons is not able to forward the answers before this deadline, please let me know in advance.*

To avoid misinterpretation, this questionnaire is written in English. It is therefore preferable, although not a requirement that answers are stated back in this language.

1. Questions related to the incubator set up

1.1 When was the incubator established?

The Incubator, related to the program today and as a project was started in the end of 2003.

1.2 What is the incubators goal/focus area?

In international terms, the incubator is a pre-incubator, and the goal of the incubator is to provide a framework in which people, mainly students, can explore the business potential of their idea before actually starting up a business. The incubator provides supporting/administrative staff, access to laboratories and databases, professional guidance and coaching/mentoring and a network to other entrepreneurs and regional support programs. The program is also open for companies starting up a new business area and companies in a start up phase.

1.3 How many employees are working within the incubator?

2 people(full time equivalent) are working on the day to day operations in the incubator. They are supported by student helpers and financial support staff.

1.4 How is the incubator structured?

The incubator has a central secretariat and decentralized co-ordinators (placed in the academic environments). The central secretariat handles general issues and the contact to the surrounding environment, setting up e.g. courses and finding mentors and professional counseling for the individual entrepreneur. The decentralized co-ordinators handle the day to day contact with the individual entrepreneurs, securing relevant academic guidance and informs the entrepreneurs of relevant research or relevant events.

Central secretariat and decentralized co-ordinators are in frequent contact.

1.5 What is the incubators legal status (e.g. for or non-profit)?

The incubator is a project under Aalborg University, and funded by EU-regional funds. The Incubator is non-profit.

1.6 Have the incubator grown since its establishment?

1.6.1 If yes, how much (e.g. budget, space, expansion of services, staff members, etc)

The incubator has grown in relation to number of participants and number of decentralized incubators. The program has more staff today, but the budget pr incubatee is more or less the same.

1.7 How many incubatees/tenants are currently present within the incubator?

40

1.8 From what sources are the incubator receiving financial support/sponsors, and how much?

The incubator receives funds from EU Regional Funds, and a few small contributions from various national programs and organizations.

1.9 Is the incubator in the presents of a complementary research part/Science park or R& D facility?

1.9. 1 If yes, please state the type of interaction or connection and what the value- added services/outcomes?

The Incubator central office and courses are placed in NOVI science park, and offers the possibility to network with other entrepreneurs and staff of the science park and university.

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2. Questions related to the incubators operational process and management practices

2.1 What type of services is the incubator offering?

- courses in various aspects of business planning
- network
- academic counseling

-mentoring

-access to laboratories

-access to professional assistance, e.g. legal guidance

2.2 What is the available space offered (in size)?

Offered if available at the specific institute. Size varies, but will typically be a room of 10 – 12m2

2.3 How long is the incubation process?

It's an individual process, but typically for six months, with the option of prolonging into 1 year.

2.4 How are the incubatees/tenants evaluated or monitored during the incubation process?

Through milestone planning and regular meetings with project management and co-ordinators.

2.5 What are the incubators client focus/who can apply for the incubation?

Knowledge based business ideas and potential business ideas, but key issue is that the idea is knowledge based and the university has a knowledge that will contribute to bringing the idea forward. Anyone can apply, and will be evaluated.

2.6 How are the incubatee selected (what are the admission criteria)?

If there is a knowledge based idea, the incubatee is granted access to the program based on commitment to the idea and to a milestone plan agreed with the project management.

2.7 What are the exit criteria's?

The incubatee can stop anywhere in the process. Based on the commitment of the incubatee, project management can expel the incubatee.

2.8 How much are the financial expenditures for participating in the incubation?

It's free.

2.9 Do you consider the incubator as assisting or encouraging incubatees to develop environmentally friendly products?

Not specificly addressed at the moment.

2.9.1 If yes, how is this addressed?

2.9.2 If no is there any particular reason for not addressing this?

Lack of resources to focus on sustainability.

