



# Analysis of the Socio-economic Contributions of RINCÓN DE LA VIEJA NATIONAL PARK “Conservation with Soul of Volcano” World Natural Heritage Site UNESCO 2009



FOTO: F. Salas, 2009



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## **List of acronyms**

ACG	Guanacaste Conservation Area
ASADAS	Administrating Associations of Rural Aqueducts
ASP	Protected Wildlife Areas
AyA	Costa Rican Institute of Aqueducts and Sewer Systems
FODA	Strengths, Opportunities, Weaknesses and Threats
INBIO	Biodiversity National Institute
ICE	Electricity Costa Rican Institute
IPC	Rate of Prices for the Consumer
ONG	Non-Governmental Organization
MINAET	Ministry of Environment, Energy and Telecommunications
PNRB	National Parks and Biological Reserves
PNRV	Rincón de la Vieja National Park
PSA	Payment for Environmental Services
SINAC	National System of Conservation Areas
TIC	Information and Communication Technologies
UNA	Universidad Nacional

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## 1. EXECUTIVE SUMMARY

The Project **Systematization and Analysis of the Contributions of National Parks and Biological Reserves to the Economic and Social Development in Costa Rica, Benin and Bhutan** is executed under the Program of South-South Cooperation, financed by the Kingdom of the Netherlands and administrated by Fundecooperacion.

This project is led by the International Centre for Sustainable Development of Policy (CINPE) of the Universidad Nacional (UNA) of Costa Rica, which performs the general coordination. The counterpart in Benin is the Centre pour l'Environnement Béninois et le Développement Economique et Social (CEBEDES). While in Bhutan is the Division of Nature Conservation of the Ministry of Agriculture and Forests of the Royal Government of Bhutan.

The project's general objective is to systematize and analyze the socio-economic contribution –centralized and decentralized- "of national parks and biological reserves to the economic and social development of Costa Rica, Bhutan and Benin and make policy recommendations of management to support policy makers in the management of national parks and biological reserves.

Rincon de la Vieja National Park (PNRV), which is part of the Guanacaste Conservation Area (ACG, Site of World Natural Heritage UNESCO), is one of the three case studies analyzed in Costa Rica. The same one that was selected by a group of experts to meet various criteria, which place it as a Protected Wildlife Area of priority in terms of water resources, diversity of landscapes, ecosystems and species, research, potential for energy generation, generation of environmental services, and national and international relevance, among others.

The methodology used in the study combines cluster analysis with a dynamics of added value chain. Where PNRV constitutes the material basis that underpins the existence and reproduction of diverse socio-economic activities that depend directly and indirectly on their preservation. These activities report qualitative and quantitative contributions to various social actors at local, regional, national and international levels.

In an effort to translate these contributions in monetary terms, the search, systematization and analysis of primary and secondary information allows an approximate estimation of the contributions of PNRV for 2009. In this regard, the overall contribution of Rincon de la Vieja National Park is approximately 12.8 billion colones (US\$ 23,010,302). This implies about 282 million colones (US\$ 507,810) at the local level. Meanwhile, the regional level reports an amount close to 2.3 billion colones (US\$ 4,169,121), the national level of 2.3 billion colones (US\$ 4,258,638), and 7.8 billion colones (US\$ 14,074,733 ) at international level.

## **2. INTRODUCTION AND ANTECEDENTS**

In Costa Rica, National Parks and Biological Reserves (PNRB) are extremely important, since they constitute the bulk of Protected Wildlife Areas (ASP) in the country (12,7%), whose main goal is to promote the conservation in favor of biodiversity. Conservation can be considered inseparable from the development processes in a society committed to the diverse ecosystems and natural resources, as is the case of Costa Rica. The main objective of this study is to analyze the way how do conservation and development at different spatial scales (local, regional, national, international) interact?

The fundamental topic is the socio-economic significance of PNRB. However, what is the meaning of these PNRB and for whom? The hypothesis associated with the previous question is that PNRB produce additional benefits to its primary role, which is the conservation of natural and environmental resources. These additional benefits are enjoyed by different social actors.

In this sense, the total social value (expressed or not in the market and prices of goods and services generated by the conserved biodiversity) of PNRB is mainly generated in the usage and non-usage of values of environmental services provided by ecological processes involved. These services-about diverse nature and scale- are attributable to the existence of the ASP, which serve as aquifer recharge areas; they contribute to the protection of biodiversity and generate scenic beauty (which attracts about 58,9% of the total of foreign tourists who visit our country every year).<sup>1</sup>

The research presented in this paper focuses on evaluating the contribution of nature contained in the PNRB to the socio-economic development of Costa Rica, and not on the value of nature-as such-in monetary terms. Additionally, socio-economic contributions of PNRB will be evaluated taking as reference the markets and the real prices in relation to the activities developed through the use of resources and ecological services provided by areas under natural protection. This research is also an update of the data obtained in 2002 by Furst et al (2002), since for this study was used the same methodology, although with some adjustments.

In terms of systematizing the contributions of the case study of Rincon de la Vieja National Park (PNRV), the data presented in this document are approximations to the real value. In the absence of specific data on incomes of certain related activities, the study designs supposed innovators that meet criteria derived from fieldworks, interviews, and consultation to experts, which as a whole are used to support the estimate contributions that are shown in this paper.

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<sup>1</sup> Other services of great value include the generation of an important amount of information about biodiversity (whose value is immeasurable) as well as sources of employment for neighbors, and equally important, opportunities of education provided directly by the ASP (Masís, personal communication, 2010).

The project is developed in a parallel way in two countries, one of them in the African Continent, Benin; and the other one in the Asian Continent, Bhutan. The purpose is to apply and adapt the methodology developed in Costa Rica to the conservation areas of both countries. For its part, in Costa Rica at the same time of this research are carried out two additional case studies, one in Corcovado National Park – Caño Island Biological Reserve (Otoya, M. et al 2010) and the other one in Palo Verde National Park (Moreno, M. et al 2010 b). Additionally to these case studies, was developed the study of the Contributions of National Parks and Biological Reserves at national level (Moreno, M. et al 2010 a).

### **3. GENERAL METHODOLOGY<sup>2</sup>**

National Parks and Biological Reserves (PNRB) are natural assets that –in socio-economic terms- generate a phenomenon that in the development analysis is called *externality*.<sup>3</sup> In our case, such external effect (about local, national and international society), induced by a territorially conglomerate set of ecological services, has mainly a positive sign, since a cluster of socio-economic activities (provision of goods and services of productive, recreational nature, etc.) takes into account these services in the surroundings of the park or reserve<sup>4</sup>. These services are also taken into account by a chain related to related activities in higher scales at the local one due to the emergence of subsequent impacts of socio-economic activity at local, regional, national and international level. So, we can talk about a positive socially externality due to the existence of PNRB, potentially leading to a process of vertical and horizontally linked development.

The focus of cluster (or clusters of interrelated activities inside a chain of income generation) is identified as a suitable tool for the identification of productive activities (including research projects in or related to parks and reserves) and reproduction (in social meaning and including the recreation of different levels and qualifications). This allows attributing the contributions of PNRB to the emergence and consolidation of such socio-economic activities in order to estimate through both numerical calculations and through qualitative indications, the benefits in terms of employment, income per visitation, etc

The instrument that is perceived as conceptually and operationally as the more useful for carrying out the type of analysis outlined above, then it constitutes the combination of local cluster analysis and transverse chain (that is, from the village of origin to final destination). With this, you can drag multiple forward linkage effects, which have the PNRB on socio-

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<sup>2</sup> This methodological section is based on the first version of the project, which is found in Fürst et al (2005).

<sup>3</sup> Véanse para mayor detalle: Salazar-Xirinachs (1996), y Scitowsky (1973).

<sup>4</sup> It is clear that an externality attributed to the initial induction of a process of development is different from the externality that is recognized and evaluated in the impact analysis and environmental cost (Pearce and Turner, 1995). In contrast to the impact and environmental cost (which is understood as the decrease of usage caused by an environmental damage), externality is equivalent to a wide range of indirect effects of chaining and connection (from the point of view of structural change in the pattern of socio-economic development) that at first sight are concentrated in an area around the PNRB (the so-called area of influence). Such boost of development also covers the emergence of service activities and production in geographical areas beyond the direct area of influence. It involves territorial units in the chain of effects produced by PNRB, including local, regional, national and international levels.



economic life, from its source (location) to its impact still barely identifiable (accountable) to a higher level of spatial scale, even when there is a greater emphasis on the contribution to local development.

In the analysis of the socio-economic development, the above is known as *cluster* linked to a dynamics of added value chain.<sup>5</sup> For this particular study, the *cluster* must be understood methodologically as a reactive process to destabilizing initial boost of “*status quo*”. This is equal to a sectoral and territorial concentration of activities and enterprises that arise because of certain “*bottlenecks*” (demand for raw material and services to be provided by others), increasingly interact with each other in terms of production and organization and ultimately depend on the conservation or not of the PNRB. So, this approach involves the concept of *unequal development* of Hirschman (1973), which postulates the start of a socio-economic dynamics in the form of a *set of chain-cluster* increasingly linked from a social investment of innovative nature in a development potential.<sup>6</sup> Such potential or development center is given in our case by the public investment for the conservation of Rincón de la Vieja National Park (PNRV).

This clearly sets out an enormous methodological difficulty to identify and define, in socio-geographical terms and chain analysis (economically and territorially chained links), the various facets of impact induced in scales of spatial impacts indicated. In particular, this is valid for the observable overlap among the spatial and territorial scales (local, regional, national and international), and the resulting problem of attributing and accounting for socio-economic benefits to the geographic units positively affected by the existence and preservation of PNRV.

Additionally, the “double counting” of benefits associated with activities developed within the chains should be avoided, in order to generate the most accurate quantification. So, the analysis should note qualitatively the way each chain is organized and clearly separate what benefits are generated from the existence of PNRB and which ones not. These limitations are taken into account in this study at the time of describing and quantifying the contributions of the PNRV.

The *Cluster analysis*, in close connection with the *evaluation of chains*-constitutes the most appropriate methodology to address the *externality* that characterizes protected areas from the perspective of development dynamized by innovations. In this case, the original innovation (initial boost force) is interpreted as the decision made (by the Costa Rican society) to conserve the ecological services of PNRV. Meanwhile, the externality generated by such an innovation that is seen as the usage of new opportunities in socio-economic field that are induced or at least related to the existence of such national park (Hirschman, 1973).

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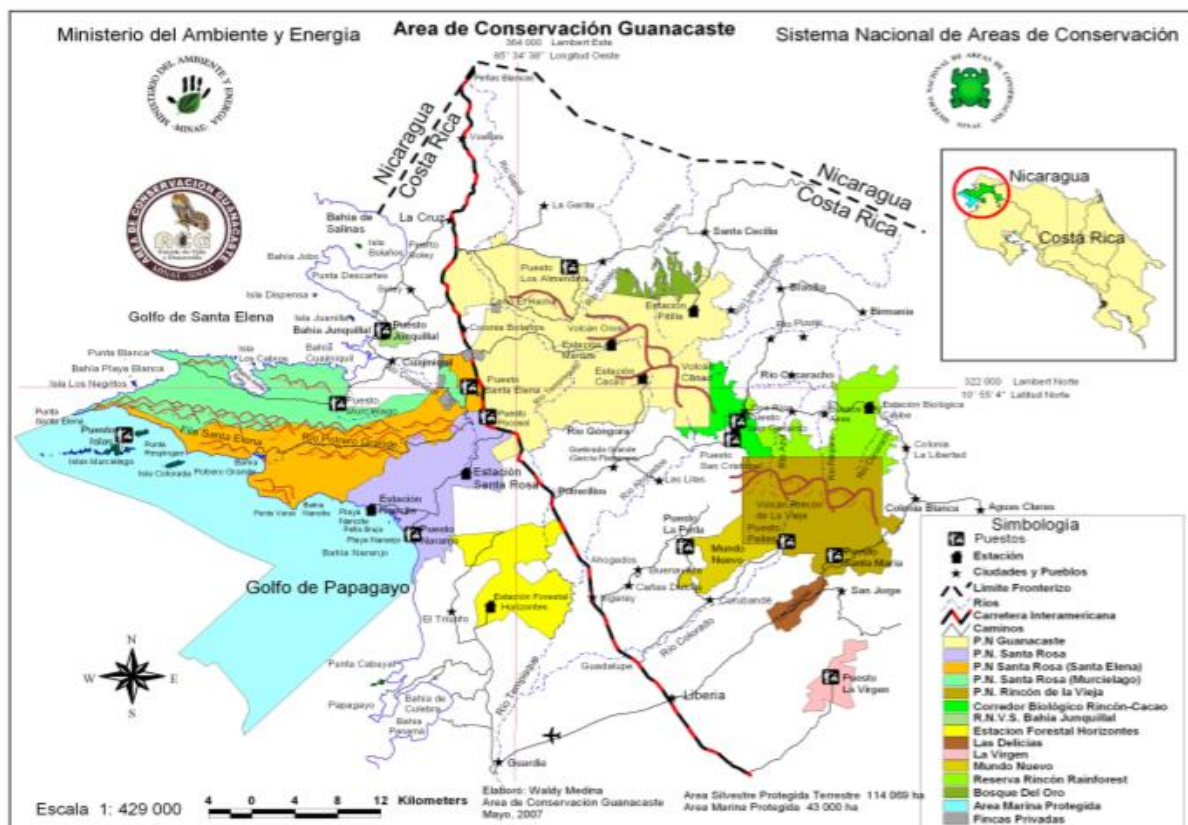
<sup>5</sup> See Porter, (1990, 1999), Altenburg / Meyer.Stahmer (1999); and Ramos, (1999).

<sup>6</sup> This *cluster concept* is quite different from that of Porter (1990, 1999) and others (INCAE, 1999) that reduce the boost to train vertically and horizontally (geographically) integrated of the conglomerate to the favorable synergistic effect on the global competitiveness and efficiency of cooperation on a network. Examples are the famous industrial districts in Europe (Schmitz / Musyck (1993) as well as in developing countries the new eco-tourist clusters around natural resources such as protected wildlife areas (e.g. for Costa Rica, in: Inman, et al. 1998, or more specifically to Monteverde, in: Acuña / Villalobos / Ruiz, 2000).

## 4. GENERAL INFORMATION ABOUT STUDY CASE

Guanacaste Conservation Area (ACG) “World Natural Heritage Site UNESCO” is a quite consolidated territorial block, which includes diverse Protected Wildlife Areas (ASP). First, a total of 3 National Parks, which include Santa Rosa PN, Guanacaste PN and Rincón de la Vieja PN. Additionally, ACG has the Horizontes Forest Experimental Station and Junquillal Bay Wildlife Refuge, along with a series of properties that protect approximately 230,000 species (which implies 65% of the estimate of species in Costa Rica)<sup>7</sup>.

Map 1 Guanacaste Conservation Area (ACG)



The general strategic objective of ACG is “To promote a balanced-healthy environment, through the restoration and conservation of the protected wildlife area and the integration and participation in the socio-productive processes corresponding to the region through a work between the staff from ACG and society” (ACG, 2006). The experience created with the action of the ACG implies the search and consolidation of a model based on a tropical reality that allows the conservation forever of wild biodiversity through non-destructive usages by the society.

<sup>7</sup> More details are found available on the webpage of ACG <http://www.acguanacaste.ac.cr/>

#### 4.1 Geographical location of Rincón de la Vieja National Park

Rincón de la Vieja National Park (PNRV) comprises a total of 14.160, 63 hectares. Some ones that are located in both districts of Dos Ríos and Aguas Claras (both located in the canton of Upala, in the province of Alajuela) and in the districts of: Mayorga, Cañas Dulces, Curubandé and Liberia (all of them located in the canton of Liberia, province of Guanacaste). The surrounding communities include: Parcelas de Santa María, San Jorge, Santa María Colonia Libertad, Buenos Aires, Las Delicias, Mundo Nuevo and Colonia Blanca (see map 1).

#### 4.2 Importance of Rincón de la Vieja National Park

Rincón de la Vieja National Park (PNRV) is part of the 28 national parks in Costa Rica, established by the National System of Conservation Areas (MINAET-SINAC, 2008).<sup>8</sup> At national and international levels, this park is widely known both for its scenic beauty and the presence of a climate of dry forest. Besides, its characteristic name dates from an Indigenous legend of our country, which is created orally every time that visitors consult the villagers about the origin of the name of the volcano<sup>9</sup>

This National Park offers several attractions for tourists (see box 1). First, scenic attractions including fumaroles, mud pots, and waterfalls, which constitute the fundamental basis for productive activities of the tourist cluster developed in the communities surrounding the park.

##### **BOX 1 GENERALITIES OF PNRV**

**Access:**

25 Km east of the La Victoria City of Liberia, Guanacaste

**Extension:** 14 160, 63 hectares.

**Attractions of the PNRV:** natural resources such as fumaroles, mud pots, its crater, waterfalls, water bodies, trails and hot springs.

**Height of Rincón de la Vieja**

**Volcano:**

1 898 msnm

**Other heights:**

Von Seebach 1 894 msnm

Santa María 1916 msnm

**Source:** ACG (without date), MINAET et al (2009).

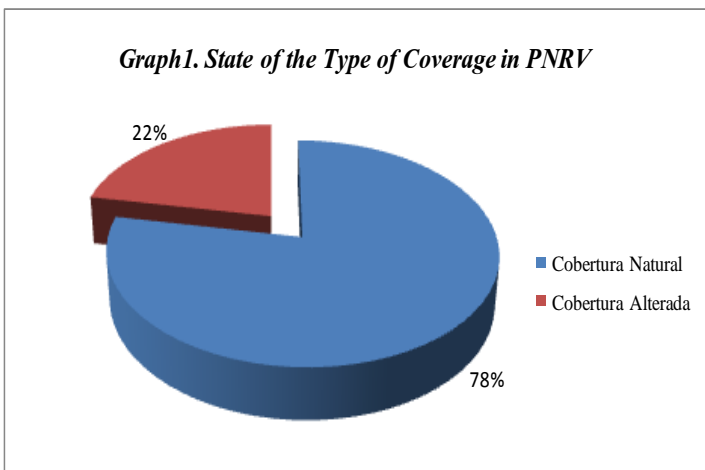
In addition to the conservation of ecosystems and scenic beauty, the park also provides environmental services for the protection of valuable water sources. The Rincón de la Vieja massif is part of the watershed between the Caribbean and the Pacific, of the northwest area of the country; and 32 rivers have their source here, among them El Colorado, Blanco and Ahogados. This water richness is used by the Costa Rican Institute of Aqueducts and Sewer Systems of Liberia to supply at 70% of their users (section 6).

<sup>8</sup> The lands that make up this park have been paid in a 100% by the state. So, the most recent initiatives aim to expropriate the lands that are located in the boundaries of the park to promote the existence of biological corridors.

