



## PERCEPTION STUDY OF BENEFITS OF SOCIO BOSQUE PROGRAMME IN ECUADORIAN AMAZON REGION

### ESTUDIO SOBRE LA PERCEPCIÓN DE LOS BENEFICIOS DEL PROGRAMA SOCIO BOSQUE EN LA REGIÓN AMAZÓNICA ECUATORIANA

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#### Abstract

This study explores issues related to the conservation of native forests of western Ecuador's Amazon region (provinces of Napo, Pastaza and Morona Santiago) and its relationship with some social and economic variables, the forests were included or not to the Socio Bosque Program. The field phase was conducted between February to March 2014. We analyzed data from one hundred twenty-two surveys of these two different groups of farmers. The analysis of information included geographical, social, labor, land use and future activities data. Among other results, it is evident that most owners want to keep their wooded areas with native species, but they mention the need for more frequent training about the dynamics of local ecosystems and best ways to care for them.

**Keywords:** Ecuadorean Amazon region, Socio Bosque Programme, socio-economics, forest conservation, biodiversity loss.

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### **Resumen**

El presente estudio explora aspectos relacionados con la conservación de bosques nativos del occidente de la región amazónica ecuatoriana (provincias de Napo, Pastaza y Morona Santiago) y la relación de ésta con algunas variables sociales y económicas. Los datos se generaron en ciento veinte y dos predios de dos grupos de finqueros: unos pertenecientes a la iniciativa Socio Bosque y otros no, la fase de campo se realizó entre febrero a marzo de 2014. En la información recogida, se incluyeron aspectos geográficos, sociales, laborales, de uso del suelo y de actividades futuras. Entre otros resultados, se evidencia que la mayoría de propietarios desea mantener sus zonas boscosas con especies nativas, pero manifiesta la necesidad de contar con capacitaciones más frecuentes en torno a la dinámica de los ecosistemas locales y las formas más idóneas para cuidarlos.

**Palabras claves:** Región Amazónica Ecuatoriana, Programa Socio Bosque, aspectos socioeconómicos, conservación de bosques, pérdida de biodiversidad.

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## 1 Introduction

In Ecuador, permanent native forests cover approximately 9.5 million hectares, which provide environmental and ecosystem services constantly. However, more than 60.000 hectares of these forests are wasted annually (Amores & Jiménez, 2011).

This fact encouraged the design of the Socio Bosque Program, which seeks to provide economic incentives for peasants and indigenous communities within a conservation voluntary commitment in Ecuador. This program is framed in the incentive system created by the Government. The goal of this program is to protect the native forests and it seeks to achieve a direct and equitable distribution of benefits all along Ecuador. The amount of the incentive depends on the number of hectares that are part of this program, and it could be about US \$ 30.00 per hectare per year (MAE, 2012).

There are some prioritization criteria for enrolling owners to the Socio Bosque program, such as high threat of deforestation in these areas, environmental services that they offer, and high level of poverty (MAE, 2011).

This study seeks to address some socio-environmental aspects related with the conservation of native forests in El Puyo, Tena y Palora cantons, areas where population growth rate is important, which affects directly or indirectly their local ecosystems (INEC, 2010).

## 2 Materials and Methods

### 2.1 Study area

The population of the Amazonian region of Ecuador has indigenous people from various groups. The indigenous are the ancestral inhabitants of the region and they include eight nationalities that mostly live in vast territories covered with tropical rain forests. Traditionally they have practiced migratory agriculture according to the dynamics of the forest; however, with the opening of roads and market linkages, their needs for higher economic incomes increased (Palacios, 2010).

This research was developed in Ahuano, Chontapunta, Pano, Misahuallá, Puerto Napo and Talag parishes (Tena canton, Napo province) (Figure 1); Mera, Lieutenant Hugo Ortiz, Shell, Puyo, Tarqui parishes (Puyo canton, Pastaza province) and Palora (Morona Santiago province) (Figure 2). All the

places studied are between 400 and 900 meters above sea level.