2.10 What kind of background does the management team/staff hold?

One has a degree in business and one has a degree in sociology

3. Performance outcomes/impacts

3.1 How many companies have graduated since the establishment of the incubator?

Approximately 300 potential entrepreneurs have taken part in our programs. For 2008, 46 people have graduated(23 starting up companies) and in 2009 70 persons graduated(33 starting up companies).

3.2 What is the growth and survival rate of those previous incubatees/tenants?

Not measured

3.3 Is the incubator still in contact with its previous incubatees/tenants to some point?

3.3.1 If yes, how is the contact maintained?

By arranging bi-annual meetings with alumni and by keeping an updated e-mail list.

3.4 Do you consider the incubator has positively contributed to community impacts and how?

The incubator has provided, and is still providing a platform where knowledge based entrepreneurs can test and improve their business idea. A lot of the incubates have started own

companies and created value and jobs, and a lot of the incubates have acquired new competencies that will help them create relatively more value in the company or organization where they are employed afterwards.

Moreover the incubator have been a valuable tool for highlighting the importance of entrepreneurship as being part of a universities operations, and have helped in getting more entrepreneurship into the educational program.

If any additional comments or information of importance please state below:

Thank you for your time!

Email sent: May 19th 2010

Hei igjen Morten,

Jeg har et tilleggsspørsmål som jeg håper du kan svare på.
Har dere noen miljøtiltak innad i SEA som dere må forhlode dere ang resirkulering, bruk av energi osv?

Mvh,

Answer received: May 20th 2010

Hej Veslemøy

På SEA som sådan har vi ikke deciderede miljøtiltag. Vi følger universitetets øvrige procedurer og anvisninger på området, uden at jeg dog kender disse. Vi har heller ikke som sådan et særligt fokus på området pt, men arbejder på at udvikle inkubatoren med målrettede aktiviteter mod udviklingslandene. Dette er dog på udviklingsstadiet, og mangler funding.

Mvh

Morten

Appendix 18

Interview of Aalborg University incubator 16 March, 2010

With:

- *Morten Dahlgaad Andersen, Head of section- regional development manager, IDEA*
- *Niels Maarbjerg Olesen Head of Secretariat the Engineering, science and medicine faculties office*

Why incubation:

It's important to support start-up businesses in their effort to generate innovative products and processes which can alter new sustainable business models. Incumbent companies or large multinational companies are often less capable of being innovative as compared to new start-ups. While the former often have difficulties changing their organization culture and structure, new start-ups are more dynamic in their approach and manage to adapt to the needs of their surroundings. These large companies are often bought up new start up's or been innovative based on other peoples research. Once can say there have been a shift in how companies commercialize industrial knowledge. From closed innovation process to more sustainable ways called termed open innovation processes.

Background

- AAU incubator is part of AAU innovation center. AAU innovations core focus components includes:
  Facilitate network between different scientific areas and participants in firms or institutions
  IPR and commercialization of inventions
  Scientific intensive knowledge
  Project collaboration between students and companies
  Regional, national and international collaboration activities

- AAU innovation consists of 16 employees distributed around network centre, commercializing unit, and SEA (Supporting Entrepreneurship at Aalborg University - 4 people are working in the SEA). It is within the SEA incubation are offered. Supporting Entrepreneurs at Aalborg University was established along with AAU innovation in 2005. The AAU incubators is foremost a pre-incubator helping entrepreneurs in their start up

phase. The SEA was established to contribute to the AAU's goals. Along with the new development and perception of universities role the incubator was established to;

1) Create employment opportunities (for social welfare)

2) Link industry –university (to support economic development and regional development as such)

3) Create innovation and new-thinking (to change "old" business models to new more sustainable once)

Currently this semester 35 persons are enrolled in the incubation

- 50 % of incubators income is deriving through funding from the EU
- Incubation is free for employees, students and graduates, however, already established business must pay a small amount for participating
- Sustainability is addressed based on social and economic development but are not embracing an integration of environmental considerations.
- Entry criteria's: following the AAU semester (entry two times a year - February and September). Both students and employees and also others who have a scientific idea can enter without any specification on background. Participants are evaluated based on their motivation and commitments, the potential for innovation and scientific level of the projects and projects growth potential and relevance for market.
- Exit criteria's: Physical exit is preferably after 1 year, but can also last for several months and years after incubation.