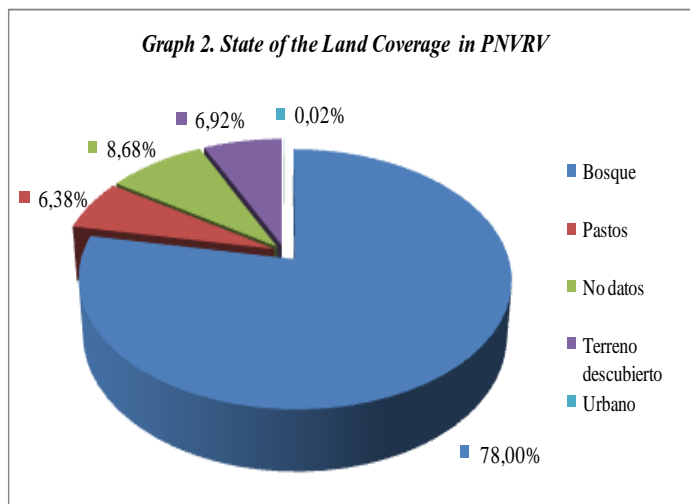
<sup>9</sup> Thus, the tradition retells the story of an impossible love and the leading role of its heroine. Same as after suffering a major disappointment leaves the town and goes into a cave, where turns from a princess into a shaman, and starts practicing magic to help those who request it. All this is from his hideout known as Rincón de la Vieja.

According to data from 2006, the vegetation of PNRV is mainly natural (Chacón, 2009). This natural coverage refers to forests. According to the classification systems of life zones of Holdridge (1979), the vegetation of forests within the Park corresponds to five life zones: (1) tropical wet forest transition to premontane, (2) rain premontane forest, (3) low rain montane forest, (4) tropical wet forest transition to premontane, and (5) wet premontane forest.

As shown in Graph 1, 78% of the park has natural coverage. This vegetation includes rainforests in the Pacific sector. As well as wet forests and very wet forests in the Caribbean sector, cloud forest in the massif and of transition between dry rainforest in the west foothills of sectors of Las Pailas and Santa Maria and among different life zones. In addition, small patches of scrubland, with some patches of secondary forest, native pasturelands growing on old lava flows and forests (according to what is observed during the fieldworks).



**Source:** Own elaboration based on Chacón (2009).



The remaining 22% of the Park's coverage refers to coverage altered by human activities (see Graph 2). In particular, the grass refers to 6.38%, while the open lands add up to 6.92%, urban is associated with a 0.02% and 8.68% record no data.

Due to the diversity of ecosystems represented in the five life zones indicated, the fauna is very diverse in the Park (MINAET et al, 2009).

**Source:** Own elaboration based on Chacón (2009).

Considering mammals, it should be noted the presence of the white-tailed deer (*Odocoileus virginianus*), collared peccary (*Tajassu tajacu*), tepezcuintle (*Agouti paca*), tapir (*Tapirus bairdii*), coati (*Nasua narica*), jaguar (*Panthera onca*) and guatusa (*Dasyprocta punctata*), etc. Additionally, a total of 282 bird species have been reported in the Park. The same ones include the bellbird (*Procnias tricarunculata*), squirrel bird (*Piaya cayana*) and mosquitoes (*Tyrannus melancholicus*), among others.

### 4.3 Management and Administration of Rincón de la Vieja National Park

Rincón de la Vieja National Park (PNRV) was established on July 30<sup>th</sup>, 1955, through the Law of Creation of the Tourism Costa Rican Institute (ICT), what defined as a space for protection, through the control and prevention from civil society from possible volcanic eruptions. This declaration is modified by the first Forest Law (1969), followed by Act No. 5398 (1973) ratified the creation of PNRV attached to the General Forest Department of the Ministry of Agriculture and Livestock. The Law of National Parks, Act No. 6084 (1977) transferred the custody of the Park to the National Park Service of Costa Rica.

Executive Decree 8493-A (1978) increased the extension of PNRV, which at that time covered 11 700 ha. This when was added the farm known as Hacienda Guachipelín. Whose lands are located at the foot of the volcano and are known as Las Pailas. The name has been kept until 2010, in one of the entrances of the park.<sup>10</sup>

According to MINAET et al (2009), the objectives of conservation of PNRV are the following:

1. To contribute in the biological and ecosystematic strengthening of Guanacaste Conservation Area, ensuring the latitudinal migration of different species and the mitigation of the effects of the climate change.
2. To strengthen the protection of river basins
3. To protect the volcanic activity whose characteristics are unique in Costa Rica
4. To promote tourism based on their geological and tourist attractions.
5. To protect the largest existing population in the wild state of the National Flower of Costa Rica: the Guaria Morada.

#### **BOX 2 OBJECTIVES OF CONSERVATION OF PNRV**

##### Objectives of conservation of PNRV:

1. To contribute in the biological and ecosystematic strengthening of Guanacaste Conservation Area, ensuring the latitudinal migration of different species and the mitigation of the effects of the climate change.
2. To strengthen the protection of the river basins.
3. To protect the volcanic activity, whose characteristics are unique in Costa Rica
4. To promote tourism based on their geological and tourist attractions.
5. To protect the largest existing population in the wild state of the National Flower of Costa Rica: the Guaria Morada

**Source:** MINAET et al (2009).

<sup>10</sup> As was mentioned in section 4.1, the current extension of PNRV is of 14.160,63 hectares.

#### 4.4 Administration of Rincón de la Vieja National Park

In operational terms, the administration of the Rincon de la Vieja Volcano National Park is in charge of The Guanacaste Conservation Area (ACG, ‘‘World Natural Heritage Site UNESCO’’), whose administrative office is located in Santa Rosa. The ACG, along with the rest of 10 Conservation Areas, operate with SINAC as a ruling entity for the administration of protected wildlife areas in Costa Rica.<sup>11</sup>

For the attention of visitors, two official entrances have been established by PNRV. The sectors correspond to Santa María and Las Pailas, which have the presence of at least 2 rangers in each sector.

##### Sector Santa María

The entrance to the Santa María Sector is located at the southwest corner of the park. The entrance road involves using local tracks of the Barrio La Victoria until getting to the town of Colonia Blanca. From both sectors, is possible to climb the crater; however, the main economic activities are concentrated around Las Pailas Sector.



**Photo 1:** Entrance to PNRV by the Santa Ma Sector.



**Photo 2:** La Casona

Visitors entering by the Santa María Sector pay the amount of the ticket in the ranger post, located within the Casona.<sup>12</sup> This is a typical building of the ranches of the area, which has been converted into a showroom, where it is offered the observation of volcanic rocks, implements used in the work of the farms-i.e. the so called ‘‘pieces of metal’’-, photographs of the volcanic craters and the Colorado and Blanco Rivers, as well as animal bones-i.e. monkeys and peccaries, which have been found dead by rangers on their routes.

Other places to visit in the Santa María Sector include: The Hummingbird trail, Mud pots, Enchanted Forest Waterfall, Hot Springs, and Viewpoint.

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<sup>11</sup> In 2010, SINAC is composed of eleven regional administrative units, called conservation areas, which are located along the national territory (including the continental and marine area).

<sup>12</sup> Since the late nineteenth century until 1973, the Santa María Ranch was one of the largest ranchers of the area. It was devoted to dual purpose stockbreeding (milk and meat), and the cultivation of coffee and sugar cane.

### Sector Las Pailas

The entrance to Las Pailas Sector is located on the western end of the park. The access to this place is via the city of Liberia, on the Interamerican Highway (5 km north); and then to the northeast along a ballast road of 20 km until getting to Las Pailas Sector. It is important to mention that more than 90% of tourists access through this sector. So, the Santa María Sector constitutes the access road for less than 10% of tourists.



**Photo 3:** Entrance to PNRV by Las Pailas Sector

Las Pailas Sector has its name because of the volcanic phenomena that take place in its surroundings (see Photo 4). During the months of March and April, the activity reaches its maximum. The ascent to the main crater takes about a day, and without exception all visitors who want to get to their surrounding areas must do it only with a guide authorized for such purposes.

Visitors are prohibited to access the surroundings of the crater on their own. This is because the trails lack adequate signage, which represents a significant risk to the safety of tourists. Despite these indications of the rangers, some tourists assume the risk of ignoring the warnings. Such is the case of the tourist David Gimelfarb, who enters alone to Las Pailas Sector; the morning on August 12<sup>th</sup>, 2009. Unfortunately, this tourist remains lost to July, 2010, despite intensive search efforts undertaken by the Red Cross patrol, rangers and the U.S. military aboard two Black Hawk helicopters<sup>13</sup> like in brigades composed of dog units specialized in search of human remains.<sup>14</sup>



**Photo 4:** Boiling mud known as Pailas

In terms of public opening hours, Las Pailas Sector is closed every Monday, while the Santa María Sector is open. Meanwhile, in both sectors are received tourists from 7 a.m. until 3 p.m. (Sihezlar, personal communication, 2009). Additionally, in the case of incidence of high intensity rainstorms, the park is closed to the public until weather conditions

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<sup>13</sup> Source: [http://www.nacion.com/ln\\_ee/2009/agosto/24/sucesos2067758.html](http://www.nacion.com/ln_ee/2009/agosto/24/sucesos2067758.html)

<sup>14</sup> As it is observed in the Park during the trip made from December 2<sup>nd</sup> and December 6<sup>th</sup>, 2009.

improve. This because, the content of boiling mud lagoons overflows and threatens the safety of visitors.

All the tourists who enter to Las Pailas Sector must pay a toll. Same as charged by the owner of Hacienda Guachipelín by passage through his property. In this connection, a gate remains closed and is after the payment of ¢ 700 per person that is permitted the access for visitors (Photo 5).

This charge is independent from the payment of the entrance to the PNRV, and the incomes generated are exclusive property of the owner of the farm. So, SINAC does not receive any income for this item: despite all tourists exclusively come to visit the park under its administration.



**Photo 5:** Toll in the Santa María Sector

**BOX 3**  
**ADMISSION AND LODGING**

Ticket Price:

- Foreigners: \$10.
- National adults: ¢1.000
- National children and residents from 6-12 years old: ¢400

Lodging:

- Right to camp: US\$2

Payment of the toll:

- Las Pailas Sector: ¢700/person
- Las Pailas-Santa María Sector: ¢700/person

**Source:** Fieldwork

An additional toll is charged to tourists who travel from Las Pailas Sector to Santa Maria. In this sense, a road was recently paved by ICE which allows the access between the two sectors. As in the case of Hacienda Guachipelín; a gate remains closed and is up to each visitor pays ¢ 700 when is allowed him to enter.

Again, the toll is independent from the payment of the ticket to PNRV, and the incomes generated are exclusive property of the owner of the farm. So, SINAC does not receive any income for this item: despite all the tourists come just to visit the park under its administration.

The official vehicles belonging to governmental organizations such as the Universidad Nacional (UNA) are exempt from the payment of tolls. This was as result of negotiations between SINAC and owners of the farms where the collection booth is located (according to information gathered during the fieldworks). As stated by the experts during the validation workshop (see annexes), the owners of the farm have expressed their interest in keeping these lands under their ownership, and; therefore, they have refused the purchasing offers that on several occasions governmental officials have gave them, to eliminate this charge to tourists in the park.



## 5. CLUSTER ANALYSIS AROUND THE PNRV

Following the methodology of cluster, the case study of PNRV carries out an analysis of socio-economic contributions at different scales. At the local level, the quantification of contributions focuses on socio-economic activities that take place in the district of Curubandé. Same that is located in the canton of Liberia, in the province of Guanacaste.

In considering the regional level, the count includes a total of 5 districts distributed in two provinces. In this regard, the districts include Dos Ríos and Aguas Claras (both located in the canton of Upala, Province of Alajuela). As well as the districts of Mayorga, Cañas Dulces and Liberia (all located in the canton of Liberia, Province of Guanacaste). For its part, the contributions that are made outside the regional level are recorded as contributions at the national level. Additionally, the socio-economic dynamics of the tourist cluster generated around the PNRV implies the accounting for contributions that are located on the international sphere, that is, outside the boundaries of Costa Rica.

Based on this approach are identified different productive activities conglomerate and related to PNRV. Tourism emerges as the most important one both in terms of incomes creation, and in the dynamics of generation of various related activities that give support to the cluster associated with the park. Visitation is totally dependent on the environmental services coming from the park and its surroundings, for example, scenic beauty and biodiversity protection.

The second one most important is drinking water supply for both human consumption and for productive activities, which constitutes a determining factor in the prosperity of the Canton of Liberia. This water resource is dependent on environmental services coming from the park or its surroundings, for example, scenic beauty and protection of water resources.

Other service activities and recreation are also identified as part of the socio-economic conglomerate around the park. This category includes research, education, leisure time and spiritual experience. All these activities are directly related to conservation management of the PNRV under the administration of SINAC.

Figure 1 presents a graphical approximation to the cluster and sub-conglomerate of the activities and sources of income identified around the PNRV. The core activity in which are based all others, is the one of conservation and natural protection that carries out the State in the park. This activity is related to the positive *externality* provided by the natural heritage of the PNRV and its ecological services, which allow the existence of other effects chained on the development. For example: economic activities, research and education, as well as leisure time and spiritual experience.

The interactions among the different productive, commercial and recreational activities represent interesting feedback with the central axis of the cluster conformation, e.g. the activity of conservation and protection of PNRV. Thus, research and education, the management of the park by SINAC, as well as the tourist related activities are largely

determined by the existence of the park. While these activities directly provide resources in the form of incomes by income fees or by transfers to SINAC, such as in the case of the management of the park and research activities for which it is paid a kind of fee mainly through INBIO (Induni, 2007). Indirectly, such activities generate contributions to the local development through investments in infrastructure and services that enable a greater visitation of the park and, hence, the area of influence.

Various interactions take place internally in the cluster. The existence of this National Park makes possible the protection of ecosystems and natural resources. They are the same ones that constitute the material basis for the development of various socio-economic activities.

The socio-economic activities involve flows of productive inputs, which in turn result in the movement of money measured in monetary units. Additionally, the existence of the park makes possible the generation of more qualitative services, which are related to the welfare of human populations, which are not measurable in monetary measures. For example, education, leisure time and information, that receives both the surrounding communities and national and foreign tourists. This implies an improvement in the welfare of these people because it involves a higher quality of life.

Figure 1 shows the cluster of development around the PNRV. In this respect, protection and conservation of ecosystems and natural resources of the park constitutes the center or dynamic pole of the cluster. The same which consists of 4 main axes:

- Management (visitation and maintenance of the park) by SINAC.
- Related economic activities: to tourism and related ones, real estate<sup>15</sup>, energy and drinking water supply (human consumption and irrigation).
- Education and training in environmental matters driven by Guanacaste Conservation Area, Costa Rican and foreign universities, ONGs, international chains of television, and local organizations of environmental education.
- Leisure time and experience of tourists, provided by activities that take place within the park and its surroundings, such as visits to the crater and fumarolic lagoons, recreation in rivers and streams, hiking on trails and recreation in viewpoints.

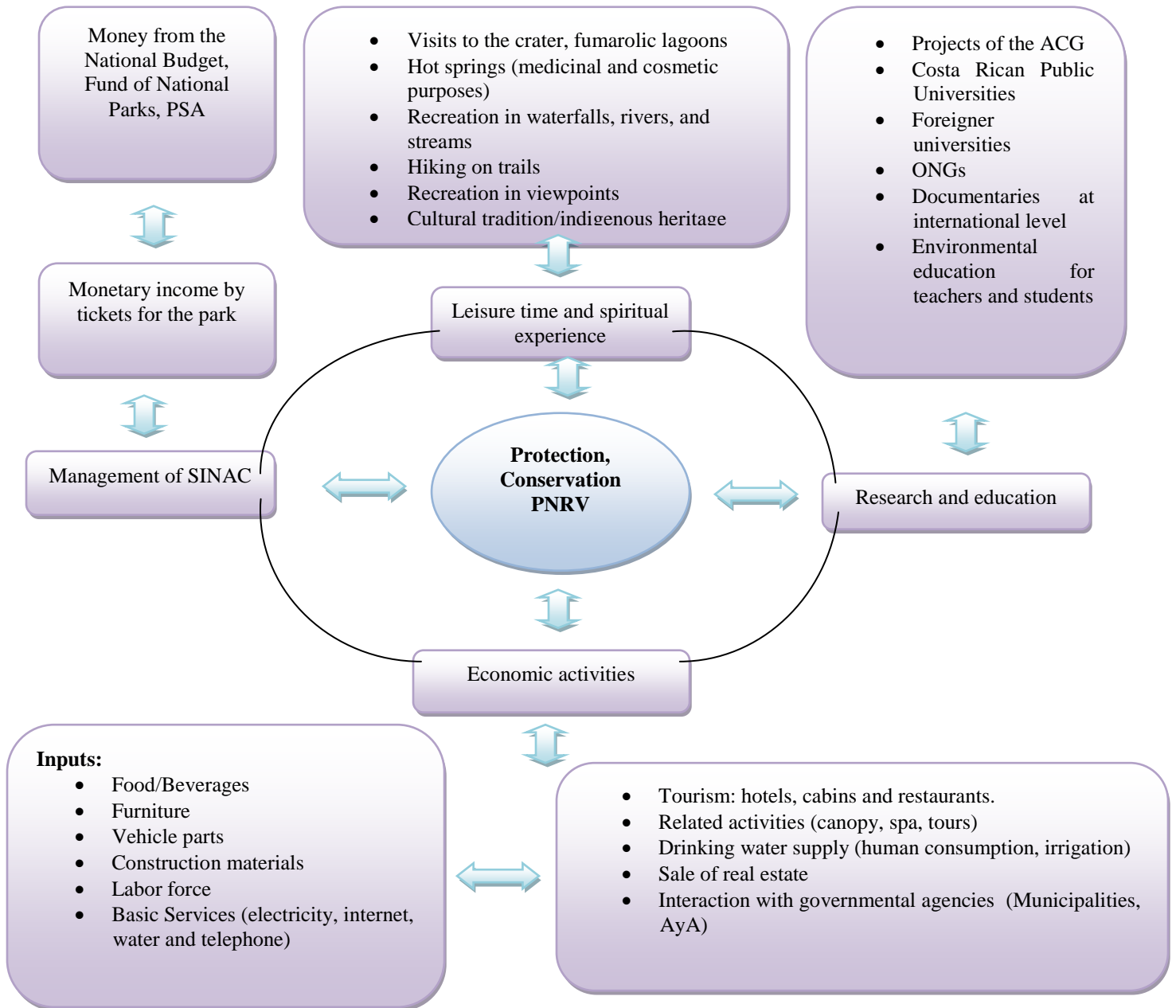
In the following sections of this study will be presented an analysis of the contributions of the PNRV at the local (district of Curubandé), regional (Dos Ríos, Aguas Claras, Mayorga, Cañas Dulces and Liberia), national and international level. All this based on the perspective of the cluster mentioned before.<sup>16</sup>

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<sup>15</sup> During the fieldworks are observed several billboards of real estate on properties located in the road that goes to the Sector of Las Pailas. The names of such developments take explicit usage of the name of PNRV – as well as allusion to its scenic beauty- for purposes of market and sales. Despite of multiple ways to contact to the entrepreneurs associated with these businesses, it resulted impossible to get information to include it in this study. So, the only information available is that the price per m<sup>2</sup> is on average of US\$25.

<sup>16</sup> For more details see the methodology and fieldworks that are presented in the annexes.

**Figure 1 Cluster of development around the PNRV**



Source: Own elaboration

## 6. SYSTEMATIZATION AND ESTIMATION OF THE CONTRIBUTIONS OF THE PNRV

PNRV provides monetary benefits (incomes by tourism, etc.) and non-monetary contributions (scenic beauty, water resource, conserved biodiversity, etc.) to the country and to the communities that are located in the surrounding areas.<sup>17</sup> This park also generates an important benefit to the communities that are not immediately nearby the park, but which are within its area of influence (regional) and, above all, enjoy the water which rises on it. Taking as reference the canton of Liberia, the beneficiaries of this water resource approximately amount to 32.692 people.