The study area was chosen because it has medium-size and easily accessible properties. Moreover, it has the presence of permanent residents (Granda, 2015, Clavijo, 2016).

Between February and March 2014, field work was carried out on 122 randomly selected sites (central-west of the provinces of Pastaza, Morona Santiago and Napo). A semi-open survey was applied, which allowed the recording of socio-environmental information in each site. The process was fully described by Granda (2015) and Clavijo (2016).

Table 1 shows the number of farms that were evaluated and their positive or negative membership to the Socio Bosque initiative in these three provinces.

### 2.2 Surveys application and tabulation

The surveys were implemented through semi-formal meetings with the owners, and we always tried to keep a friendly conversation.

The groups of survey questions applied were organized in a database according to their typology: geographic, social, labor, economic, land use and future activities analysis. The complete database can be observed in the works of Granda (2015) and Clavijo (2016).

### 2.3 Information analysis

Each question group was addressed separately with descriptive statistical analysis.

## 3 Results and Discussion

### 3.1 Causes that encourage access to the Socio Bosque Program

Inquiring for the reasons that motivated landowners to enroll to the Socio Bosque program (considering 58 owners who were already in the program, out of a total of 122 respondents), four types of responses were recorded (Table 2).

Due to Socio Bosque (SB) is a government program that was created in 2007 to support and promote an incentive for the conservation of native forests and paramos in Ecuador; it is important to no-

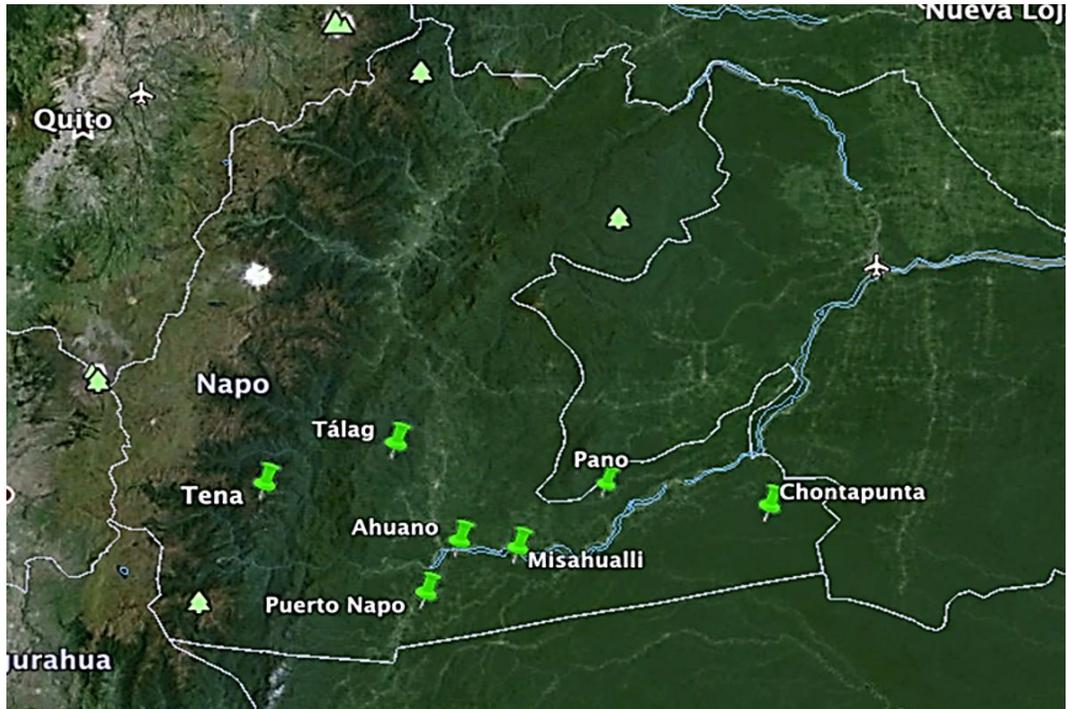


Figure 1. Parishes of Napo Province, where the information was recorded. Source: adapted from Google Earth, 2014.