- Incubation process is 6 months and is divided into 5 phases including
- 1. Start up phase
- 2. Future trends and insight to the business industry
- 3. Consumer and identification of markets
- 4. Innovation and development of business idea
- 5. Prototyping of developed product in relevant markets.

- Incubator units are separated around campus. Value added services includes laboratories, library, database, etc.

Appendix 19

Email correspondence to:

Lisbeth Christensen – Directorial secretary at NOVI

NOVI Science Park

Email sent: March 16th 2010

Hei,

Jeg er master student ved Dep. for planning og miljø ved Aalborg Universitet. Jeg
skal skrive min master oppgave om hvordan inkubatorer kan bidra til å generere 'sustainable performance' for sine inkuberte selskap.

For å analysere dette vil jeg se på inputs (e.g. management skills, finance, stakeholder objects etc), prosessen (e.g. selve inkubasjons prossesen som sådan, exist og entry criterias etc,) og outputs (e.g. survival of tenants, job creation etc,).

Jeg lurte derfor på om dere kunne være behjelpelige med å svare på noen av disse spørsmålene samt deres forhold til sustainability (e.g samfunnsmessig, miljø og økonomisk)

Påforhånd takk!

Mvh,
Veslemøy B. Aurmo

Answer received: March 19th 2010

Hej Veslemøy B. Aurmo,

NOVIs direktør Jesper Jespersen har mulighed for at tage et møde med dig i slutningen af april måned. Kan det passe dig?

Med venlig hilsen
Lisbeth Christensen
Direktionssekretær

Email sent: March 19th 2010

Hei,

Jeg hadde tenkt å distribuere et spørreskjema ang de nevnte spørsmålene før påske.
Det hadde derfor vært ønskelig å fått tilbake svar i midten av april siden mye data skal innhentes og bearbeides.

Men hvis han eller noen andre har mulighet til ås vare på dette stiller jeg gjerne opp til møte.

Mvh,
Veslemøy

Answer recieved: March 19th 2010

Du er velkommen til at sende spørgeskemaet til mig, så skal jeg forsøge at finde en person, der kan udfylde det snarest muligt.

Hilsen

Lisbeth

Email sent: March 25th 2010

Hei,

Takk for at dere er villige til å delta.
Vedlagt er spørreskjemaet.

Vennligst ta kontakt hvis noen av spørsmålene er uklare.

Mvh,
Veslemøy Aurmo

Answer received: April 09th 2010

Jeg vedhæfter udfyldt spørgeskema.

Med venlig hilsen

Lisbeth Christensen

Answered questionnaire

Thank you for answering this questionnaire. This research could not have been established without your participation and it is highly appreciated.

*It is requested that answers are returned back as soon as possible, and no later than **14 of April**. Still, if someone for any reasons is not able to forward the answers before this deadline, please let me know in advance.*

To avoid misinterpretation, this questionnaire is written in English. It is therefore preferable, although not a requirement that answers are stated back in this language.

1. Questions related to the incubator set up

1.1 When was the incubator established?

1989

1.2 What is the incubators goal/focus area?

To promote technological and commercial development in North Denmark.

1.3 How many employees are working within the incubator?

12

1.4 How is the incubator structured?

Corporate organization consisting of an operating company, a for-profit fund, and an innovation incubator.

1.5 What is the incubators legal status (e.g. for or non-profit)?

For-profit fund

1.6 Have the incubator grown since its establishment?

1.6.1 If yes, how much (e.g. budget, space, expansion of services, staff members, etc)

From 5,500 square meters to 33,000 square meters.

1.7 How many incubatees/tenants are currently present within the incubator?

85 tenants.

1.8 From what sources are the incubator receiving financial support/sponsors, and how much?

-

1.9 Is the incubator in the presents of a complementary research part/Science park or R& D facility?

1.9. 1 If yes, please state the type of interaction or connection and what the value- added services/outcomes?

