



INTRODUCING STRATEGIC SUSTAINABLE DEVELOPMENT IN A BUSINESS INCUBATOR

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ABSTRACT

This qualitative action research explores integration of Strategic Sustainable Development (SSD) at Inova business incubator (Karlstad, Sweden). Researchers and incubator agreed that planning with sustainability in mind at a very early stage of company development may have important impacts on future business success and societal welfare.

The objective was to answer how SSD could be integrated into the processes at Inova and how Inova staff's and entrepreneurs' understanding of sustainability demonstrably evolve after exposure to SSD.

Apart from general research methods, SSD methods and tools were used with three entrepreneurs and business incubator staff. The Five Level Framework for Planning and Decision-making in complex systems and the Templates for Sustainable Product Development approach were central to the study.

Inova staff and entrepreneurs began to develop; an understanding of business' dependence on and relationship to broader societal and ecological systems; and an ability to use backcasting from the basic socio-ecological principles of sustainability in business planning. In turn they experienced an increased capacity to identify sustainability related business risks and opportunities.

A new incubation process integrating SSD was created. Although the outcome is specific to Inova, it is general enough for other assistance organizations to gain insight from. In conclusion, SSD should be integrated as early as possible in the business planning of start up companies. Organizations with a mission of assisting entrepreneurs have an important role to play

In further research it is recommended that visionary sustainability leaders are identified and tracked from start up.

Keywords: sustainability, entrepreneurship, business incubator, TSPD, strategic sustainable development



INTRODUCTION¹

Business leaders today are responding to pressure caused by a convergence of trends; increasing energy costs, legislation aimed at reducing pollution and waste, erosion of corporate trust, shortage of quality workers, and increased consumer awareness (Willard 2005, 11; 2006). Businesses acting proactively to mitigate their impact on the environment and society are beginning to see notable benefits. The realization has begun to sink in; businesses have a responsibility to be not only financially sustainable but also socially and environmentally sustainable.

Given the fact that small enterprises are an important source of economic growth, development and employment, there is a societal need to identify ways of introducing sustainability planning into such companies. Like small companies, start up companies display more flexibility in their decision making processes, and also have fewer resources for implementing those decisions. This stage of a company's development poses an important leverage point, as designing a business strategy that will anticipate risk and maximize opportunity is an essential planning tool for success. To this end a partnership was created with business incubator Inova (Karlstad, Sweden) to integrate sustainability into current processes.

According to the initial agreement reached in December 2006, the research team was invited to work from Inova for two months, conducting action research. Researchers and incubator agreed that planning with sustainability in mind at a very early stage of company development may have important impacts on future business success and societal welfare. The objective was to answer how SSD could be integrated into the processes at Inova and how Inova staff's and entrepreneurs' understanding of sustainability demonstrably evolve after exposure to SSD.

The researchers hoped to show that Strategic Sustainable Development (SSD) could offer a valuable layer of systemic understanding to start up companies by incorporating knowledge of the ecosystems' interactions with business processes, and complimentary tools to guide decision making. This study does not generalize about all incubators. It provides in-depth insight into one case, which can be used as evidence of behaviour that may apply to entrepreneurs and start up companies in general.

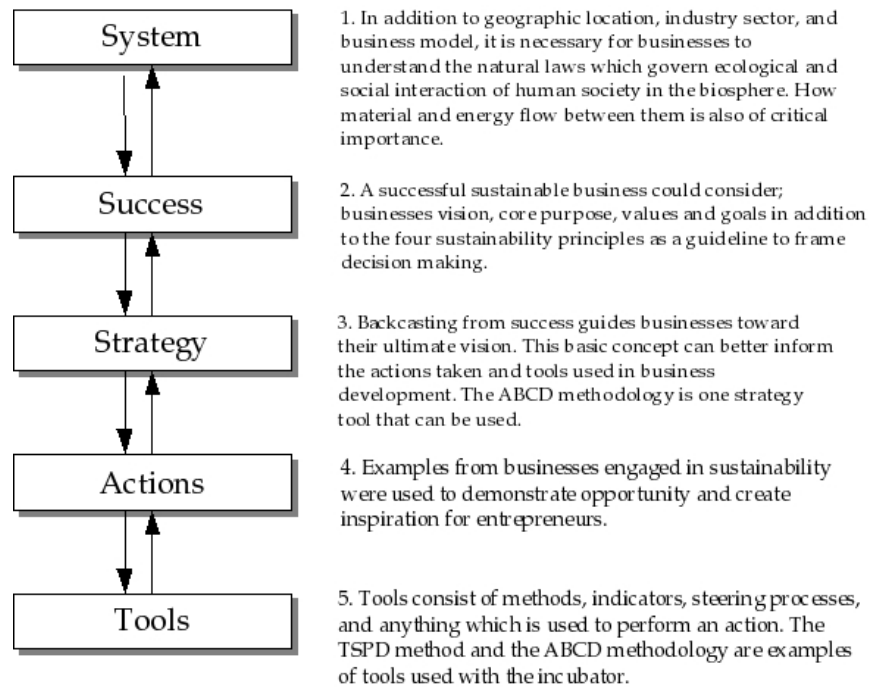
Framework for Strategic Sustainable Development

Sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their needs" (World Commission on Environment and Development 1987). The Framework for Strategic Sustainable Development (see Figure 1), designed in the early 1990s, is meant to facilitate such development, and is not based on prescriptive actions, but on a structural approach to guide complex decision making (Robèrt 2000, p. 247). This broad approach has been designed to complement existing tools and strategies. It acts quite like a compass for planning the societal transition toward sustainability, which organizations can use to find their own creative way to reach their goals. (Broman et al. 2000, p. 14).