In the following sections, this document presents the systematization of the contributions reported by the existence of PNRV. This one includes contributions both qualitative and quantitative, whose information was available at the moment of carrying out the investigation. That is, the data collected, systematized and analyzed at the end in search of secondary information, interviews for key actors and fieldworks made in the framework of the project (for more details see annexes).

Section 6.1 presents what is related to one of the 4 main axes called **Leisure Time and spiritual experience**. This one refers to non-measurable qualitative benefits in monetary units, which consist in the experiences that tourists express at the moment of visiting the park, and that depend directly on the ecosystemic environmental services that are preserved there. The most important are scenic beauty and the conservation of biodiversity.

An approximation to the estimate contributions in monetary terms begins from section 6.2. In this regard, box 4 summarizes the quantification of such contributions. In 2009, PNRV contributed with a total of 12.8 billion colones to the economy and Costa Rican society, as well as to diverse actors from the international sphere.

Most of these incomes are generated in cluster activities at international level (61, 2%), national (18, 5%), followed by contributions attributable to PNRV at regional level (18, 1%) and local level (2, 2%), respectively.<sup>18</sup>

**BOX 4**  
**Total of contributions generated by PNRV in 2009 and its scope at international, national, regional and local level, respectively:**

**Approximate Total:**

12.8 billion colones or  
US\$23 million dollars  
(TC of 555 colones per US\$)

- International (61, 2%)
- National (18, 5%)
- Regional (18, 1%)
- Local (2, 2%)

**Source:** charts 5, 6, 7 and 8.

<sup>17</sup> Those located in the district of Curubandé, which result to be the closest ones to Las Pailas (the sector of largest visitation of the Park).

<sup>18</sup> For more details see charts 5, 6, 7 and 8.

### 6.1 Qualitative contributions referring to leisure time and spiritual experience

This research assumes that leisure time and recreation are activities that social actors carry out voluntarily to increase their welfare. That is, these people spend part of their available incomes to buy goods and services that cause them an impact on their daily life. This one is assumed as positive, since it implies the generation of pleasant emotions, and therefore, they increase their quality of life.

In the specific case of PNRV, the experience of the tourist implies a determined set of practices that are given an enjoyment supported by the social value given and recognized in the attractions of the park. These ones depend directly on the conservation of environmental services of great importance like scenic beauty and the conservation of the biodiversity, among others.

Similarly, leisure time and spiritual experience are associated with the usage of time with therapeutic purposes both for the body and mind. In this regard, the visit to the attractions of the park is associated with an activity of rest that is made outdoor, which allows a “delight” derived directly from the contact with nature. That is, the natural attractions of PNRV constitute environmental services that satisfy the spiritual needs of tourists who are attracted to them.

Considering the information collected during the fieldworks,<sup>19</sup> interviewed tourists say that in their opinion the main attraction of PNRV is scenic beauty associated with the volcanic activity. In this sense, fumaroles and lagoons of boiling water and mud are pointed out as the factors that call the attention the most of visitors while they walk the circular trail in Las Pailas Sector. Most of them carry cameras both photographic and video that, according to what they say, used them to capture these attractions and keep them as a memory of their visit to the park.

Other attractions that interviewed tourist mention are associated with the conservation of biodiversity. In terms of fauna, the sightings include monkeys, guatusas, butterflies, and coatis. On the other hand, flora is perceived by tourists as the vegetation and the presence of forests, while the different trees compose natural environment.



**Photo 6:** Coati (*Nasua Narica*) in Las Pailas Sector

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<sup>19</sup> For more details see annexes.

## *6.2 Contributions at local level*

### *6.2.1 Impact on local tourism*



**Photo 7:** Hotel located around the PNRV

As it was mentioned before in previous sections, the tourist development at local level in Curubandé is one of the most important benefits that can be attributed to the existence and conservation of PNRV. The tourist who visits Curubandé comes attracted by the Park. Both the scenic beauty associated with the volcanic activity and the presence of biodiversity is pointed out by interviewed tourists as the main attractions of the place. These ones are the driving force of the productive activities that constitute the Cluster of development around the Park, which was presented in section 5.

Following are shown the most relevant characteristics of the activities that constitute the tourist cluster generated around the Park. All of them are identified for purposes of this case study.

### *6.2.2 Profiles of visitation and average expense*

During the fieldwork, a total of 401 tourists are interviewed (national and foreign).<sup>20</sup> The information collected is used as a valuable input to create a profile of the tourist who visits the PNRV. This one allows establishing the dynamics associated with the socio-economic activities that respond to the purchasing of goods and services by such tourists.

With the aim of completing the statistically significant sample of tourists, the application of instruments is made in two trips to the Park.<sup>21</sup> The first one takes place in the month of August, while the second one is made in December, both in 2009, so that the information collected respond to the answers expressed by the tourists who were in the place at the moment of the surveying process.

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<sup>20</sup> For more details see the annexes.

<sup>21</sup> In the 4 fieldworks, the tasks of surveying take place in both sector of the PNRV (Las Pailas and Santa María). This includes the contact both with tourists and rangers. On the other hand, the productive activities consulted are located in the communities of the district of Curubandé, and the 5 districts considered by the study as the regional scale (Dos Ríos and Aguas Claras of Upala, Alajuela, as well as the districts of Mayorga, Cañas Dulces and Liberia of Liberia, Guanacaste).

In terms of the daily expense made by the tourist inside the Park, people say they had spent on average ₡37.841, 02 (US\$64, 96). This amount includes the payment of the ticket, as well as food, transportation and one night of accommodation. Other expenses include the payment for basic services (i.e. personal expenses of articles of personal cleanliness or medicines) and recreation activities that are hired in the hotels around the Park; like for example horseback ridings or canopy (see box 5).

The average stay in the surroundings of the Park is of 1, 4 days. This average remains independent from the origin of the tourists, that is, it is the same for national and foreign tourists (see chart 1). However, there are significant differences regarding the additional destinations that these people visit.

**BOX 5**  
**AVERAGE PROFILE OF THE TOURIST**

Average stay of the Tourist in PNRV: 1, 4 days

Daily average expense of the visitor inside the PNRV: ₡37.841, 02 (US\$64, 96), for food and accommodation.

Other expenses: basic services, and recreation activities additional to the attractions of the park.

**Source:** Own elaboration based on the results of the surveys applied in PNRV

National tourists, who represent 6% from the total of interviewees, say that they take advantage of their visit to the Park to then move to any of the beaches from Guanacaste (for example: Coco Beach). The remaining 94% of the interviews correspond to foreign visitors, who come with an all-inclusive package, which consist on average of 5 tourist destinations, among which is found the Park.<sup>22</sup> In the case of all the interviewees, the long walk on the circular trail is the main activity that visitors do inside the park and once finished, the people continue with their planned agenda.

**Chart 1**  
**General characteristics of Tourists who visit the PNRV**

Tourists	%	Average time in PNRV	Organization of the trip		Means of transportation					Would they pay more for the ticket price?	
			On his/her own / Other means	Agency or Tour-operator	Public Bus	Tourist Bus	Rented car	Own or familiar car	Others	% Yes	% No
Foreign tourists	94%	1,4	57%	37%	7%	25%	57%	1%	4%	33%	61%
National tourists	6%	1,4	6%	0%	0%	0%	0%	5%	1%	5%	1%
<b>In Total</b>	<b>100%</b>	<b>1,4</b>	<b>63%</b>	<b>37%</b>	<b>7%</b>	<b>25%</b>	<b>57%</b>	<b>6%</b>	<b>5%</b>	<b>38%</b>	<b>62%</b>

Source: Fieldworks.

<sup>22</sup> More details about Tourist packages are shown in section 6.3.2

In general, tourists who get to the Park, stay in hotels or cabins located in surrounding communities. The visit is short, since most of tourists leave the Park as soon as they finish the trails and they go immediately to other tourist destinations.

In terms of the total average it results that 63% of the total of interviewed tourists organize their trip on their own (where 57% of these visitors are foreigners and 6% are national). While the remaining 37% contract the services of a travel agency or tour operator. At this point it is important to note that this figure corresponds fully to foreign tourists. This implies that all interviewed national tourists said their trip was organized on their own.

Considering the means of transportation 57% of foreign tourists use a rented car, 7% public bus, 25% travel on a tourist bus, 1% on own car and 4% on other means of transportation. In the case of national tourists, they use basically own car and other means (6%).

Clearly, transportation expenses and logistic organization of the trip do not occur directly in Curubandé or other communities of the direct area of influence. On the contrary, such disbursements are left mostly at the national level and international level (as it is shown in sections 6.4 and 6.5).

Additionally, the tourists are asked about their willingness to pay an additional amount for the ticket to PNRV. 62% of the interviewees express to be against of it (61% foreigners and 1% national tourists), against 32% who would be willing to pay it (33% foreigners and 5% national tourists). This consultation aims to the willingness of payment of visitors, whose additional amount to the ticket would go to improvements inside the PNRV, the same ones that are suggested by interviewees.

### ***6.2.3 Expenses incurred in restaurants and coffee bars***

During the fieldwork, the research team applies one survey to the administrator of the single restaurant of the community of Curubandé. At the moment of applying the survey, this business has few months in operation. This restaurant is built by its owner and some pawns, while its belongings, furniture, and other equipment, as well as the inputs are bought in Liberia. The usage of the land before the construction corresponded to grassland and is still used part of the land for this purpose.



**Photo 8:** Example of the main dish



According to the information gathered, the means of transportation that the customers of the restaurant use are rented and own cars, and others mobilized on foot. The 70% of their customers are national and the 30% are foreigners, so we can assume that at least this 30% are people who are directly attracted by the existence of the PNRV. The business is promoted through banners and by the villagers, who represent the largest number of their customers. Additionally, the restaurant is not associated with any organization or tourist enterprise at local or national level.

In terms of employment, the restaurant holds 2 people during each season –high and low-, who live in the community and they are not part of the family nucleus of the owners. Taking into account environmental variables, the business uses water that comes from a well. Besides, the separation and recycling of wastes is practiced and the organic wastes are transported to Liberia.

The sales of the restaurant are maintained during each season –high and low-. One aspect to highlight is that the incomes exclusively come from the sale of beverages and suppers, because of they do not sell lunch or breakfast. The menu of the suppers includes dishes of pork ribs, as well as beef and chicken cuts. Generally, the foreign tourists are who eat dinner; while local villagers only consume beverages.

Chart 2 shows an estimation of the monthly profits of the restaurant. In order to adjust the calculation to reflect –the nearest way possible- the contributions directly attributable to the existence of the PNRV, the research team carries out the estimation of the profits corresponding to a 30% from the total of incomes.<sup>23</sup>

**Chart 2**  
**Contribution of the sale of meals nearby the PNRV**

<i>Monthly approximate income</i>	<i>Monthly customers*</i>	<i>Amount*</i>
<b>High season</b>	1 200	₡ 3.600.000,00

**Source:** Own elaboration, according to data gathered in the survey.

\*The amount of included customers corresponds to 30% of the foreigners who go to the restaurant.

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<sup>23</sup> This because, according to the survey the 30% corresponds to the proportion of foreign tourists who dine in the business as part of their visit to the National Park. Reason by which the estimation in no case should be considerate as the total monthly profit of the restaurant, that implies all the customers even the locals, who are excluded for the purposes of the effects of the calculation because it is assumed that their visits to the restaurant are independent of the existence of the PNRV.

### 6.2.4 Impact on related activities

In the framework of the analysis of the *cluster* that guides this case study, the related activities were identified as those which provide the basic inputs (grocery stores, furniture shops, etc.) and support the development (tour operators, travel agencies, airlines) of the tourist activity focused on hotels and cabins. In Curubandé are distinguished four types of related activities that make some of their sales directly to the tourists of PNRV or to the identified tourist businesses (box 6). These activities are: (1) coffee bars, (2) grocery stores, (3) bazaar, and (4) souvenir shop. A fifth activity is tourist transportations or excursions that are developed at the regional level.

#### a) General aspects of the related activities

Before the boom of tourist activity, the villagers of Curubandé engaged in agriculture and stockbreeding and work at home (housewives).

#### b) Related activities located in the district of Curubandé

Among the related activities that are found in the communities located in the district of Curubandé are distinguished three related activities: Supermarkets, Grocery stores (Minimarket), coffee bars. For its part, the Souvenir Shop is an activity that takes place outside the park and the community, which relies 100% on tourism. All activities get benefits by the presence of the PNRV.

#### BOX 6 RELATED ACTIVITIES OF THE DISTRICT OF CURUBANDÉ

Kind of activities: Coffee bars, grocery stores, bazaar, souvenir shop.

Services or products that are offered?

- Meals
- Groceries
- Bazaar
- Crafts

Origin of the customers:

- Most are national between 70% - 92%
- Few foreigners between 8% - 30%.

Except for the coffee bar which has more foreigners (75%) than national ones (25%)

How many in favor of an increase in tourism in the park? 100%

Opinion about the management of MINAE: 80% in favor, because they conserve nature, the remaining 20% do not know it.

Improvements to increase tourism in the park:

- To eliminate toll: 60%
- To improve highways: 40%

Where do you buy the goods?:

- Liberia: 100%

Means of transportation to carry and bring goods:\*

- Car: 40%
- Truck: 20%
- Bus: 30%
- Others: 10%

Where do you buy the possessions and furniture?:

- Liberia: 40%
- Manufactured at home: 20%
- Bought to a neighbor: 20%
- Do not know: 20%

Are you planning on expanding the local or services:

- Yes: 20% (Bazaar)
- No: 80%

Investment: Only one activity provides the datum around 3 million colones.

**Source:** Fieldwork.

These activities are located in the community of Curubandé. The majority of family members work on the business. To cite one example, grocery stores are 3 of the 5 interviewed related activities, which also provide inputs to the community. Besides, one of the grocery stores offer the service of bazaar; while the other two activities offer the service of coffee bar and crafts, just one has employees outside the family nucleus. These activities represent the family livelihood because no one has any other source of income. Before working in the grocery stores, these people were engaged in household duties (housewives), laborers and they worked at a hotel.

In terms of organization, the enterprises are not part of any communal, commercial or tourist association at national and international level. Considering environmental variables, the water used comes from 80% aqueducts and 20% from a well. All interviewed enterprises have no sewage treatment plant, while 60% of them manage the solid wastes by burning the garbage, as well as burying the organic wastes, while 40% recycle plastic and glass bottles. The 100% of the activities practice the separation and recycling of wastes, but none has any kind of certification. During the fieldwork, related activities provide data partially. So that the estimations carried out are based on the available information which supports the calculation of the following approximate profits per season (chart 3).

**Chart 3**  
**Contribution of related activities to PNRV**

<i>Approx. income per month</i>	<i>Amount*</i>
<b>High Season</b>	€775.000,00
<b>Low Season</b>	€283.750,00

**Source:** Own elaboration, according to data gathered in the interview

\*The amounts are an estimation of the average profits per month of the 5 activities.

### ***6.2.5 Contribution through the Payment for Environmental Services***

In the buffering area or in areas close to PNRV there are several projects that receive PSA. In 2009, the owners of 60 hectares received a sum of nearly 10.7 million colones for the modality of Forest Protection PSA (see Chart 4). This payment has a double effect: (1) generating incomes for the owners of those forests, and (2) contributing to the conservation of forest cover and biodiversity on these lands.

**Chart 4**  
**PSA Protection of Forests in the surroundings of PNRV 2009**

<b>Year</b>	<b>Number of Hectares</b>	<b>Payments for PSA Protection, total amount in million colones</b>
2009	60	10.656.000
<b>TOTAL</b>	<b>60</b>	<b>10.656.000</b>

**Source:** Own elaboration with data from FONAFIFO, Regional Office from Cañas, Guanacaste.

### *6.2.6 Contributions for the payment of toll*

All visitors to PNRV must pay a toll charged, which is charged for traveling along the access road to Las Pailas Sector. In this regard, the toll booth is located on a farm owned by a family, which in turn owns a hotel located in the vicinity. The 700 colones that are charged per person and the amount collected in its entirety represents an income for the family, as the park administration does not receive any income from this item (see section 4.4).

Interviewees expressed discomfort over this collection. Similarly, the experts interviewed reiterate the need for the State to expropriate the lands and made public this access road. In this sense, it is suggested government intervention to solve this situation as soon as possible by the corresponding authorities.

### *Summary of the incomes generated at local level by PNRV*

Based on the data previously presented, it was structured box 7 which summarizes the socio-economic contributions (as valuable in monetary terms) of PNRV at the local level. In the fieldworks carried out in the area was proved that communities located in the district of Curubandé receive the greatest direct influence of the park.

According to data obtained through surveys, the total of income generated by tourists who visit the PNRV at local level was about 281.8 million colones in 2009 (see also chart 5). This income is distributed among the following groups of social actors:

- 13 families own hotels and cabins
- Owner family of the farm where the toll is located
- 32 families of workers hired in related activities
- Owners of 60 hectares of forests in the buffering area of PNRV.

**BOX 7  
SUMMARY ECONOMIC  
CONTRIBUTIONS OF PNRV TO THE  
LOCAL DEVELOPMENT (2009):**

**TOTAL:** 281.8 million colones or 507.8 million dollars

Which activities and actors participated and how much?

- Hotels and Cabins (65%)
- Salaries and employment in hotels and cabins (15%)
- Payment for tolls (12%)
- Payment for PSA (4%)
- Employment related activities (4%)

**Source** Chart 5.

Chart 5. Systematization of Local Contributions of PNRV

SCOPE-SCALE OF THE CONTRIBUTION	BENEFITED ACTIVITIES AND USERS CLASSIFICATION		TYPE OF CONTRIBUTION (GOOD/SERVICE/EXTERNALITY) VALUED ACCORDING TO SOURCES		OBSERVATIONS	% OF CONTRIBUTION	
	Type of Activity	Type of user/benefited "stakeholder"	Incomes				
			Colones	US\$			
<b>LOCAL</b>	Hotels and cabins	Owner families of 13 hotels and cabins	182.224.276	328.332	It represents the incomes but not the expenses. Calculated based on 90% of tourists whose visit depends on the existence of PNRV	64,7	
	Salaries and employment in hotels and cabins	Workers of hotels and cabins, salary expenses.	44.827.001	80.769	Employ of 35 family people and 143 extra family people	15,9	
	Payment of tolls	Owner family of the farm where the way is located	32.753.700	59.016	The toll is charged to all <b>tourists</b> (¢700 per person)	11,6	
	Payment for Environmental Services	Owners of forests in the buffering area.	10.656.000	19.200	It includes 60 hectares under the modality of PSA Protection received in 2009.	3,8	
	<b>RELATED ACTIVITIES</b>						
	Coffee Bar, Grocery Store, Bazaar and Souvenir Shop	4 families from the district of Curubandé	1.650.372	2.974	Family Employment	0,6	
	Salaries of the coffee bar, grocery store, bazaar and souvenir shop	Workers of the 4 related activities (salary expenses)	2.391.519	4.309	Family Employment	0,8	
	Salaries of the employees of the tour operator	3 people from the district of Curubandé	3.194.580	5.756	Hiring depends on the sales	1,1	
Salaries and employment in restaurant	2 people from the district of Curubandé	4.137.035	7.454	Additional to family employment	1,5		
<b>Local Total</b>			<b>281.834.483</b>	<b>507.810</b>		<b>100,00</b>	

Source: Own elaboration based on information gathered in fieldworks.

### 6.3 The contributions of PNRV to the regional development

#### 6.3.1 Contributions generated by water which has its source in PNRV

The PNRV contains important water richness.<sup>24</sup> This production of water in the area is another of the main benefits offered by PNRV, both locally and regionally.

