

The relation between Creativity, Culture and the Entrepreneurial outcome.



Blaz Mateljic

Lund University

**School of Economics and
Management**

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Entrepreneurs are people who have a slightly different view on how the world works, they have certain characteristic that make them stand out of the crowd. This thesis focuses on the link between creativity culture and entrepreneurship



LUND UNIVERSITY

Prof. Tomas Karlsson

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1.Introduction

The concept of entrepreneurship has been described by different researchers in the and scholars in the 20th century. One of the most influential was Schumpeter who stated that entrepreneurship is about innovations and destroying inferior creativity in order to make place for new innovations and new business models to which creative economic wealth. Schumpeter (1934) called this process “creative destruction” – it is an continues process whereby new innovative firms rise and make old technologies, products and services form other obsolete. The role of the individual her (i.e. the entrepreneur) is to create new combinations of available resources. Changes in technology, political forces, marco-economical factors and social trends create useful information for the entrepreneur to analyze and recombine the resources into more valuable forms. An alternative view on entrepreneurship is given by Isael Kirzner who took a more micro-economical view on the matter and stated that incremental improvements are responsible for the majority of innovations and entrepreneurial possibilities. Kirzner (1973) moreover stated that there is an Gap in the economy – asymmetric information supply – whereby certain individuals posses superior information and entrepreneurial opportunities arise due to imperfect knowledge distribution of market participants. Opportunities arise not from innovations but depend more on the capabilities and alertness of the entrepreneur to seize and exploit the opportunities. According to Shane (2003) the Schumpeterian view has an focus on disruption the system whereas the Kirzner view is focused on reinforcing established ways of doing entrepreneurial activities.

In both views it is the entrepreneur who is playing an central and critical role, this individual is the one who decides whether he or she has the willingness, is able to seize and see the opportunity and eventually to exploit it. It's is the entrepreneur who has certain or combinations of characteristics that make this person stand out of the crowd and be different. In this thesis my emphasis is going to lie on the creative way of thinking that enables certain individuals to see unique opportunities and seize them. The thing that makes these opportunities unique is the fact that other individuals, the mass, simply are not able to see and seize these opportunities. The individuals who see these opportunities are the so called “entrepreneurs”, motivation of entrepreneurship can differ, sometimes an individual is forced to become an entrepreneur as there are no options for other type of employment. These entrepreneurs are also known as necessity entrepreneurs and emerge in the western world during times where employment is scares and unsecure (i.e. during turbulent economic times like the last financial crisis). On the other hand there are also opportunity driven entrepreneurs who don't necessarily are forced into entrepreneurship, but pursue an entrepreneurial career

out of passion, lifestyle etc.... In this thesis both types of entrepreneurship are going to be taken into consideration as both of them have an strong link to creativity.

2. Theoretical background:

In this part of the thesis the main theories with respect to creativity and entrepreneurship are going to be discussed. I first start with the explanation of the concept “entrepreneurial intelligence” which will be followed by the explanation of creativity and why certain individuals are somewhat better in finding creative and maybe entrepreneurial solutions than others. At the end there is an summary where I have created an model that summarizes the theories.

2.1 Entrepreneurial intelligence

According to Stenberg (2004) entrepreneurs are people who have different and unique views on doing business and life in general. Successful entrepreneurs posses an special blend of analytic, creative and practical aspects of intelligence; the combinations of the elements constitutes to successful intelligence.

This successful intelligence is something that is hard to measure, therefore I will use a story as an example to illustrate this intelligence. The story goes as follow:

“ The professor and entrepreneur are walking in a forest, both of them think that that they are smart. The college professor had high 700s on his SATs in high school and was graduated summa cum laude from an Ivy League college. He has published several hundred articles in prestigious academic journals and has won a number of distinguished prizes for his work. He makes US\$80,000 per year in salary but supplements this salary with consulting to the tune of US\$10,000 per year. The entrepreneur had 500s on his SATs in high school, and the best that could be said is that he was graduated from college. His grades in college were marginal, in part because his interests lay elsewhere: He was busy working at a business he had formed that was netting him US\$30,000 per year, even though he was enrolled in school full time. Now, as an entrepreneur, he is a multimillionaire.

As they are walking, a huge, ferocious, hungry-looking grizzly bear comes charging at them. The professor, ever the human computer, calculates that the bear will overtake them in 17.3 s. Clearly, he is very smart: He knows that $Distance = Rate \cdot Time$, and he can do these kinds of calculations even under pressure. The entrepreneur, on the other hand, cannot and would not do this calculation. The professor looks over at the entrepreneur and notices that he is taking off his hiking

boots and putting on running shoes. "You must be crazy," the professor says to the entrepreneur. "There's no way we will ever outrun that bear." "That's true," says the entrepreneur, "but all I have to do is outrun you."

Source: Successful intelligence as a basis for entrepreneurship, Sternberg (2004)

This example clearly shows that there is a big difference in intelligence. The professor is clearly an intelligent person and he has a certain way of reasoning that made him do the math and conclude that it is going to be impossible to get away from the bear. His way of reasoning I would define as academic-reasoning as it is only theoretical. The entrepreneur on the other hand is using a more practical approach, which in this case, is way more effective. He sees a goal which is to escape from the bear and stay alive, the only way to do this is by outrunning the professor.

This difference between practical and theoretical intelligence has also been noticed by the US army during the second world war. The US air force sought to identify fighter pilots who were able to respond in certain ways to get out of jams in unorthodox ways. The officials wanted to have intelligent pilots who would not bail out in emergency situations but rather save themselves and the aircraft. The pilots were selected by recruiters through conventional intelligence tests. But soon came to light that selection based upon just a high IQ didn't provide the desired pilots and the recruiters resorted to more anecdotal measurements (Kraft, 2005).

2.2 Creative thinking

The difference between academic and practical intelligence has been performed by psychologist Joy Paul Guilford in 1976. He discovered that intelligence, as academic intelligence, doesn't mirror a person's total cognitive capabilities. He furthermore developed a model of human intellect that has become the basic model for research into creativity. In his model he discusses and distinguishes two important variables – "Convergent" and "Divergent" thinking. Kraft (2005) states that all of us are creative and are able to come up with creative solutions to problems, but that these skills strongly rely on the way that our brains have been trained and encouraged to work. Where convergent thinking means the ability of an individual to give correct answers to standard questions that don't require any kind of creative thinking. Logic is used to find an orthodox solution to a certain case to determine whether it is unambiguously right or wrong. In these cases there is a problem and there is just one solution possible to solve this problem; multiple choice IQ tests are examples where Convergent thinking is tested and used. The opposite of convergent thinking is divergent thinking, in this situation the individual's creativity can be unleashed and different thought patterns are followed which result in unusual or distantly associated answers (Guilford, 1976). Divergent thinking holds that the individual,

while solving a problem, departs from different starting points and searches for different and multiple solutions where there is not necessary only one good solution. If we look back at the example of the entrepreneur and the professor, we can clearly see that the professor had an complete different starting point for his reasoning than the entrepreneur.

Divergent thinking seems to be an important underlying variable for creativity. Based on Guilford's research (1976) creativity experts focus on the certain characteristics that individuals who excel in divergent thinking seem to excel. These characteristics are the following:

- Ideational fluency: The number of ideas and associations an individual gets when presented with a word.
- Originality: The ability to develop solutions that other people don't reach, mostly unorthodox.
- Variety and flexibility: The ability to think of many different solutions when asked for the possible uses of for instance: a paper cup or paperclip.
- Elaboration: the possibility to develop an idea, expand it, and create a real application out of it (creating something out of scratch)
- Problem sensitivity: The ability to recognize and solve the crucial parts of a problem and keep the overview during the process.
- Redefinition: the ability to look at a known problem from a complete different view.

Nevertheless these characteristics are just variables that can be measured, more interesting is to look at why some individuals have stronger divergent thinking possibilities than others. According to the psychologist Roger W. Sperry (1960) the brain possesses two hemispheres, a left and a right one. The left hemisphere is responsible for most aspects of communication like: hearing, writing and body language. The right hemisphere is responsible for processing images, melodies, modulation, complex patterns (faces or figures), and the body's spatial orientation. According to experimental evidence (Kraft, 2005), the left hemisphere is responsible for convergent thinking and the right hemisphere can be held accountable for divergent thinking. In other words; the left part is the more logical part (i.e. the professor's academic brain) it processes issues analytically and logically, but it lacks to look further and make certain abstract connections. The right part is more imaginative and intuitive, it works holistically and is able to put bits and pieces of an informational puzzle into one clear view.

If we consider for instance an Picasso painting, then the left hemisphere is going to recognize the different lines and colors and probably see that there might be an pattern. The right hemisphere on the other side would integrate the patterns and colors, based upon the individuals, prior ideas and imaginations into an abstract overarching metaphorical meaning. Which is also the reason why individuals can have different thoughts and feelings about for instance an painting.

In the previous part I have described that certain individuals can be more creative and that creativity and divergent thinking is positively correlated with entrepreneurship. We all have an right hemisphere and we all have certain feelings that are processed in the the right hemisphere like: curiosity, risk taking, mental flexibility, love of experimenting and playfulness. The question is why certain people are able come up with very creative and unorthodox solutions or ideas and others simply are not able to even think about those possibilities.

Kraft (2005) explain this by an journey that goes back to our childhood, he states that children are creative engines and use their imagination to create things out of nothing. – an blanket combined with an table could become an fort, the vacuum cleaner the horse, the yardstick the sword and then we would have an complete medieval scene in the living room-. But this talent is gradually repressed as soon as we start going to school, where we are trained to solve problems correctly and not creatively, the emphasis lies on training the logical part of the brain (i.e. convergent thinking). The upcoming years that are spend in this skewed system dominates according to Kraft the first 20 years of our life's by: tests,- grades, college admissions, degrees, and job placements. We strive to accomplish these things and in order to so a lot of emphasis is put on the usage of our left hemisphere where we train logical thinking, factual competences, language and math skills. And over time this becomes an habit and certain ways and paths of reasoning become an habit. The brain starts to use an the well established neuro-pathways to think and make decisions. As an results of this failure or non-training of the creative part of the brain the responsible neurotransmitters start to wither.