---

2. Questions related to the incubators operational process and management practices

2.1 What type of services is the incubator offering?

Reception/telephone services, meeting rooms, intranet and community, accounting services, marketing assistance etc.

2.2 What is the available space offered (in size)?

Flexible

2.3 How long is the incubation process?

-

2.4 How are the incubatees/tenants evaluated or monitored during the incubation process?

-

2.5 What are the incubators client focus/who can apply for the incubation?

Primarily high-technology

2.6 How are the incubatee selected (what are the admission criteria)?

Primarily high-technology

2.7 What are the exit criteria's?

-

2.8 How much are the financial expenditures for participating in the incubation?

Rent example for standard space in NOVI 1:
Standard space: 4.5m x 6m = net 27m2. Gross area: 47.25 m2.
Annual rent: 47.25m2 x DKK 1,084.56 = DKK 51,537.50
Annual operating fees: 47.25m2 x DKK 350.00 = DKK 16,537.50

2.9 Do you consider the incubator as assisting or encouraging incubatees to develop environmentally friendly products? No

2.10

2.10.1 If yes, how is this addressed?

2.10.2 If no is there any particular reason for not addressing this?

-

2.10 What kind of background does the management team/staff hold?

3. Performance outcomes/impacts

3.1 How many tenants have graduated since the establishment of the incubator?

-

3.2 What is the growth and survival rate of those previous incubatees/tenants?

-

3.3 Is the incubator still in contact with its previous incubatees/tenants to some point?

3.3.1 If yes, how is the contact maintained?

3.4 Do you consider the incubator has positively contributed to community impacts and how?

Synergy effect, job creation

If any additional comments or information of importance please state below

Thank you for your time!

Email sent: April 25th 2010

Hei igjen,

Takk for besvarelse!

Pga av manglende data skulle jeg veldig gjerne hatt svar på følgende:

Number of present incubatees?

Financial support and source of income?

Graduated companies in total?

Survival of incubatees?

Håper denne mailen distribueres til noen som kan svare på dette. Eller

er det noen jeg kan kontakte for å få svar?

Mvh,

Veselmøy Aurmo

No answer obtained

Appendix 20

Email correspondence to:

John Herrison - Investment manager

Innovation Centre Iceland

Email sent: march 17th, 2010

Hi,

I'm a master student currently in the process of writing my
master thesis at Aalborg University in Denmark. My colleague and friend from Island Guðrún Anna Finnbogadóttir told me to contact you.She thought that you could be able to help me in my research.

My master thesis is about how Scandinavian incubators can contribute to generate sustainable start-up businesses.
To do this I will assess different incubators by various analyzing their input, process and outputs. By the early-mid April I will have prepared a questionnaire based on different indicators. Examples of such questions would be such as management skills, tenants firms survival and growth, financing, exist and entry criteria, stakeholder objectives, jobs created, number of tenants, etc,

I therefore wondered if you would be able to answer this or if you know somebody that are better suited, it would be highly appreciated?

Hope to hearing from you!

Best regards,
Veslemøy Aurmo

Answer received: April 06th 2010

Hi and thank you for this mail.

I would be honored to participate in your study and if needed I can arrange for my collage to help me to do so. I have been around managing incubation centers for about seven years. Also I have been helping entrepreneurs to finding investors, applying for grants and r&d programs, so I hope I can help you.

If you have any questions do not hesitated to be in touch. I will not be in vacation from 22. April to 3 May, so in that time I will not b able to answer you.

Looking forward to hear from you

Best regards
Jón Hreinsson

Jón Hreinsson
Fjármálastjóri, CFO
Nýsköpunarmiðstöð Íslands
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Netfang / e-mail: jonhr@nmi.is
heimasíða / webpage: www.nmi.is

Answered questionnaire

Thank you for answering this questionnaire. This research could not have been established without your participation and it is highly appreciated.

*It is requested that answers are returned back as soon as possible, and no later than **14 of April**. Still, if someone for any reasons is not able to forward the answers before this deadline, please let me know in advance.*

To avoid misinterpretation, this questionnaire is written in English. It is therefore preferable, although not a requirement that answers are stated back in this language.