The water intake of the Plant of AyA is located in Liberia River (MINAET et al, 2010). Inside the PNRV the so-called Channels of Santa María have their sources, which feed this river (Arias, Brenes, Carrillo and Chacon, personal communication, 2009). In this sense, the park provides an important environmental service for protection of water resources supplied for human consumption and irrigation. This represents a positive impact at regional level, which includes the five districts of the canton: Liberia, Cañas Dulces, Mayorga, Nacascolo, and Curubandé, whose total population amounts to 46 703 people (INEC, 2002).

In 2009, the supply of water for the canton of Liberia is estimated in approximately 7,015,614 cubic meters of water supplied to customers in residential, business and governmental sectors.<sup>25</sup> In monetary terms, this invoice corresponds roughly to ¢ 2,852,206,477 billed to different users of the water provided by AyA Liberia.



Photo 9: Water in the Channels of Santa María

Approximately 70% of water supplied by the AyA of Liberia has direct relation to the existence and conservation of PNRV.<sup>26</sup> The remaining 30% comes from water intakes located outside the area of direct influence of the park (see box 8).

#### BOX 8 AVAILABILITY OF WATER AT REGIONAL LEVEL (2009)

##### AyA Liberia:

Approximately 70% of water is directly related to PNRV.

This is equal to:

- 4.910.930 m<sup>3</sup> of water supplied
- ¢1.996.544.534 billed to users

**Source:** Own elaboration based on data from MINAET, et al (2010).

<sup>24</sup> It includes six rivers: Colorado, Negro, Aguas Verdes, Blanco, Tizate and Jala Piedras. And 9 streams: Martínez, Gutiérrez, Zopilote, Leiva, Argentina, Rancho Grande, Loquat, Mora, and Provision.

<sup>25</sup> Calculation based on real data for the first semester, and figures projected for the second half. In this regard, the projection takes as reference the Consumer Price Index (IPC) and inter-annual inflation of 4%. This according <http://indicadoreseconomicos.bccr.fi.cr/indicadoreseconomicos>

<sup>26</sup> Figure that is estimated through own calculations based on MINAET et al (2010). In this regard, it is important to note the valuable contributions of Masís (personal communication, 2010) in terms of the quantification of the contribution of the Park for the supply of water. On the other hand, the Regional Office of AyA in Liberia estimates such relation in 25% (Chacón, personal communication, 2009). However, for the purposes of this report is used the own calculation.

Taken into account the total amounts of m<sup>3</sup> provided by AyA Liberia, it is possible to estimate that the direct contribution of the Park amounts approximately to 4.910.930 cubic meters of water provided to customers from the residential, managerial and governmental sectors, what in monetary terms correspond approximately to ¢1.996.544.534 billed to the different users of the water supplied by AyA Liberia (2009).

### ***6.3.2 Contributions generated by tourism***

At the regional level, generation of incomes derived from the influx of tourists to PNRV is strongly related to sales of inputs (goods and services), acquired by tourism-related activities<sup>27</sup>, as well as with the transportation of tourists to PNRV.

#### ***Tour Operator and Transfer to PNRV***

At the time of carrying out the fieldworks, a total of 5 travel agencies and 18 rent-a-car companies operate in Liberia. As a result of the visit and discussions with their administrators, it is possible to affirm that tourists who come to PNRV have purchased tour packages in their home countries. That is, these visitors arrive with an established schedule before arriving in Costa Rica, and therefore their relationship of these travel agencies at the regional level is nonexistent.



**Photo 10:** Tour Operator

Packages purchased by foreign tourists are provided by a line of wholesale trade, which sells packages under the "all-inclusive" modality (lodging, car, food). This implies that these companies sell the package in their home countries, and subcontract travel agencies located in San Jose, which operate as their representatives. So, the tourists travel on a commercial airline from their countries, and once in Costa Rica Costa Rican travel agencies deal with both of his/her movement to the Park and his/her food (for more details see section 6.3.3). Due to this type of tourism, just one tour operator sells one-day-tours to the Park. This is to tourists who arrive by their own means and without an "all-inclusive" package. In this regard, the incomes generated in the quality of this, amount to ¢4,628,905 (US\$ 8,340), since the owner indicates that 54% of its total sales depend on the existence of PNRV.

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<sup>27</sup> The estimations corresponding to businesses that sell inputs are made based on the surveys applied to tourism-related activities. This is because, the administrators of all businesses visited during the fieldwork say they do not have records indicating that they sell such inputs to businesses linked to tourism of PNRV.

Additionally, three hotels offer the service of transportation to PNRV. This "transfer" has an average price of US\$20 per person and is sold to tourists who arrive by their own to the hotel and thus, they ask for it. According to information provided by those responsible for such services, on average 130 people get these packages every month. So, the estimation of these incomes for 2009 amounts to ¢17.316 million (US\$31,200).

### ***Purchase of fuel for transportation***

Companies that offer movements and transfers require the purchase of fuels to transport tourists to PNRV. According to the fieldworks, the largest purchase of fuel takes place in San Jose at the time of initiating the transfer (see contributions at national level in Chart 7). However, additional purchases of fuel to complete the journey are made in various gas stations located at the regional level. In summary, the purchase of fuel at the regional level reports incomes of ¢12.000.000 (US\$21,622).

### ***Sales of goods and services related to tourism***

Tourism-related activities require different inputs to offer their goods and services. In this regard, the instruments applied in the fieldworks indicate that these businesses report an expense of ¢143,316,702 (US\$258,228) for 2009, an amount that is considered as an approximation for incomes earned by businesses that sell groceries, food and beverages to related activities linked to tourism of the PNRV.

It is important to notice that during the fieldworks is visited all the supermarkets located at the regional level, where their administrators say not to know the amount of their sales that are made to such related activities. Because of this lack of information, the previous amount is considered the best approximation available for the purposes of the quantification performed.

### ***Payments for patents and permissions of tourist activities***

As part of the study, the municipalities of the canton of Upala and Bagaces are consulted about the existence of patents and records of commercial businesses related to PNRV. Only the municipality of the canton of Liberia reports the existence of such information. For its part, the municipalities of the cantons of Upala and Bagaces indicate not to have the records requested.<sup>28</sup> According to the records of the Municipality of Liberia, the companies associated with PNRV report payments for patents that add up a total of ¢6,056,132 (for 2009).<sup>29</sup>

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<sup>28</sup> As stated in the official letter **MB-304-2009** signed by Mr. Luis Angel Rojas Madrigal, Mayor of the Municipality of Bagaces, and as in the official letter signed by Juan Hurtado Acevedo, Mayor of the Municipality of Upala.

<sup>29</sup> This datum must be assumed as the best approximate to the current datum that is available. Given that, municipal officials recognize the existence of some companies that are registered under different legal names, corporations or other legal entities that make impossible to associate them directly to the cluster of PNRV. So, the quantification includes only incomes reported in the records that are directly attributable to the existence of the Park.



### 6.3.3 Other contributions

#### *Environmental education*

The ACG develops a pioneering program at national and international level. *Biological education* is a teaching-learning system that implements environmental education in student populations of schools and high schools located in the communities nearby the park. To cite one example, the course is taught in Colonia Blanca. Community which presents the greatest conflicts with the park since it constitutes a town composed mostly by illegal hunters (fieldwork, 2009).



**Photo 11:** A class



**Photo 12:** "Forest as a library"

The *Biological Education* Program tries that the contents of natural history, processes of reforestation and awareness of biodiversity become in a benefit for communities. Similarly, lectures, trainings, working with teachers and seeing the "forest as a library" are the strategies that prepare the children for their visit to the PNRV.<sup>30</sup>

In budgetary terms, ACG handles its trusteeship through the Foundation of National Parks. On the other hand, SINAC contributes also with the salaries of 9 officials of such Program as well as the insurances for the 2500 children who participate in the program (Masís, personal communication, 2010).

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<sup>30</sup> At the beginning of it, the Program has had the valuable support of different donors, which include from the Danish Government to international foundations and local donors (Masis, personal communication, 2010).

### *Trusteeship of ACG*

Guanacaste Conservation Area (ACG) has a trusteeship that is distributed among the ASP under its management. In this regard, the PNRV receives nearly 30% of such funds to pay costs associated with its administration. In summary, the 54 million colones which correspond to the park is used for the payment of salaries of two officials of ACG and a ranger hired in Las Pailas Sector. Additionally, these funds are used to purchase materials.

### *Summary of the contributions of PNRV to the regional development*

In Box 9 is systematized monetary incomes previously indicated generated by PNRV at the regional level. The total sum of these regional contributions of the Park amounts to approximately 2.3 billion colones or 4.2 million dollars.

The contributions to regional development through the existence of the park include:

**BOX 9**  
**SUMMARY OF ECONOMIC CONTRIBUTIONS OF PNRV TO THE REGIONAL DEVELOPMENT (2009)**

**TOTAL:** 2.3 billion colones or 4.2 million dollars

- Water extracted by the AyA Liberia is associated directly with the existence of the park (86, 3%)
- Sale of goods and services related to Tourism (6, 2%).
- Biological Education Program of the ACG (3, 5%)
- Trusteeship of ACG (2, 3%)
- Transportation of tourists to PNRV from the hotels (0, 7%)
- Purchase of fuel for transportation (0, 5%)
- Payments for patents and permissions to the Municipality of Liberia (0, 3%)
- Tour Operator (0, 2%)

**Source:** Chart 6.

- 70% of the water extracted by the AyA Liberia is associated directly with the existence of the park.
- Incomes in favor of the owners of supermarkets, furniture stores and other businesses that sell goods to hotels, restaurants and other tourism-related businesses,
- Biological Education Program of the ACG,
- Trusteeship of ACG
- Incomes for the owners of transportation for tourists to PNRV from the hotels
- Purchase of fuel in the stores located in the regional level
- Incomes received by patents granted by the Municipality of Liberia to tourist and commercial businesses that are part of the regional cluster driven by the visitation of PNRV,
- Incomes for the owner family of the Tour Operator.

Chart 6. Systematization of Regional Contributions of PNRV

SCOPE-SCALE OF THE CONTRIBUTION	BENEFITED ACTIVITIES AND CLASSIFICATION OF USERS		TYPE OF CONTRIBUTION (GOOD/SERVICE/EXTERNALITY) VALUED ACCORDING TO SOURCES		OBSERVATIONS	% OF CONTRIBUTION
	Type of activity	Type of user/"stakeholder" benefited	Incomes			
			Colones	US\$		
<b>REGIONAL</b>	Provision of drinking water By the regional office of AyA Liberia	70% of total of users Of drinking water in th Home categories, managerial, preferential And govern	1.996.544.534	3.597.378	Calculation based o Real data for the First semester and Projected for the Second (IPC)	86,5
	Sales of goods and services Related to tourism	Commercial businesses of Liberia , Upala	143.316.702	258.228	Expenses in food and Beverages of hotels, cabins, restaurants, tour operator Related activities	6,2
	Program Biological Education of ACG	Students of primary and Secondary school communities inside the Area of influence of ACG	80.000.000	144.144	Figure provided by Environmental teacher In charge of the program	3,5
	Trusteeship of ACG	2 officials of ACG and 1 ranger hired in the Sector of Las Pailas	54.000.000	97.297	Materials Are purchased besides Ítem in salaries	2,3
	Transportation of tourist PNRV from the hotels	Owner families of hotels and transport independent	17.316.000	31.200	Calculation based On intervie In charge of the Hotels, haulers	0,7
	Buying of Fuel for transport	Vending Stations Of fuel distributed in Liberia	12.000.000	21.622	Multiple users	0,5
	Pays for Patents licenses of hotels restaurants	Municipality of Liberia	6.056.132	10.912	Data of incomes per Territorial taxes Not available	0,3
	Tour Operator in Liberia	Firm tha sells tours Of one to PNRV	4.628.905	8.340	54% of their sales Depend Directly on the PNRV	0,2
<b>Total Regional</b>			<b>2.309.233.368</b>	<b>4.160.781</b>		<b>100,0</b>

Source: Own elaboration based on information gathered in the fieldworks.

## **6.4 The contributions of PNRV to the national development**

### **6.4.1 Contributions by the existence of PNRV**

The biological richness (diversity of life zones and habitat), thanks to the existence of the PNRV and its conservation, it is very important for the country. The scenic and spiritual beauty characteristic of PNRV (craters, fumaroles, lagoons and water bodies) and its biodiversity are invaluable contributions in monetary terms (incomes generated). However, they constitute the key original contribution of the park, which can attract many visitors from other places and countries who want to enjoy these benefits provided by nature with regard to environmental services mentioned.

### **6.4.2 Contributions generated by tickets for the conservation and management of ASP**

MINAET, through SINAC, must ensure the protection and conservation of Protected Wildlife Areas (ASP) at the national level. For this, annually it is assigned budgetary items for the regional and central offices that handle this task. An important part of these expenses are financed by the entrance rights to the ASP, among them the PNRV.

As mentioned in section 4.4, the Rincon de la Vieja National Park has two entrances. Las Pailas sector serves to visitors from Tuesday to Sunday, between 7 a.m. and 3 p.m. Meanwhile, the Santa Maria sector is open to tourists during the whole week within the schedule of 8:00 a.m. to 4:00 p.m.

As shown in Box 10, the incomes in the quality of selling of tickets to the Park amount to ₡199,843,050 (which is equivalent to US\$360,078) for 2009. This implies that 41 660 tourists who pay their ticket to Las Pailas Sector, this represents 8 955 national visitors and 32 705 foreign visitors; considering the Santa Maria Sector, a total of 2523 tourists pay ticket. What this includes add up 1017 national visitors and 1506 foreign visitors.

**BOX 10  
INCOMES GENERATED BY  
TICKETS TO PNRV**

**Entrance in Las Pailas:**

- Payment \$10 foreigners and ₡1000 colones national tourists.
- Number of tourists that pay in 2009: 41.660.

**Entrance in Santa María:**

- Payment \$10 foreigners and ₡1000 colones national tourists.
- Number of tourists in 2009: 2.523.

**Incomes by selling of tickets**

**2009:** ₡199.843.050 or  
US\$360.078

**Source:** Own elaboration based on ACG, (2010).

In both sectors, each foreign tourist pays US\$10 dollars in the quality of ticket to the park, while national visitors pay ¢1000 colones each. National and resident children under 12 pay ¢200 colones for the ticket, meanwhile, the right to camp has a cost of \$2 per person per night.

Las Pailas sector presents the highest income of tourists. According to data provided by the Ecotourism Program of ACG, this sector reports a total of 46.386 tourists for 2009 (that is, tourists who pay ticket and those who are exempt).<sup>31</sup> Meanwhile, the Santa María sector receives 3.405 visitors (idem). Figures that imply that from the total of 46.791 tourists who visited the PNRV in 2009, 92, 7% enter by Las Pailas while the remaining 7, 3% do it by Santa María.

It is important to note that all tourists are attracted by natural resources and environmental services conserved in the PNRV.

#### ***6.4.3 Tour-operators and travel agencies***

As it is shown in Section 6.3.2, the vast majority of foreign tourists who visit the PNRV acquire an “all-inclusive” package. This implies that companies that sell the package in their home countries subcontract travel agencies located in San Jose, which operate as their representatives. This is for purposes of transportation of such visitors during their stay in Costa Rica.

As a result of fieldwork is estimated that the commissions in the Costa Rican tourism sector are about 20%. That is why the approximate calculation of contributions assumes that the total of tourists pay on average for their package, 20% represents the income of tour operators and travel agencies located in San Jose. The contribution amounts to ¢1, 616, 959,646 (US\$2, 913,441).

This figure also includes the expenses reported by hotels as a payment for tour operators and travel agencies. What happens in the case of some tourists who come to the hotel without “all-inclusive” package, and the hotel serves as an intermediary for the purchase of the service. This inclusion constitutes an additional effort to adjust the calculations with the aim of achieving an amount of contributions as close to real datum.

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<sup>31</sup> Policies for charging exemption from the ticket to the park is applied to children under six years, and elderly (that is, people over 65 years). Similarly, organized groups of the communities of San Jorge and Santa Maria receive this benefit.

#### ***6.4.4 Rent-a car***

Even though the vast majority of foreign tourists who visit the PNRV with an ‘‘all-inclusive’’ package, the fieldworks allow surveying some few tourists who arrive to the site on their own. So, renting a car is an important part of its structure of expenses. According to their answers, the contribution is estimated at ¢1,546,785 (US\$2,787), which already includes the adjustments to get closer to the amount directly related to the visit to the Park.

Although this figure constitutes the best possible approximation, it is assumed that is undervalued compared to real datum. This one is impossible to obtain given the lack of information by rent-a-car companies consulted, that at the time of selling their services, they do not ask the destination of the customer. So, they lack of records necessary to establish the proportion of their sales that are related to the existence of PNRV. Given this situation, the document includes the figure reported by the surveyed tourists to reflect the income generated.

#### ***6.4.5 Transportation of tourists (excursions)***

During the fieldworks, a total of 4 excursions visit the PNRV from San Jose. These tourist transportations or excursions offer transfers for groups of tourists who visit the PNRV. Even though the main service they sell is the transportation of tourists, sometimes they act as intermediaries with travel agencies to sell them one-day tours to the Park.

99% of their customers are foreigners, so that only 1% corresponds to national people (students’ service and excursions for national tourists). So, interviewees say that 100% of their incomes come from tourism. These transportations report incomes related to tourists who visit the Park of ¢477,296 (US\$860) for 2009.

#### ***6.4.6 Purchase of fuel by tourists***

The vast majority of foreign tourists travel with an ‘‘all-inclusive’’ package, which causes that accurate data on fuel expenses are impossible to quantify within its structure of expense. So, as part of fieldworks are visited fuel vending companies, rent-a-car and travel agencies. Those who claim not to have data on this expense, at the time of selling their services they do not ask their customers if they go to PNRV. This has as a result the absence of reliable data that relate directly the purchase of fuel for vehicles to a trip to the park.

So, this document assumes as a reasonable assumption that all tourists need fuel for their movement to the Park, and that it is purchased in San José (because this is the point at which is started the vast majority of trips). This is the reason why the contribution is assumed at the national level.

For purposes of the estimation is taken as reference data for average fuel consumption allowing complete the route offered by the average "all-inclusive" package, which starts in San José and goes to PNRV. Since this park is one of 5 destinations visited by tourists, the calculation makes this adjustment to isolate the direct relation to the PNRV in the generation of income (see Chart 7). As a result is got an estimate contribution of ¢524,573,901 (US\$945,178).

#### ***6.4.7 Payment for the service of electricity and internet***

With the development of Information and Communication Technologies (TIC), all related activities included in the study require the services of electricity and Internet access to operate. Given that "all inclusive" packages are sold in home countries of tourists, the communication among travel agencies is essential to coordinate the logistics so that tourists receive services when they board a plane to Costa Rica, during their movement to tourist destinations, lodging, meals, etc .- and until their return to home.

Fieldworks indicate that foreign travel agencies that sell "all inclusive" packages to PNRV are located mainly in Europe and North America. So, the usage of computer tools, for example e-mail, phone call systems through Internet allows achieving the coordination of reservations between the different links that imply the "all-inclusive" package.

According to information provided by surveyed productive activities, the income received by the Costa Rican Institute of Electricity (ICE) for providing electricity services and Internet access amount to ¢20,143,273 (US\$36,294) for 2009.

