Financial analysis of a community bamboo enterprise in southern Ecuador

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Introduction

Bamboo is a very important resource for rural communities in Latin America, and bamboo or bamboo-dominant forests cover an estimated 11 million hectares in the region, with an estimated 23,000 hectares in Ecuador (INBAR, 2015). Communities use bamboo in the construction of houses, fences, warehouses, bridges, etc., and it is also a source of cash for emergencies. Although many rural producers and enterprises work with bamboo, there is little information available on the financial aspects of bamboo products, for example, production costs, or the financial viability of bamboo-based enterprises. The marked lack of financial information makes decision making within enterprises to improve their profitability and viability in the long term difficult, and complicates the development of policies to support the sector.

In this case study we present the results of a financial viability analysis with the Green Value methodology of the Association Rio 7, an enterprise recently placed under community ownership, which produces bamboo in a property with the same name in southern Ecuador. We analyzed the production period from February to December of 2016, which was the company's first year of independent production.

The Association Rio 7

The study was carried out on Association Rio 7's property, in Guayaquil Canton, Tenguel Parish, Ecuador (Figure 1). At the end of 2015, the land was transferred from the previous owner, HDineagros, a company which belonged to the Armed Forces of Ecuador and ran the bamboo enterprise from 2004 to 2015, to Association Rio 7, which is composed of the employees who previously worked for HDineagros. This transfer happened through the Ecuadorian government's land reform program, *Plan Tierras*.

Figura 1. Map of the study area. (Adapted from Google maps)

The Association Rio 7 is made up of 28 members. Its production area is around 300 hectares (ha) of plantations, with 200 ha of Guadua (*Guadua angustifolia* Kunth) and 5 ha of giant bamboo (*Dendrocalamus asper*). Its products include commercial stems of different sizes, including sections that are used to support banana and cacao plants, which are preserved through a chemical process and dried. The main clients are intermediaries who sell bamboo primarily in Peru, as well as within Ecuador.

The company regularly collects technical, financial, economic, and management information as a result of the discipline instilled by HDineagros. This has allowed the association to keep great records. For accounting and tax purposes, the Association has an accounting system (SOFI). This system works great for the administrative team, but does not provide information in a format that is easily understood by the association members. For this reason the technical manager likes Green Value and uses its outputs to regularly inform the association members about the financial situation of the company. This information helps the association members make investment decisions, as well as decisions regarding harvest volumes, marketing and sales, and personnel management.

Methodology

Green Value

The Green Value tool offers a simplified six-step method for monitoring and analyzing costs and revenues for small forestry and agricultural initiatives (Figure 2). It consists of a User's Guide and a series of pre-formatted worksheets (in a spreadsheet software) used to record and analyze data. Each worksheet corresponds to one of six steps. A summary sheet

(corresponding to Step 5) presents all costs and revenue in a single worksheet and provides the results for various indicators, such as cost per activity, cost per input type, total cost, cost per unit sold, net income (profit), and rate of return. The idea is that producers and their partners can monitor and analyze costs and revenues throughout the year, use annual results to make decisions, and see how the results change over the next few years. Green Value materials are available for download on the website www.green-value.org.

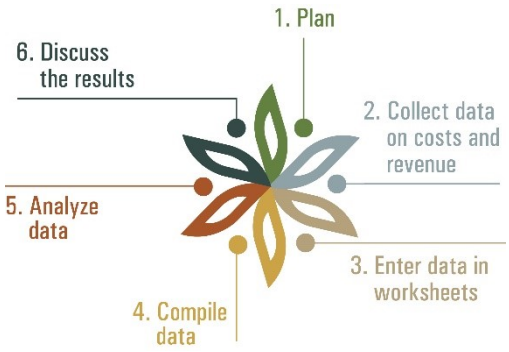


Figure 2. Green Value's six steps.

The case study

The case focuses on Association Rio 7's productive activities and sales of bamboo products for the period from February to December 2016, the first period during which the association operated independently. The main productive activities were: inventory of planation areas, harvest of bamboo stems, transportation of bamboo stems within the property, and marketing.