Interesting to see is that some famous and fairly successful individuals refused to proceed with the educational system. According to Sternberg (2004) individuals who wish to become an entrepreneur of have entrepreneurial intentions might find school a distraction from what most matters to them. It's not only the entrepreneurs but also people who want to become concert musicians, athletes, actors, plumbers, carpenters, farmers etc.. find school unrelated to their goals and also have an higher likelihood to drop out the education system. Interesting to see is that all these occupations require practical knowledge and don't depend on the academic knowledge. Richard Brandson, Steve Jobs, Tiger Woods, Quintin Tarantino, Johnney Depp, Nicholas Cage, Christna Aguilera, John Travolta, Michael Dell, Paul Allen, Roman Abramovitch,

Larry Ellison and Bill Gates had all one thing in common – “they dropped out of school, where entrepreneurs or artists, where thinking unorthodoxly and they became successful in terms the quantity of wealth they accumulated”-. It is not that these people became successful over a night, the process has probably taken years. And in these years they have developed an unique tacit knowledge. This knowledge is something that is embedded in the direct environment and it has to transfer through paper or any other form of verbal communication. It is the knowledge that one needs to know in order to negotiate an environment effectively that typically is not directly taught and that often is not even verbalized. In other words, tacit knowledge is the knowledge that often is most important for success in the workplace, but it also is the knowledge that people must pick up by themselves (Sternberg, 2004). According to Hofstede (2004) tacit knowledge is formed within the culture a person lives in, other behavior aspects are also formed by the culture. The environment seems to play an crucial role in the development of an individual and also for the development of entrepreneurs.

2.3 Culture

Hofstede (2004) defines culture as “the collective programming of the mind or the that distinguishes the members of one group or category of people from another’s ‘mental programming’ and compares it with the software that is used for computer programming.

The big difference with the software that is used in computers is that the programmer of the computer determines what software he wants to install whereas there is no such thing with culture and mental programming of human beings. That is because the source of one’s mental programming lies within the social environment in which this person grew up and collected the necessary life experiences (i.e. tacit knowledge). This means that culture is learned from one’s social environment and is not inherited or genetically determined (Kale, 1995). Hofstede states that mental programming occurs because one’s first experiences are collected within the family; and secondly in the neighborhood, at school, in youth groups, at work and at the living community of this person. The social environment programs the people and that the people program the social environment, therefore the culture of a certain region remains quite stable over time and is hard to change.

Aldrich & Cliff (2003) agree with Hofstedes theory and link it to entrepreneurship. They state the individuals who have grown up within entrepreneurial families or entrepreneurial environments have an higher likelihood of becoming entrepreneurs themselves. These persons tend to have developed an higher ability to for recognize opportunities and don’t perceive entrepreneurship as something risky and make faster startup decisions. Furthermore they have an well developed network for business consulting and resource mobilization.

2.5 Summary:

In the figure underneath I have tried to summarize the theories into one simplified model, the model is very rough and not everything is included. The environment where an individual grows up in seems, according to the literature, have a great impact on the overall development of the individual. It affects the way the individual reasons and it determines the life-path the individual chooses which in an later stage becomes crucial for the development of the tacit knowledge the individual develops. This knowledge combined with all other aspects (i.e the culture the person grow up in, the abilities he/she had etc..) determine whether this person is going to be able to recognize entrepreneurial opportunities and pursue them. An example of this is given by an Brazilian pshycologist Nunes (1994) who observed and studied the lives of Brazilian street children, the circumstance where the grow up in where hard and their day to day life is comparable to the example of the professor and the entrepreneur. For these children the use of their creative mind and intelligence is to an certain amount a matter of life or death. If they through what ever reason don't develop the necessary tacit knowledge they need to survive in the circumstance they life in they are likely to be left with no or little money to survive. Needless to say is that they need to eat, so they are left with the option to steal or to starve. If they start stealing they life expectancy will decrease drastically as it is very likely that they will be murdered by the death squads whose members are hired (cheaply) by shopkeepers to rid themselves of the annoyance of street children who steal their goods.

What is interesting in the work of Nunes (1994)it that he found that these street children developed a certain tacit knowledge that enabled them to do the necessary street mathematics and to learn the necessary social skills and networking. They could add up purchases, compute change, bargain for discounts, and so forth. Thus, they were competent to do the math they needed to run their businesses. The model underneath summarizes this process. The street children grew up in a certain environment and in that environment there was an certain culture which forced them, either to adopt and learn the necessary tacit knowledge to survive, or get murdered because of lacking the knowledge to find ways to survive.

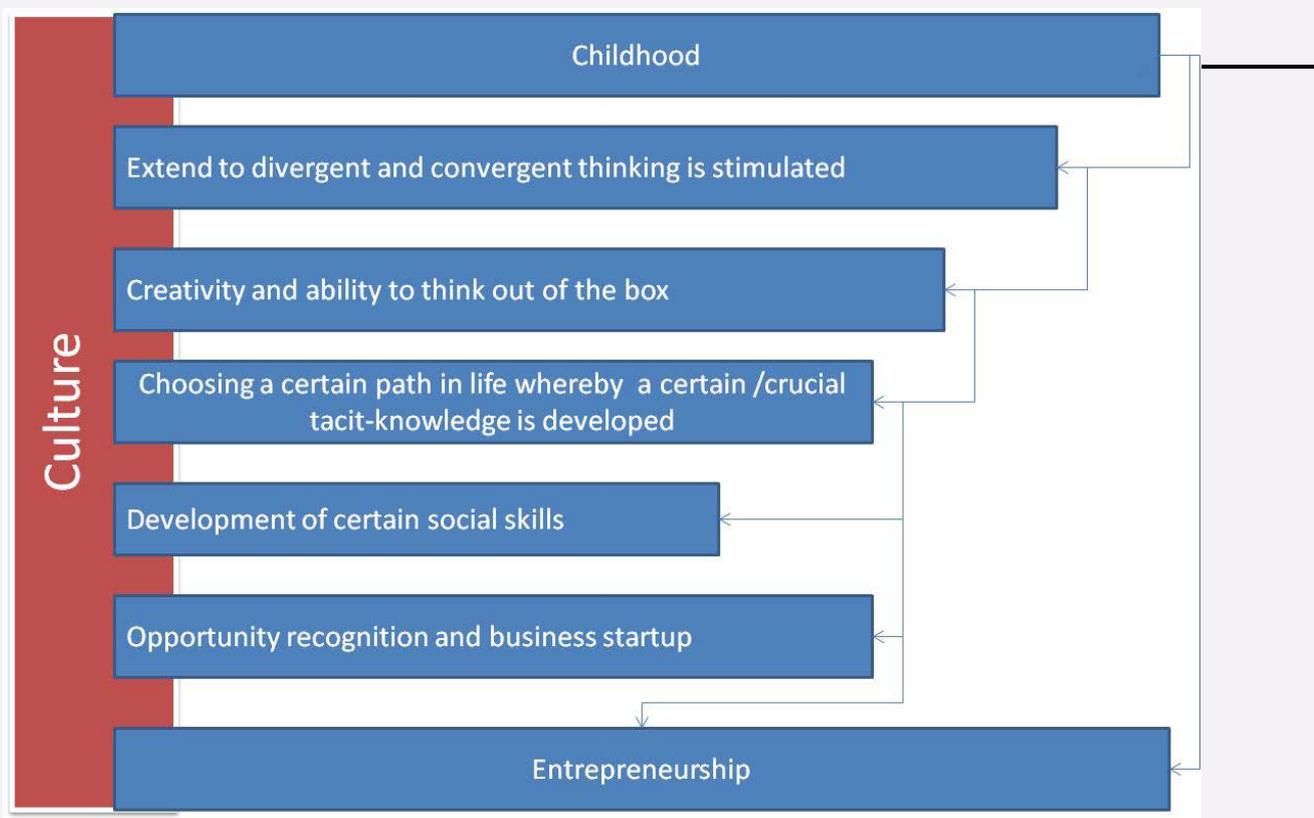


Figure one: Theoretical Framework/ Model

3. Methodology

In this paragraph I will briefly discuss the methodology that is going to be used in this thesis. Next to this I will also give more information with respect to my educational and business background.

This technique that is used in this qualitative research is the so called “auto-ethnographic” approach whereby me : Blaz Mateljic, will be the main subject of analysis. I will be analyzing my experiences through this year, but also from the past. The experiences of this entrepreneurial year have been collected in weekly learning-journals from - November 2010 until May 2011-. During this time I have been enrolled in the Masters program “entrepreneurship” at Lund University in Sweden. The learning journals include the weekly progress and the difficulties I had to face during the business development phase of a new venture. By the use of the auto-ethnographic research approach I will analyze my own experiences and thoughts and reflect them on the theories and literature as described in the theoretical part of this thesis.

3.1 Background:

As I’m going to be research subject I’m going to describe my background in this part of the research. Furthermore I will discuss the startup projects where I have been involved in, these

project will be the topics, in combination with the literature and learning journals, I will be leading for the ethnographic research.

3.2 Interest in entrepreneurship:

After I finished secondary school I knew that I was interested in economics, ethics and the role that these topics fulfilled in organizations. A bachelor program in Business administration was therefore a logical step to take for me. During this program I worked on 5 fictive and 3 real life projects with project groups that consisted of 5 fellow students. During the 3 real life cases I was the project leader and I liked it because it felt like I was actually running my own business. From that practice I knew that I also had interest in managing processes and people. These interests were also confirmed during my internship at the postal division of TNT, where I performed a research on the turnover of postmen and had to work in project groups as well. At the end of my internship I was offered a career in the Young Executive Program, which I rejected because I wanted to develop myself further on higher academic level and I was not interested in a corporate career. Therefore I subscribed to the Masters program in Marketing at the Erasmus University. I choose marketing because I found the psychological part of the program very interesting, especially the courses where buying behavior is put central. This topic I found fascinating because it explains the buying behavior of people and the way companies adapt themselves to this.

During the time I describe above I was continuously thinking about how I could earn money by finding innovative and creative solutions for people's needs/problems (entrepreneurship) , which probably explains my interest in marketing and the psychology behind people buying behavior. For instance, when I read newspapers or a economic magazines like 'the economist' I often see lucrative entrepreneurial opportunities. The challenge for me is to find a way to execute these ideas into a successful venture. What I especially like / find thrilling and challenging about entrepreneurship is that it is thrilling, unsecure and fascinating to take calculated risk and try to make your own plan work in the real world. One of the most inspiring sentences that summarize my way of thinking is the following: 'If you think the way you always thought, you'll get what you have always got' (Kraft, 2005)

4. Research question:

This thesis has an auto-ethnographic nature, therefore I will not state one clear research question that is going to be answered. I'd rather use the theories of creative thinking and the way the minds of individuals can be affected by the environment to reflect upon my own

experiences. It will be interesting to identify situations and happenings, from the learning journals, during this year that can be linked to these theories. The theories can then be understood in a more personal and practical way. In some sense it also is a certain way of theory testing especially with this kind research.