¹ The paper is based on the Master Thesis performed at Blekinge Institute of Technology, Karlskrona, Sweden within Strategic Leadership Towards Sustainability programme. Full paper can be obtained via an electronic archive of completed thesis projects at programme home page: <http://www.bth.se/ste/tmslm.rsf>



Figure 1. The Five Level Framework for Strategic Sustainable Development (FSSD)



Adapted from: Robèrt et al. 2002, 198; Robèrt 2000, 247

The compass of FSSD is embodied in the four basic principles of sustainability. The creation of which has been guided by scientific research since initial inception (Holmberg et al. 1996). In their most recent revision the basic socio-ecological sustainability principles read (Ny et al. 2006, 5):

In a sustainable society nature is not subject to systematically increasing...

- I. concentrations of substances extracted from the Earth's crust,
- II. concentrations of substances produced by society,
- III. degradation by physical means,
and, in that society...
- IV. people are not subject to conditions that systematically undermine their ability to meet their needs.

One of the strengths of using FSSD for business planning is its inherent focus on backcasting (Robinson 1990). Implied in the term strategy; backcasting means having a well defined outcome in mind to plan towards. Strategic backcasting allows a business to recognize trends of un-sustainability as symptoms of larger problems, and encourages long range thinking toward a successful and "sustainable" company as defined by the four sustainability principles. Planning accordingly can create a financially successful and ecologically sustainable business (Robèrt et al. 2002, p. 202)

The framework was used to guide the analysis of Inova's current incubation process in addition to overall operations.



METHODOLOGY

The study uses qualitative research design promoted by Maxwell (2005). This approach is appropriate when performing action research, which studies outcomes in two areas: benefits for the body of academic knowledge and benefits within a learning organization (Inova).

General research methods such as document analysis, observation and semi-standardized/un-standardized interviews were used.

A pre-survey was developed to capture initial information about both staff and start-ups (attitudes, pre-conceived notions of sustainability). Later in the post-survey, the data would help to evaluate the impact of workshops and training on participants' understanding of the Framework for Strategic Sustainable Development.

Strategic Sustainable Development Tools

Two FSSD strategy tools, the ABCD Methodology and The Templates for Sustainable Product Development were used with Inova and the entrepreneurs to incorporate sustainability thinking into business planning.

A-B-C-D Methodology

ABCD is used in FSSD to develop a strategy which is guided by a principled definition of sustainability and a clear vision of success (Robèrt 2000, p. 247). Overall it is best used to bring a group together in a creative process where there is a clear desired goal in mind.

Awareness - A

This stage of the strategy is about setting the boundaries of the topic being addressed. Is it a product/service, or whole company model that is being discussed? It is most useful to have discussed the system and success levels of the Five Level Framework (above) before beginning such a strategy session.

Baseline mapping - B

Using the four sustainability principles baseline mapping is used to assess the strengths/weaknesses, and opportunities/threats of the company's current situation. The four sustainability principles can be used to assess potential opportunities, for instance how would the product, as it is currently designed comply with the four sustainability principles? How will it violate them?

Compelling vision - C

A creative process is used to develop solutions to sustainability violations which were identified during the B step. "Solutions such as new energy systems, saving resources, substitutions of materials, new and more service-oriented and resource-saving business models, etc. can be listed" (Robèrt et al. 2006, 45-48). A creative gap between current situation and desired future is used to generate actions for improvements.

Down to action - D

Ideas and actions are next scrutinized using prioritization questions. The company can avoid poor long term investments through this process, and other criteria can also be added to this list

- Is the measure taking the organization towards its vision?



- Is the measure bringing the society as a whole towards sustainability?
- Is the measure a flexible platform the organization can build on in the future?
- Does the measure provide satisfactory return on investment (social, political, economical)?

Templates for Sustainable Product Development

The Templates for Sustainable Product Development (TSPDs) is a strategic tool. The TSPD is subject to ongoing research, and has been used to facilitate dialogue within companies whose goals include sustainable product development. (Ny, 2006).

The purpose of the TSPDs is to:

- Bridge the competence gap between sustainability expert and client
- Facilitate discussion and decisions between various company departments
- Influence the organization's long term ability to find improvements in product/service which are relevant for SSD².