### *Summary of the incomes generated at national level by PNRV*

In Box 11 are systematized the monetary incomes previously indicated generated by the PNRV at the national level. The total sum of these regional contributions of the Park amounts approximately to 2.4 billion colones or US\$4.3 million dollars.

The contributions to national development through the existence of the park include:

- Contributions by the existence of the park PNRV,
- Incomes by tickets to the Park. National Parks Fund,
- Tour operators and travel agencies
- Transportation of tourists (excursions)
- Rent-a-car,
- Purchase of fuel by tourists,
- Payment for electricity and Internet service.

**BOX 11**  
**SUMMARY OF THE ECONOMIC CONTRIBUTIONS OF PNRV TO THE NATIONAL DEVELOPMENT (2009)**

**TOTAL:** 2.4 billion colones or US\$4.3 million dollars

- Tickets to PNRV (8,46%)
- Tour operators and travel agencies (68, 41%)
- Transportation of tourists (excursions) to PNRV
- Purchase of fuel by tourists (22, 19%)
- Rent-a-car (0, 07%)
- Service of electricity and Internet (0, 85%)

**Source:** Chart 7.



Chart 7. Systematization of National Contributions of PNRV

SCOPE-SCALE Of contribution	BENEFITED ACTIVITIES AND CLASSIFICATION OF USERS		TYPE OF CONTRIBUTION (GOOD/SERVICE/EXTERNALITY) VALUED ACCORDING TO SOURCES		OBSERVATIONS	% of contribution
	Type of activity	Type of user/"stakeholder"	Incomes			
			Colones	US\$		
<b>NATIONAL</b>	Tour-operators and travel agencies	Companies in San José Whose sales remain in Costa Rica by selling PNRV	1.616.959.646	2.913.441	Calculation based on incomes of 30% of the amount reported by the hotels and cabins, and 20%	68,43
	Buying of fuel by tourists	In San José	524.573.901	945.178	Of the average expense fuel, according to Our calculation the PNRV represents 20% Of the schedule of the tourist, and 100% of The tourists use it	22,20
	Income per tickets to the Park. National Fund of Parks.	MINAET to Carry out management in other ASP	199.843.050	360.078	44.183 tourists who Pay ticket in the year 2009. Calculation excludes the 2.608	8,46
	Payment for the service of electricity and internet	ICE	20.143.273	36.294	The pay that make the <b>hotels</b> , <b>restaurants</b> and other <b>activities</b>	0,85
	Rent-a-car	Companies from San José	1.546.785	2.787	Calculation based on tourists who affirmed Renting a car	0,07
	Transport of tourists (excursions)	Companies from San José	477.296	860	95% of the tourists Are moved to the PNRV	0,02
<b>Total National</b>			<b>2.363.066.655</b>	<b>4.257.778</b>		<b>100</b>

Source: Own elaboration based on information gathered in the fieldworks.

### *6.5 The contributions of PNRV at international level*

As it is shown in previous sections, the tourist cluster around the PNRV depends strongly on the visit of foreign visitors. In this sense, his/her movement from Europe and North America is done by air. This is the reason by which every tourist must purchase an airline ticket to get to Costa Rica and then, to be transported to the Park (see box 12).

According to the fieldworks, the average price of each airline ticket purchased is \$2,000 (in 2009). So, this study assumes that 100% of foreign tourists paid the price for his/her ticket, and that it may be related to the PNRV only a fifth portion (20%), because the all-inclusive package consists on average of five tourist destinations, which the PNRV is one of them.

Taking into account these adjustments, the income generated by the PNRV which is located at the international level amounts to ¢7,811,476,815 (US\$14,074,733). This figure represents the largest contribution reported by the Park in 2009, that is, 68% from the total of contributions.

**BOX 12**  
**SUMMARY OF THE ECONOMIC**  
**CONTRIBUTIONS OF PNRV**  
**AT THE INTERNATIONAL**  
**LEVEL (2009)**

**TOTAL:** 7.8 billion colones or  
US\$14 million dollars

Travel agencies and  
international tour-operators  
(100%)

**Source:** Chart 8.

Chart 8. Systematization of International Contributions of PNRV

SCOPE-SCALE OF THE CONTRIBUTION	BENEFITED ACTIVITIES AND USERS CLASSIFICATION		TYPE OF CONTRIBUTION (GOOD/SERVICE/EXTERNALITY) VALUED ACCORDING TO SOURCES		OBSERVATIONS	% OF CONTRIBUTION
	Type of Activity	Type of user/benefited "stakeholder"	Incomes			
			Colones	US\$		
<b>INTERNATIONAL</b>	Travel Agencies and international tour operators	Enterprises in Europe and North America that sell air tickets to Costa Rica	7.811.476.815	14.074.733	From the average price of sale of the air ticket of \$2000, according to our calculation the PNRV represents 20% of the schedule of the tourist, and 94% of the tourists use it.	100
<b>International Total</b>			<b>7.811.476.815</b>	<b>14.074.733</b>		<b>100</b>

Source: Own elaboration based on information gathered in the fieldworks.

## **7. STRENGTHS, OPPORTUNITIES, WEAKNESSES AND THREATS (FODA)**

An analysis of strengths, opportunities, weaknesses and threats (FODA) of PNRV is carried out with the fundamental objective of identifying all those positive aspects (strengths and opportunities) that must be strengthened and enhanced, as well as those negative aspects (weaknesses and threats) that must be mitigated or eliminated to maintain and improve the valuable qualitative and quantitative contributions provided by Rincon de la Vieja National Park to the country. The information sources for this FODA have been the bibliographical review, fieldwork (various interviews in Curubandé and San Jorge) the consultation to experts, and the validation workshop of results carried out through the investigation.

### **7.1 Strengths**

- As a result of natural resources and environmental services of PNRV, tourism-related activities have increased. This generates significant incomes for families embedded in this dynamics, especially at local and regional levels.
- Las Pailas Geothermal Project developed by ICE has improved the condition of roads and bridges in their areas of influence. This infrastructure development constitutes strength for the Park due to it improves the access roads to Las Pailas Sector, which is the most visited by tourists.
- All lands of PNRV have been expropriated by the Costa Rican Government. This gives a legal basis for the conservation of biodiversity, while at the same time it allows taking actions before the invasion of squatters that have occurred several times since the creation of the park.
- The existence of unique biodiversity and scenic beauty of the Park represents a valuable potential for research. The park has distinctive characteristics that are valued by various social actors, who show an interest in protecting it (for example, participants of the Biological Education Program).

### **7.2 Opportunities**

- The existence of the park has generated sources of local employment, which show the presence of entrepreneurship by the owners of the most important hotels. A well-developed boost can help to future initiatives of local small entrepreneurs to supply new products and services that nowadays do not exist, but that could get unattended niches of markets (for example, sale of water and food to tourists who visit the Park).

- The existence of PNRV has improved awareness of people towards natural resources. This offers the opportunity to continue with environmental education programs and start a new training on local productive initiatives, so that there is a more equitable distribution of incomes generated by the tourist activities among the diverse local actors.
- UNED and INA, offer courses to people in the community. This implies the creation of capacities which if it is well-managed it offers the tourist a personalized service, which is highly valued and would allow generating synergies among the different related activities.
- The PNRV has a Plan for Sustainable Tourism (MINAET et al, 2009), which provides valuable information on the tourist product, control and monitoring of the impacts of tourism and a budget. This establishes important inputs to the design and implementation of policies for the management of the Park.

### **7.3 Weaknesses**

- The signage of paths shows deterioration. What is mentioned frequently by interviewed tourists as an aspect that needs to be improved urgently, both to increase the enjoyment of the visit and to reduce risk of loss of visitors.
- The absence of continuous electrical energy within the Park has a negative effect on at least two aspects. First, this restriction avoids offering services to tourists. In this regard, the interviews applied indicate a strong availability of the visitors to buy food and cold water in case they were for sale within the park. Second, the presence of electricity could allow having a computer system in the office of the ranger for the purpose of making reservations and ensure payment of tickets.
- The 10 rangers work with great mystical and commitment in the Park. However, the attention of tourists consumes most of their time and efforts. As it is very difficult for them to do other tasks that are crucial for the conservation of ecosystems, such as patrolling to prevent hunting and illegal extraction of resources from PNRV.
- The current infrastructure is inadequate for the attention of visitors. Surveys to tourists and key actors show that this situation is causing tourists to stay a short time inside the park. This is worse when weather conditions include rain, and the spaces available are insufficient to retain visitors within the facilities.

## 7.4 Threats<sup>32</sup>

- With the development of tourist activities around the park, villagers of communities increasingly are entering the employments generated by hotels, cabins and restaurants. This has led to a decline in livestock and crop farming of sugar cane, beans, corn, coffee and tubers. This could possibly be a threat in terms of food security of families in the community, especially if tourist activity will experience a contraction that would reduce local employment.
- A massive visitation of tourists without proper planning would represent various negative environmental impacts. This includes increased pressure on natural resources and environmental services inside the Park and the unplanned growth of productive activities in their surroundings. The negative impacts will eventually include at least solid wastes pollution, untreated discharges on water bodies, habitat fragmentation, and biodiversity loss, among others.
- At the local level, the hotel sector has experienced a significant growth due to the influx of tourists to PNRV. Unfortunately, the communities have a weak link with the cluster and this has as a result in a distribution of inputs generated strongly linked to the most important hotels. While local villagers receive mainly incomes associated with their salaries.
- Several threats are persist in natural resources and environmental services of PNRV. In this regard, the following are highlighted by the experts as the ones that require priority attention:

**Poaching**, especially of tepezcuintle, though it is also hunted the peccary and tapir. This responds both to cultural factors and as “business”. The strongest pressure occurs in the entrance by the sector of Las Pailas<sup>33</sup>, and it especially comes from the communities of San Jorge, Colonia Blanca, Colonia Libertad, Santa María, and Parcelas de Santa María.

Hunters do not have age limit. They know very well the park and they are rarely caught in fraganti; even the rangers find the remains of hunted animals. When imposing any sanction, the lawbreakers take revenge against the officials of the park.

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<sup>32</sup>This report provides an emphasis on the issue of threats to the PNRV, which responds to the explicit recommendation of several experts who participate in three workshops held throughout the project. In all cases, these experts emphasize the need to emphasize on the subject of threats and management problems that occur in the PNRV, so as to reflect the positive contributions of the Park are vulnerable to certain threats that jeopardize its continuity over time. In addition to the contributions of these experts, this section includes primary and secondary information, fieldworks, interviews and consultations with key actors.

<sup>33</sup> The Santa María Sector presents few conflicts.

An important factor to mention is that ACG is working with children in biological education, which has helped reduce somewhat the illegal hunting (see section 6.3.3).

**Forest fires:** low incidence in PNRV. However, 90% of these fires are caused by hunters as revenge. The remaining 10% corresponds to burnings conducted in near plots, which are out of control and reach the lands inside the Park.

**Illegal logging:** it is a problem that occurs less than hunting. The rangers know 2 people who extract wood in tables, which is suspected to be transferred to clandestine sawmills located in Liberia. The sector of Las Pailas suffers from illegal logging than the sector of Santa Maria.

**Vandalism:** is presented on the signs inside the park, which involves both damages and the change in signaling of the trails. This becomes a major risk for all the tourists who can get lost in the park.

**Illegal digging:** the so-called "huaquerismo" is another problem that occurs inside the park. In this regard, lack of staff results in weak protection of archaeological heritage in PNRV. Lack of resources causes the inability to control this evil practice, which implies that the settlers of surrounding areas continue extracting archaeological pieces that should be kept in a museum.

## **8. POLICIES RELATED TO THE MANAGEMENT OF PNRV**

The policies respond to processes and an action that brings together the set of actions taken by individuals (or groups), public and private, in order to perform pre-defined objectives. Given that policies are not the product of spontaneity, these actions correspond to both the transitional efforts to become decisions into operational proposals, such as the efforts developed to make big and small changes (Van Meter; Van Horn, 1993). For this reason, the phase of implementation of these policies is initiated when the previous decisions have correctly set the goals and objectives.

In a policy are distinguished several phases. First is the elaboration or definition, which is the conceptualization of the vision for the long term. Second is the implementation, the execution or performance, which represents the practice of such policy. Third is the impact of the policy, which refers to the consequences derived from its implementation and execution.

In the practice, the policies should not be considered as formulas. This is due to different processes, which correspond to different dynamics, structures and relations among the factors that influence in the elaboration and execution of the policy. The previous implies that in each particular case must be defined policies according to their goals and specific objectives. There are different means to achieve the objectives of policy; these ones can range from plans, actions or structured studies so that they make the objectives operational. Similarly, several instruments are distinguished for their implementation.

In general terms, policies refer to instruments that can use the government to change the behavior or economic, social and environmental behaviors. In this regard, here are presented policy recommendations that arise as a result of the analysis of the case study of Rincon de la Vieja National Park. The eventual evaluation and implementation of these ones through the creation of action instruments, or other mechanisms must be conducted by the National System of Conservation Areas (SINAC).



Chart 9. Recommendations of policies

Thematic Area	Objectives	Policies
<b>1. Biodiversity</b>	<p><b>1.1</b> To contribute to the protection and conservation of Biodiversity in PNRV</p> <p><b>1.2</b> To improve the environmental management of productive activities</p>	<p>1.1 In the areas surrounding the PNRV, the development of tourism must grant the conservation and protection of biodiversity, under the concept of ecological tourism or ecotourism.</p> <p>1.2 Application of the Plan for Sustainable Tourism according to their guidelines and recommendations for PNRV.</p> <p>1.3 Each tourist development must mitigate their negative environmental impacts.</p>
<b>2. Productive activities</b>	<p><b>2.1</b> To promote the development of productive activities at the local level, that have environmental impact and generate synergies that allow inserting more actively to communities of the district of Curubandé in the tourist cluster around the PNRV</p>	<p>2.1 To strengthen through training the activities of local entrepreneurship.</p> <p>2.2 To create financial program that promote local investments.</p> <p>2.3 To promote the diversification of tourist services offered.</p> <p>2.4 To facilitate synergies/alliances among established tourist entrepreneurs and local villagers, to favor a more equitable distribution of the incomes generated by PNRV, and guarantee the sustainability to long-term of the local development associated with the Park.</p>
<b>3. Institutional capacities</b>	<p><b>3.1</b> To improve the institutional and administrative capacities of SINAC-MINAET for a better management of PNRV</p>	<p>3.1.1 To provide more technical, financial and human resources to PNRV.</p> <p>3.1.2 To improve infrastructure and information available (trails, signage) and associated services (facilities, communications, energy) inside the PNRV.</p> <p>3.1.3 To increase the processes of staff training of the Park in topics about environmental management and attention to tourists.</p> <p>3.1.4 The relationships between MINAET-SINAC and tourist entrepreneurs must be clear under cooperative and collaborative outlines.</p>
	<p><b>3.2.</b> Inclusion of social organizations and civil society for decision-making.</p>	<p>3.2.1 Boost to environmental education programs at formal level.</p> <p>3.2.2 Participation of ONG's in decision-making and activities that improve the environmental management inside and in the surroundings of PNRV.</p>

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Thematic Area	Objectives	Policies
<b>4. Solid wastes and management of the ground.</b>	<b>4.1</b> Territorial arrangement Prohibition of non sustainable activities and with high environmental impacts	4.1.1 To declare public the Access road to Las Pailas Sector. 4.1.2 Implementation of plans of participative territorial arrangement, where protection and conservation of biodiversity deprive of economic usages. 4.1.3 To identify and prohibit all those activities with social and environmental impacts that threatens against sustainability of the region such as hunting and illegal tree falling.
	<b>4.2</b> Integral management of solid wastes	4.2.1 Development of a system of integral management of solid wastes 4.2.2 To promote the separation, classification and recycling of the wastes. 4.2.3 To improve the social capacities for the establishment of a communal recycling center.
<b>5. Creation of capacities</b>	<b>5.1</b> To promote the Access to education and generation of programs according to the needs of local actors	5.1 Education linked to tourist activity directly or indirectly, it must be the fundamental axis for the creation of capacities in the region.

Source: Own elaboration

## 9. SUMMARY AND CONCLUSIONS

As seen in this case study locally, regionally and nationally, the PNRV provides important contributions both to the country and to the communities surrounding to it. In the previous sections are performed both qualitative and quantitative approximations (monetary) to the main components of the *cluster* of activities formed around the PNRV.

Among the most important **qualitative contributions** of PNRV, are highlighted the spiritual experience, recreation and leisure time that represent the scenic beauty provided by the craters, lagoons and fumaroles. It is also important to mention the protection of biodiversity and water sources as the most important environmental services in the area and the natural heritage value that gives to them the tourists and the communities nearby the park. Moreover, the provision of water represents one of the main contributions of the park to local, regional and national development. Clearly, water valuation approaches as part of various incomes generated in the present, but it will undoubtedly be of vital importance for the future to be exploited for human consumption purposes (including tourism).

As regards the approximate **quantitative contributions** in terms of monetary income based on the primary and secondary information collected in this case, it was estimated that PNRV generated a total income of almost 11.5 billion colones in 2009. This total contribution has had different influence in socio-geographical levels also considered for a study, namely: local, regional, national and international levels.

According to the discussion in Section 6.1 and what was systematized in the box 6, at the **local level** the district of Curubandé, has been benefited in 2009 by a total income of approximately 281.8 million colones (\$507.810 million dollars), largely due to activities linked to tourism attracted by PNRV. The main activities of the local cluster around tourism have been the existing tourist businesses (13 hotels and cabins). They generated about US\$328.332 for their owners as well as US\$80.769 for workers hired in these hotels and cabins. While related activities report US\$20.493 that include the contributions to owners of such activities, like the amount in salaries of employees of restaurant and tour-operator. This benefit thanks to PNRV as nucleus of the emerged tourist cluster constitutes an important source of monetary income for local people, given the declining of other productive activities in the area, mainly agriculture and stockbreeding.

It is important to mention that probably the total calculated and, for the most part, individual items of income recorded in Chart 5 are lower than actual ones, due to incomplete information and rebuilt in some cases (travel agencies, tour operators, etc.) based on indirect approximation techniques.

Regarding the role of PNRV as "*development pole*" it leads to a total income of 1,030 million colones (US\$1,856,521) at the **regional level**. Chart 6 shows clearly that the most benefited activity; (income of US\$1,284,778) has been the supply of drinking water by the

regional office of AyA in Liberia. This represents a strategic contribution to the conservation of water resource by the PNRV, which allows the development of the activities of diverse social actors at the regional level.

Other effects identified of related and tourist activities around the PNRV at the regional scale were the payment of taxes to the Municipality of Liberia. However, the low magnitude in monetary terms of this income (only 0.6% from the total of contributions), it seems undeniable the trend toward the development of a conglomerate of activities driven by PNRV at the regional level.

It seems that what was lately said is also valid for the contributions provided by the PNRV at **national level**. According to Chart 7, the income generated by activities for traveling to PNRV (in 2009) has had a higher incidence in San Jose or the Central Valley, and it has impacted to a lesser extent impact in proportion to local and regional scales. The contribution of national scope amounted to more than US\$4 million. From this contribution were firstly benefited tour operators and travel agencies, which have its headquarters in San Jose, who are subcontracted by companies which sell the packages to tourists in their home countries (\$2.9 million in 2009). In addition, the PNRV generated them indirectly incomes to gas stations in the quality of fuel sold to tourists (\$945 thousand), and to ICE-headquarters in the quality of the sale of electricity and internet access to tourist companies analyzed (US\$36,294).