5.Results/ Reflection :

5.1The startup challenge:

During the startup challenge our creative thinking skills were tested for the first time. The assignment was very simple and clear: “we had to make as much money as possible within a two weeks period of time”. During the class my group members have been talking and sharing thoughts with other groups, which is part of the process in my point of view. We have discussed and had some brainstorming sessions before and the ideas we came up with were creative and sometimes not realistic. It was for example raining that day and one of the team members sporadically came up with an creative idea to order umbrellas with advertisement on them and give the umbrella’s away for free. But soon we realized that the affordable umbrella’s only could be purchased in way to large quantities and moreover, they had to come from somewhere in China. The idea of umbrella’s wasn’t going to work so we wanted to apply the same business model to Ponto’s which we eventually killed as we – finding advertisers would have taken to much time -.

As time was passing and we saw all our other creative ideas turning out not be not feasible at all certain group members gave up the creative way of reasoning and probably that is where the convergent part of reasoning kicked-in in our group. The ideas that were ambitious, creative and could be describable as blue ocean ideas made place for weak convergent red ocean ideas (Kim mmkkk with an profit margin that wasn’t going to be big. What I observed was this convergent way of thinking emerged in my group after me and the other team members have been exposed to the ideas of others and didn’t had enough confidences in our more risky ideas. Something that also played a role here was the fact that we were forced into taking entrepreneurial activities and our brains had already had an known path to travel sorted out. – if we buy something and resell it than we make money – input and the output are clear here.

The experiences from this startup as in many ways added value to my tacit knowledge, the learning experiences shall defiantly contribute to my future entrepreneurial activities. The most valuable lesson learned during this startup challenge is that there are so many possibilities to

earn money by entrepreneurial activities. I probably wouldn't have had such an experience if it wouldn't have been an assignment for school. Another learning experience that I have noticed is the easiness of finding Kirzners sort of entrepreneurial activities. He argued that the entrepreneurs see opportunities in the form of gaps in the economy and that the entrepreneur as an individual possesses certain skills to fill those gaps. I believe to a certain extent that there is true, but when looking at the startup challenge I realize that there are gaps everywhere. The question whether someone is willing to seize the opportunity comes more from his willingness and motivation which in my opinion is directly linked to the potential amount of money that can be earned. So I don't completely agree with the statement of Kirzner and think that there is more to it.

For the project I had in mind that I wanted to learn new things instead of following already known paths, this is something that I also discussed within the group and we decided not to do anything that had something to do with buying and reselling goods. Instead we started to network and talk with people from outside the project about our challenge. We found out that Sergio Silva, who owns a little student store called Lundabocker, had the need to advertise his store to students and our solution for this was as follows:

- We identified the problem as a group and started to brainstorm together with Sergio how we could solve this. We came up with a couple of ideas, but the best idea was to use a map of Lund where the locations of the nations were pointed out.
- We wanted the students to keep this map with them and use it as frequently as possible, therefore we added a time schedule with the dining and party schedules of the nations.
- The next step was to generate money which we did by finding advertisers who were interested in students knowing their name. We contacted the gym and local stores in the city. At this stage we really had to sell our product and negotiate about the space and the price of the add. I learned that the bigger the company is the more they are willing to pay regardless of the size of the add, we therefore charged bigger companies like the gym "Gherdahallen" a premium price. Furthermore Legitimacy was a hard thing here and because I felt good by trying to convince people to purchase add space I didn't think about the money that was at the end of the track. I was doing something where I was good at and the drive to continue came from the accomplishments that I made myself but also from the team.
- The next step was to put everything together, as we were no designers we used our network and found a German designer in Berlin who wanted to help us.
- The final step was to distribute the maps to our target market and we used our network again to distribute the maps to student accommodations all over Lund.

During the whole process we have been using our creative way of thinking and because we didn't had any resources to pay for the services and means we needed we used our network. This approach is also know as bricolage (Garud & Karnoe, 2003) where we as entrepreneurs have identified an need or problem and we were using our creative minds to allocated the necessary needed resources that enabled us to create this map. At the end we haven't even spend one cent and earned around 12000 SEK during this project.

5.2 Functional Aesthetics Berlin:

The second project I was involved with was Functional aesthetics which was an German company. The reasons behind my involvement in that project where mostly due to friends from the program who were keen and believed in the project. My problem was that I did not really believe in the Functional Aesthetics because I did not understand exactly what they were doing and didn't understand either what our role in the project should be. As an result of that I didn't know what my added value was and therefore I could not identify myself with the project. Motivation to do something came more out of solidarity to my team-member than to the project itself. I knew from my past education how to build marketing models and how to write marketing plans, I have been involved in doing these things for Functional Aesthetics, but I also realized that I wasn't using my creativity at all. I used my convergent thinking skills and followed established neuron-pathways with experiences from past to fulfill the necessary tasks. The project itself might have been very interesting if I only would have understood what it exactly was. After two months of functional aesthetics experience I decided to defiantly resign from the project. This decision wasn't very easy to take because it meant that I would have been back to having no project to work on.

Interesting enough this decision enabled me to start thinking "out of the box" again. Because of it I came in contact with Mato Bozic who is an marketing entrepreneur in the Netherlands and bricolaged his way to an company that has more than 1500 employees at the moment and still is growing. We shared thoughts which resulted in possibilities for after the program. Although this hasn't been useful for the entrepreneurial project I learned more about my own creative thinking capabilities. We for instance discussed possibilities for direct marketing business developments in Croatia and Bosnia and I found out that I knew more about the topic and the local market than I initially thought. The unique environment where I grew up in and the path of my life made it possible for me to talk with Mato and generate ideas. I also noticed that he, although being CEO of such a big company, didn't had a lot of academic knowledge. He was running his business based on his tacit knowledge and his own creativity. He made ideas come

to reality by networking and allocating the necessary resources he needed. In other words: he found other people to make his ideas come to reality.

5.3 Rabobank

It came clear to me that practical knowledge could be the key to entrepreneurship. This is in line with the statements of Kraft (2004) and Sternberg (2003) that entrepreneurship more depends on divergent thinking skill, practical and prior tacit knowledge than pure academic knowledge and understanding of theories. I came aware of this not only because of sharing thoughts with Mato but also from my past work experience at for instance the Rabobank. Reflecting back on the reorganization project called Rabo | 2010 I now have a much better understanding on why the brainstorming rooms and session were so crucial. Before I wondered a little bit and thought that the predestinated rooms were a bit to overdone and that the sessions - where the consultants placed their thoughts on a wall and applied certain brainstorming techniques to generate problem solving ideas - inefficient. I thought this because I assumed that they were consultants and that they therefore had the right knowledge already prepared, but I was wrong as I didn't take creativity into consideration. The reason why I'm mentioning this is, despite the fact that they were not entrepreneurs, has to do with the creative solutions that were found by these consultants. And I'm pretty sure that if they would have been given the assignment to think of a creative new business venture that they could have generated series of good ideas for the simple reason that they are able to think out of the box and make use of their convergent thinking abilities.

5.4 Urblove

A couple of years ago an idea came to my mind accidentally when I wanted to spend some time with a group of friends in Holland. We didn't want to travel far and were looking for something near our own city. We knew that there should be a lot of different possibilities but it wasn't time efficient to go through the yellow pages and see if the places were open and check the booking status. The idea that emerged was to build a platform where people could easily see all leisure opportunities, the booking status, price and opening hours. This idea I discussed with a fellow student, Nicolas Lara, to see if he was interested in this. I chose to share thoughts about this with Nicolas because I knew that he was an IT specialist and had more in depth knowledge about the needed IT resources to build such a platform. Looking back I see that I have unconsciously been looking for the right person to make up for my own shortcomings in certain areas where I lacked knowledge. From an entrepreneurial point of view this is good. What I found very

interesting is that I came up with the general idea and Nicolas was able to give it more shape as he knew what was possible from the IT point of view. We both were able to think – outside of the box - but on different fields, which made the conversations interesting and I believe that the both of us learned from it.

But soon we became aware that our ideas weren't going to get anywhere without the funding, so we decided to talk to our professor Tomas Karlsson who informed us about Urblove. This company had developed guide tour based on cell phone location and directions where send to the users phone by SMS. We found this idea interesting and wanted to incorporate it in our platform because we believed it could make it unique.

After one week of working, thinking and coming up with new ideas we realized that wouldn't work and we decided to continue with something else. I learned during these two weeks of collaboration that good ideas indeed emerge from past background knowledge because Nicolas could come up with completely new insights, he had the IT knowledge and knew about possibilities like GPS tracking, personalized user databases etc.. those where things I had never heard or thought about. I furthermore learned that I could enhance my experiences and increase my creative thinking capabilities by forcing myself to understand and talk with people from different fields. By doing so I could understand problems or ideas from other points of view. That entrepreneurial skill has been mentioned by Guildford (1976) as one of the most important skills an entrepreneur should possess. And this is not always easy as I also recognized that it is much easier to talk with people who think on a similar way I do, but than one will probably get what one has always got before.

5.5 GreenGlass

5.5.1 The start

I have gathered a lot of new knowledge from the past experiences I had during the year, those experiences enabled me to reflect upon myself and my way of thinking and reasoning. The weekly learning journals were a guideline for this as they forced me to think about my accomplishments and about the plans I had in mind for the upcoming weeks and months. I knew that I needed a good and reliable team member where I could work together with and who understood me and visa versa. Furthermore I learned that I need to work with a product I seriously believed in.

During an informal conversation with Fredrik Malmberg at the VentureCup first round finals, we spoke briefly about Airglass. I told him that I was interested in the product and its capabilities. Not short after that me and Fredrik met and talked about the possibilities and the possible

business opportunities there were with Airglass. The product is an transparent aerogell application that could be molded into almost every desirable shape and still keep its unique insulating capabilities.