Figure 2. Templates for Sustainable Product development questions

I. Market Desires/Needs	II. Concepts	III. Extended Enterprise
Current market desires addressed	Conceptual design of today's product	Current stakeholder cooperation/communication
<p>What <i>current</i> market desires is the product/service intended to meet?</p> <p>What are some <i>current</i> overall sustainability problems related to these market desires?</p> <p>How do these market desires relate to basic human needs?</p> <p>How do these market desires relate to basic human needs?</p>	<p>What current flows and management routines from the life cycle of the chosen product/service concept are critical from a sustainability perspective? In other words, what critical violations of the sustainability principles could be identified for the following general life-cycle phases? Resources extraction, supply chain & manufacturing distribution and use final disposal or reuse recycling/ land-filling</p>	<p>What current preferences and conditions of societal stakeholders are opposing the introduction of more sustainable product/service concepts? Is the company trying, through external communication and actions, to change these conditions? How?</p> <p>What current product/service value-chain cooperation is agreed upon and what gaps can be identified that prevents responsible handling of sustainability problems throughout the lifecycle?</p>
Future needs to address	Likely conceptual design of future product:	Likely future stakeholder cooperation/communication
<p>What <i>new</i> market desires are likely to evolve in the future in response to sustainability challenges?</p> <p>What <i>new</i> market desires, related to your core business, could improve chances of fulfilling basic human needs?</p> <p>Are there market trends that point in this direction?</p>	<p>Could physical flows, management routines, etc, related to the current life-cycle of the product concept be developed to reduce the risk of societal violation of the basic sustainability principles? In other words, what solutions to product-related sustainability problems could be identified for the following general life-cycle phases? Resources extraction, supply chain & manufacturing distribution and use final disposal or reuse/ recycling/ land-filling</p> <p>Could new product/service concepts be developed that meet the current and/or future market desires while reducing the risk of societal violation of the basic sustainability principles?</p>	<p>What future societal stakeholder preferences and conditions would be particularly favorable for the development of more sustainable product/service concepts, and how could the company interact with external stakeholders to facilitate such change?</p> <p>What future strategic product/service value-chain cooperation would be particularly favorable for responsible handling of sustainability problems through-out the lifecycle? How could the company develop such cooperation?</p>

Source: adapted from Ny, 2006

² This goal was not a primary focus with start up companies, as the length of the research period did not allow assessment of long-term influence.



The TSPDs were used with both the business incubator in edited format for a service organization and three start up companies (see Figure 3 below)

1) TSPDs for service based organization (Inova)

The Templates for Sustainable Product Development were applied in workshop format, accompanied by a visioning exercise and action prioritizing. TSPDs for service based organization were used as a mean of developing the incubator's sustainability strategy. In two workshops, a cross departmental group of Inova's staff participated. For research purposes another goal was added for the incubator:

- Test the TSPDs on a service based organization

2) TSPDs for start up companies

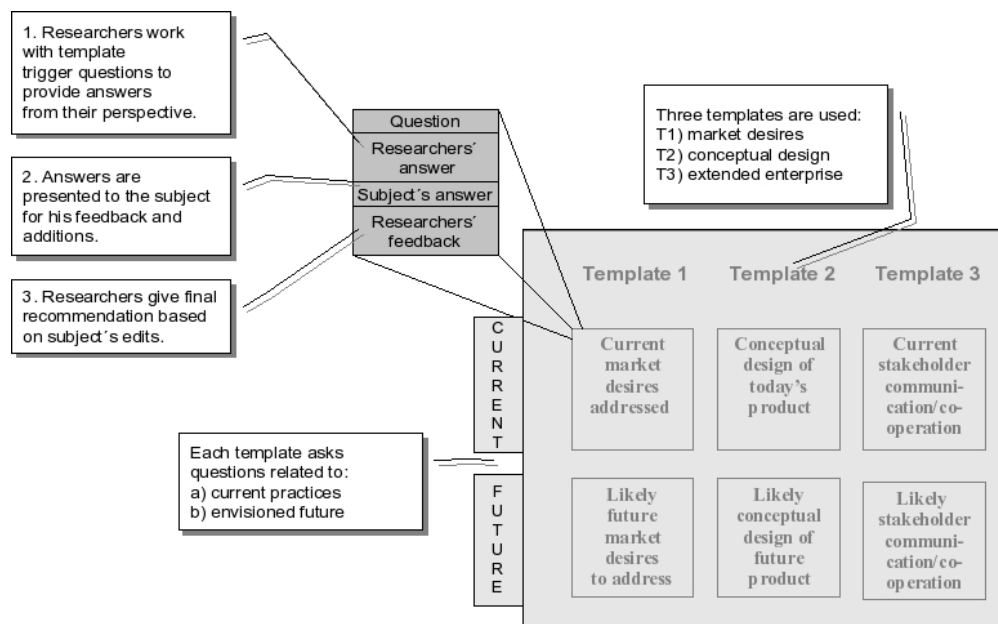
Three companies using the TSPD method analyzed current and future market desires, conceptual design of product and the company's interaction with market, suppliers, and societal stakeholders.

Additional goals for start up company use:

- Find complements with current strategy tools.
- Provide new insight on future business opportunities/benefits.
- Test the TSPD method's applicability to start up companies for future use by Inova.

Entrepreneurs were first presented with an introduction to sustainability. With this basic understanding of the system, the TSPD method was introduced (principles, guidelines) to coaches and entrepreneurs. The research team provided the first set of template answers, which were given to the entrepreneurs and coaches to reflect upon. Together, coaches and entrepreneurs worked together reflecting on the TSPDs questions and researcher's answers. The research team reviewed comments and answered clarification questions, and a summary report was presented. Follow up interviews were conducted with each entrepreneur (coach present). Coaches were interviewed separately about the TSPD process.

Figure 3. Templates for Sustainable Product Development – box outline





RESULTS

Inova staff's shift in thinking

Research question:

How does Inova staff's understanding of sustainability demonstrably evolve after exposure to Strategic Sustainable Development?

Guided by The Five Level Framework, methods and tools of Strategic Sustainable Development were introduced to Inova staff through; a basic introductory presentation (System), a visioning and Sustainability Principles workshop (Success), organizational planning using the Templates for Sustainable Product Development (TSPDs), and the Strategic Planning Questions for guiding prioritization (Strategy). After working with each of the tools listed, staff was interviewed and had an opportunity to evaluate their experience.

