

BAMBÚ SOCIAL 2.0

BUSINESS MODEL

INTRODUCTION - Thomas Hebbink

Bambú Social is a foundation with the mission is to solve the housing problem in Nicaragua by sharing knowledge about use of local resources for sustainable and affordable housing with the local students and craftsmen and stimulate the social acceptance of bamboo as a standard construction material.

Nicaragua is one of the poorest countries in Central America. There is a great shortage of housing and the existing houses have many qualitative shortcomings. Building techniques used are often influenced by the modern, first world architecture and not adapted to the local environment and subtropical climate. The construction materials used in El Rama, for example, create a warm and humid interior and are produced with processes that pollute the natural environment. The use of wood could be a great danger for the local rainforest. In addition, the local population depends on unreliable systems for building, electricity, clean drinking water and food.

In El Rama, the Bambú Social foundation has set up a sustainable construction course, together with the local university and the municipality, to create a sustainable and dignified housing alternative. This building method can be practiced in a completely local manner, with the integration of a decentralized, low-tech, natural water purification and storage system in order to provide clean drinking water for the inhabitants of the house. In 2014 a model house was constructed, which forms the base for the design of an affordable social house and is a great example of the possibilities of

bamboo. Bambú Social also made the construction manual 'Un manual de construcción sostenible', which explains the entire process with step by step drawings. The model house has been donated to the local university and currently functions as a library.

Starting November 2015, team Bambú Social will contribute to the project and travel to El Rama. Based on the knowledge and experience of the past two years we'll investigate ways to improve the design of a social bamboo house. Our aim is to get one step closer to an affordable, easy-to-build house of good quality that is adaptable to the various needs of the residents of Nicaragua.

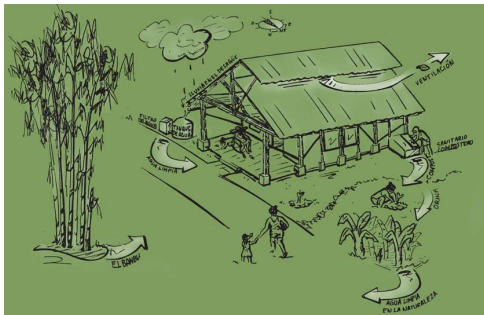
We will evaluate and analyze the work done by the previous group and write a report on the current state of the model house and the social acceptance of the model house as well as bamboo in general.

The first two stages both result in a report. Based on those reports we will conclude what the enablers and the barriers are and which aspects/components of the design of a social bamboo house could be improved. By making multiple



design options and constructing and testing them we hope to improve a part of the design.

As explained earlier, the Bambú Social foundation is working on a construction manual for an affordable social house. The design for this social house is still being improved and, if our hypothesis is correct, one of these improvements will be the possibility of prefabricating the construction elements. In that case, the manual will explain step by step how to connect the prefabricated elements and build the social house.



By pursuing the objectives of Bambú Social, a chain of entrepreneurship and employment opportunities will be triggered. The demand for bamboo plantations, bamboo treatment companies, transport, the production of prefab bamboo elements and bamboo-house constructors will increase. This business plan is written for one link in that chain; a small, local company that produces the bamboo elements that are needed for the construction of a bamboo house.

This prefab company, named BambúBueno, is an important factor in achieving the mission of Bambú Social and making a sustainable, affordable and comfortable house accessible for all citizens of Nicaragua. A development boost like this will affect the gross domestic product (GDP) of Nicaragua, and strong evidence was found on the influence

of GDP on the infrastructure-stock in a society (Canning and Pedroni, 1999). This in turn will lead to further improvements in living standards in general, and to further increases in economic growth (Barro and Sala-i-Martin, 2004). In this way a vicious cycle will be put in motion.