I seriously like the product as it excited, it was touchable and the only thing that had to be done was to find a market and build a business around it. It was something I have been looking for. After a week of thinking, background research and conversations with Fredrik I realized that the this product could best be applied in Glasshouses. This idea came to my mind from my background experiences with glasshouses. I have been born in a city in Holland that is surrounded by glasshouses. During my youth I have had part-time holiday jobs in these glasshouses and I knew how they looked like and how they worked. Moreover I have been in contact with the farmers and new for instance that transparency of the glass was of huge importance, - one percent less transparency meant one percent less production-. I knew this because the glasshouse farmer explain this to me on the day that he assigned me to clean the glasses. I also knew that the energy consumption of the glasshouses had an big impact on the overall production costs. The idea to apply this aerogell application for glasshouses was born and now I'm aware that I wouldn't have been able to come up with this idea if I wouldn't have had the experiences from my youth jobs. Those experiences made it possible for for me to identify myself and get an very deep understanding of the glasshouses, experiences which were perceived as useless by me but became very important now.

The idea was born, but I knew that it wouldn't be smart to continue with this project on my own as I didn't had all the necessary knowledge and I also needed someone to discuss ideas with. At this point I started to network again and soon realized that a classmate who had become a friend "Jesenko Capra" would be the perfect team member. Not only because of the friendship but Jesenko also spoke Swedish and was an very communicative person, this were benefits that I my point of view could be beneficial. I approached jesenko with my idea, he liked it and we decided to continue together with it. Reflecting back on this process I now realize that the reason why Jesenko and me went along very well could also be explain by the shared background culture. Both of us had roots coming from the Balkans and I believe that this played an role, which is in line with the theorie of Hofstede. One other important team member on the side is Fredrik Malmberg. During the meetings Jesenko and me had with Fredrik we got a lot of input and it became clear to me that Fredrik was a person with an very divergent mind. He was able to see opportunities in business and ideas where one would think it was impossible. When we for instance were talking about the issues Glasshouse farmers faces with carbon dioxide emission rights, he came up with the idea to sell carbon dioxide space to factories. The CO2 producing factories who produced an excess of CO2 had to pay the EU an certain amount of money for the

emission rights. Fredrik's idea was to give those factories the possibility to pay the Greenglass equipped glasshouses an certain amount to get rid of their CO₂, the Glasshouse needed the CO₂ anyways for the stimulation to boost the growth of the crops. This would create an win-win situation. I found this way of reasoning interesting as it differed from my own reasoning and it gave me an reason to always try to see opportunities in problems.

Because we needed an different name for our product we thought of our product and what it would do for the Glasshouses. The answer is that it would make them CO₂ emission free and it would save fossil fuel, not long after the name Greenglass was given to our product.

5.5.2 Market research

The market research that we did was of great importance and played an fundamental role in the further development of our business. I recognized that Jesenko was good in talking with people and making them feel comfortable with his presence. I knew that Jesenko has been working at an Cab company for some time.. At an cab company one get's in touch with very diverse and different people who all want to be treated in such a way that they feel comfortable. I think that he developed his tacit knowledge with respect to communicating there.

During the market research phase we didn't want to limit ourselves to the Swedish market only. One of the biggest glasshouse industries is located in the Netherlands and because we couldn't fly up and down for meetings I arrange meetings over skype, the first one was with the glasshouse company I worked at 10 years ago. Through this skype meeting I got other leads which I contacted and from every conversation we obtain new insights and useful information. The glasshouse farmers lost their interest when I was talking about the product and explaining what it did, but surprisingly all of them got very interest when I mentioned the – out of the box thought – of growing banana's and other tropical fruits in place where it wasn't, from economic point of view possible before. With greenglass this was possible and it created the possibility to create an complete new niche in the market. When the glasshouse farmers heard that they became very interested and started to ask more detailed questions about the product and one even wanted to run a pilot.

The whole idea combined is from my point of view entrepreneurial and creative. It is entrepreneurial in an Schumpeterian way, but also in Kirzners way as elements from views apply. Schumperian because it could be an breakthrough innovation that could change the industry and Kirzners because it could also fill an Gap or need in the current market and I think that the glasshouse farmers where aware of this..

5.5.4 Venture Cup

We wanted to test if our business idea actually was good and therefore we entered Venture Cup. We send in a draft of our business plan and were not sure if we would make it to the finals, when we got the results both Jesenko and me were positively surprised that we got selected. For us this meant two things, firstly that our business idea was good and secondly that we could present it and get more feedback. We won the third student prize at the finals.

5.5.5 Greenglass future

For the continuation of the project we will have to remain creative and improvise almost everywhere if we want to form a real company and bring the product to the market. The production on big scale is one of the biggest problems we shall face. We don't have the resources to build our own production facility and therefore we will have to bricolage during the startup. We were thinking of renting excess production capacity from companies that already possess all the necessary equipment to produce the greenglass. But before we even can think about production itself we must test pilot the greenglass first to test if there are any complications with the crops and if the product in reality does what it promises to do in theory. We are preparing collaboration with Alnarp and Wageningen University in the Netherlands to see if there are possibilities to outsource the testing and the piloting. The reason why we have chosen collaboration with these universities is because we believe that, from a science point of view, it is interesting to test the product.

6. Conclusion:

In this paragraph I shall discuss the conceptual model as mentioned and described on page 11 by linking it to the entrepreneurial experiences, as described from page 13 -20.

In this model I state that the most important underlying variable that influences all other variables is culture. And culture is something that is responsible for individuals' behavior and group identity. The culture can be very deeply embedded, this is the case when we look at nations, regions or even continents. But it also can be less deeply embedded and a subculture can be created, for instance within football teams where the team has certain behavioral rules that make that team different than any other team. (Hofstede 2004). I believe that the students of the masters program entrepreneurship also have created a certain entrepreneurial culture. In this culture I have brought my tacit knowledge from previous education and work experiences with me. This has enabled me to think differently about certain issues than other students who had other

experiences. But because we all had different backgrounds we could approach problems differently and generate different types of ideas. Through that process we learned from each other, like I did during the startup, urbløve and the greenglass project. It gave me a better understanding on how I could approach problems and generate more ideas to solve them, in other words it increased my divergent thinking. I furthermore learned to think more out of the box and think of unconventional solutions.

I have developed myself this in a very unique way. I couldn't have developed myself in such a way if I would have stayed in the Netherlands. These developments are caused by the international and practical setting of the program and the entrepreneurial experiences as described in the previous chapter. These experiences have given me a deeper understanding of the things that I want to achieve in life and therefore they also have influenced the choices that I am about to take for the upcoming years. I'm sure that I wouldn't have made these choices if I wouldn't have attended this program.

The startup experiences have given me a better understanding on how I can start up my business. The program supported me with a safe environment to try, fail, learn and try again. I have been learning during this process and created certain neuron pathways in my brain. I am now better able to understand and to assess whether an idea or opportunity is worth developing or not. Because of all these learning experiences I now know better what it takes to create a business out of an idea, which also one of the main reasons that I wanted to attend this masters program.

7. Further research

In this thesis I have mentioned statements from my own experience and I also have created a model based upon the theories which are described in the theoretical part. This model and the description of it is my personal view and reflection, it has not been empirically tested. Therefore I can't say that this model nor my description of it can be generalized or scientifically used for any other research. The link between culture, childhood, creativity and the development of the process needs to be followed and carefully watched over a certain period of time to see if there is a significant link between those variables. This research needs to be performed at diversified (i.e. different) parts of the world and placed in perspective of that environment, a successful entrepreneurship in the western world might hold different characteristics than in a less developed region like Africa.

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GREEN | GLASS

The Glasshouse Insulator



- Business Plan -

Blaz Mateljic - Jesenko Capra

May 2011



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1.Executive summary

Greenglass© is a company that will produce and distribute high insulating window panels for walls of glasshouses. The effect of these window panels is that they will decrease energy costs because their insulating ability is much greater than that of ordinary glass. The farmers will not need nearly as much energy as they need today to keep the glasshouse at desired temperature. We can calculate a saving coefficient of at least 10times compared to ordinary glass which will drastically cut down the costs and from the sustainability perspective the usage of fossil fuels can be abolished, since electricity and gas can be used as the primary heating source. Our primary market to start with is The Netherlands since it is the metropolis of glasshouse companies and from a marketing perspective very lucrative since we can become known in the industry much faster than anywhere else. The forecast for growth and expansion is taken account for in our value chain – The Netherlands, Sweden and rest of Europe are primary markets during the startup, later expansions will involve Northern America and other parts of the world -. The expansion is possible since our product can be applied in building new greenhouses and converting already existing glasshouses into glasshouses with our product. The positive attributes of the product and the constantly rising prices on energy the response has been very positive and we are carefully optimistic of the future potential.

After the second year in 2012 the cash-flow is expected to be 1,4 million Euros. The year after, in 2013 the cash-flow will be 5 million Euros and at the end of 2015 the cash-flow has increased to 15 million Euros.

The strategic plan for stabilization and expansion of the company is a four step process where we will target the beneficiary markets and try to maximize the efficiency concerning customers, delivery & supply chains. Since we can produce Greenglass© ourselves we will construct appealing business companionships in order to decrease our costs and make efficient processes concerning customer support, delivery, installation, product development and so on. The way to do so is by incorporating four steps that become the main pillars in our value chain. We will try to use our cross functional capabilities, broad functional capabilities, activity based capabilities and special capabilities to construct a efficient integrated system that will help us cut price on our product, and increase sense of quality by putting the customer first.

With Greenglass© we can contribute in making this world a cleaner place.

2.The business

2.1 Introduction:

Nowadays it is possible to eat tomato's and other vegetables during seasons that seemed to be unsuited for the growth of these products. This is made possible by the so called greenhouses, these houses protect crops from too much heat or cold, from storms and they keep out pests and other harmful crops-diseases. Thus: creating the ideal environment for the plants to grow. The idea of growing these plants in environmental controlled areas started during the Roman times and has developed itself during time and spread to northern countries like Holland and England. The greenhouses evolved technologically and the greenhouses as we know then nowadays are high tech environments where temperature and ideal climates for growth can be created. The Netherlands for instance has some of the largest greenhouses of the world and 0,25% of the country's total land is occupied by greenhouses.

Creating these ideal climates (i.e. circumstances) is a costly process where fossil fuels are burnt in order to keep the greenhouses at the desired temperature levels. Currently one-sided glass is used mostly in greenhouses and it is preferred above the better insulating double glass because the double glass is less light transparent. And transparency is crucial as transparency is directly linked to production – 1% less transparency equals 1% less production and visa versa - .Our product is as transparent as normal glass and insulates better than mineral wool, it is called:“Greenglass©” and it let's 85% of solar light through and 87% of solar energy, ordinary double sided glass is 75, respectively 81%. Our greenhouse glass not only gets more light through the material also insulates 7 times better than any other insulation material available. This technological breakthrough enables us to create non-fuel consuming glasshouses that don't produce CO2 but, but can consume industrial CO2-emissions.