Inova staff working with Strategic Sustainable Development demonstrated;

- An acknowledgment that the boundary of responsibility for companies could/should be wider. Understanding how companies interact with society and the system around them (i.e. the flow of material and energy from companies to surround communities and environment) was critical to this shift in thinking.
- A new perspective on their internal processes, on questions posed to startups at various stages of incubation, and on the appropriate staff expertise needed.
- Generally, priorities shifted from a desire to;
 - i) gain the interest of businesses in the incubator,
 - ii) define sustainability,
 - iii) introduce a seventh criteria to guide sustainability integration,

to new priorities of;

- i) translating sustainability into language and examples that speak to business,
- ii) identifying external experts to support start up companies,
- iii) gaining an appropriate staff/coach competence level and
- iv) agreeing upon a strategy for full implementation.

Templates for Sustainable Product Development for Inova

The Templates for Sustainable Product Development method were used to guide a strategy for integrating sustainability into the incubator processes. Findings about the use of the TSPDs in a service based organization, and in a workshop format are presented.

Key findings:

- It is crucial to have all staff that work directly with companies in sustainability strategy sessions. The experience helps to build staff understanding of the Strategic Sustainable Development process, and creates a shared experience which is a useful reference point for the future. As a sustainability strategy is a key document,



participation of all coaches that will bring the process to start up companies is crucial.

- A workshop format allows discussions among participants. Because there were different levels of understanding of what sustainability is and how it should be addressed, a substantial amount of time in the workshops was spent discussing these issues and creating a shared understanding. This time was crucial and cannot be underestimated.
- An inclusive atmosphere, where the contribution of all participants is appreciated is ideal. When participants feel that their ideas are recognized they are more committed to supporting the process in the future.
- It was critical to have ongoing interaction with one staff person throughout the research process. We received consistent feedback, were better able to understand the internal environment of the incubator, and Inova could monitor research progress on regular basis.
- The slight change of wording of the TSPDs questions did not affect the overall outcome. The delivery of the Template workshop in English may have slowed the understanding. It is desirable to conduct complex planning sessions in one's native language.
- The TSPD method was supplemented by a short vision creation section. Establishing a shared vision before answering the template questions enabled participants to focus on the strategy component.

Table 2. Pros and cons of using TSPDs in workshop format for Inova strategy development

	Pros	Cons
Time constraints	In two months strategy development was started and SSD tools were tested with entrepreneurs	Staff and entrepreneurs were short on time. The research team participated in the strategy development much more than expected.
Face to face interaction	Increased understanding by fostering necessary discussions between researchers and participants.	According to some feedback it was easy to "fly away" and more focus in the workshops was needed.
Language	Language that both sides understand was used (English). Swedish was used when producing the final Template.	Using Swedish as a native language of participants could have led to better outcomes for both staff and entrepreneurs, and led to increased overall understanding.
Missing visioning exercise in the workshop	Creating a vision before discussing strategy helped build a shared understanding in the group.	The vision was the brainstorm of one person and not all the staff were engaged in creating it. A draft was presented to them, discussed, and then agreed upon.
Building excitement	A group setting provided a space to share enthusiasm needed for organizational	A workshop is good way to focus on the topic on one point at a time. Outside of the workshop it was



	change. Participants saw the commitment from senior staff and built upon each other's ideas.	challenging to command full participation
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Entrepreneurs' shift in thinking

Research question:

How does Inova entrepreneurs' understanding of sustainability demonstrably evolve after exposure to Strategic Sustainable Development?

Using a survey, entrepreneurs were asked to assess the importance of sustainability to their business planning. The survey was developed in relation to the Sustainability Learning Curve. A total of 12 entrepreneurs answered a pre-survey and then participated in the awareness building Introductory Presentation. Three companies, in different stages of the incubation process, were then selected for further collaboration using the Templates for Sustainable Product Development (TSPDs). A post-survey was filled out at the end of the process, to capture any overall change in how they valued sustainability for their business development. Insights from interviews and ongoing interaction are presented here.

Entrepreneurs working with Strategic Sustainable Development demonstrated;

- Gaining a new perspective on their business development
- New ideas were identified, such as; new product, value chain engagement, business model, and partnership opportunities
- Commitment to further exploration of sustainability in the company

Templates for Sustainable Product Development for start up companies

The TSPDs were applied slightly differently with each of the three entrepreneurs, in an effort to better tailor the tool to the needs of each. For example, as feedback was received that it was difficult to understand the new concepts in English, the text was translated to Swedish. The entrepreneurs verified the analysis done by the research team, and shared their experience using the templates.

Key findings:

- TSPD method was successfully used with start up companies. The original method is applicable in the business incubator.
- The support of business coaches throughout the process was critical for the entrepreneurs. They were able to ask questions, and brainstorm creatively with the coaches.
- TSPD Guidelines were created to clarify the process. Visual support, such as a flow chart of the questions seems to be a useful way to enrich the guidelines.
- The TSPDs require thorough reflection of the entire company. Even though the use of English is pervasive in Sweden, the use of one's native language was more efficient for understanding.
- Information provided by "sustainability experts" should be clear and explanatory. Prior training on the basic sustainability concepts and practice using the four sustainability principles will increase the effectiveness of the TSPD method.



- The format of the templates influenced understanding. The superior method was the presentation of a Guidelines document followed by the TSPD with expert's responses in a word document format. Providing information in spreadsheet format was perceived as confusing.
- Entrepreneurs were able to identify connections with familiar business planning tools.