To reach these goals, BambúBueno should meet the definition of a sustainable enterprise, in a social as well as in an ecological way. How sustainable entrepreneurship can be defined, and how it differs from development aid or the old colonial relationships with developing countries is explained by the book *Entrepreneurship, Innovation and Sustainability*: “The colonial relationship focused on financial goals, the development aid relationship focused on social and/or ecological goals. Sustainable entrepreneurship tries to combine the strengths of both the colonial and the development aid relationship, aiming to balance financial, social and ecological goals, therewith creating a viable alternative for both” (Wagner, 2012). This definition gives a global idea of the mission of a sustainable enterprise, what can help during the formation of the business plan. Besides the definition of sustainable entrepreneurship, it is important to know what makes a sustainable or social entrepreneur. Gregory Dees explains the social entrepreneur as follows: “Social entrepreneurs play the role of change agents in the social sector, by adopting a mission to create and sustain social value (not just private value), recognizing and relentlessly pursuing new opportunities to serve that mission, engaging in a process of continuous innovation, adaptation, and learning” (Dees, 1998). Gregory Dees also explains that a social/sustainable entrepreneurial approach to social and developing problems can be a highly effective solution because it combines development aid with the possibility of financial profit. This idea is confirmed by Christian Seelosa

who states that “social entrepreneurship is a structure that allows individuals to strike their own balance between the desire to make a social contribution and the personal need to capture an economic return from professional activity, across a wide range of possible ratios” (Seelos, 2004). This entrepreneurial approach towards development problems is very interesting for BambúBueno but also for the Bambú Social foundation, because it gives a good idea of how they can implement their good intentions in a feasible way.

Another supporter of this entrepreneurial approach is William Easterly who states in his book ‘The white man’s burden’ (2006) that the last decades have shown that the governmental and philanthropic aid programs are less effective as expected. It has been revealed that the major social sector institutions are often inefficient, unresponsive and ineffective. Instead he promotes a bottom-up approach that tries to offer a solution through entrepreneurship. By keeping this bottom-up approach in mind, we believe that BambúBueno can have a great impact on the developing problems in Nicaragua.

While writing this business model some assumptions were made. All these assumptions are based on experience of the Bambú Social foundation and our local contacts in El Rama. These are mentioned in the references.

THE BUSINESS MODEL CANVAS – Marie-Louise Greijmans and Sophie Hengeveld

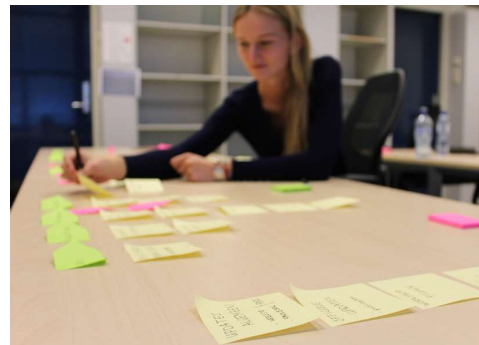
This Business model canvas is based on ‘The Startup Owners Manual’ by Steve Blank (2004). This manual explains the theory behind the canvas and gives examples of how it can be filled in. The Business model canvas for BambúBueno is added at the next page, and forms a summary of the business model. In the next chapter the different blocks of the canvas are explained.

BUSINESS MODEL BLOCKS – Marie-Louise Greijmans, Thomas Hebbink and Sophie Hengeveld

1. Customer segments

Nicaragua has a serious need for houses. Over the past decades, Nicaragua has been hit by devastating events; not only politically, by the dictatorship and revolts against the Somoza family, but also economical and environmental. This has left the nation in a precarious development position. 78% of the people live in substandard homes or do not have adequate housing.

BambúBueno serves these people of Nicaragua by offering them an affordable, easy-to-build and comfortable alternative for their current home.



The first and most important customer segment is formed by individuals who are in need of a (new) house. Their income is very low and they do not have access to a banking account and a loan or mortgage. The average income of this customer segment is around the \$3000 a year. Since building your own house keeps the price down, most of them have basic construction knowledge. On the other hand, some of them will need help with assembling the prefab elements.