The economic significance of conservation and visitation of PNRV for the national economy is indisputable. Such a contribution would have been much greater in the present and even more in the future, if it would have been possible to consider and counting properly the contributions at national level that PNRV provides in terms of environmental services. In particular, the social value of the already mentioned volcanic activity and associated ecosystems, whose scenic beauty is highly appreciated by visitors.

Since it is estimated that 94% of tourists who access the PNRV are foreigners, the purchase of air tickets is essential to make the visit. In this regard, the income received by companies that sell those tickets report the highest contribution. This one is located at the international level, given that foreign tourists say to have purchased this service in their home countries.

In total (adding the contributions at local, regional and national level, the PN Cahuita generated an estimate income of \$20.7 million with the highest incidence at the national level, but also at regional level, leaving a favorable impact on national and regional development (to a lesser degree local). What is important to mention is that, according to the information analyzed, the Park reports the greatest impact on the international scale (Chart 8).

In summary: first, the development of economic activities related to PNRV has been increasingly becoming a way almost forced as there are no other options for employment and income to people in the area. On the other hand, the tourist dynamics in the district of Curubandé has the potential to be more expanded and diversified in the future (in favor of other entrepreneurship so that more income is generated at local level). This depending on local capacity to take advantage of public, community and entrepreneurial to promote eco-

tourism and generate infrastructure and greater linkages with the hotels established in the local level.

Regarding the future of local and regional development, it should be addressed properly the weakness in the capacity of inhabitants of the district of Curubandé to insert more actively in the tourist cluster generated around the PNRV. As the presented charts show, the related activities represent only 4% of the contributions at the local level, as higher incomes remain concentrated in productive activities that provide attractive goods and services to tourists (65% associated with hotels and cabins). In this regard it is important to facilitate processes of creation of capacities, entrepreneurship and synergies for local communities to receive a greater proportion of incomes associated with the Park.<sup>34</sup>

Thus, the cluster of tourist and related activities around the PNRV could contribute even more than until nowadays, to the interactive dynamics between biological conservation and local development.

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<sup>34</sup> For example, tour guides say that they transport tourists to a fast food restaurant located in Liberia because in the surroundings of the park there is no a business that meets the quality standards demanded by visitors. In this sense, the suggestion involves establishing a typical food restaurant whose conditions of hygiene, quality and prices allow that these tourists stay in the district of Curubandé for lunch after visiting the PNRV. Moreover, at least one of the people who work in the restaurant must have English language skills.

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Webpage of ACG, Retrieved on June 2<sup>nd</sup>, 2010 <http://www.acguanacaste.ac.cr/>

### **Interviewees**

Arias, M. 2009. Mrs. Arias is the responsible of the Department of Ecotourism of ACG in Santa Rosa National Park.

Brenes, V. 2009. Mrs. Brenes was official of the Program of Ecotourism of ACG (at the moment of carrying out the study).

Carrillo, J. 2009. Mr. Carrillo is the responsible of Planning of ACG.

Chacón, E. 2009. Mr. Chacón is the responsible of the Office of AYA of Liberia, Guanacaste.

Díaz, L. 2009-2010. Mr. Díaz is official of the Department of Administration of Information of the Tourism Costa Rican Institute.

Guadamuz, L. 2009. Mr. Guadamuz was the responsible of the Santa María Sector of PNRV (at the moment of carrying out the study).

López, L. 2010. Mr. López is official of the Department of Management of Collection. Municipality of Liberia.

Masís, A. 2010. Mr. Masís is the Director of the Guanacaste Conservation Area. Site of World Natural Heritage UNESCO.

Sihezar, J. 2009. Mr. Sihezar was the responsible of the Las Pailas Sector of PNRV (at the moment of carrying out the study).

Toruño, M. 2010. Mr. Toruño is the responsible of Promotion and Assistant of the Direction of the Office of ASADAS of Liberia



# ANNEXES

## ANNEX 1 METHODOLOGY OF FIELDWORK PERFORMED IN RINCÓN DE LA VIEJA NATIONAL PARK

### *1. Design, testing and validation of instruments for the gathering of primary information*

In 2002, the project developed to analyze the contributions of National Parks and Biological Reserves creates a total of 4 instruments to collect information during fieldworks. In this regard, the interviews focus on: (1) key actors, (2) restaurants and coffee bars, supermarkets, (3) workshops, excursions, and other related tourist activities, and (4) hotels / cabins / camping / renting of a house. All the information gathered is systematized and analyzed for the three study cases: Poás Volcano National Park, Chirripó National Park and Cahuita National Park.

These instruments are used as valuable input to initiate this investigation. First, these instruments are reviewed by the teamwork, then, after making it necessary changes, they are tested during the first exploratory visit to Rincon de la Vieja National Park. Here is where surveys are validated by local experts, including rangers, officials from SINAC and key actors.

The four initial instruments are analyzed both by experts and by the experience of the teamwork of the project that visit the study area. This new knowledge is included in these instruments, which in turn are accompanied by 3 new surveys that meet the productive dynamics that make up the cluster discussed analyzed in PNRV. In summary, the methodology for collecting primary information for the study case PNRV implements a total of 7 validated instruments: (1) key actors, (2) restaurants and coffee bars, supermarkets, (3) workshops, excursions and other related tourist activities, (4) hotels/cabins/camping/renting of a house, (5) students, (6) researchers and (7) teachers.<sup>35</sup> Additionally, the research considers the application of interviews to experts, conversations with key actors and directed observation.

### *2. Gathering of information and surveys*

To sum up, the instruments applied during the fieldwork, include surveys to:

- ✓ (1) *Tourists*: which compile information about the park, as well as elements necessary for the building of cluster of tourism; tourists
- ✓ (2) *Students*: which carry out studies in the park, they are consulted about the attractions of the park and its areas of interest for studies.

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<sup>35</sup> Annex 2 presents in detail the 7 instruments. Additionally, these surveys have an English language version, presented in the document entitled “Case of Study Rincón de la Vieja National Park”, which is another product within this project.

- ✓ (3) *Hotels and Cabins*: located in the communities surrounding the PNRV: Curubandé, San Jorge, and Buenos Aires, they are consulted in order to determine the influence of the park on these activities.
- ✓ (4) *Restaurants and Coffee Bars*, and (5) *Related Activities*: they are commercial and productive activities whose characteristics depend on the existence of PNRV for their development.
- ✓ (6) *Key actors*: correspond to the rangers and people related to the development of the place. Same that has much valuable knowledge about the socio-economic and environmental changes associated with the development of productive activities and infrastructure, and the profit and negative effect of the presence of the park, employment generation and actions of SINAC.

### 3. Fieldworks

To gather primary information are made four trips to Rincón de la Vieja National Park. The first one takes place from April 4<sup>th</sup> to April 8<sup>th</sup>, 2009 when it is performed recognition both of the PNRV and nearby communities and the respective developed economic activities. Additionally, several tests of the instruments are made, as well as interviews with local experts and visits to hotels located around the park.<sup>36</sup>

The second trip is implemented from August 9<sup>th</sup> to August 15<sup>th</sup>, 2009. During this fieldwork it is applied a total of 273 surveys, including 253 tourists (191 applied in English and 62 in Spanish), 4 for students, 6 for hotels, 9 for related activities and 1 for restaurant. Additionally, the research team applies 8 interviews to local experts.

The third fieldwork takes place from December 2<sup>nd</sup> to December 6<sup>th</sup>, 2009. When continuing the process of surveying in the Park, and is achieved to exceed the sample selected for the tourists. Since the total number of interviewed tourists reached 401 (330 surveys applied in English and 71 in Spanish).<sup>37</sup>

The fourth fieldwork takes place from February 22<sup>nd</sup> to February 25<sup>th</sup>, 2010, in order to complete the information of hotels and other productive activities. Here is important to note that the 13 interviewed hotels represent those that have direct relation with PNRV and that also, they were operating at the moment of the interview. This is because several hotels

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<sup>36</sup> This trip includes also the visit to other of the case studies of this project: Palo Verde National Park

<sup>37</sup> In the four fieldworks, the tasks of surveying take place in both sectors of PNRV (Las Pailas and Santa Maria). This includes contact with both tourists and rangers. For its part, consulted productive activities are located in communities of the district of Curubandé, and the five districts considered by the study as the regional scale (Dos Ríos and Aguas Claras of Upala, Alajuela, as well as the districts of Mayorga, Cañas Dulces and Liberia from Liberia, Guanacaste).

were closed at the moment of the visit and their owners preferred not to provide information.<sup>38</sup>

As it is shown in Chart A1, the total of surveys applied amounts to 430, while interviews amount to 15.

**Chart A1**  
**Instruments applied during fieldworks**

Surveys / Interviews	Number of Surveys Applied	
<b>Surveys</b>		
<i>Tourists</i>		401
<i>English</i>	330	
<i>Spanish</i>	71	
<i>Students</i>		4
<i>Hotels</i>		13
<i>Restaurants</i>		1
<i>Related Activities</i>		11
	<b>TOTAL</b>	<b>430</b>
<b>Interviews</b>		
<i>Key Actors</i>		9
<i>Staff of ACG</i>		3
<i>Staff of AYA</i>		2
<i>Staff of the Municipality of Liberia</i>		1
	<b>TOTAL</b>	<b>15</b>

**Source:** Own elaboration according to the database of the project.

#### 4. Design of Database

The process of systematization of collected primary information is of great interest to this investigation. In order to select the most optimal way for processing such data, the research team makes several internal meetings aimed at assessing the options available for this purpose. In this regard, Microsoft Excel and SPSS programs are analyzed in detail to determine which offers the best alternative to process the information collected through surveying.

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<sup>38</sup> A hotel was under remodeling and the other ones out of service due to the economic crisis, according to the owners' opinion; it has contracted the tourist activity in the area.

The following criteria support the choice of Microsoft Excel to tabulate the surveys:

- a. The frequency in SPSS is often impractical to add values and make combinations for multiple-choice questions. On the other hand, Microsoft Excel offers clear advantages for processing this kind of questions.
- b. Using Microsoft Excel is possible to create a database that can be updated, and it can include new values to obtain results in future works that SINAC decides to carry out.
- c. As part of the testing process of both programs, the research team starts working in the tabulation in SPSS tabulation, which shows management problems of the type of answers obtained in the implementation of the instruments during the fieldwork.
- d. The problems associated with use of SPSS to tabulate the surveys include: aggregation of variables, the payment of licenses for use, etc.
- e. To include annotations to specify information is very easy when Microsoft Excel is used. This is impossible within the program of SPSS.

Given the above, the Microsoft Excel program is chosen to start the tabulation of the information gathered. The first step is to assign a code to the questions and answers, to then close the questions with more general answers.

For purposes of ordering the surveys, the information gathered is divided into three groups. In the case of *tourists*, the first one includes general information about the tourist what other places will he visit? How did he arrive to the country? What did he like from the park?, among others. The second group refers to the costs incurred during the visit in the country and to the park in the case of foreigners and nationals. Meanwhile, the third group includes visitors' opinion regarding the management that is performed in the park and how it can be improved.

In the case of surveys for *Restaurants and Related Activities*, as well as for tourists, the first part includes information about commercial and productive activity, suppliers. Meanwhile, the second includes the incomes and expenses of the activity. Meanwhile, the third covers the political and environmental management. That is, this is related with the work done in the park and how wastes are managed, among others.

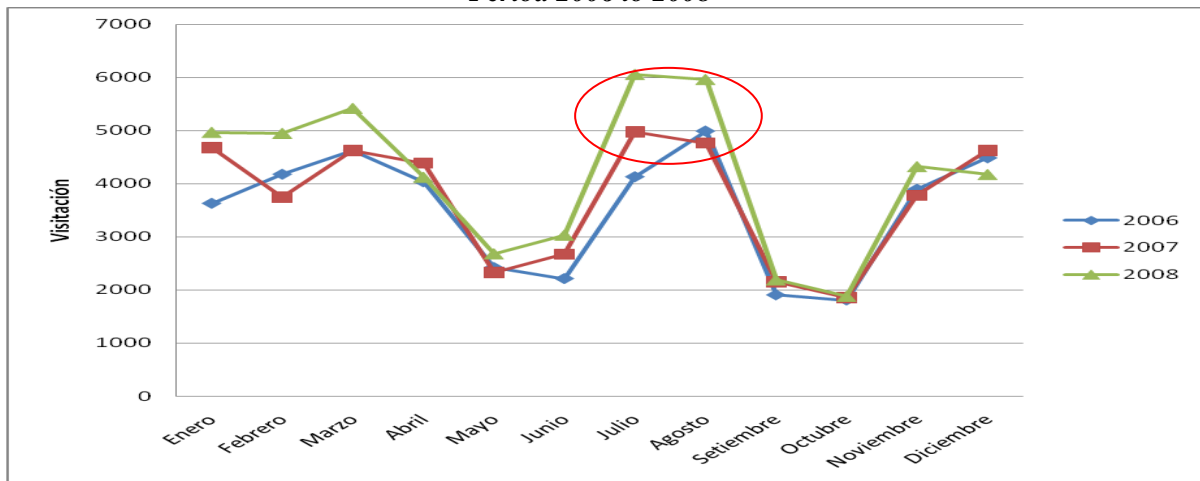
As regards the surveys for *Hotels* the information is divided into 4 sections. The first one like the other instruments includes the hotel information, as well as of suppliers, employees, and others. For its part, the second one determines the incomes that the hotel has, whether in respect of accommodation, activities that offer and restaurant service if it possesses. While in the third one there are expenses associated with the services provided, and the fourth one holds the information about political and environmental management.

## 5. Determination of the sample

In order to determine the sample size to apply the instruments, the research team takes as a reference the data of visitation supplied by officials of the PNRV according to their daily records of entries. In this regard, Graph 1 shows the monthly visitation of Rincon de la Vieja National Park for the years 2006, 2007 and 2008; where it is highlighted the months of July and August as those which present the highest visitation during the year.

In calculating the average visitation for the 3 analyzed years, the month of August gets a total of 5238 people. This figure is higher than that of 5053 tourists reported for the month of July. In order to obtain a major representative, the month of August is selected to perform the surveying.

**Graph A1**  
*Monthly visitation of Rincón de la Vieja National Park*  
*Period 2006 to 2008*

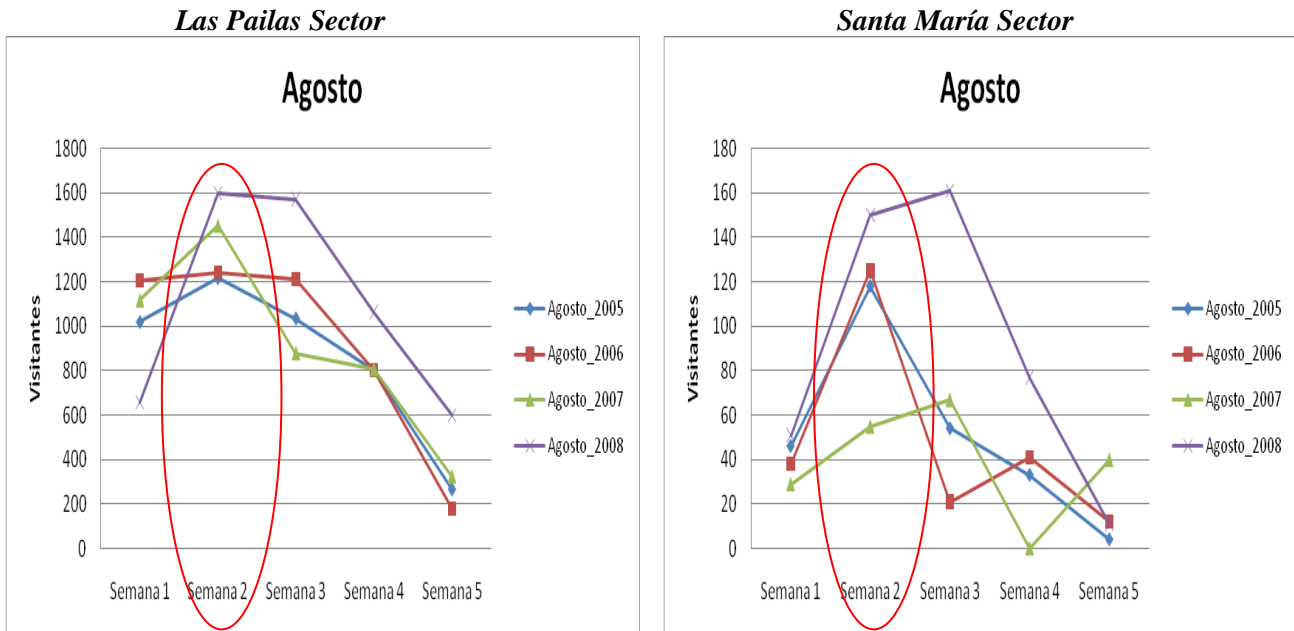


**Source:** Own elaboration, according to information given by the park.

Additionally, the month of July presents an important challenge in terms of logistics. Given the celebration of the Annexation of the Party of Nicoya to Costa Rica (July 25<sup>th</sup>), the Guanacaste province is home to various activities in commemoration. In this respect, diverse festivals and popular celebrations take place in communities and their inhabitants participate massively. Reason for which, it is expected that a surveying process becomes more difficult and probably has less participation from tourists and other key actors.

Having defined that the fieldwork will take place in August, it is discussed the visitation per weeks to calculate the sample size. As a result, it is observed that the second week of that month has greater visitation by sector, as seen in the following graph:

Graph A2



Source: Own elaboration, according to information provided by the park.

Since the calculation of simple size determines the degree of credibility that will be given to the obtained results, it is used the following formula of population size:

$$n = Z_{\alpha}^2 \frac{N \cdot p \cdot q}{i^2 (N - 1) + Z_{\alpha}^2 \cdot p \cdot q}$$

**Where:**

$n$  = It is the simple size (number of surveys to apply).

$N$  = It is size of population or universe (total number of possible interviewees).

$\alpha$  = Significance level of 5%

$Z_{\alpha/2}$  = Value corresponding to the Gaussian distribution of 1,960, it depends on the level of confidence that is assigned.

$1-\alpha$  = Confidence level of 95%

$p$  = Expected prevalence of the visitation to the park, is the proportion of individuals who own in the population the characteristic of study. (This piece of information is generally unknown and it is often assumed that  $p=q=0.5$  which is the safest option).

$q$  =  $1-p$ , is the proportion of individuals who do not have that feature.

$i$  = Error which is expected to commit is 5%. The sampling error is the difference that can exist between the results that are obtained by asking a sample of the population and the ones we would obtain if we would ask to the total of the same.

As it is explained in previous paragraphs, the target population corresponds to the visitation of the second week of August, 2008, for each one of the sectors of PNRV, which results in the maximum sample of surveys to apply, this as follows:

**Sector Population Las Pailas:** 1.600 visitors

$$n = 1.960^2 \frac{1600 \times 0.5 \times 0.5}{0.05^2(1600 - 1) + 1.960^2 \times 0.5 \times 0.5}$$

$$n = 310$$

As for the sector of Las Pailas the sample size is 310 tourists, with a significance level of 5%.

**Sector Population Santa María:** 150 visitors

$$n = 1.960^2 \frac{150 \times 0.5 \times 0.5}{0.05^2(150 - 1) + 1.960^2 \times 0.5 \times 0.5}$$

$$n = 108$$

For its part, the simple size of the sector of Santa Maria is 108 tourists, with a significance level of 5%. This implies that the maximum sample size to survey is of 418 visitors in total for Rincon de la Vieja National Park.

In order to obtain a minimum sample size for surveying, it is performed the calculation of the sample size according to the average of total visitation for the last three years i.e. from 2006, 2007 and 2008 respectively.