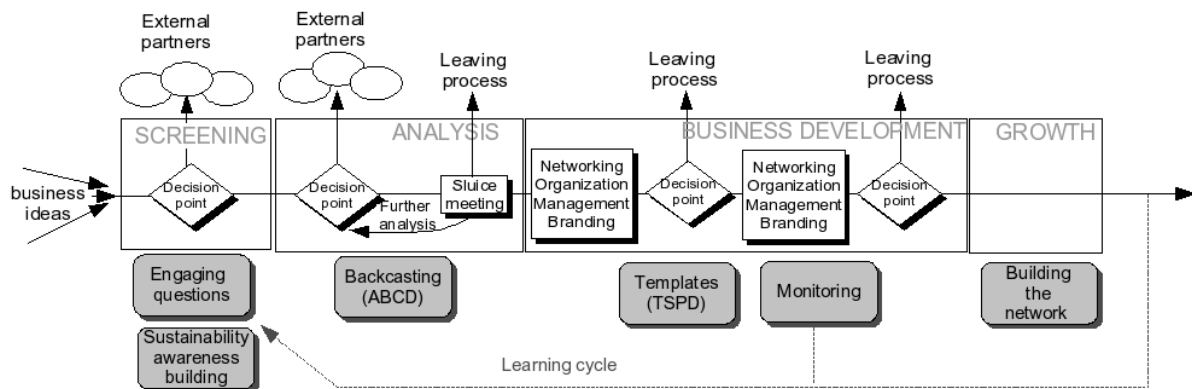
Sustainability Integration

Research question:

How could Strategic Sustainable Development be integrated into the processes at Inova?

Through testing and evaluating the core tools and methods of Strategic Sustainable Development (SSD), the following process was created. Below is a diagram to visualize where specific tools could be introduced in Inova's current incubation process. The grey boxes dictate where in the process the recommended tool is used.

Figure 4. Introduction of SSD tools in the incubation process



This approach is designed to complement current processes, while integrating a sustainability approach into existing incubator development methods (workshops, presentation meetings, strategy making). In this model the coaches/staff of the incubator act as a support system. The entrepreneurs are ultimately responsible for applying concepts and strategies to their businesses. While the concepts associated with SSD were new and sometimes complex, the more often staff and entrepreneurs applied SSD methods to a topic of relevance, like their businesses, the more useful it became. Further description of the used concepts can be found in the Master Thesis (Blankenship, Kulhavý, Lagneryd 2007)

1. Screening stage

Engaging sustainability through triggering questions

Purpose Add questions to existing screening process which measure the entrepreneur's overall awareness and willingness to engage sustainability in the future. Open ended questions, which encourage discussion, are preferable.



- Suggestion** Screening Questions
- What does ultimate success look like for your business?
 - How will society benefit from your business?
 - What are the potential environmental and social impacts of the business? What risks and opportunities do you see?

Sustainability awareness building

Purpose Build awareness and basic understanding which answers 1. What is sustainability? 2. Why is it important for business? 3. What opportunities exist? 4. How can sustainability enrich business development?

- Suggestion** Sustainable development covers an immense range of topics for businesses. Entrepreneurs require a thorough introduction of sustainability which should include;
- A basic understanding of the earth's bio-geochemical cycles and natural laws, in relation to human society (system).
 - A principled definition of sustainability to guide complex decision making and analysis in the future (success).
 - Examples of businesses engaged in sustainability initiatives can paint a clearer picture for entrepreneurs, connecting with their experience (actions).

2. Analysis stage

Backcasting using ABCD methodology

Purpose Backcasting provides an opportunity for the entrepreneur to think long term about a company vision which incorporates an understanding of sustainability. Identification of future material, energy, information flows – unforeseen opportunities and threats – will assist the incubator in deciding to accept the business.

- Suggestion** Apply ABCD method to the entire company
- Conduct the strategy session as a group with all business partners and business coaches involvement for maximum creativity

3. Business Development stage

Templates for Sustainable Product Development (TSPDs)

Purpose The TSPD method poses questions to encourage overarching analysis of the product/service from a sustainability perspective. Its use early in the Business Development stage can create new market ideas, inform conceptual product design, and/or alter the business model.

- Suggestion**
- Include all business partners in this process as it increases creativity and can spur significant changes in the business idea.
 - It is more important that the sustainability experts used during this process know the method itself, less so the specific business concept



being analyzed.

- The outcome of the TSPD method can be used as a sustainability SWOT analysis, providing insight for overall business development aligned with the sustainability principles.

Monitoring business development towards sustainability

- Purpose** Tracking the generation of new ideas from the TSPDs to inception will create a record of successes/challenges, further informing future decision making (financial implications of choosing renewable materials, logistical considerations for supply chain management, etc.).
- Suggestion** Utilize the TSPD method to expand the advisory network of the incubator and create new partnership opportunities for the companies (university engagement, investors, corporate mentoring, research/design, etc.). The incubator can specifically;
- Monitor cost/benefit of sustainability initiatives with companies.
 - Compile best practices and useful tools.
 - Promote internal success stories frequently.

4. Growth stage

Building the network through alumni engagement

- Purpose** As companies leave the incubator they become success stories. Those which have succeeded in implementing and benefiting from sustainability thinking can inspire others.
- Suggestion** The incubator can build organizational capacity by maintaining relationships with entrepreneurs after they leave the incubator. Business leaders could add value by;
- Mentoring other start up companies.
 - Leading discussions on sustainability and innovation.
 - Increasing sphere of influence through regional partnerships, public promotion of sustainable development, and advocacy.