An often heard criticism is that the proposed customer segment of BambúBueno is too poor which makes the business not feasible. However, this does not make it impossible to create a huge demand for the



KEY PARTNERSHIPS

Bamboo farmers
Bamboo treaters
Transport company
Construction company
University of Managua
Micro Finance agency

KEY ACTIVITIES

Production
Construction
Maintenance

VALUE PROPOSITIONS

Prefab elements
Construction service
Maintenance service

CUSTOMER RELATIONS

Personal assistance
Professional assistance
(bamboo community)

CUSTOMER SEGMENTS

Individuals
who want to build/buy a
sustainable house

Government/foundations
who want to set up a
social housing project

Professionals
architects or contractors

KEY RESOURCES

Treated bamboo
Workshop
Equipment
Finance
Transportation
Employees
Marketeers

CHANNELS

Construction manual
Word to mouth marketing
Newspaper articles
Handcraft courses

COST STRUCTURE (FINANCIAL)

Material costs
Transportation costs
Workers (labour costs)
Marketing costs
Production costs
Fixed costs (rest, water etc)

REVENUE STREAM (FINANCIAL)

Product sales
Construction service
Repair service (maintenance)

SOCIAL COSTS

Jealousy of competitors

ECOLOGICAL COSTS

Treatment chemicals
CO₂ emission (transport)

SOCIAL REVENUES

Employment, education,
awareness, safety, health

ECOLOGICAL REVENUES

Less deforestation, less soil erosion,
less use of harmful materials, more
CO₂ absorption

offered products. In fact, since 78% of the inhabitants of Nicaragua does not have adequate housing, we can conclude that this is a segment of customers for who almost no other affordable products of good quality are produced. This phenomena is very well described the book 'The Fortune at the Bottom of the Pyramid' (Hart, 2002). This book explains that almost all the wealth of the world is owned by a small elite group on which almost all product producers are focused. However, there also is a group of 4 billion people who make less than \$1,500 a year, which is ignored very often by product producers. So when you come up with an affordable product that fulfills the needs of this 'poorer' customer group, you reach a huge market with lots of possibilities. This is exactly the plan for BambúBueno, and with the help of microfinance companies like Kivia, BambúBueno can even reach a bigger group of people.

Apart from the individuals, BambúBueno works with a customer group that we call the professionals. These are mainly architects and contractors who are convinced that social housing can be cheaper and more sustainable by using bamboo as main construction material. They have a lot of knowledge about constructing, also on a bigger scale. They are hired by bigger housing companies, foundations or governments who do big investments and provide the people from entire villages in social homes. Because the quality of the product will not only attract the poorest, these professionals can also work for individuals with a larger budget, who prefer to outsource the construction of a new house.

2. Value propositions

To be able to tackle the housing problem in Nicaragua, BambúBueno has to look for workaround, improvise solutions and find ways to incorporate those into the offerings it creates. This process can be described as design thinking which involves: "Designers who consider what we

call the edges, the places where extreme people live differently, think differently and consume differently" (Brown, 2010). Design thinking can be the first step to social innovation and by approaching the housing problem in Nicaragua from a designers point of view, BambúBueno can make a major progress.

So, in order to make a difference BambúBueno has to come up with a value propositions that meet the needs of the costumers, while taking into account the cultural, social and infrastructural context.

To serve the two customer groups of Nicaragua, the company has three products which form the three value propositions of the business model.



1. Prefab bamboo elements - Customers can buy these prefab elements and build their own house according to the manual. Calculations of the Bambú Social foundation show that the price of a standard wall element will be around the \$800. This product is meant both for the families as for the professional contractors and architects:

- Individuals can buy bamboo elements and get a construction manual, with which they can build their own house. The need of housing is then solved on individual level. Microfinance or paying in terms, could make this product more accessible.
- Professionals can buy the construction elements and build the (social) houses for their clients, in order to provide the housing need in Nicaragua

with the involvement of professional construction workers. Cooperation between these professionals and BambúBueno is important to scale up the project. Yet the professionals are the customers because of their need of prefab construction elements.



2. Building service - The individual customer segment can also choose to let their house be constructed. If they do not have construction knowledge the prefab bamboo company can provide them with a building service. Professional construction workers usually don't provide individual constructions, therefore this building service of the prefab bamboo company is meant for the individuals.