Figure 2. Parishes of Pastaza and Morona Santiago provinces, where the information was recorded. Source: adapted from Google Earth, 2014.

**Table 1.** Distribution of study lands in terms of their province and whether or not they belong to Socio Bosque

Province	Socio Bosque Grounds	Non Socio Bosque Grounds	Total
Napo	32	39	71
Pastaza	25	25	50
Morona Santiago	1	0	1
<b>Total</b>	<b>58</b>	<b>64</b>	<b>122</b>

**Table 2.** Causes that led to the entry of owners into the Socio Bosque program

Question	To conserve native forests	For the economic incentive	Looking for taxes reduction	For giving some non-extractive use to the lands	Total
Why did you join Socio Bosque?	30 -52 %	16 -28 %	10 -17 %	2 -3 %	58

te that 52% of the owners enrolled SB mainly looking for the conservation of the native forests in their properties. The 28% of them enrolled because of economic incentive provided by the program (an amount of US \$ 30.00 per hectare per year) which is a good way for them to earn some money by having hectares of forest unaltered.

A 17% of owners enrolled to SB because of reduction of property taxes that contemplates the law for SB partners. The 3% of them enrolled in the program simply for having a kind of non-extractive use for their lands.

### 3.2 Perception of native forests owners about benefits

The benefits provided for the conservation of the native forest include various environmental and self-conscious situations (Table 3).

35% of the owners think that native forests allows to regenerate or maintain active the local water cycle, which, at the same time, allows them to supply uncontaminated water daily; 32% of owners think that conservation of forests allows to take care of biodiversity; 30% think that conservation help mainly to keep the air purification, and only 2.5% of farmers do not perceive any benefit from the conservation of nature. Thus, the census demonstrates that owners have a high conservationist conscience, in spite of the fact most of them do not have necessarily attended high school or university. They understand the importance of the resources: water,

air and biodiversity and their close relation with the maintenance of the forest.

### 3.3 Main Geographical aspects

Most of the properties studied are small or medium-sized (4 to 110 hectares), with little primary forest area (4 to 6 hectares) and relatively few secondary forests (2 to 60).

Local people also have few hectares within Socio Bosque, due to relatively small wooded areas. Therefore, the amount of money received by the owners of lands attached to this partnership is relatively low.

It is also important to mention that most owners of the properties do not live on the property itself, they prefer to live in the nearest town center.

The pastures for livestock have a range between 0 and 20 hectares per farm. The initial forest regeneration is evident, especially *Pollalesta discolor* (Asteraceae) that is observed in the majority of farms, covering between 1 and 14 hectares per farm; some studies such as those of Merino (2010) mention that this initial regeneration is a good option to start reforestation and timber use in the medium and long term in the Ecuadorian Amazon.

### 3.4 Social aspects

Approximately half of the farms analyzed are inhabited by all or almost all their owners and children;

**Table 3.** Perception of the land owners about benefits that they receive from the conservation of native forests

Variable	Conservation of water and its cycle	Biodiversity	Pure air	None	Total
Benefits provided by the native forest	43 -35%	39 -32%	37 -30%	3 (2.5%)	122

in some cases some owners live on their farms without their children, which generates a small household size, this is probably due to the high rate of migration that exists in the provinces studied, since young people usually go to study or work in the nearby cantonal capitals (INEC, 2010, Eche, 2014).

In general, the study shows when the owners have a higher educational level, they are more interested in joining Socio Bosque, especially when the owners are young or middle-aged.

Also, it is important to note how older people (>60 years) are not interested in enrolling the SB program, because it is generally difficult to care for their properties when they become old people (INEC, 2010).

### 3.5 Labor aspects

On one hand, Most of owners attached to the SB program do not work their lands; they do not carry out agriculture nor livestock activities; which would be supporting the general spirit of the SB program.

On the other hand, on farms which do not belong to SB, almost all members of the family work on the farm (with agricultural or livestock activities) and at the same time, they show little interest in enrolling SB.