Each month the technical manager transferred cost and income information from the accounting system to the Green Value worksheets. Then, the manager and the leadership team analyzed the data and discussed the results. This process was accompanied by an external consultant (Alvaro Cabrera) for Earth Innovation Institute (EII).

Additional information for the case study was collected based on interviews with the workers and the technical manager of the association, field visits, and literature review. Visits were made to Association Rio 7's property in September and October of 2016, in addition to several physical and virtual meetings with the association's technical manager and administrator in the city of Quito throughout 2016 and early 2017.

Inputs

The exercise includes all costs involved in the production process: labor, services, infrastructure for the preservation and drying of bamboo, pumping and fumigation equipment, and the value of rent for offices and housing of workers on the property.

The Association has contracts with 22 people (members of the association) who receive a minimum legal salary plus benefits and, when applicable, overtime compensation. The association also employs a forestry engineer as the full time technical manager, and an administrator and accountant on a part-time basis. For large orders, external workers are contracted, especially for harvesting activities, are paid a daily wage.

Assumptions

For this study, several assumptions were used that are important when considering the results of the analysis:

- The annual depreciation costs of tools and equipment (or the loss in value of items that occurs each year) have been prorated to cover the 11 month study period.
- Materials and/or services previously paid for by HDineagros, including equipment and training, have been included in a prorated amount to determine the true value of the product or service being sold, and therefore the actual minimum income needed to cover costs.
- With respect to the office and the dwellings for the technical manager and 11 workers and their families that were built by the previous company and for which the construction costs are unknown, instead of estimating construction and depreciation costs, the estimated costs of rent for similar buildings in the local town were used.
- The cost of establishing the plantations was not included in the study as the association received the property with the plantations already established. At the moment, the value of the plantations and the previously installed infrastructure is being negotiated and it is possible that Association Rio 7 will have to compensate HDineagros for them, but they may not.
- An important decision was the calculation of income in terms of payment received versus the value of sales made, but not necessarily paid. In the current study, only income deposited into the accounts of the association during the period was considered.

Results and discussion

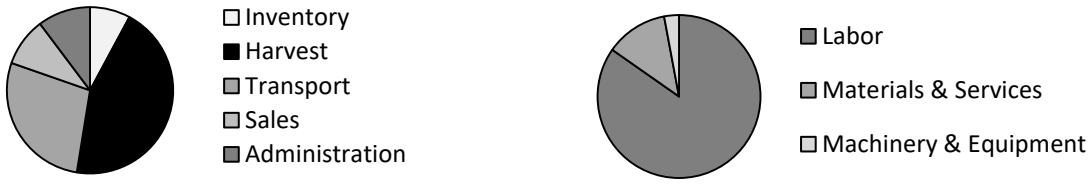
Among the costs, the most expensive activity was "Harvest", which corresponded to 45% of the total cost of the initiative, followed by "Transport" with 28% of the total cost (Table 1, Figure 3). In terms of inputs, labor, which is linked to the payment of a monthly salary to the partners-owners of the initiative, regardless of their productivity, was responsible for 85% of the total cost (Table 1, Figure 3). The high cost of labor is a concern for the association and is regularly discussed. In the end, the total income was not sufficient to cover the total cost, and the rate of return was negative 12 percent (-12%) (Table 2). If the depreciation costs of the infrastructure built by the previous owner are excluded from the analysis, the rate of return is still negative (-4%).

Table 1. Cost per activity and type of input (USD)

Activity	Labor	Materials & Services	Machinery & Equipment	Subtotal ($)	Proportion
Inventory	14 256	84	1 297	15 637	8%
Harvest	78 552	7 410	2 953	88 915	45%
Transport	53 460	1 541	275	55 276	28%
Sales	16 236	1 155	1 325	18 716	9%
Administration	6 050	14 355	0	20 405	10%
Subtotal	$ 168 554	$ 24 545	$ 5 850	$ 198 949	100%
Proportion	85%	12%	3%		

Table 2. Total income, total cost, net income, and rate of return (USD)

Financial Indicator	Value
Total income	$ 174 428
Total cost	$ 198 949
Net income (profit)	-$ 24 522
Rate of return	-12%



(a) (b)

Figure 3. (a) Cost per activity; (b) Cost per input type.