DISCUSSION

The results show a documented shift in thinking about how sustainability can be integrated at Inova and about the value it brings to the business development of start up companies. This shift coupled with results from use of the Templates for Sustainable Product Development (TSPDs) led to proposed incubation process adjustments. The following discussion provides an in depth assessment of the use of the TSPD method for start up companies and service organizations (like an incubator). We begin with the TSPD discussion in an attempt to discuss *how* a shift in thinking on sustainability was arrived at and how that shift will affect Inova's next steps with companies. Finally, we discuss the implications of our general methodology.



The research questions set in the beginning of the research aimed to find a way to integrate sustainability in Inova's processes. We felt that by introducing the FSSD and measuring reactions of both parties we could determine the usefulness of the tools, suggest changes to make them more applicable to start up companies, and recommend process integration for Inova. The core tool used was the Templates for Sustainable Product Development. We believe that TSPDs could act as a substantial part of sustainability assessment at the incubator in the future. The discussion section explores the use of TSPDs and states recommendations. Further elaboration on fulfillment of the tool goals is elaborated in the Master Thesis (Blankenship, Kulhavý, Lagneryd 2007).

Inova staff's evolving understanding

Gaining a broad perspective and deeper understanding

As a result of working with Strategic Sustainable Development (SSD), Inova has developed a broader perspective on how sustainability affects start up businesses, and Inova's internal processes. This understanding will help guide future decisions on when and how to engage the start ups. The research team and Inova's Process Manager identified a need early on to build a shared sustainability understanding within the staff. It was felt that if SSD could be used to do this, then staff would be motivated to create further concrete action. By the time the first workshop was held, a few weeks after the introductory presentation, staff had already begun to view current projects using their sustainability understanding. One coach recalled using the Sustainability Principles when reading business plans and asking questions to companies at the analysis stage of incubation (Bångerijs 2007 March 16). Another has since noted that "The biggest success is that I do take sustainability into account in another way than before and that I will address the subject in connection to all new ideas that are presented to me" (Lööv 2007 April 4).

As staff began to analyze Inova's vision, current sustainability impact, and future actions to take, a broader view of Inova's responsibility toward sustainability emerged. This sudden widening of perspective encouraged creativity and caused much discussion on the appropriate boundary of responsibility. All final evaluations received from staff identify this shift in understanding as the biggest success of the research, "...and I think that is the main goal of the work that you have helped us with, it [sustainability] is a natural part of our thinking and I think that is the greatest achievement in our work so far" (Isaksen 2007 April 7).

Evolving priorities

Inova's new priorities from Results 3.1: i) Translating sustainability into language and examples that speak to business ii) Identifying external experts to support start up companies iii) Gaining an appropriate staff/coach competence level and, iv) Agreeing upon a strategy for full implementation are also the generally viewed next steps. We believe the following factors were essential elements preceding the shift in priorities;

- Building a common understanding has allowed Inova to more confidently move ahead in their strategic planning
- A sustainability vision was created and is being discussed by the Steering Committee
- Entrepreneurs were willing to work with the research team, and gained new insight from the experience.



Recommendations for use of the TSPD method with service based assistance organizations

The TSPD method can be useful when creating a sustainability strategy for an organization like the incubator. The following should be considered;

- The organization should have an agreed upon vision for sustainability, and well defined next steps of how to take the information from the templates and create a strategy plan from it. The templates in themselves do not clearly define actions to take or guide prioritization of ideas.
- A workshop setting is a valuable way to engage various levels of the organization and build a shared understanding and commitment. However, adequate time should be allowed for discussion as the topic is complex and cannot be rushed.
- An adequate level of training on the basic concepts of sustainability should be provided before any strategy making occurs. It is most productive if all staff are given the opportunity to apply the concepts of backcasting from sustainability, the four sustainability principles including the nine human needs, and the Five level framework for planning and decision-making in complex systems.

Entrepreneurs' evolving understanding

Gaining a new perspective

After using the Templates for Sustainable Product Development (TSPDs), the entrepreneurs generally agreed that an understanding of sustainability and associated business benefits/risks of planning with sustainability in mind is important for their business development. This is not a surprising finding as Inova staff had chosen the entrepreneurs we worked with based on their stage in incubation and potential openness to be part of the research process. Staff also worked closely with each entrepreneur on the TSPDs and strove to increase their understanding of the tool being used. Staff had a role to motivate and inspire which probably increased the effectiveness of the process. One coach commented that upon receiving the template analysis he had to ask himself if he agreed with what the research team had proposed. He knew that if he did not understand or support what was written, the entrepreneur would sense this and the outcome might have been affected (Lööv and Bångerijs 2007 April 10)

The entrepreneurs' shift in business perspective was measured in survey results as well as comments received in interviews.

Before being exposed to Strategic Sustainable Development tools the three entrepreneurs collectively identified the following as the most important sustainability issues for their businesses;

- Avoiding costs through minimizing waste (both emissions and solid).
- Choosing the right material and the right material input.
- Analyzing the company's operations with a broad perspective - effects to both the global human society and nature.

After receiving an introductory presentation and working with the TSPD method the entrepreneurs answered the survey again. This time they added value to a larger number of issues on the survey. The following issues were given a higher value in the post survey;



- Integrating sustainability into every aspect of the company's operations.
- Choosing business solutions that are not environmentally and socially harmful in the first place.
- Using environmental aspects in marketing and public relations.
- Meeting legislative environmental standards regarding pollution.