### 3.6 Economic analysis

The census documented that just 10 farms belong to landowners with good or very good incomes (>US \$ 1000 per family per month), of the 122 farms evaluated (inside and outside SB), and it was documented that such incomes not necessarily derived from SB, but from other personal labor activities (Granda, 2015).

Finally, it should be point out that almost half of the landowners receive the solidarity bonus, especially mothers, who receive US \$ 50 per month from the Ecuadorian government. It is important to men-

tion that those who receive this bonus have small farms and do not show interest in joining SB.

### 3.7 Self-perception about future activities

Issues considered in this area included: Will you increase livestock? Will you increase short cycle crops? Will you grow permanent crops? Will you increase the sale of wood? Will you increase the production of smaller animals? Would you like to join SB Program? Do you think Socio Bosque’s incentive is low? Are you interested in having more information about SB? (Granda, 2015).

The results to these questions can be seen in Table 4.

Note how neither SB nor NSB wants to increase livestock production; this desire has to do with the fact that the owners do not find an economic benefit having cattle of meat, nor of milk, since in general the pastures that can be produced there possess little nutritional value for the cattle.

With regard to the question “will you increase short cycle crops?”We can observe that most of them do not want to plant monocultures of short cycle (banana -Musa x paradisiaca-, cassava -Manihot esculenta-, naranjilla -Solanum quitoense-, Chinese potato -Colocasia esculenta- and sugar cane -Saccharum officinarum-) because the land is little fertile or the agricultural activity has little development in these zones. However, people find it more profitable to carry out agroforestry activities or to plant their farm in a mixed way (several products simultaneously on the same surface), which technically generates more benefits than a monoculture (Baldock, 1982; YÁñez, 2006).

In the question “will you grow permanent crops?”Most owners do not want to increase permanent crops (coffee, Coffea arabiga, and cocoa, Theobroma cacao); this is explained by the low yield of these plants in Amazonian soils (YÁñez, 2013), since the Amazon soils lose their fertility after the first 5 years of intensive cultivation (MAGAP, 2010).

With regard to the question “Will you increase

**Table 4.** Opinions of the local inhabitants on the future activities that they wish to carry out in their properties (\*)

Variables	Socio Bosque		Non Socio Bosque	
	YES	NO	YES	NO
Will you increase livestock?	2	56	4	60
Will you increase short cycle crops?	4	54	7	57
Will you grow permanent crops?	4	54	8	56
Will you increase the sale of wood?	0	58	1	63
Will you increase the production of smaller animals?	2	56	3	61
Would you like to join SB Program?	Not applicable	Not applicable	39	25
Do you think Socio Bosque's incentive is low?	30	28	Not applicable	Not applicable
Are you interested in having more information about SB?	29	29	28	36

(\*) The farms within the Socio Bosque program were 58. Those not belonging to it, 64.

the sale of wood? It is very important to clarify that when timber merchants belong to SB, the timber resources, which are included in the program, cannot be used anymore. Likewise, the owners not affiliated to Socio Bosque don't want to increase the sale of wood extracted from the forest; it happens because the forest ecosystem provides them with numerous environmental benefits, such as water, pure air and biodiversity (Yáñez, 2014).

The firm refusal to increase the production of smaller animals, both on SB and NSB farms, can be explained by the fact of production of chickens, guinea pigs and rabbits does not have a high productive yield, mainly because in these zones there is not an adequate knowledge regarding the care of these animals (MAGAP, 2010).

Regarding owners which are not enrolled yet in SB program, 39 of them want to join the program, and 25 do not want to, this occurs possibly because they do not meet the number of hectares required, or they do not have their title deed, or they do not agreed with the proposals of the Socio Bosque program (MAE, 2014).

With regard to the perception about the incentive provided by SB, approximately half of the owners think that the incentive is good and the other half think it is not adequate. People answer in that way possibly because some of them do not need this income because they have other monetary sources that help them in economy issues.

Additionally, the opinion of the owners about the question "are you interested in information about SB?". Approximately half of non SB owners were interested.

### 3.8 People Suggestions for the SB Program

Table 5 shows the main suggestions from the local people to the Socio Bosque Program.