2.2 The Idea:

The Greenglass© is an product that is transparent and one could say that it looks like ordinary glass. Other important characteristics are that it insulates better than mineral wool and is more heat resistant than aluminum. The idea is to create GreenGlass© to be the market leading glass component that is used in for the construction of glasshouses. The material itself can be vacuumed or coated, and because the material can be fabricated in a manner that it weighs only 4 times air which makes the product even safer than the safety glass that is currently used for constructing greenhouses. The material itself can also be used as stand alone panels that can manually, based on the weather conditions, type of corps or season be applied in the greenhouse which creates flexibility for the glasshouse companies to switch to different types of corps during different seasons. Because of the insulating capabilities of the material it also could allow extend the growing season enabling the greenhouse farmers to start sooner and have longer production season than greenhouse farmers who don't use our material. But the biggest value that GreenGlass© adds to the glasshouse farmers is that it reduces the energy consumption of the glasshouses to an level where there is almost no need for burning any kind of fossil fuel to keep the glasshouse at the desired temperature. Considering the fact that 30% of the costs of one kilogram tomato's is determine by the quantity of used energy, one could say that the production costs can also say that GreenGlass can cut production costs by 30%. GreenGlass© can moreover be applied to build glasshouses in countries like Sweden to cultivate tropical fruits in the category of banana's and kiwi's. This would create an complete new way of cultivating corps and could lead to a completely new industry in for instance Sweden.

2.3 History and ownership

Greenglass AB is going to be managed and controlled by the owners Jesenko Capra and Blaz Mateljic. The company will be a joint-venture with Airglass AB. The technology behind Greenglass finds his roots at Airglass AB. The product compounds are known to the market, but the mixture and the production-process is secret and will not be shared outside of the joint-venture. Production of the product will be licensed out to an external producer in the Netherlanders.

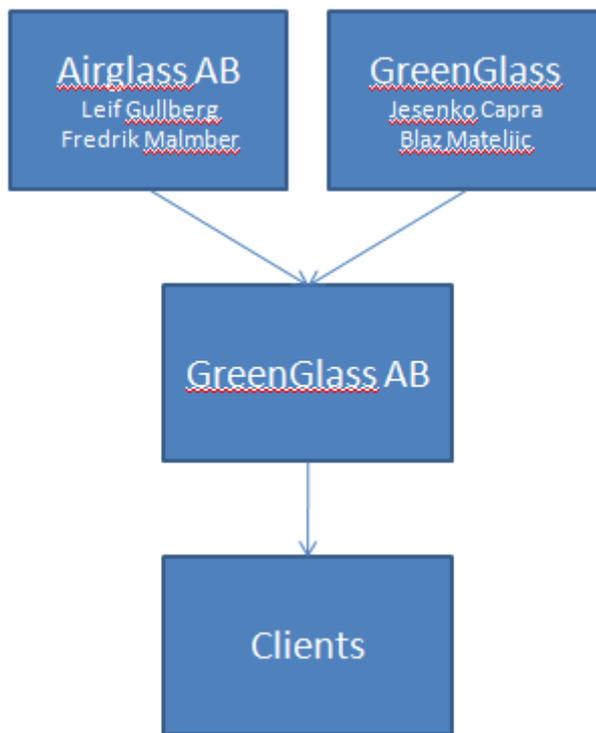


Figure 1: Company structure.

The management team of GreenGlass AB will be a very strong team as all necessary competences for the startup phase are presented. The team members from Airglass AB are: Leif Gullberg, Fredrik Malmberg, Jesenko Capra and Blaz Mateljić. The technological knowledge will come from the founder and owner of Airglass AB “Leif Gullberg” who is considered to be the leading researcher in the field of transparent silica-gels. Fredrik Malmberg has a background in civil engineering and business development which both are extremely useful. Jesenko has a background in business management and has an entrepreneurial drive and well developed communication skills. Blaz has a background in business consultancy, finance and marketing research which are very useful skills in the startup phase but also for the expansion plans and future growth.

Not all necessary skills are covered and external knowledge and expertise shall be needed after establishment of the joint-venture. Expertise with respect to the glasshouse market, production & logistics, Sales and administration are not yet fully covered and need to be added to Greenglass AB in the future.

Figure one gives an visual representation of the competences present or needed for GreenGlass AB.

		Competences															
		Entrepreneurship	Market Research Knowledge	Legal/ patent and licensing	business Network	Production and Logistics	Administration	product development	Sales	General management	Project management						
		<table border="1"> <tr> <td style="background-color: #90EE90;"></td> <td>fully covered</td> </tr> <tr> <td style="background-color: #FFD700;"></td> <td>Partly covered</td> </tr> <tr> <td style="background-color: #FFB6C1;"></td> <td>Needs attention</td> </tr> </table>											fully covered		Partly covered		Needs attention
	fully covered																
	Partly covered																
	Needs attention																
Name:	Expertise																
Leif Gullberg	R&D																
Fredrik Malmber	Business Consulting																
Jesenko Capra	Business Development																
Blaz Mateljic	Business Development																
Future Employment :																	
fte Netherlands	Sales																
fte Sweden	Sales																
fte Europe	Sales																
Fte Netherlands	Logistics																

Figure 2: competences at Greenglass AB

GreenGlass shall be registered in Sweden and it's main office will also be located in Sweden during the first two years. The reason for keeping the headoffice in Sweden is because the technical and knowledge is provided from the R&D department of Airglass AB. During the launch of the company this is R&D is going to be crucial as the product has to be piloted and monitored in an glasshouse. After this stage there is an possibility to reallocate in the headoffice in The Netherlands due to tax regulation which are, according to the Dutch Chamber of commerce, beneficial for an SME like GreenGlass AB.

2.4 The Greenglass Product

GreenGlass© is a result of research and development, the product is a breakthrough innovation when it comes to insulation characteristics combined with the light transparency characteristics. GreenGlass© is an Aerogel application and consists out of 98% air, it has a solid but porous structure which is determined by the silica. When the first generation of aerogels had where introduced to mass media they were foggy and the product got also known as “blue smoke, solid smoke, blue smoke or frozen smoke”. These nicknames were given to the product because it looked and was as light as trapped bluish smoke. The reason why we called the product GreenGlass© is because intensive research and development in the last decade has improved the product to such an extent that it is as transparent as Glass but still has its unique insulating capabilities – the product can now be applied in glasshouses and save enormous amounts of energy and significantly decrease the corresponding carbon dioxide emission and in some cases the glasshouse can even become a carbon dioxide consumer.

2.4.1 Product protection

The uniqueness of this product can be derived from the mix that has made the product transparent. Aerogels themselves are not patentable, but the formula that is used to produce GreenGlass© is unique and superior to the mix of all other aerogels on the market. The formula is a company secret and this secret can also be seen as a patent because the time that it would take for a competitor to develop a similar formula would take high R&D efforts and approximately 5 years of research. Nevertheless there is a patent pending on certain parts of the mixture.

2.4.2 Production process

The production process is characterized where a unique silica mix goes through the following three stages:

- 1) The liquid silica together with alcohol is poured into molds that determine the shape of the product it is going to have at the end of the process.
- 2) The second process is the drying process.
- 3) The third and last process is where the last spores of water and alcohol are removed.

After this process the final product arises and consists, as mentioned before, of air and silica.

2.4.3 The product

Figure three gives an visual representation of Greenglass© within an Glasshouse. GreenGlass© lets sunlight through in a same manner as light get through normal glass (92% of the beams gets through), whereby the UV-beams that are responsible for warming up the greenhouse also get through. The heat or cold from the outside atmosphere (air temperature) is blocked from going through the Greenglass© and stays outside. This also implies that the heat that is generated from the sunlight and UV-beams that go through the Greenglass© are trapped and stay inside. Furthermore the product is moist-proof, fireproof and doesn't melt or catch fire which makes it an safe product and copes with the safety regulations of glasshouses. In case of an fire the product would shrink when a temperature of 750C is reached, which is an very unlikely scenario in a glasshouse to happen