Maintenance service - This service is mostly meant for the individuals who have built their house themselves. These customers aren't professional, and if errors occur after the house has been built, the prefab company could be hired by this customer group to do maintenance of the house. If they built their house with help of the building service BambúBueno can

give a quality assurance for a given amount of years, the maintenance service will be free. This will enhance the credibility of the product and increase the demand of the customers.

3. Channels

Because bamboo is a relatively new construction material in Nicaragua, BambúBueno has the task to raise awareness among the people of El Rama about the benefits of constructing with bamboo. BambúBueno needs several channels in order to reach the customers.

To reach the individual segment, word of mouth will be the most effective publicity for the company. Not only is this a free way of marketing, it also gives the customers the most trustworthy information. To push this it is possible to invite possible customers over to a model of the house or the workshop so they can be introduced to the product.

Also the built houses will attract a lot of attention, since the use of bamboo is relatively unknown (we call this trendsetter marketing). The more houses are built, the faster the demand will increase. Articles in the local and national newspapers will also be a reliable channel with a long reach.

A professional portfolio website gives the opportunity to expand the reach of the word to mouth- and trendsetter marketing. The customers that have access to a computer have the chance to evaluate the product by listing finished houses on the website or post reviews on the product.

Maintaining a positive relation with the customers ensures positive reviews and is beneficial for the image and publicity of the company. This is why an after sales 'department' had to keep in touch with finished projects. By combining this department with a maintenance service, BambúBueno can maintain a positive relation with the costumers.

The professional customers require some different channels than the individual customers. For them, reports and articles in journals and professional trade magazines are an important channel. Also workshops and activities and the distribution of the construction manual to architects and contractors will have a positive influence. Cooperation agreements with special prices for professionals and large orders will attract attention for BambúBueno.

4. Customer relationships



Both the individual and professional customer segment require a personal and long-term relationship with BambúBueno. This means personal assistance is important. This is the main reason that BambúBueno provides a maintenance service. Individuals should always have the possibility to ask BambúBueno for help when they have problems with their house. The maintenance service must always be ready to visit the customer or help him with his problems. For the professionals it is important to maintain a personal and long-term relationship because they are big current and future customers. Furthermore, the professionals have a lot of influence on the image and publicity of BambúBueno, therefore it is important to maintain a personal and positive relationship. When an architect comes up with a new model BambúBueno can initiate partnership and potentially adapt or create new bamboo elements. If more companies get involved

and if the prefab bamboo construction method is implemented in multiple municipalities, a bamboo community can arise where topics about bamboo as a construction material are discussed. In this community the key partners will also be involved.

5. Revenue streams

The financial revenues of Bambú Bueno will mainly exist of the sales of the prefabricated bamboo construction elements. The price is established by the variable costs and the fixed costs and the relevance of the piece. The costs of the resources should at least be covered. Therefore is it beneficial for the company to make as many elements of the same sort as possible.

Beside the standard prefab elements that the company will produce, they will also produce custom elements meant for the designs of the architects and contractors. The bigger the order, the cheaper each element. This stimulates the contractors to construct as many as possible at once.

From individual customers there's also the revenue as a result of the maintenance service and the building service. This can be sold for a permanent price dependent on the average working hours needed.

6. Social and ecological revenues

Setting up the BambúBueno business it is very important to take the idea of shared value into account, as explained by Porter and Kramer. According to them, shared value is a solution for the recent increase of social, environmental and economic problems that business cause for their environment. In their paper they suggest to address this problem as follows: "The solution lies in the principle of shared value, which involves creating economic value in a way that also creates value for society by addressing its needs and



challenges. Businesses must reconnect company success with social progress.” (Porter, 2011) This quote is a perfect explanation for the goals of BambúBueno and the Bambú Social foundation. The business they propose leads to many social and ecological revenues which can have a major impact of social and ecological progress.

The most important social revenue is the creation of awareness among the local people about the benefits of constructing with bamboo. Also BambúBueno will create more employment for the people of El Rama. Not only will the people gain more salary, they will also be educated. They will learn about construction mechanics, safety and sustainability (taking care of the environment). Because a high safety level is maintained, health among the employees can be assured. Educating them about the environment should also teach them how to handle waste, how to reuse materials, and they will pass it on to their families.