The most important suggestion for the SB program (37% of the opinions) is that this program should carry out trainings, which can be given to SB members or non-members. This training workshops can include environmental aspects, conservation, and production of crops in a friendly way to nature. About 20% ask to be helped with loans to start a business or purchase some movable or immovable property. Another request from people belonging and not belonging to SB is to be helped with reforestation activities; they demand, for example, the beginning of permanent programs related to planting and care of native trees on their farms. 15% does not ask for anything or has no suggestions or new expectations for the Socio Bosque program.

## 4 Conclusions and Recommendations

### 4.1 Conclusions

Most of people interviewed enrolled SB for native forest conservation, followed by the economic incentive provided by the initiative. The owners of the studied lands knew about Socio Bosque mainly through the conversation with friends, who commented on the benefits of the program.

Local people associate strongly the conservation of the native forest with the regulation of natural cycles, especially water, which allows them to be supplied with sources of uncontaminated water.

In the three provinces, there are farms with little

**Table 5.** People’s suggestions for the Socio Bosque initiative

Variable	Farmers training	Reforestation support	Loans	Nones	Total
People suggestions for Socio Bosque (from farms currently included and not included in the SB program)	45 -37 %	34 -28 %	25 -20 %	18 -15 %	122

forest area, due to processes of landscape transformation carried out in previous decades.

In general, owners >60 years old, are less interested in belonging to the SB initiative. However, the younger and more educated owners are more inclined to register with it. This situation shows positive advances for the sector, especially when the actors improve their standard of living, for example, their education level.

Because of the low incomes of most local landowners, they generally need to work more off-farm. Few farms report higher income, and it generate them in activities different from those of Socio Bosque.

It is important to point out that some landowners let trees grow naturally to avoid erosion of the land or because the family is not able to work the land.

Some farms show important deforested areas because of agriculture and livestock production; this is probably the main reason why their owners have not been able to join the Socio Bosque initiative.

In spite of this, the Socio Bosque or Non-Socio Bosque landowners continually express their refuse to increase any productive activity on their farms, which includes the non-increase of short-cycle crops, permanent crops, livestock, smaller animals production and sale of timber.

Most Non-Socio Bosque landowners are interested in joining the program, although those who already belong to SB believe that the economic incentive is low.

Both those SB partners and non-partners say that they are interested in having more information about the Socio Bosque Program, especially about the incentives and benefits.

Likewise, people ask Socio Bosque to help with training on environmental, agricultural and livestock issues, and also to help them with more reforestation activities on their farms. .

## 4.2 Recommendations

Periodic studies must be carried out (every 2 years at least) that include the ideas exposed in this study in order to understand how the conservation activities in the Ecuadorian Amazon evolve in lands assigned and non-assigned to SB.

Biological studies about the dynamics of flora and fauna in primary and secondary forests in private Amazonian lands are necessary in order to verify the current state of such groups in natural and semi-natural private areas.

Likewise, we need broader social studies that address the educational and age aspects of the owners to know how these aspects have to do with the conservation of biodiversity in the Amazonian provinces of Ecuador.

It is also necessary to develop an economic study to verify the income, expenses and net income of the Amazon families (belonging to or non-belonging to SB) on regular basis (every 2 or 3 years) and the native forest conservation activities that these families could carry out.

Other research could include studies about the use of soils in the Ecuadorian Amazon, verifying, by means of geographic information systems, the current state and the future dynamics of the occupation of lands and its relationship with the conservation of native forests.

An increase of the number of on-site training conferences and meetings carried out by Socio Bosque is needed, since they are well received by the owners of the properties, these activities could be used to emphasize the benefits of the program.

These trainings should address the benefits of native forest conservation, but also about alternative forms of low environmental impact in the use of local natural resources such as ecotourism and agrotourism (as proposed by Doumet-Chilán & Yáñez, 2014), cultural tourism (as exemplified by Nasimba & Cejas, 2015), management of products of native

species (described by Yánez, 1997, Yánez, 1999, Yánez, 2012, among others).

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