**Population of Rincón de la Vieja National Park:** 45.560 visitors in total.

$$n = 1.960^2 \frac{45,560 \times 0.5 \times 0.5}{0.05^2(45,560 - 1) + 1.960^2 \times 0.5 \times 0.5}$$

$$n = 381$$

Rincon de la Vieja National Park represents a minimum sample size of surveyed visitors in the park is of 381 tourists. This is with a significance level of 5%. In summary, for the purposes of this research, the number of tourists surveyed in PNRV must be between the 381 and 418 respectively, to obtain an acceptable degree of credibility for the obtained results.



## **6. Validation Workshop of Preliminary Results**

The workshop of socialization and validation of preliminary results of the case study: Systematization and Analysis of Socio-economic benefits of the existence of the Rincon de la Vieja National Park was held the morning of Friday 26<sup>th</sup>, 2010, in the Colonial Room of Hotel Boyeros & Conference Center of Liberia.

This activity was attended by 13 experts, who work in various public and private organizations related to PNRV. These include the Municipality of Liberia, the ACG-SINAC, ICE, the Cañon de la Vieja Lodge Hotel and Synergy Cañon de la Vieja Lodge. During this workshop with experts, the different aspects of the project are presented in order to place participants in the research context.

In this regard, the presentations include the issue addressed, the objectives of the project, theoretical and methodological backgrounds, the cluster approach and value chains, analysis of the contribution, as well as the experiences generated in the adaptation and implementation of the methodology in three countries: Costa Rica, Benin and Bhutan (for example, global impacts of the project and reciprocity).

In the case of Costa Rica, Rincon de la Vieja National Park constitutes the case study presented at the workshop. Preliminary results of this study are socialized in a second presentation. Participants give feedback these data with their experience and knowledge that are taken into account by the team of researchers to enhance this report.

The discussion is extended during a plenary session, which allows the exchange between experts and the research team. So, comments and recommendations of the experts become valuable inputs to complement the work that has been doing in the PNRV.

**ANNEX 2. INSTRUMENTS APPLIED IN THE FIELDWORK PERFORMED IN RINCÓN DE LA VIEJA NATIONAL PARK**



No. survey	Interviewer code

**Interviews for key actors in Rincón de la Vieja Volcano National Park**

**Project “Systematization and analysis of the contribution of National Parks and Biological Reserves to the economic and social development in Costa Rica”**

The National University is carrying out a research project which its objective is to quantify the contributions of National Parks to the socio-economic development of Costa Rica. In this sense, we require your collaboration to complete the following questionnaire. All the information gathered will be used only for academic purposes.

Date: \_\_\_\_\_

Place: \_\_\_\_\_

Position: \_\_\_\_\_

1. What kind of socio-economic and environmental changes have happened in the local or communal level through the development of tourism, towards the park?

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

2. What productive activities have grown rapidly and which ones have been disappearing?

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

3. In your opinion, what are the benefits and negative effects arising from the presence of the Rincon de la Vieja National Park to socio-economic development?

\_\_\_\_\_  
 \_\_\_\_\_

4. What has been the development of infrastructure associated with the creation of the park?

\_\_\_\_\_  
 \_\_\_\_\_

5. Does tourist activity related to the park generates enough jobs for the people to stay working in the community or should they emigrate?

\_\_\_\_\_  
 \_\_\_\_\_

6. According to your experience, how do you qualify the management that SINAC carries out in Rincon de la Vieja National Park? What actions could be applied to improve the current management?

\_\_\_\_\_  
 \_\_\_\_\_

7. Observations



No. Survey	Interviewer code

**Interviews for Supermarkets, Workshops, excursions, and other tourist related activities. Rincón de la Vieja Volcano National Park**  
**Project “Systematization and analysis of the contribution of the national parks and biological reserves to the economic and social development in Costa Rica”**

The National University is carrying out a research project which its objective is to quantify the contributions of National Parks to the socio-economic development of Costa Rica. In this sense, we require your collaboration to complete the following questionnaire. All the information gathered will be used only for academic purposes.

Date: \_\_\_\_\_

Place: \_\_\_\_\_

Type of establishment:

Supermarket \_\_\_\_\_ Travel agency \_\_\_\_\_ Tour operator \_\_\_\_\_

Name of the enterprise: \_\_\_\_\_

Name of The interviewee: \_\_\_\_\_

Position of the interviewee: \_\_\_\_\_

**1. General Questions**

1. How long do you offer the service? \_\_\_\_\_

2. What did you do before working in the company?  
 \_\_\_\_\_

3. What types of services or products are offered by the enterprise?  
 \_\_\_\_\_  
 \_\_\_\_\_

4. Do you know what percentage of people are nationals and foreigners?  
 \_\_\_\_\_ Foreigners  
 \_\_\_\_\_ Nationals

**2. Questions about providers**

5. Where do the goods you use in your business come from?  
 \_\_\_\_\_

6. What kind of means of transportation do they use (boats, cars, trucks, etc) to bring and carry goods?  
 \_\_\_\_\_

7. Where did you buy the furniture and equipment that you use in your local?  
 \_\_\_\_\_

**3. Fixed and operating costs**

8. Is the business own or rented?

Own \_\_\_\_\_

Rented \_\_\_\_\_ How much do you pay per month? \_\_\_\_\_

9. What is your monthly expenditure in terms of?

Item	Monthly Cost
Electricity	
Water	
Telephone	
Internet	
Cable TV	
Cleaning	
Maintenance	
Other services	

10. How many people work in the enterprise each season? (including yourself)

	High Season	Low Season
Relatives		
Employees		

11. How much do you pay for wages monthly?

\_\_\_\_\_

**4. Incomes**

12. Do you live only of this activity or do you have other sources of income?

YES: \_\_\_\_\_ NO: \_\_\_\_\_

Which one? \_\_\_\_\_

13. What percentage of your income comes from tourism?

\_\_\_\_\_

14. How much raises the monthly / annual sales that are carried out in the following seasons?

	Low Season	High Season
Monthly		
Annual		

15. What percentage of your sales is made to visitors of the Park?

\_\_\_\_\_

**5. Investment**

16. Are you planning on expanding the capacity of the business (to build more or to offer more services) \_\_NO / YES\_\_ what services will you expand?

\_\_\_\_\_

17. How much money has you invested in your business so far?

\_\_\_\_\_

18. Where does the water you use come from?

\_\_\_\_\_ Concession (Well) \_\_\_\_\_ Aqueduct Other \_\_\_\_\_

19. Do you have a treatment plant for sewage water? YES \_\_\_\_\_ NO \_\_\_\_\_

20. How do you manage the solid wastes (garbage)?

\_\_\_\_\_

21. Do you practice the separation and recycling of wastes? YES \_\_\_\_\_ NO \_\_\_\_\_

22. Do you have any certification? YES \_\_\_\_\_ NO \_\_\_\_\_ which one?

\_\_\_\_\_

#### **6. Organization and relationship with the Park**

23. Is the enterprise a member of a communal, commercial, tourism association (at national or regional level)?

YES \_\_\_\_\_ NO \_\_\_\_\_ which one? \_\_\_\_\_

24. In your opinion: Would you be in favor of an increase in tourism towards the park? Yes \_\_\_\_\_ No \_\_\_\_\_ Why? \_\_\_\_\_

25. In your opinion: What can be done to promote and sustain tourism towards the National Park?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

26. Do you agree with the management being undertaken by the MINAE in the park? \_\_YES / NO\_\_  
Why? \_\_\_\_\_



No. Survey	Interviewer code

**Interviews for Restaurants and Coffee Bars**

**Rincón de la Vieja Volcano National Park**

**Project “Systematization and analysis of the contribution of the national parks and biological reserves to the economic and social development in Costa Rica”**

The National University is carrying out a research project which its objective is to quantify the contributions of National Parks to the socio-economic development of Costa Rica. In this sense, we require your collaboration to complete the following questionnaire. All the information gathered will be used only for academic purposes.

Date: \_\_\_\_\_

Place: \_\_\_\_\_

Type of establishment:

Restaurant \_\_\_\_\_ Coffee Bar \_\_\_\_\_ Other Specify \_\_\_\_\_

Name of the enterprise: \_\_\_\_\_

Name of the interviewee: \_\_\_\_\_

Position of the interviewee: \_\_\_\_\_

1. Who is the owner of the business? Where is he/she from? \_\_\_\_\_

2. When did the restaurant/coffee bar come into operation? \_\_\_\_\_

3. The restaurant/coffee bar is:

\_\_\_ Owned

\_\_\_ Rented. How much do you pay per month? \_\_\_\_\_

4. Do you know who built the restaurant/coffee bar?

\_\_\_\_\_

5. What was the use of the land before the construction of the restaurant (grass, forest)?

\_\_\_\_\_

6. Is the land still used for that purpose? YES \_\_\_ / NO \_\_\_

7. How do you promote the restaurant/coffee bar? \_\_\_\_\_

8. Does your restaurant/coffee bar have website? \_\_\_\_\_ YES \_\_\_\_\_ NO

Electronic address \_\_\_\_\_

9. What is the price charged for the dish of the day? (Include the types of food).

\_\_\_ Breakfast \_\_\_\_\_

\_\_\_ Lunch \_\_\_\_\_

\_\_\_ Dinner \_\_\_\_\_

10. How many dishes do you sell in each season?

High Season \_\_\_\_\_ Low Season \_\_\_\_\_

11. How many tourists do you attend daily/monthly in your restaurant/coffee bar?

	Low Season	High Season
Daily		
Monthly		

12. Is there any time of the year in which the visitation is minimal?

\_\_\_ YES \_\_\_ NO

Which months? \_\_\_\_\_

13. Have you been able to notice differences in the visitation rate of restaurant/coffee bar in recent years?

\_\_\_ YES / \_\_\_ NO

Explain \_\_\_\_\_

14. Has the current economic crisis affected the demand for the services your restaurant/coffee bar offers?

YES \_\_\_\_\_ NO \_\_\_\_\_ Explain \_\_\_\_\_

15. Do you know what percentages of your customers are national and foreigners in each season?

	Low Season	High Season
National:		
Foreigners:		

16. What means of transportation use the tourists to get to the hotel/cabin?

Bus \_\_\_\_\_

Car (own \_\_\_\_\_ rented \_\_\_\_\_)

Other means Specify \_\_\_\_\_

17. In your opinion, what percentage of customers are attracted by:

\_\_\_\_\_ Rincón de la Vieja National Park

\_\_\_\_\_ Palo Verde National Park

\_\_\_\_\_ Other attractions. Specify \_\_\_\_\_

18. Do you have any idea of what percentage of your incomes depend on the Rincón de la Vieja National Park?

\_\_\_\_\_

19. How much raises the monthly / annual sales that carry out the restaurant in the following seasons?

	Low season	High season
Monthly		
Annual		

20. What is the operation and maintenance cost of the restaurant/coffee bar (during the season)?

Low Season	High Season

21. Are you thinking on expanding the capacity of the restaurant/coffee bar (to build more or to offer more services)?  
 \_\_\_ Yes \_\_\_ NO which services will you expand? \_\_\_\_\_

22. How many people work in your restaurant/coffee bar in each season? (including yourself)

	Low Season	High Season
Relatives		
Employees		

23. How much is the amount you pay in salaries monthly?  
 \_\_\_\_\_

24. Where do employees come from?

- \_\_\_ Guayabo (Bagaces)
- \_\_\_ Liberia
- \_\_\_ San Jorge
- \_\_\_ Colonia Libertad
- \_\_\_ Curubande
- \_\_\_ Quebrada Grande
- \_\_\_ Valle Verde
- \_\_\_ Buenos Aires
- \_\_\_ Dos Ríos
- \_\_\_ Aguas Claras
- \_\_\_ Other place, Which one? \_\_\_\_\_

25. ¿Cuál su gasto mensual en cuanto a los siguientes rubros?

Item	Monthly Cost
Electricity	
Water	
Telephone	
Internet	
Cable T.V	
Food	
Beverages	
Other services	

26. Where did you buy the furniture and other equipment for the restaurant/coffee bar?  
 \_\_\_\_\_

27. Where do you buy the inputs you use in your restaurant/coffee bar?  
 \_\_\_\_\_

28. How much Money have you invested approximately in your business up to date?

General description \_\_\_\_\_



29. Do you collaborate or do you have any relation with any enterprise or organization at local, national or international level related to your activity? \_\_\_ YES / NO \_\_\_  
\_\_\_ ICT  
\_\_\_ Chamber  
\_\_\_ Tour operator  
\_\_\_ Travel Agencies  
\_\_\_ Others, which ones? \_\_\_\_\_
30. Where does the water you use for your restaurant/coffee bar come from?  
\_\_\_ Concession (well) \_\_\_ Aqueduct Other \_\_\_\_\_
31. Do you have a sewage treatment plant? YES \_\_\_ NO \_\_\_
32. How do you manage the solid wastes (garbage)?  
\_\_\_\_\_
33. Do you practice the separation and recycling of wastes? YES \_\_\_ NO \_\_\_
34. Do you have any certification? YES \_\_\_ NO \_\_\_ which ones? \_\_\_\_\_
35. Do you agree with the management that MINAET carries out in Rincón de la Vieja National Park?  
\_\_\_ YES/ NO \_\_\_ why? \_\_\_\_\_
36. Are you supporting financially or in any other way the maintenance of any protected area?  
\_\_\_ YES. How?: \_\_\_\_\_  
\_\_\_ NO. Would you be willing to do it in the future? \_\_\_\_\_



No. survey	Interviewer code

**Interviews for hotels / cabins / camping /house renting**  
**Rincón de la Vieja Volcano National Park**

**Project “Systematization and analysis of the contribution of National Parks and Biological Reserves to the economic and social development in Costa Rica”**

The National University is carrying out a research project which its objective is to quantify the contributions of National Parks to the socio-economic development of Costa Rica. In this sense, we require your collaboration to complete the following questionnaire. All the information gathered will be used only for academic purposes.

Date: \_\_\_\_\_

Place: \_\_\_\_\_

Kind of lodging (hotel / cabin / camping / house): \_\_\_\_\_

Name of the enterprise / brand: \_\_\_\_\_

Name of the interviewed person: \_\_\_\_\_

Position of the interviewed person: \_\_\_\_\_

1. Who is/are the owner(s) of the business? Where is she/are they from?  
 \_\_\_\_\_
2. When was the hotel/cabin opened to the public? \_\_\_\_\_
3. Do you own the hotel/cabin or are they rented?  
 \_\_\_ Own  
 \_\_\_ Rented. How much do you pay per month? \_\_\_\_\_
4. Do you know who built the hotel /cabins?  
 \_\_\_\_\_
5. Where did you buy the furniture (tables, lamps, etc.)?  
 \_\_\_\_\_
6. What was the usage of the land before the construction of the hotel /cabin (grassland, forest)?  
 \_\_\_\_\_
7. Is the land still used for that purpose? Yes \_\_\_ / No\_\_\_
8. Which is the most important use for your income currently? \_\_\_\_\_
9. How many tourists stay monthly in your hotel / cabin?  
 Low Season \_\_\_\_\_ High Season \_\_\_\_\_
10. The segment of market to which your hotel provides services relates to:  
 Massive Tourism\_\_\_\_\_ Adventure Tourism\_\_\_\_\_ Ecotourism\_\_\_\_\_  
 Cruise Tourism\_\_\_\_\_ Health Tourism\_\_\_\_\_ Community Rural Tourism\_\_\_\_\_

11. How many of your customers are national? \_\_\_\_\_ Foreigners? \_\_\_\_\_
12. What means of transportation do tourists use to come here?  
\_\_\_\_\_  
\_\_\_\_\_
13. How do you promote your hotel/cabin?  
\_\_\_\_\_
14. Does your hotel have website? \_\_\_ Yes / No \_\_\_  
Address: \_\_\_\_\_
15. In your opinion, what percentage of your customers is attracted by the park?  
i. Only the park \_\_\_\_\_  
ii. Other attractions \_\_\_\_\_ Specify which ones: \_\_\_\_\_
16. Do you collaborate or do you have any relation with an enterprise or organization at local, national or international level?  
\_\_\_ Yes / No \_\_\_  
\_\_\_ ICT  
\_\_\_ Chamber  
\_\_\_ Tour operator  
\_\_\_ Travel Agencies  
\_\_\_ Others, which ones: \_\_\_\_\_
17. How many bedrooms does your hotel/cabin have? How many beds are there per room?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
18. Which is the price that is charged per bedroom in each season?  
Low Season \_\_\_\_\_  
High Season \_\_\_\_\_
19. Which is the occupancy rate in each season?  
Low Season \_\_\_\_\_  
High Season \_\_\_\_\_
20. Is there any time of the year in which the occupancy is minimal? \_\_\_ Yes / No \_\_\_  
How much time?: \_\_\_\_\_
21. Have you been able to notice differences in the occupancy rate in recent years?  
\_\_\_ Yes / No \_\_\_  
Explain \_\_\_\_\_
22. Has the current economic crisis affected the demand for the services that your hotel offers? \_\_\_ Yes / No \_\_\_  
Explain \_\_\_\_\_
23. Approximately, how much does the monthly income for the service of lodging amount to?  
\_\_\_\_\_  
\_\_\_ NS / NR, so, Do you any idea of what is your monthly income in each season?

Low Season \_\_\_\_\_  
 High Season \_\_\_\_\_

24. Do you have any idea of what is the percentage of your incomes depends on the national park?

\_\_\_\_\_

25. Are you thinking on expanding the capacity of the hotel / cabin (to build more bedrooms or to provide more services) \_\_\_ No / Yes \_\_\_,  
 Which ones?: \_\_\_\_\_

26. Do your hotel / cabin have restaurant service? \_\_\_ No / Yes \_\_\_,  
 Es usted propietario/a \_\_\_ Sí / \_\_\_ No, Sí se lo alquilan, cuánto paga de alquiler:

\_\_\_\_\_

27. How much do sales of the restaurant per year amount to?

\_\_\_\_\_

28. Do you have any idea of how many guests use the restaurant services?  
 \_\_\_ No / \_\_\_ Yes, how many?

\_\_\_\_\_

29. Do you have any idea of how many people who are not guests use the restaurant service?

\_\_\_\_\_

30. How much money have you invested approximately in your business up to date?

General description \_\_\_\_\_  
 \_\_\_\_\_

31. Which is the cost of operation and maintenance of the hotel /cabin (per season)?

Low Season \_\_\_\_\_  
 High Season \_\_\_\_\_

32. How many people work in your hotel/ cabin in each season?

	Low Season	High Season
Relatives		
Employees		

33. Which is the amount that you pay for salaries monthly?

\_\_\_\_\_

34. Where do employees come from?

- \_\_\_ Guayabo (Bagaces)
- \_\_\_ Liberia
- \_\_\_ San Jorge
- \_\_\_ Colonia Libertad
- \_\_\_ Curubande
- \_\_\_ Quebrada Grande
- \_\_\_ Valle Verde
- \_\_\_ Buenos Aires

- \_\_\_ Dos Ríos
- \_\_\_ Aguas Claras
- \_\_\_ Other, Which one? \_\_\_\_\_

**35.** What is the monthly expense regarding?

- i. Food \_\_\_\_\_
- ii. Beverages \_\_\_\_\_
- iii. Water \_\_\_\_\_
- iv. Consumption of electricity \_\_\_\_\_
- v. Internet \_\_\_\_\_
- vi. Telephone \_\_\_\_\_
- vii. Cable T.V \_\_\_\_\_
- viii. Other services \_\_\_\_\_

**36.** Where do you buy these goods? \_\_\_\_\_

**37.** Are you supporting financially or in any other way the maintenance of any protected area?  
 \_\_\_Yes, how? \_\_\_\_\_  
 \_\_\_No, would you be willing to do it in the future? \_\_\_\_\_

**38.** Do you agree with the management that MINAET carries out in the park?  
 \_\_\_Yes / No \_\_\_  
 Why? \_\_\_\_\_

**39.** What other services does your hotel provides to tourists?

Service	Fee
Walk to the main crater	
Hot Springs to swim	
1. Viewpoints	
2. Walks	
3. Deep holes to swim (Santa María)	
4. Waterfalls	
Others	

**40.** Where does the water you use come from?  
 \_\_\_Concession (well). \_\_\_Aqueduct \_\_\_Other. Which one? \_\_\_\_\_

**41.** Do you have a sewage treatment plant? Yes\_\_\_ / No \_\_\_

**42.** How do you manage solid wastes? (garbage).  
 \_\_\_\_\_

**43.** Do you practice the separation and recycling of wastes? yes\_\_\_ / No \_\_\_

**44.** Do you have any certification? \_\_\_ No / \_\_\_ Yes. Which one?  
 \_\_\_\_\_



No. Survey	Interviewer code

**Interviews for Tourists.**

**Rincón de la Vieja Volcano National Park**

**Project “Systematization and analysis of the contribution of the national parks and biological reserves to the economic and social development in Costa Rica”**

The National University is carrying out a research project which its objective is to quantify the contributions of National Parks to the socio-economic development of Costa Rica. In this sense, we require your collaboration to complete the following questionnaire. All the information gathered will be used only for academic purposes.