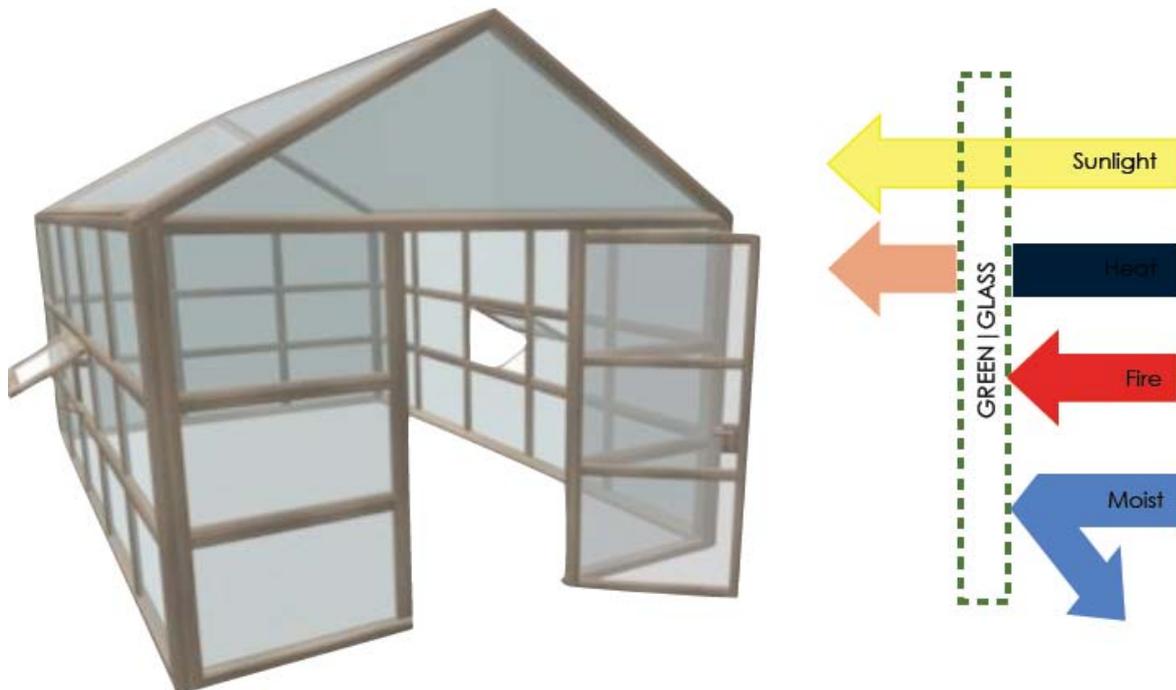


Figure 3: GreenGlass visual image

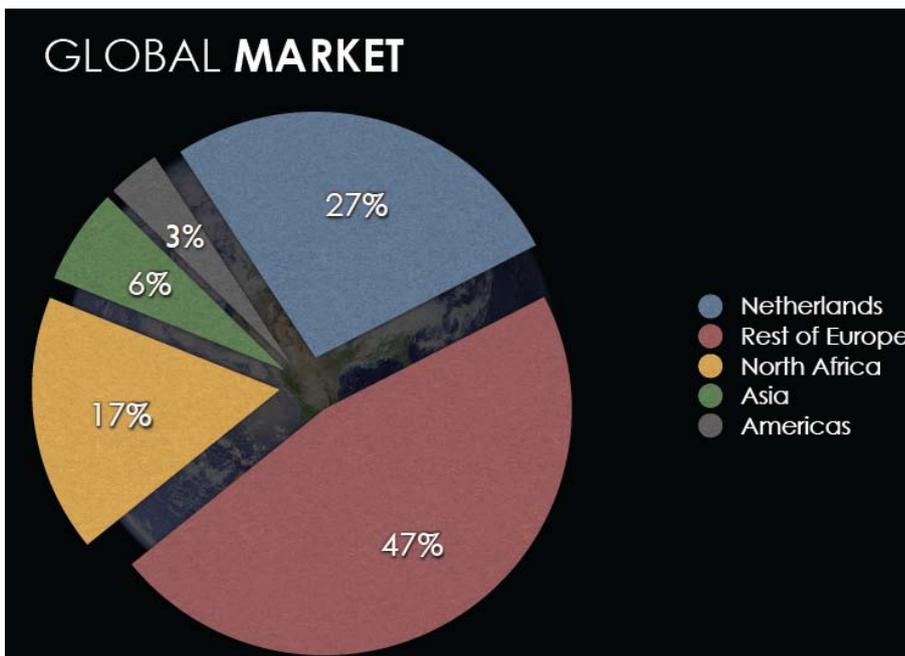
Once Greenglass© is installed in the glasshouse it can replace the “other materials” that are used currently in the glasshouses. Another major environmental benefit of Greenglass© is that it reduces the energy need and oil consumption of the glasshouses which is going to reduce the CO2 emissions coming for the Glasshouses. New trends in the Glasshouse industry are closed systems where the temperature, airflow and carbon dioxide are optimized and computer controlled. The carbon dioxide that used to be an residual has become an

useful additive to stimulate and optimize the photosynthesis (i.e. the growth) is of the crops and is pumped back in to the glasshouse. With Greenglass© the glasshouse doesn't need to produce and extinct carbon dioxide for heating the glasshouse, but would need the carbon dioxide to stimulate the growth of the crops, thus the Glasshouse is now an carbon dioxide consumer. This is possible as CO2 emission rights are becoming more scares because the EU union is going to decrease the amount of rights every year. Greenglass© offers industries that produce CO2 as an waste product the possibility to do something environmental friendly and recycle the CO2 in glasshouses that are made out of Greenglass©. By doing so the industry benefits, the glasshouse farmer benefits as his crops grows faster and the environment benefits as the CO2 doesn't go out in our atmosphere but is absorbed in the crops growing in the glasshouse.

3. The market

3.1 market size

The market potential for this GreenGlass© is impressive. The amount of Glasshouses in Europe consists of 27.122 ha (i.e. 271.220.000m2) wherefrom 10.500 ha is located in the Netherlands, making it the biggest Glasshouse market in Europe (Costa et all. 2004). Other important markets are the north of Africa and the Americas as show in figure 4. The potential market is big, especially because the GreenGlass© can easily be applied in the already existing glasshouse. Considering the fact that 29% of the operational costs of these



glasshouses is determined by energy consumption for heating we can state that the whole glasshouse market would be interested in this product (Woerden and Bakker, 2000). This means that the potential market is the whole glasshouse market.

Figure 4: market size

3.2 Carbon dioxide and Greenglass©

The “European Union Emissions Trading Scheme” (EU ETS) which is also known as the European Union Emissions Trading System, is the largest multi-national emissions trading scheme in the world. It was launched in 2005 and is a major pillar of EU climate policy. This systems goal is to reduce CO₂ emissions by 20% by 2020. The rights are gradually being pulled out of the system, this system creates scarcity on the market and is going to make the rights more expensive in the near future. This situation is threatening the northern, and especially, the Dutch greenhouse market as production costs increase significantly compared to the competitors in southern regions of Europe which can give the greenhouse entrepreneurs the incentive to move their production out of the Netherlands. As an result the Dutch and other North European governments have created subsidies and tax discounts for companies that are investing in technologies that decrease their carbon dioxide emission (Bunte & Dijkshoorn, 2009). These developments are interesting as they force the Glasshouse companies to invest in new technologies. If they don't and the CO₂ emission rights rise to 25euro/ton (which is expected in Bunte and Dijkhoors's research) 6.000 jobs shall disappear and the annual production shall depreciate approximately 220 million euro's a year. Incentives for glasshouse companies to switch and implement/ invest in environmental friendly products like Greenglass© are increasing. The benefits for the Glasshouse companies to implement Greenglass© in their companies are as following:

- 1) Lower their energy consumption,
- 2) Cut CO₂ emission (i.e. save on buying emission rights)
- 3) Generate extra income from the by using industrial CO₂ emission.
- 4) Get subsidized by the government and be a green company.

3.3 SWOT

Greenglass© main competitive advantage is that the product is a technological breakthrough and can change the way that crops are cultivated in glasshouses. The main weakness is that there is a large demand for the product now, but the full scale production facility is yet to be built. Other strengths and weaknesses are described in a SWOT analysis for Greenglass©.

	Internal
Strength	<ul style="list-style-type: none"> Having specialized product and production knowledge Clean or Green technology, 100% recapture of CO2 and alcohol Secret production formula Patent and patent pending on technology
Weakness	<ul style="list-style-type: none"> Lack of capital for large production Need of investment for procuring process equipment No large scale / real life testing has been done so far Not sales force active
	External
Opportunity	<ul style="list-style-type: none"> There is a vast and fast expanding market International need for the product Greenglass makes it possible to consume industry CO2 waste Possibilities to cooperate with other branches
Threats	<ul style="list-style-type: none"> Competitors enter the same market with similar product Increase in component prices Contractual and legislative aspects on international markets Resistance from the glasshouse "glass" manufacturers

Figure 5 : SWOT analysis

3.2 Confrontation matrix

This matrix is used to see the interaction between the internal and external processes, and to establish a future direction of the company. We have two options in this case. Those options are based on our future strategy for the company. We can choose between market-driven or resource-driven.

	Opportunities	Threats
Strengths	Offensive strategy	Adjustment
	<ul style="list-style-type: none"> - Penetrate new market segment with our product quality. 	<ul style="list-style-type: none"> - Realign our strengths and further develop them. - Actively work on adapting the legislative aspects to our product.
Weaknesses	Defensive strategy	Survival strategy
	<ul style="list-style-type: none"> - Closely monitor competition. - Adapt the product. 	<ul style="list-style-type: none"> - Try to turn the negative tide, by actively developing, quality, customer service. - Benchmark.

Figure 6: conformation matrix

We will aim to penetrate the market via a market-driven strategy. We know that fossil fuels are becoming expensive, and that the legislation is moving towards a decrease in carbon dioxide emission by heavily taxing those businesses that have carbon emissions. The legislation changes has forced the market of energy saving into a new mode, and we can clearly see that this is beneficiary for us and our product.

3.3 Competitor analysis:

In the greenhouse market we have two different kinds of competitors, the first one comes directly from other aerogel producing companies and the second group of competitors are manufacturers of products that currently used in greenhouses.

The other companies that produce products that are based on silica Aerogels are Aspen Aerogels who produce insulation materials that are opaque and Cabot Corp who produces materials that are translucent but not transparent. Both of these companies form no real threat as their materials aren't transparent and therefore not suitable for the greenhouse market.

3.3.1 other glasshouse materials

In the glasshouse industry there are different types of materials that are used as base material for the greenhouse itself. The material that is used in the greenhouse depends on the crops that the company wants to grow and is to some extent limited because growing banana's or other tropical fruits in greenhouses in for instance Sweden or the Netherlands would be an energy consuming process that would make the final products more expensive than the imported ones.

Current materials that are used for the growth of different types of non- tropical corps in Northern Europe are:

<u>Type of glass:</u>	<u>Application:</u>	<u>Cost per m2:</u>
Diffused Glass	Flowers like roses	100 SEK
Anti-reflection Glass	Intense light needing corps	200 SEK
White Glass	Strawberries, summer plants, egg-plants etc.	100 SEK
Polycarbonate (PC)	Plants with high energy consumption and low light need. Orchids	320 SEK
PMMA (acryl)	Outside plants with high energy consumption	250 SEK
Polyethylene (PE)	Cold growth of trees	15 SEK
ETFE	Strawberries & cut flowers	120 SEK
<i><u>Greenglass</u></i>	<i><u>Tropical fruits, all other crops.</u></i>	<i><u>500 SEK</u></i>

Figure 6:Glasshouse materials

Greenglass© has a cost of approximately 500 SEK m² if produced in large quantities, which makes it more expensive than already existing products on the glasshouse market. As the characteristics of these glasses aren't comparable with our product, their application and target market is completely different. Therefore we can state that there is no competition on this market. From an environmental point of view Greenglass© is superior to all other products as those products are applied in the existing greenhouses, but due to the carbon dioxide regulations and rising fossil fuel prices the glasshouse entrepreneurs need to change their production process in order to stay competitive.

4. Strategy

4.1 strategic plan

Figure three shows the planning of the company. The first two phases are necessary to plan the production and to pilot the product on a full scale glasshouse. At the end of the second phase the product is ready to enter the market. As the demand for Greenglass© is expected to be high we expect to get 8% (84.000m²) marketshare during the first year in the Dutch

glasshouse industry. After the first year we have established a certain brandawareness and therefore expect equal sales of 84.000m² for the first four years on the Dutch market.