The context and its influence on the Association

The economy of Ecuador is based largely on oil, which has suffered a considerable drop in value in recent years and this has had several impacts on the country in general, with Rio 7 being no exception. First, the construction sector has contracted: the growth rate for the sector fell from 11% in 2011 to 0% during 2014, 2015 and 2016 (Revista Gestión, 2015). This affected demand in the construction sector for bamboo, which has been used to construct 10 to 12% of Ecuadorians' homes (INEC, 2010). Demand for and the price of bamboo increased significantly due to a 7.8-magnitude earthquake (Richter scale) in April 2016 on the northern coast of Ecuador, which resulted in the need for an estimated 20,000 new homes. However, it was difficult for the Association Rio 7, which offers high quality products produced legally according to a management plan registered with the government, to compete in the disaster area with the supply of illegal and poor quality bamboo that was sold during the reconstruction phase. Another impact of the economic downturn is that many programs for social assistance and technical and financial support to rural communities have stalled, which is why Rio 7 has received less help from the government for technical support and infrastructure than in previous years.

Another symptom of the state of the economy is the rate of inflation in Ecuador, despite being a country which uses the US dollar as its currency. Inflation combined with the rigidity of the hiring system and labor laws have led to an increase in the costs of bamboo products. In mid 2016, some of the association's orders destined for export were canceled when the buyer apparently found suppliers with a similar product at lower prices in other countries in the region. A new negotiation process with the company is expected in 2017.

Policies on trade with neighboring countries has also affected the association, as the Peruvian market is the main destination for the its production. In 2015 the government of Ecuador created a series of tariffs and safeguards, of up to 30% in some cases, on more than 500 imported products. In 2016, Peru, as reciprocity, increased phytosanitary requirements and controls on Ecuadorian agricultural and forestry products, including bamboo products and derivatives, and this greatly affected the association's revenues. Fortunately, cross border trade in bamboo between countries has been restored, however, the possibility of creating new tariffs and thus new trade disputes between both countries remains.

Figure 4. An Association Rio 7 worker transporting bamboo from the forest to a collection area. (Photo: Shoana Humphries, EII)

Finally, a local factor that affects the association is that, because it is located in an area with lots of mining, prices of goods and services are higher than other areas of the country, including local labor. It is therefore difficult for the association to compete when it needs to hire local workers.

Impacts of using Green Value

As a result of the use of Green Value, the management capacity of Association Rio 7 has been noticeably improved, including a better understanding of economic / financial issues among the technical manager and the workers. Improved transparency and communication on costs and revenues has already resulted in some strategic decisions to improve the enterprise's financial situation. First, cost analysis conducted in the first half of 2016 revealed that internal transportation costs accounted for almost 41% of the total cost. This led to a reflection on how to reduce costs, and as a result, the association acquired a used truck in the second half of 2016 to use within the plantation. When vehicle depreciation costs were entered in the updated cost tables, transportation costs dropped to 28%. Second, in view of the high cost of labor, the association initiated a discussion on how to reduce costs and improve the cost versus productivity ratio for labor. The association decided to offer incentives to employees who meet specified production goals, as well as to provide opportunities for work on extra days when necessary to fill orders.

Another change based on the financial analysis results was the decision to diversify the association's customer base and make other changes to increase revenues. The association usually sells to intermediaries who offer the lowest prices for bamboo stems, disregarding aspects such as quality, social and environmental responsibility, legality, etc. In 2016 the association decided to pursue FSC certification to be able to differentiate its products in the market. This effort helped the association get a contract in 2017 with TANASA, a national company that buys a large volume of bamboo annually and requires certification. The association is also using other mechanisms to secure new clients, such as social networks and participation in fairs and other events. Finally, the association is considering promoting a person from within the association to take over the field activities of the current technical manager, so that the current manager can focus on marketing, collecting payments, and strategic supervision of the business. This change would also help develop improved capacities and greater autonomy within the association.