Having a broad perspective fell out of the top four most important issues in the post survey, however, this can be attributed to the overall increase in value assigned to other issues. The broad perspective was not valued differently in the post survey. The new issues which were added are generally more specific. This could have occurred because this survey was conducted after the entrepreneurs had focused on a thorough analysis of their specific products. Comments received in interviews support the claim that the companies gained a broader perspective about their company in regards to sustainability.

- "The issue is complex, it isn't hard to understand but it touches so many parts of the company.I have a wider view of the problem now, which is good." (Co-founder of start up company 1. 2007 April 4)
- "We are a new company, can we afford to be on the cutting edge, or can we afford to wait?" (Co-founder of start up company 7. 2007 April 4)
- The social component is an important part of sustainability; it isn't just about materials you choose, it is also important to have the social thinking. I hadn't thought about that before. (Co-founder of start up company 1. 2007 April 4)

New ideas and next steps

After working with the TSPD method the entrepreneurs had new insights on their own products and business processes. The companies were in various stages of product development; however, all had prototypes of their products. One of the goals of the TSPDs was to generate new product/service ideas using the lens of sustainability. Given the short time that the entrepreneurs had to reflect on the templates, and the newness of their sustainability understanding, the ideas created are seen as an adequate beginning.

Product and company insights included;

- Use of eco-labeling to promote sustainability of product in the future. (Co-founder of start up company 4. 2007 April 4)
- Conducting more thorough market analysis to assess the importance of sustainability aspects to potential customers. (Co-founder of start up company 4. 2007 April 4)
- Development of requirements for suppliers. (Co-founder of start up company 7. 2007 April 4)
- Exploration of a service based model of current product. (Co-founder of start up company 7. 2007 April 4)
- Research partnership idea with the university to assess nutritional value of product in relation to fast food. (Co-founder of start up company 7. 2007 April 4)
- Human needs/social aspect has a role in business planning. (Co-founder of start up company 1. 2007 April 4)

Receiving feedback that sustainability was important to their long term planning was not unexpected. However, entrepreneurs also expressed a commitment to using their sustainability insights in the future.



1. All three would be reporting back to an Inova coach or their business partners.
2. One entrepreneur expressed interest in using the Sustainability Principles to guide new product development in the future (Co-founder of start up company 1. 2007 April 4)
3. Another expressed a strong desire to get his business partners involved and planned a workshop on sustainability within one month (Co-founder of start up company 7. 2007 April 4)

Recommendations for future use of the TSPDs with start up companies

- Provide a training session for all coaches and guide them through the TSPDs for start up companies in a common meeting.
- Encourage coaches to share their experiences on the way and support each other.
- Coaches should devote appropriate portion of their time for preparation (company information, understanding guidelines, basic concepts).
- Entrepreneurs and coaches should be educated beforehand on using the four sustainability principles and nine human needs, examples of how to work with actual issues violating the principles will strengthen the understanding.
- Develop visual support to explain the TSPD method and basic concepts.
- Templates I and III can inform market analysis; however, it also seems necessary for a company to understand its market before engaging in the TSPD. A reiterative process may be ideal.

Discussion on proposed process changes

This integration process is only one of the possible ways the incubator could approach the task. Additionally, this approach is linear, whereas we recognize that both the incubator's processes and the realistic use of the tools can be dynamic.

Screening stage

Screening questions are not meant to represent a sustainability filter. They are proposed to add value (richness, broader perspective) to current screening questions. For entrepreneurs, the prospect may trigger further questioning of the business idea and its impact on socio-ecological system.

The questions should help build understanding by triggering new thoughts which can be developed to build sustainability into the very beginning in business idea development.

Analysis stage

The potential market success of the business is a focus point for a coach-entrepreneur dynamics. When introducing sustainability, examples of opportunities and stories of success may orient entrepreneurs toward more creative positive thinking about their business development. Additionally, new creative ideas of how to attain success can be stimulated through the added principled view of the business' success embedded in the four sustainability principles.

Business development stage

The TSPD method is used at the business development stage. This stage seems to be the best place for thorough business analysis. The companies are researching and business planning,



gaining competence in diverse areas, and gathering information about the market. This process may occur early in business development and be revisited throughout. Deliberate search for partners and sustainability relevant information sources could support ongoing progress.

Growth stage

Utilizing the experience of companies that have completed incubation is essential. The learning loop for Inova can be rounded by experience coming from alumni companies operating in the market. Inova is already working to improve communication here, and a sustainability focus will fit well.

Validation from Inova and external partners

Research results were validated by Inova staff as well as by two external experts in entrepreneurial business development. The external experts were asked to reflect on our proposed sustainability integration process, and offer insight into its applicability in their organizations. Diverse complementary feedback was given.

Dick Eriksson - vice managing director, Innovationsbron Väst AB

Eriksson is the vice managing director of the incubators' network in western Sweden, of which Inova is a member. His reflections of the results were collected in an interview (Eriksson 2007 May 14). Key comments were:

- Wider potential applicability of proposed sustainability integration in the incubator network is possible. Since the incubation process among the incubators is very similar there are no obstacles to application of proposed generic model. It was also pointed out that sustainability is one field of knowledge where incubators need the best external expertise available. This is becoming more and more obvious.
- A role model of sustainability integration is needed amongst incubators. Inova can become a pioneer in this field sharing experience with others and further promoting strategic sustainable development.
- Incubators need to communicate very clearly what they offer. When integrating sustainability it should be clear to applying businesses and community how this can add value.