Estimations with respect to the European market are that the product is gradually going to penetrate the UK, French and Scandinavian Glasshouse market from Greenglass will reach an market of 1.4 million in 2012 and will grow to an marketcapitalization of 15.0000 in 2013.

These estimations have are based on an interview with prof. Gerrit Baars from Wageningen Agricultural University in the Netherlands. The four different phases are described underneath and shown in the strategic plan (figure 7)

- Phase one: Here the focus will rely on fundraising and the formation and registration of the company. With the researchers at Airglass AB the product needs to be designed in more detail.
- Phase two: The focus is to start producing the product in order to build pilot the Greenglass in an full scale glasshouse to evaluate and, if necessary, make adjustments to the final product and production process.
- Phase three: Focus lies on the producing and making the production and logistics process as efficient as possible and creating marketing the Dutch market aware of our product. The aim is to establish market awareness.

- Phase four: The focus in this phase is to expand the sales to other other European countries and to expand the production in the Netherlands. Aims after this phase are to stabilize the market share and grow further in the Dutch, but also in other European markets.

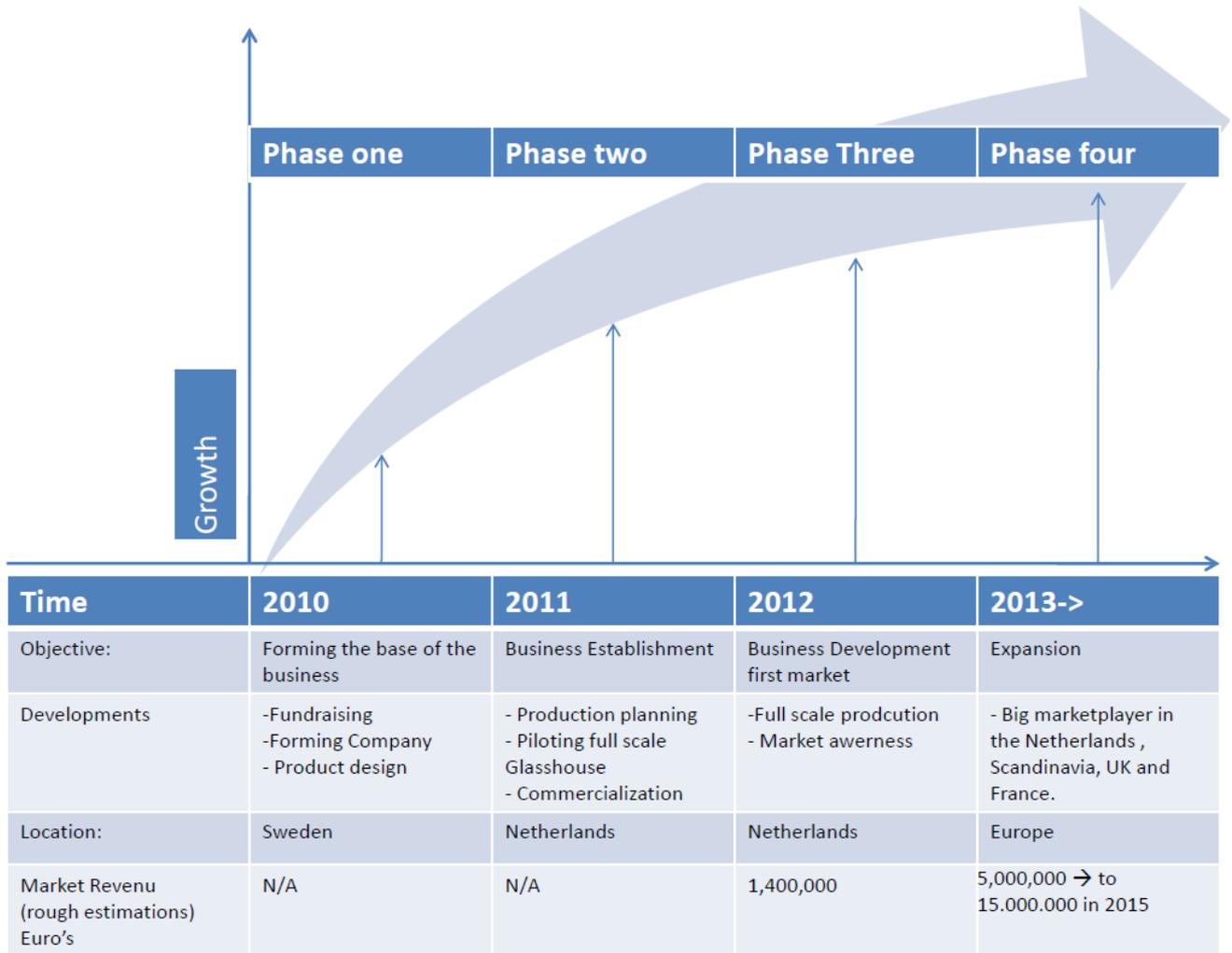


Figure 8: Strategic plan

4.2 Organization

Research and Development

R&D and sales are the key success factors underlying the success of our business. Key to the R&D activities is the patented technology that allows the Greenglass© to be as transparent as ordinary glass. The further development of the glass will be done in-house at the pilot station in Staffansdorp by Airglass AB. Furthermore the design, thickness and optimal size will be determined at the R&D department.

Production

The production of Greenglass© will take place in the Netherlands and is license based. Purpose of the licensing agreement is that the ingredients and recipe stay and remain confidential.

Transportation:

Within the Netherlands the Greenglass© is going to be transported from the production plant directly to the clients. During the third phase, as described in figure 4, the production shall reach certain levels that the Greenglass© shall be stored in a warehouse first before it will be shipped to the clients.

5. Marketing Strategy

5.1 Reasoning

Greenglass© is a high involvement product with a narrow customer base. Because the product doesn't explain itself, direct interaction with the client is key to our business success. Our major marketing instrument is a direct marketing approach, supplemented with a highly informative website. Next to this we are going to be present at greenhouse exhibitions through Europe.

The marketing and sales for Greenglass© will be done in several phases; first market and brand knowledge is going to be build up – mainly through presents at exhibitions and the website; second, the direct sales and follow-up approach is used, adjusted for local market peculiarities.

First, the market analysis and initial research serve to identify potential target markets. This research is aimed at acquiring all relevant information to ensure a successful product launch in the desired market.

5.2 Direct sales approach

A skilled salesman who is also well-versed in the technical details of Greenglass© will be dedicated to all sales projects. Initial contact is to be made by telephone. The Glasshouse entrepreneur or representative who is able to make purchasing decisions is guided through a detailed questionnaire which is linked to an simple program that calculates the savings and return on investment which shall lead to the insight that Greenglass© has an cost-saving advantage for the glasshouse. After the contact has been established and the questionnaire filled, the client shall be invited to Sweden to visit the Pilot Greenhouse with Greenglass©.

During this visit eventual misconceptions can be solved and further questions can be answered by the Researchers en Developers. Because not all the glasshouses are similar the client shall receive a package that includes pictures and technical details of the pilot greenhouse for comparison reasons. Two elements, to be agreed upon ex-ante to the demonstration, ensure commitment, align expectations and increase the likelihood of a positive outcome.

1.) Preclosure: The sales person will discuss the expectations that the client has towards Greenglass©. Commitment has to be made that the Glasshouse company is willing to buy our product if those expectations are met.

2.) The client contact arranges for all the relevant decision makers (head of maintenance, the person in charge of procurement and budget) to be present at during the pilot visit. The best way to convince them of the superiority of our product is to show them that in real life that the product does what we promise it will do. Furthermore we will have enough time and our whole team present to answer all the questions and dissolve any misconceptions or misunderstandings, which will speed up the purchasing process.

The presentation at the pilot Glasshouse will be done by the Sales person and supported by our Researcher. Albeit expensive, we expect that this approach will lead to most sales and very close contact with our customers. Furthermore it is the best way to receive feedback and get market knowledge from our clients' needs and demands. The Research and developers shall also have a guaranteed information flow to feed continuous product development and improvement.

The marketing and distribution system is kept as lean and mean as possible in order to make expensive international subsidiaries abundant. Production takes place in the main target market – The Netherlands – and production, depending on the quantity ordered, takes about six weeks. Ideally the down-payments will be made at the time the contract is signed, although this could be negotiable and discounts can be given during the startup phase.

For our expansion markets we follow a similar procedure. Native speaking sales affiliates are hired for non-English speaking markets outside of Europe to effectively cope with possible cultural and linguistic differences. Those in-country representatives will be trained at our

main facility. Compensation is solely commission based to optimize the incentive and to avoid unnecessary costs. Most likely this will not be a full-time job, so an option would be to contract consulting companies that are involved in the Glasshouse construction business and thus know the market well.

5.4 pricing

As mentioned in the competitor analysis, there is no real competition in this market as all other products are abundant. Greenglass© is unique and the only product and is able to cut an tomato growers production costs by 30% if the whole glasshouse is equipped with Greenglass. We therefore expect that the marketdemand for this product will be high and an Pull-strategy is the appropriate strategy to be pursued.

The total costs for the production of Greenglass are estimated at 500SEK/m² and it has an life-expectancy of 20 years, which is equal to the life expectancy of an Glasshouse. The price shall initially be set at 1000 SEK/m², which equals an profit margin of 100%. This price will be kept stable and the profit margin shall gradually increase during time as an result of higher production which is associated with lower production costs (economies of scale), furthermore we expect the production process to become more efficient over time. This price of 1000 SEK/m² can also be justified if we look at the potential savings which are: - 85% of the annual energy costs – if the whole glasshouse is equipped with Greenglass©.

6. Profitability and financing:

Based on the intended development phases we have estimated our expenditures and income for the first 5 years. Our expectations are to finance our activities by funding 40.000 euro's by own capital, 300.000 in venture capital and an bankloan of 200.000 to finance the first 2 years and to have an buffer for the case that more financial resources are going to be needed during the piloting and production-planning stage.

Cash flow statement and the projected balance sheet are based upon those estimations. The Cashflow statement is shown underneath, and the Balance sheet is visible in appendix 2.

Sales estimations are made upon the amount of glasshouses that are going to be renewed, restructured or newly build. Combining that information with expert interviews with Gerrit Baars and Teknopoll consultants we estimated the sales to be 100.000 m² a year, with total

costs of 50 euro m2 and margin of 50 euro m2 – means that gross annual profit is estimated at $100.000 * 50 = 5.000.000$ euro before tax at the end of 2012. (tax accounts for 26,2%).
More detailed financial information can be found in appendix one and three.