As mentioned above, by using bamboo as main construction material, awareness about the environment is created. Slowly but surely BambúBueno will create a new construction-culture and the use of materials that have high pollution rate will decrease. Apart from that, bamboo has a high CO₂ absorption level so by increasing the demand for bamboo, more and more CO₂ will be absorbed. Also, the use of bamboo will prevent deforestation of the rainforest, because bamboo is an alternative for

hardwood. On top of that, the bamboo roots work against soil erosion and in contrast to the centuries-old rainforest, bamboo won't die after being cut down.

7. Key resources

In order to conduct the key activities, BambúBueno needs several key resources. The following list sums up these required resources.

1. Treated Bamboo: This is the main construction material and it is needed to produce the prefab elements and to maintain the social houses already build.
2. Workshop: BambúBueno needs a place where they can produce the elements.
3. Equipment: Tools and other equipment are needed for the production of the elements.
4. Finance: In order to start the business there needs to be a start capital with which the business can make the needed investments.
5. Transportation: BambúBueno needs a truck to transport the elements to the customer or to visit the customer for the maintenance of the house.
6. Employees: BambúBueno needs several skilled employees who are experts in producing these elements. These employees should also be able to do maintenance work at the customer's place. They first have to get educated, and will later on be able to educate others.
7. Marketeers: BambúBueno needs a marketing strategy. This can help them with the promotion on their product and reach out to potential customers. This task also includes keeping the bamboo community running.

8. Key activities

The main activity of the proposed business is the production of prefab bamboo elements. With these elements a social house can be built, with help of the construction manual. Customers can buy these prefab elements from BambúBueno and build their own house with use of the manual, which comes with the elements. However,

customers can also ask BambúBueno to build the house for them; this leads us to the second key activity; the construction of the houses. The third key activity is the maintenance of the built houses. Owners of the house can call or visit the workplace if reparations are needed.

9. Key Partnerships

The key partners provide BambúBueno from the key resources needed for the key activities. The following list shows these key partners and their value.

1. Bamboo farmers and treaters: The bamboo farmers produce and cut the bamboo. After the harvesting the bamboo is treated to give the bamboo more durability and resistance against the weather and bacteria. This treatment can be done by the farmers or there



could be another party involved that takes care of the treatment. After the treatment the bamboo needs to dry for several months. The drying process gives the bamboo stems more strength and durability. The products are treated and dried bamboo stems, ready for production.

2. University of Managua: The University of Managua is an important partner for the company. The students can do research on bamboo as a building material and on the production process of bamboo. This research helps to improve the production process of the company as well as the quality of the product. Furthermore, by involving young students, the company can ensure the continuation by delivering new designs. They could



also teach apprentices or students the trades of the company after which they can work for the business or start their own. Both ways support the use of bamboo. As mentioned before, after a while a community will be created. This community will be the bamboo platform in Nicaragua. For students this forms a platform through which material characteristics and designs are spread.

3. Transport Company: The transport company has to make sure that the bamboo is transported from the plantation to the company in time and safe. By hiring a third party to take care of the transportation, BambúBueno and the bamboo farmers can focus on their main activities. For BambúBueno it is a good choice to outsource the transportation so they do not have to worry about to main side activities.

4. Construction company: To provide the housing need in Nicaragua on a bigger scale, also al collaboration with professional construction workers can be very usefull.

5. Micro finance Company: A big part of the population of Nicaragua lives on a minimum income, for these people it is hard to pay for their house. Microfinance could offer these people a solution by enabling them to pay in installments. To be able to focus on their own specialization, it is not a good idea for BambúBueno to offer the microfinance themselves. Instead they could partner with a micro financier like Kiva. By involving a partner who is specialized in microfinance, BambúBueno does not have to deal with the risks but can focus on their prime activities instead. A microfinance organization is a very important

partner because it increases the sales market and the accessibility of good housing drastically.