Mikael Johansson - business developer, counsellor for start up/early phase companies at Coompanion Kooperativ Utveckling Skåne

As a start up business developer, Johansson offered a review of SSD tools and the integrated process proposal, and gave feedback in a telephone interview (Johansson 2007 May 11). Coompanion is not an incubator, however several similarities in start up support mechanisms were found. The key points were:

- Backcasting is being used in the organization as a way to develop business ideas. It was expressed that wider application of backcasting would be beneficial in their case, as it is not uniformly applied.
- The importance of a focus on introduction of sustainability at an early stage was stressed, and compatibility of the thesis results with Coompanion's processes was found. The triggering questions proposed for the screening stage and questions asked in the survey (part B) were found to be very similar to the ones already used. It was felt that questions like this should become a natural part of daily work of



coaches and business developers. Johansson saw a leverage point in influencing businesses, in particular by; helping them to reach new markets, providing people with meaningful work, and in meeting supply chain requirements. The thesis outcomes were stated to be useful for support organizations' operations and should be made available for them.

- Applying the Five Level Framework in a business area is very appropriate. Especially the System, Success and Strategy levels, which bring added value in guiding companies planning.
- Research outcomes can be useful for Coompanion to help raise awareness of entrepreneurs, and make the sustainability business case more clear. Some of the proposed tools (e.g. ABCD methodology) and questions are seen as applicable to Coompanion. It was felt that a level of competence would need to be built before the Templates for Sustainable Product Development could be used, as it didn't seem accessible without more training or information.

Inova staff: Victor Isaksen, managing director; Britt Lööv, process developer; Ann-Sofie Holm, Helena Wiktelius and Patrik Bångerijs, business coaches.

Inova staff's feedback was collected in a workshop setting where the research team reviewed work done during the research period and introduced the sustainability integration proposal for the first time. The research results corresponded well with Inova's experience and were appreciated as relevant for moving towards sustainability integration in the incubation process. The key points the staff commented on were:

- System thinking was proven to be a very valuable way to acknowledge the broader perspective of a businesses operations and the role of business in society. The Five level Framework was appreciated to guide sustainability strategy development.
- Backcasting will be used at Inova not just as a strategy to arrive to sustainability but also as a planning tool for business visioning. Introduction of backcasting to entrepreneurs from the very beginning was perceived as a main way of triggering their thinking around the role of business in society.
- Inova found general backcasting and the TSPDs to be the core elements for their integration. The two would compliment each other and could be used flexibly between the analysis and business development stages.

CONCLUSIONS

We can conclude that:

- Inova staff and entrepreneurs, working with SSD, began to develop;
 - an understanding of business' dependence on and relationship to broader societal and ecological systems; and
 - an ability to use backcasting from the basic socio-ecological principles of sustainability in business planning.

In turn they experienced an increased capacity to identify sustainability related business risks and opportunities.

This evolving understanding and ability was validated by Inova staff and entrepreneurs.

- Strategic Sustainable Development can be integrated into a business incubation process using the suggested tools. As a result of the work, Inova is committed to



moving forward with the implementation of the proposed integration of Strategic Sustainable Development into the incubation process. The proposed integration process is designed to be specific to Inova's internal processes, yet general enough for another assistance organization to gain insight from. We feel that the tools tested fit best in this configuration as they follow a logical learning curve and allow for development of understanding and increasing complexity of analysis of one's business.

- Inova and similar entrepreneur assisting organizations provide a useful arena to integrate Strategic Sustainable Development. In a societal journey toward sustainability business owners have a key role to play. They are community members, teachers, suppliers, and economic drivers. Organizations like Inova have a tremendous opportunity to add a visionary value, connecting business ideas to their core societal purpose. Businesses exist to meet the needs of human society, without undermining the natural regeneration of life sustaining natural systems.

Suggestions for further research

In further research it would be useful to see a longitudinal study tracking the progress of visionary sustainability leaders from start up. The following four areas could be further explored. 1. From start up company to successful business: What long-term value do business leaders see as a result of planning guided by Strategic Sustainable Development (SSD)? 2. From separate to integrative tools: What will the integrative tools look like in a business incubator heading for SSD? 3. From separate to a common language: How will the language and terminology associated with SSD evolve to speak directly to businesses? 4. From the Swedish case to the international arena: Will integration of SSD into other business incubation processes around the world differ? How can experience be shared among the family of business incubators redesigned towards sustainability?

ACKNOWLEDGEMENTS

We would like to express our gratitude to all those who gave us the possibility to complete the Master thesis which gave base for the conference paper .

Foremost we are deeply indebted to Victor Isaksen, managing director at Inova Business Incubator in Karlstad Sweden, for inviting us to commence this thesis at the business incubator, and to collaborate with the incubator staff and start-up companies as necessary for our research. We are indebted to Britt Lööv, process developer at Inova Business Incubator, for her stimulating and enthusiastic support. Furthermore we would like to thank the rest of the Inova staff; Ann-Sofie Holm, Helena Wikteliuss and Patrik Bångeriuss, Mona Nordin, Helen Marcus, Jenny Kvarnlöf, Emily Löfman for their kind and supportive assistance.

We are especially obliged to the entrepreneurs at Inova, for openness in finding the business case for sustainability, and engaging a creative collaboration.

We would like to thank Dick Eriksson, Vice Managing Director at Innovationsbron Väst AB Gothenburg, Sweden and Mikael Johansson at Coompanion Kooperativ Utveckling Skåne; for their feedback on the relevance of our findings to their organizations.

Finally we thank our supervisors Sophie Byggeth and Henrik Ny, doctoral students at the School of Engineering at Blekinge Tekniska Högskola, Sweden, for their research guidance and valuable advice.



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