Cash flow statement projected

	2010			2011					2012					2013	2014	2015
	Q3	Q4	Year end	Q1	Q2	Q3	Q4	Year end	Q1	Q2	Q3	Q4	Year end	Year end	Year end	Year end
Net Income	-58,309	-36,809	-95,117	-36,809	-36,809	-36,809	-36,809	-147,234	1,438,246	1,438,246	1,438,246	1,438,246	5,752,982	7,505,961	10,462,903	10,698,449
Depreciation	333	333	667	333	333	333	333	1,333	333	333	333	333	1,333	6,000	10,667	10,667
Capital expenditures	-4,000		-4,000											-32,000		
Free cash Flow	-61,975	-36,475	-98,451	-36,475	-36,475	-36,475	-36,475	-145,901	1,438,579	1,438,579	1,438,579	1,438,579	5,754,315	7,479,961	10,473,570	10,709,115
<i>Financing activities</i>																
- Founders capital	20,000		20,000													
- First stage	500,000		500,000													
- Second stage																
Net Cash Flow	458,025	-36,475	421,550	-36,475	-36,475	-36,475	-36,475	-145,901	1,438,579	1,438,579	1,438,579	1,438,579	5,754,315	7,479,961	10,473,570	10,709,115
Beginning cash flow	0	458,025	0	421,550	385,074	348,599	312,124	421,550	275,649	1,714,227	3,152,806	4,591,385	275,649	6,029,964	13,509,925	23,983,495
Ending cash flow	458,025	421,550	421,550	385,074	348,599	312,124	275,649	275,649	1,714,227	3,152,806	4,591,385	6,029,964	6,029,964	13,509,925	23,983,495	34,692,611

Figure 9: Cash flow statement

7. Risk analysis

We have identified potential risks for the company that will need to be addressed if they occur. The risk analysis scheme is a result of the risks that we may face later on, and extracted through the financial, and business records in the plan. Those areas are; Financial risks, environmental risks, legal risks, technological risks and customer risks. The scheme is divided into the level of impact and likelihood. The grading is 1-3 where 1 is low and 3 is high. The risk analysis demonstrates likelihood and impact of certain areas and how we will act if they occur. The worst case scenario is that new technology enters the market and we face severe problems. The second biggest risk is that we commit errors in abroad contract signings. This will be addressed as well by competent lawyers in that specific country. One of the main problems at for-hand could be ensuring the value of the transaction, if a delay occurs and the value of he currency happens we would be secure in our investment. The best case scenario is that GreenGlass© enters the market and has a growth rate sufficient for expansion of markets.

Impact

Risk Distribution

Significant	(C6) (E1)	(L1)		(T1)
Medium	(C3)		(C4) (C1)	(L2) (C5)
Minor	(F1) (T2)	(L3)	(C2) (F2)	
	Low		Medium	High

Risk	Likelihood			Action taken
	I	L	I*L	
Radical increase of material costs	1	1	1	Will mean switching material or adapting prices.
Insurances	1	2	2	We have to have insurances since it is a necessity for a wellbeing company
Force majeure	3	1	3	If there is a earthquake and our material cant be delivered on time, we need to have a small stock as a back-up
Liabilities in the firm	3	1	3	Make sure that we keep the important aspects secret and that we treat personnel with care so that we can be a healthy organization
Contracts abroad	2	3	6	Make sure to lawyer-up since different countries have different law-structures
Patents and trademarks	1	1	1	We have to continue trademarking and patenting new inventions
New technology is penetrating the market	3	3	9	This is a big risk, and we have to be aware of this, by evolving on the customer service sector and start a renewal circle
The transparency is not enough	1	1	1	We have to develop Greenglass, but while the development is undergoing, direct the customers with the value they need
The price is too high/low	2	2	4	Adapt to market pricing in order to have a fair chance of reinvesting and developing the company
The demand is too high	1	2	2	We have to increase the production, which is a not to complicated procedure.
The customers are unsure of the product qualities	2	1	2	We will have an adding-value campaign for anyone that might find this product interesting, and through that create a snowball effect.
The demand is insufficient	2	2	4	Work hard, on getting close to potential clients, and inform of different benefits, and potential

				subsidies from EU
Customer service is good/not good	2	3	6	This is also an important point and we will be working hard to keep the customers satisfied, and updated.
Nobody wants to use Green glass	3	3	9	In the beginning, this is the likely scenario. We have to be wary and make the best of the first customers, collect data and apply on the marketing strategy

Figure 10: risk distribution

Conclusion

As can be derived from our financial and thorough market research, GreenGlass© AB is a well thought-out business venture worth supporting its own right. The integrity, quality, motivation and innovativeness of the management team will have a major impact on its success. We are convinced that the relatively small initial investment in combination with an attractive first mover or even monopoly position, high expected returns, relatively low risks and a world-wide market expansion potential, will make GreenGlass© AB a true gemstone in every venture capitalists portfolio. We therefore foresee a bright and clean GreenGlass© future.

Appendix -1-

Balance sheet projected							
	Year end						
	2007	2008	2009	2010	2011	2012	
	Year end	Year end	Year end	Year end	Year end	Year end	Year end
<i>Total current assets</i>							
- Cash & Cash Equivalents	421,550	275,649	6,029,964	13,509,925	23,983,495	34,692,611	
- Inventory (end product)	0	0	0	0	0	0	
- Inventory (component)	0	0	0	0	0	0	
<i>Total non-current assets</i>							
- Plant, Property & Equipment	4,000	4,000	4,000	32,000	32,000	32,000	
- Depreciation	-667	-2,000	-3,333	-5,333	-16,000	-26,667	
Total Assets	424,883	277,649	6,030,631	13,536,592	23,999,495	34,697,944	
Total liabilities	0	0	0	0	0	0	
<i>Equity</i>							
- Founders Capital	20,000	20,000	20,000	20,000	20,000	20,000	
- Shareholder Capital	500,000	500,000	500,000	500,000	500,000	500,000	
- Retained Earnings	-95,117	-242,352	5,510,631	13,016,592	23,479,495	34,177,944	
Total liabilities & Common Equity	424,883	277,649	6,030,631	13,536,592	23,999,495	34,697,944	

Location	Area (ha)		
	Greenhouses and large tunnels (plastic)	Small tunnels (plastic)	Glasshouses
<i>Europe</i>			
Italy	61,900	19,000	5,800
Spain	46,852	17,000	4,600
France	9,200	20,000	2,300
The Netherlands	400	-	10,500
UK	2,500	1,400	1,860
Greece	3,000	4,500	2,000
Portugal	1,177	450	-
Ex-Yugoslavia	5,040	-	-
Poland	2,031	-	1,662
Hungary	6,500	2,500	200
Total	160,000	90,000	-
<i>Africa and Middle East</i>			
Egypt	20,120	17,600	-
Turkey	17,510	26,780	4,682
Morocco	10,000	1,500	500
Israel	5,200	15,000	1,500
Total	55,000	112,000	-
<i>Asia</i>			
China	380,000	600,000	-
South Korea	43,900	-	-
Japan	51,042	53,600	2,476
Total	450,000	653,600	-
<i>Americas</i>			
USA	9,250	15,000	1,000
Canada	600	-	350
Colombia	4,500	-	-
Mexico	2,023	4,200	-
Equator	2,700	-	-
Total	22,350	30,000	-
WORLD TOTAL	687,350	885,600	-

Appendix 2:
market
estimations.

appendix -3-: Profit and loss statement

Profit & Loss statement projected	2010				2011				2012				2013		2014		2015	
	Q3	Q4	Year end	Q1	Q2	Q3	Q4	Year end	Q1	Q2	Q3	Q4	Year end					
Revenue																		
Contracts outstanding	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Downpayment	0	0	0	0	0	0	0	0	2,500,000	2,500,000	2,500,000	2,500,000	10,000,000	13,000,000	18,000,000	18,000,000	18,400,000	
Lease	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total sales revenue	0	0	0	0	0	0	0	0	2,500,000	2,500,000	2,500,000	2,500,000	10,000,000	13,000,000	18,000,000	18,000,000	18,400,000	
Gross Profit	0	0	0	0	0	0	0	0	2,500,000	2,500,000	2,500,000	2,500,000	10,000,000	13,000,000	18,000,000	18,000,000	18,400,000	
Marketing & Sales	34,250	12,750	47,000	12,750	12,750	12,750	12,750	51,000	25,250	25,250	25,250	25,250	101,000	122,000	101,000	101,000	101,500	
Research & Developm	11,000	11,000	22,001	11,000	11,000	11,000	11,000	44,001	11,000	11,000	11,000	11,000	44,001	44,001	44,001	44,001	44,001	
Office & IT	4,500	4,500	9,000	4,500	4,500	4,500	4,500	18,000	4,500	4,500	4,500	4,500	18,000	18,000	18,000	18,000	18,000	
Administration & Accou	725	725	1,450	725	725	725	725	2,900	725	725	725	725	2,900	2,900	2,900	2,900	2,900	
Management	7,500	7,500	15,000	7,500	7,500	7,500	7,500	30,000	506,705	506,705	506,705	506,705	2,026,820	2,622,620	3,626,820	3,626,820	3,706,720	
Operating Profit (EB)	-57,975	-36,475	-94,451	-36,475	-36,475	-36,475	-36,475	-145,901	1,951,820	1,951,820	1,951,820	1,951,820	7,807,279	10,190,479	14,207,279	14,526,879		
Net Interest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Depreciation	-333	-333	-667	-333	-333	-333	-333	-1,333	-333	-333	-333	-333	-1,333	-6,000	-10,667	-10,667	-10,667	
Earnings before Tax	-58,309	-36,809	-95,117	-36,809	-36,809	-36,809	-36,809	-147,234	1,951,486	1,951,486	1,951,486	1,951,486	7,805,946	10,184,479	14,196,613	14,516,213		
Tax Payable (13.5%)	0	0	0	0	0	0	0	0	513,241	513,241	513,241	513,241	2,052,964	2,678,518	3,733,709	3,817,764		
Net Income	-58,309	-36,809	-95,117	-36,809	-36,809	-36,809	-36,809	-147,234	1,438,246	1,438,246	1,438,246	1,438,246	5,752,982	7,505,961	10,462,903	10,698,449		

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