10. Cost structure

When starting the company, some investments have to be made. When starting BambúBueno, the most substantial costs are the workshop and the machinery. These are two big investments and the business will need a start capital to finance them. It is also possible to implement this business model



in an existing workshop, in that case the investment costs can be reduced.

While running BambúBueno there are several costs that need to be taken into account.

- Fixed production costs: wages, upkeep machinery
- Variable production costs: means of production, electricity, water, petrol, transport
- Raw materials: treated bamboo
- Rent: Bank loans
- Marketing costs: articles in magazines/journals, discount for professionals, promotion, community costs
- Investments: quality and efficiency improvement

11. Ecological and social costs

These costs can be described as the negative impact that BambúBueno has on the environment and the ecosystem. The cause of these costs is, unfortunately, the production and transport of bamboo elements, but also the impact of the raw materials on the

environment is taken into account. The following list sums up all the ecological costs that result from the production of the elements, with a distinction between direct and in-direct costs.

- CO₂ emission by transport and production of elements
- The chemical treatment of the bamboo canes
- Ecological production costs like, electricity, water, heat

As the list shows, there are a few ecological costs that result from the production and construction of a bamboo house. However, when comparing these ecological costs to the ecological costs produced by the construction of the most common house in Nicaragua (concrete blocks with aluminum roof sheets), we can conclude that the costs are significantly reduced. Therefore we can say that even though there are some ecological costs, the bamboo social house is environmental friendlier as most of the current houses in Nicaragua and on ecological costs a big improvement. Also the ecological revenues, as describes earlier, largely outweigh the costs of the use of bamboo as a construction material.

Apart from the ecological costs, it is possible that the company creates some social costs because it is a new player in the housing market, which can result in some competition. This competition could be seen as a positive result because it forces the company and its competitors to keep improving. However, this competition could also turn into jealousy when the company takes more and more customers from the competitors. This jealousy could increase when BambúBueno promotes their products as better and eco friendlier and could result in negative publicity for the competitors. It is recommended that the business involves local competitors instead of squeezing them out of the market. In this way, BambúBueno and the whole idea of building with bamboo can spread around

the country and grow rapidly.

DISCUSSION - Thomas Hebbink

By working out this business plan we have developed a better understanding of social entrepreneurship in general but also a better understanding of the specific situation in Nicaragua. We have learned that starting up a business requires a lot of planning and research but at the same time a lot of flexibility. The lean start-up theory has thought us that it is important to be able to pivot your business plan around in order to succeed. This could be difficult for a social entrepreneur because this means that you must be able to alter your mission and maybe not follow your passion, but it is important for the success and therefore also the impact of the project.

In Nicaragua we will evaluate this business plan and check if it is a realistic plan. We will investigate if the partners that are needed for BambúBueno are interested and if the quality of the needed infrastructure is sufficient. Furthermore, we will check if there are people interested in starting this BambúBueno company. Also practical aspects will be investigated, like the local salaries, the costs of the workshop, etc. After we have analyzed the plan we will write a report with our findings. We will share this report with BAMBÚ SOCIAL so they can take it into account when they expand their project.

The evaluation of this business is part of a new methodology for launching companies, called the 'lean start-up'. This methodology was introduced by Steve Blank in his paper, Why the lean start-up changes everything. In summary, this new methodology can be explained as follows: "Instead of executing business plans, operating in stealth mode, releasing fully functional prototype, young ventures are testing hypotheses, gathering early and frequent customer feedback, and showing minimum viable products to

prospects, This new process recognizes that searching for a business model is entirely different from executing against that model" (Blank, 2013). This early evaluation, enables us to recognize problems and flaws of BambúBueno, which gives us the opportunity to pivot the business around to a whole new value proposition for which there is a profitable future.

The block about key partners gave us a lot of insight in the complexity of the project. It shows the different partners that are needed for the business to succeed. Because there are many partners, there are many factors that can disrupt the functioning of BambúBueno. Therefore, it is important for the business to establish a good relationship with these partners and make clear and transparent agreements.

The social costs of this business plan needs some further research because the difference in culture makes it difficult to predict the reaction of the community on this new business plan. It is important that we get a better definition of these social costs by for instance interviewing or questioning the locals.

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