Main difficulties with the use of the Green Value tool

The use of the Green Value tool was something new for the association and its technical manager. The following challenges were identified:

- Lack of time for the technical manager to enter data in the worksheets and to reflect on the results.
- The management team, which has relied on the external consultant for help using Green Value, needs more training to handle the process independently.
- Intermittent electricity makes it difficult to use a computer regularly.

- For registering sales, the association needs to convert the volume of each sale into a unit such as m3 or tons. Currently the diversity of products sold are recorded in different units. The lack of a total volume of products sold prevented the calculation of the cost and minimum price per unit sold, as well as a sensitivity analysis.

Conclusions and recommendations

Conclusions

The analysis of Association Rio 7's first year of operation (February to December 2016) after the transfer of the business to its workers from a military-owned company, showed that when all production and administration costs are considered, revenues from sales were not enough to cover costs, with a negative 12% rate of return (-12%). Strategies to lower costs and increase incomes are therefore urgent for the viability of the initiative.

The association is offering incentives to workers to meet production targets to lower high fixed labor costs, and improvements in transparency and communication regarding costs and revenues due to the use of Green Value are also expected to motivate workers to Improve the cost-production ratio. In addition, FSC certification (expected in 2018) and the recent resolution of the trade problem between Ecuador and Peru are expected to result in improved sales and profitability.

The analysis also showed that the use of Green Value has been beneficial to the association. It is noteworthy that the use of Green Value has increased transparency in the handling of financial information within the association, which was previously shared only among managers, and is already being useful for decision making, e.g., the decision to purchase a used truck to decrease transportation costs. In addition, the technical manager showed that it is not difficult to integrate the use of Green Value with the accounting system, regularly transferring accounting data to the Green Value worksheets without problem.

This is the only study to date of the companies that have been transferred to rural producers as part of the government's land reform program, *Plan Tierras*, which at the end of 2016 included 78 associations as beneficiaries. The use of Green Value certainly further differentiates Association Rio 7 among the other beneficiaries of the program. Although the results of our study show that the business is not yet profitable, it also shows that the association is aware of its challenges and already taking actions to strengthen its viability. It should be recognized that the main goal of the association, unlike the former owner of the company, HDineagros, is not profit, but is to cover the wages of its members-workers and other costs, and to be able to save to replace the machinery and infrastructure it possesses. Another difference is that HDineagros always had assured sales because it sold its production to other companies within its same consortium.

To conclude, the Association Rio 7 is a distinct source of legal, high quality bamboo in the national and regional market, generating income for 37 families, as well as having an economic impact on the nearby population by contracting services and purchasing materials locally. The use of Green Value is expected to continue to help the association strengthen its financial viability in the long term and it is hoped that this study is a good financial information reference for other forest companies working with bamboo.

Recommendations

It is recommended that the Association Rio 7 take the following actions to improve its financial viability:

- Establish a policy for relating the cost of labor with the productivity of workers, as this is the most expensive cost for the initiative (85% of total cost).
- Improve the system for registering sales by converting the volumes of products sold to the same unit.
- Implement additional training in Green Value to reduce reliance on outside expertise.

Finally, another recommendation was the creation of a Green Value application for smartphones. Almost all members of the association and the other workers have smartphones, and several comments were made about the potential advantage of being able to use the tool through their phones.

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Bibliography

INBAR, 2015. Estudio de la cadena de la producción al consumo de bambú (Guadua angustifolia) en Ecuador. Quito, Ecuador.

INEC, 2010. Ecuador en Cifras. http://www.ecuadorencifras.gob.ec/estadisticas-sectoriales/. Accessed on April 5, 2017.

Revista Gestión, 2015. Sector construcción: ¿Entre el hambre y la necesidad? Edición 257. Noviembre-diciembre, 2015. Quito, Ecuador.