---

1. Questions related to the incubator set up

1.1 When was the incubator established? 1999

1.2 What is the incubators goal/focus area?

Today we are running 5 incubators and in cooperation with 3 others.
On is with the focus of highly innovative idea, with no competition in Iceland, one has the focus on medicine and biotech, on is in rural development, and two were started for innovative ideas and started as a fight agents the economical cresses in Iceland

1.3 How many employees are working within the incubator?

Good question we have one fulltime and about 10 who helps out part time

1.4 How is the incubator structured?

f

1.5 What is the incubators legal status (e.g. for or non-profit)?

Non-Profit

1.6 Have the incubator grown since its establishment?

1.6.1 If yes, how much (e.g. budget, space, expansion of services, staff members, etc)

Yes in the past 2 year it has gone from 16 companies to about 80. In number of the staff of those companies have change from about 40 to about 240 in that time. The staff has gone from being one to having about 10 helping part time,

1.7 How many incubatees/tenants are currently present within the incubator?

See above

1.8 From what sources are the incubator receiving financial support/sponsors, and how much?

It depends on which of them we are talking about.

Our biggest are financed through governmental support, other are through grants and rent, and one is financed through the region.

1.9 Is the incubator in the presents of a complementary research part/Science park or R& D facility? Yes and no the one for medicine and biotech is close to being Science Park but not there yet.

1.9. 1 If yes, please state the type of interaction or connection and what the value- added services/outcomes?

---

2. Questions related to the incubators operational process and management practices

2.1 What type of services is the incubator offering?

Whatever is needed. Writing a business plan, finding and applying grant, finding investors, finding staff and specialist to help, marketing, finding partners all over the world, finding producers all over the world, getting specialist to help in R&D and so on. It depends on the companies needs.

2.2 What is the available space offered (in size)?

From cubicals about 2 m^2 to offices about 100 m^2

2.3 How long is the incubation process?

From one month to about 4 years, but it depends on each situation and it is evaluated on performance and need.

2.4 How are the incubatees/tenants evaluated or monitored during the incubation process?

We mostly look on the innovation part and if we believe that the person can do the job. If we believe in this ide and think that they can do the job we make short team agreement for about 6 months and in that time we evaluate performance, based on that we deiced what to do.

2.5 What are the incubators client focus/who can apply for the incubation?

Entrepreneurs and start-ups can apply

2.6 How are the incubatee selected (what are the admission criteria)?

On innovation and the team behind the idea.

2.7 What are the exit criteria's?

When companies become profitable or if they are not delivering performance the exit.

2.8 How much are the financial expenditures for participating in the incubation?

It is various from about 5.000 isk to about 700.000 isk pr. Month.

2.9 Do you consider the incubator as assisting or encouraging incubatees to develop environmentally friendly products?

2.9.1 If yes, how is this addressed?

Yes, we try, environmentally friendly is becoming part of what is needed and the requirements in that field are becoming stronger and stronger. Taking them in to the product development is what we suggest all the time.

2.9.2 If no is there any particular reason for not addressing this?

2.10 What kind of background does the management team/staff hold?

Ms.c, MBA, and Bs.c in business and engineering.

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3. Performance outcomes/impacts

3.1 How many tenants have graduated since the establishment of the incubator?

Don't know, estimate about 30 -35

3.2 What is the growth and survival rate of those previous incubatees/tenants?

To high. ☺ Two are out of business and 5 never started so about 20-25 are operating to day

3.3 Is the incubator still in contact with its previous incubatees/tenants to some point?

3.3.1 If yes, how is the contact maintained?

Yes, we meet with them on a regular base, they often come to visit us and so one. In few cases they are part of our clients in R&D

3.4 Do you consider the incubator has positively contributed to community impacts and how?

Yes and sins the economical crises in Iceland it is very positive and are creating lot of opportunity for highly educated people that use to work in big companies e.g. banks before, but are now pursuing their dreams .

If any additional comments or information of importance please state below:

Thank you for your time!

Email sent: April 07th 2010