Indicate gender

Gender	
Female	Male

1. What is your nationality?  
 \_\_\_\_\_ Costa Rican (if you are Costa Rican go to question # 4)  
 \_\_\_\_\_ American Country \_\_\_\_\_  
 \_\_\_\_\_ African Country \_\_\_\_\_  
 \_\_\_\_\_ European Country \_\_\_\_\_  
 \_\_\_\_\_ Asian Country \_\_\_\_\_  
 \_\_\_\_\_ Other. Specify \_\_\_\_\_
  
2. What was the cost of your airline ticket to get to Costa Rica?  
 \_\_\_\_\_
  
3. How long are you going to stay in Costa Rica?  
 \_\_\_\_\_
  
4. How many people travel with you?  
 \_\_\_\_\_
  
5. Did you know about the existence of the Rincón de la Vieja Volcano National Park?  
 NO \_\_\_\_\_ YES \_\_\_\_\_  
 How did you know? \_\_\_\_\_
  
6. How did you plan the visit to the Rincón de la Vieja Volcano National Park?
  - a. Travel agency
    - a.1 \_\_\_\_\_ National  
 How much did the package cost? \_\_\_\_\_  
 Does it include other additional destinations to the Rincón de la Vieja Volcano National Park?  
 \_\_\_\_\_
    - a.2 \_\_\_\_\_ International  
 How much did the package cost? \_\_\_\_\_  
 Does it include other additional destinations to the Rincón de la Vieja Volcano National Park?  
 \_\_\_\_\_

b. Tourist operator or independent carrier  
 How much did the package cost? \_\_\_\_\_  
 What places include? \_\_\_\_\_

c. On his/her own

d. By other mean  
 Explain \_\_\_\_\_  
 \_\_\_\_\_  
 Cost \_\_\_\_\_

7. What was the last place of your stay (lodging) before getting to the Rincón de la Vieja Volcano National Park?  
 \_\_\_\_\_
8. Since your last place of stay (lodging), in which costs have, you incurred to get to the Rincón de la Vieja Volcano National Park?

Item	Approximate amount
<i>Food</i>	
<i>Lodging:</i>	
Hotel	
Cabin	
Other	
<i>Transportation:</i>	
Maritime	
Terrestrial:	
Bus	
Tourist bus	
Own car	
Rented car (how many days?)	
Other	
<i>Entrance to PNVRV</i>	
<i>Other</i>	

9. What is the main attraction of the Rincón de la Vieja Volcano National Park for you?  
 \_\_\_\_\_  
 \_\_\_\_\_
10. How long are you going to stay at the Rincón de la Vieja Volcano National Park?  
 \_\_\_\_\_  
 \_\_\_\_\_
11. Do you think the services offered by the Rincón de la Vieja Volcano National Park could be improved?  
 YES \_\_\_\_\_ NO \_\_\_\_\_  
 Which ones? \_\_\_\_\_
12. After visiting the Rincón de la Vieja Volcano National Park, will you stay somewhere nearby?  
 \_\_\_\_\_ No (If your answer is NO go to question # 15)  
 \_\_\_\_\_ Yes (If your answer is YES go to the answer the next question)

**13.** Where will you stay in that case and how many days? \_\_\_\_\_  
\_\_\_\_ Hotel. Cost \_\_\_\_\_  
\_\_\_\_ Cabin. Cost \_\_\_\_\_  
\_\_\_\_ Camping zone. Cost \_\_\_\_\_. Do you rent the equipment? \_\_NO/YES\_\_ Cost \_\_\_\_\_  
\_\_\_\_ Other. Cost \_\_\_\_\_

**14.** Will you visit other places in the area?  
\_\_\_\_ NO.  
\_\_\_\_ YES ¿Which ones?  
\_\_\_\_ Miravalles Volcano National Park  
\_\_\_\_ Tenorio Volcano National Park  
\_\_\_\_ Guanacaste National Park  
\_\_\_\_ Santa Rosa National Park  
\_\_\_\_ Palo Verde National Park  
\_\_\_\_ Other  
\_\_\_\_ Which one

**15.** What type of activities will be carried out or have carried out in the Rincón de la Vieja Volcano National Park or its surroundings?  
\_\_\_\_ Walk the main crater  
\_\_\_\_ Hot springs for swimming  
\_\_\_\_ Hiking  
\_\_\_\_ Viewpoints  
\_\_\_\_ Swimming (Santa Maria)  
\_\_\_\_ Camping  
\_\_\_\_ Others \_\_\_\_\_

**16.** Which will be the diary spend of your visit to the park?  
Lodging \_\_\_\_\_  
Food \_\_\_\_\_  
Other \_\_\_\_\_  
Which one \_\_\_\_\_ Cost \_\_\_\_\_

**17.** Do you know what is the National System of Conservation Areas of Costa Rica (SINAC in Spanish)?  
\_\_YES. Please continue with question number 19.  
\_\_NO. Please continue with question number 18.

**18.** The administration of the Wild Protected Areas in Costa Rica is in charge of the Ministry of Environment, Energy and Telecommunications through the System of Conservation Areas (SINAC in Spanish). SINAC is in charge of dictate policy, planning and implementing processes aimed at sustainable management of natural resources in Costa Rica. Please continue with the questions number 19.

**19.** Do you agree with the management of SINAC in the National Park? \_\_YES/NO\_\_,  
Why? \_\_\_\_\_

**20.** Do you think the services offered by the park could be improved? \_\_YES /NO \_\_,  
Which ones? :: \_\_\_\_\_

**21.** Are you willing to pay more in the entrance fee to improve the services that the National Park offers?

How much and which services? \_\_\_\_\_  
\_\_\_\_\_





No. Survey	Interviewer code

**Interviews for researchers**

**Rincón de la Vieja Volcano National Park**

**Project “Systematization and analysis of the contribution of National Parks and Biological Reserves to the economic and social development in Costa Rica”**

The National University is carrying out a research project which its objective is to quantify the contributions of National Parks to the socio-economic development of Costa Rica. In this sense, we require your collaboration to complete the following questionnaire. All the information gathered will be used only for academic purposes.

Date: \_\_\_\_\_

Place: \_\_\_\_\_

1. Type of lodging (hotel/cabin): \_\_\_\_\_
2. Name of educational organization where you work / country where is located: \_\_\_\_\_
3. Name of the interviewed person: \_\_\_\_\_
4. Position of the interviewed person/specialization area:  
\_\_\_\_\_
5. What is your nationality? \_\_\_\_\_ In case you are foreigner, in average, what was the cost of your airline ticket to Costa Rica? \_\_\_\_\_
6. How many days are you planning to stay Rincón de la Vieja Volcano National Park?  
\_\_\_\_\_
7. How many people go with you? \_\_\_\_\_
8. How long are you going to stay in Costa Rica? \_\_\_\_\_
9. What was the last place of your stay before coming to the national park?  
\_\_\_\_\_
10. Did you have any additional cost before arriving at the national park?

<b>Cost</b>	<b>Approximate amount</b>
Food	
Lodging	
Other	

11. What is the significance of the park in the completion of the journey? What is the main attraction of the Park (ask about the importance of the park for the researcher to visit the zone)?  
\_\_\_\_\_

12. How was the visit organized to this national park?

a) \_\_ Travel agencies

- a.1)  National  
 How much did the package cost? \_\_\_\_\_  
 What places do they include? \_\_\_\_\_
- a.2)  International  
 How much did the package cost? \_\_\_\_\_  
 What places do they include? \_\_\_\_\_
- b)  Tour operator or independent carrier  
 How much did the package cost? \_\_\_\_\_  
 What places do they include? \_\_\_\_\_
- c)  On his/her own
- d)  OET
- e)  By other means \_\_\_\_\_

13. What means of transportation did you use to get here?

Transportation	Amount
<input type="checkbox"/> Public bus	
<input type="checkbox"/> Tourist bus	
<input type="checkbox"/> Own or family car	
<input type="checkbox"/> Rented car, How many days of renting? _____	
<input type="checkbox"/> Other mean. Which one? _____	

14. What is or will be the daily expense of your stay in the park and its surroundings (including food, lodging)? \_\_\_\_\_

15. How did you know about the existence of the Rincón de la Vieja Volcano National Park?  
 Reference of another researcher. From what educational organization? \_\_\_\_\_  
 Internet. From which website? \_\_\_\_\_  
 Other. Specify \_\_\_\_\_

16. What is the area of your interest in research?  
 Fauna. Which species? \_\_\_\_\_  
 Volcanology / Seismology  
 Forest species. Which species? \_\_\_\_\_  
 Other. Specify \_\_\_\_\_

17 Will you publish your research? YES  NO  Where? \_\_\_\_\_

18. What is the target audience of your research?  
 Students  
 Academicians  
 Other. Specify \_\_\_\_\_

19. What is the source of funding for your research?  
 Own resources  
 Donation. Specify \_\_\_\_\_  
 Research project. Specify \_\_\_\_\_  
 Other. Specify \_\_\_\_\_

20. In your opinion, what percentage of researchers is attracted by?

- i. Only the park \_\_\_\_\_  
ii. Other attractions \_\_\_\_\_ Specify which ones? \_\_\_\_\_

21. Does the current economic crisis have affected the funds allocated for research in the Rincón de la Vieja Volcano National Park? \_\_YES / \_\_ NO  
Explain \_\_\_\_\_

How much? \_\_\_\_\_

22. Approximately, how much raises the cost of research carried out in the Rincón de la Vieja National Park?  
\_\_\_\_\_ \_\_ NS / NR \_\_

23. Are you financially supporting or in any other way the maintenance of any protected area?  
\_\_YES, how: \_\_\_\_\_  
\_\_NO, would you be willing to do so in the future? \_\_\_\_\_

24. Do you agree with the management of the MINAET in the park? \_\_YES / NO\_\_  
Why? \_\_\_\_\_

25. Do you think the services offered by the park could be improved? \_\_YES /NO \_\_, Which ones?  
\_\_\_\_\_

26. Are you thinking of visiting other attractions or places in the zone? \_\_YES / NO \_\_ which ones?  
\_\_\_\_\_

- \_\_\_ Lomas de Barbudal Biological Reserve  
\_\_\_ Surrounding communities. Which ones? \_\_\_\_\_  
\_\_\_ Palo Verde National Park  
\_\_\_ Others \_\_\_\_\_



No. Survey	Interviewer code

**Interviews for teachers**  
**Rincón de la Vieja Volcano National Park**

**Project “Systematization and analysis of the contribution of National Parks and Biological Reserves to the economic and social development in Costa Rica”**

The National University is carrying out a research project which its objective is to quantify the contributions of National Parks to the socio-economic development of Costa Rica. In this sense, we require your collaboration to complete the following questionnaire. All the information gathered will be used only for academic purposes.

Date: \_\_\_\_\_  
 Place: \_\_\_\_\_

1. Type of lodging (hotel/cabin): \_\_\_\_\_
2. Name of educational organization where you work / country where is located: \_\_\_\_\_
3. Name of the interviewed person: \_\_\_\_\_
4. Position of the interviewed person/specialization area:  
 \_\_\_\_\_
5. What is your nationality? \_\_\_\_\_ In case you are foreigner, in average, what was the cost of your airline ticket to Costa Rica? \_\_\_\_\_
6. How many days are you planning to stay in the Rincón de la Vieja Volcano National Park?  
 \_\_\_\_\_
7. How many people go with you?  
 \_\_\_\_\_
8. How long are you going to stay in Costa Rica?  
 \_\_\_\_\_
9. How many times in the year do you come to the national park?  
 \_\_\_\_\_
10. What was the last place of your stay before coming to the national park?  
 \_\_\_\_\_
11. Did you have any additional cost before arriving at the national park?

Cost	Approximate amount
Food	
Lodging	
Other	

12. What is the significance of the park in the completion of the journey? What is the main attraction of the Park (ask about the importance of the park for the researcher to visit the zone)?

\_\_\_\_\_

13. How was the visit organized to this national park?

a)    **Travel agencies**

a.1)    National

How much did the package cost? \_\_\_\_\_

What places do they include? \_\_\_\_\_

a.2)    International

How much did the package cost? \_\_\_\_\_

What places do they include? \_\_\_\_\_

b)    **Tour operator or independent carrier**

How much did the package cost? \_\_\_\_\_

What places do they include? \_\_\_\_\_

c)    **On his/her own**

d)    **By other mean** \_\_\_\_\_

Cost \_\_\_\_\_

14. What means of transportation did you use to get here?

Transportation	Amount
<u>  </u> Public bus	
<u>  </u> Tourist bus	
<u>  </u> Own or family car	
<u>  </u> Rented car, How many days of renting? _____	
<u>  </u> Other mean. Which one? _____	

15. What is or will be the daily expense of your stay in the park and its surroundings (including food, lodging)? \_\_\_\_\_

16. How did you know about the existence of the Rincón de la Vieja Volcano National Park?

   As a part of a course. Which one? \_\_\_\_\_

   Reference of another teacher. From what educational organization? \_\_\_\_\_

   Internet. From which website? \_\_\_\_\_

   Other. Specify \_\_\_\_\_

17. What is the area of your interest in teaching?

   Fauna. Which species? \_\_\_\_\_

   Volcanology / Seismology \_\_\_\_\_

   Forest species. Which species? \_\_\_\_\_

   Other. Specify \_\_\_\_\_

18. How are you going to use the knowledge learned in the activity that you attempted in the Rincón de la Vieja Volcano National Park?

- Publication. Where? \_\_\_\_\_
- Training to other teachers
- Training to organized groups and local communities
- Other. Specify \_\_\_\_\_

19. What is the source of funding for your activity?

- Own resources
- Donation. Specify \_\_\_\_\_
- Research project. Specify \_\_\_\_\_
- Other. Specify \_\_\_\_\_

20. In your opinion, what percentage of teachers is attracted by?

- i. Only the park \_\_\_\_\_
- ii. Other attractions \_\_\_\_\_ Specify which ones? \_\_\_\_\_

21. Does the current economic crisis have affected the funds allocated for your activity in the Rincon de la Vieja Volcano National Park?  YES /  NO

- Explain \_\_\_\_\_
- How? \_\_\_\_\_
- How much? \_\_\_\_\_

22. Approximately, how much raises the cost of the activity carried out in the Rincón de la Vieja Volcano National Park? \_\_\_\_\_  NS / NR \_\_\_\_\_

23. Are you financially supporting or in any other way the maintenance of any protected area?

- YES, how much? \_\_\_\_\_
- NO, would you be willing to do so in the future? \_\_\_\_\_

24. Do you know what the National System of Conservation Areas of Costa Rica is (SINAC in Spanish)?

- YES. Please continue with question number 26.
- NO. Please continue with question number 25.

25. The administration of the Wild Protected Areas in Costa Rica is in charge of the Ministry of Environment, Energy and Telecommunications through the System of Conservation Areas (SINAC in Spanish). SINAC is in charge of dictate policy, planning and implementing processes aimed at sustainable management of natural resources in Costa Rica. Please continue with the questions number 26.

26. Do you agree with the management of SINAC in the National Park?  YES/NO   
Why? \_\_\_\_\_

27. Do you think the services offered by the park could be improved?  YES /NO , Which ones?  
\_\_\_\_\_

28. Are you thinking of visiting other attractions or places in the zone?  YES / NO  which ones?

- \_\_\_\_\_
- Lomas de Barbudal Biological Reserve
- Surrounding communities. Which ones? \_\_\_\_\_
- Palo Verde National Park
- Others \_\_\_\_\_



No. Survey	Interviewer code

**Interviews for students**

**Rincón de la Vieja Volcano National Park**

**Project “Systematization and analysis of the contribution of National Parks and Biological Reserves to the economic and social development in Costa Rica”**

The National University is carrying out a research project which its objective is to quantify the contributions of National Parks to the socio-economic development of Costa Rica. In this sense, we require your collaboration to complete the following questionnaire. All the information gathered will be used only for academic purposes.

Date: \_\_\_\_\_

Place: \_\_\_\_\_

1. Type of lodging (hotel/cabin/another, which one?): \_\_\_\_\_
2. Name of educational organization where you study / country where is located: \_\_\_\_\_
3. Name of the interviewed person: \_\_\_\_\_
4. Position of the interviewed person/specialization area:  
\_\_\_\_\_
5. What is your nationality? \_\_\_\_\_ In case you are foreigner, in average, what was the cost of your airline ticket to Costa Rica? \_\_\_\_\_
6. How many days are you planning to stay in the Rincón de la Vieja Volcano National Park?  
\_\_\_\_\_
7. How many people go with you? \_\_\_\_\_
8. How long are you going to stay in Costa Rica? \_\_\_\_\_
9. What was the last place of your stay before coming to the national park?  
\_\_\_\_\_  
\_\_\_\_\_
10. Did you have any additional cost before arriving at the national park?

Cost	Approximate amount
Food	
Lodging	
Other	

11. What is the significance of the park in the completion of the journey? What is the main attraction of the Park (ask about the importance of the park for the researcher to visit the zone)?  
\_\_\_\_\_  
\_\_\_\_\_

12. How was the visit organized to this national park?

e)  **Travel agencies**

a.1)  **National**

How much did the package cost? \_\_\_\_\_  
 What places do they include? \_\_\_\_\_

a.2)  **International**

How much did the package cost? \_\_\_\_\_  
 What places do they include? \_\_\_\_\_

f)  **Tour operator or independent carrier**

How much did the package cost? \_\_\_\_\_  
 What places do they include? \_\_\_\_\_

g)  **On his/her own**

h)  **By other mean** \_\_\_\_\_  
 Cost \_\_\_\_\_

13. What means of transportation did you use to get here?

Transportation	Amount
<input type="checkbox"/> Public bus	
<input type="checkbox"/> Tourist bus	
<input type="checkbox"/> Own or family car	
<input type="checkbox"/> Rented car, How many days of renting? _____	
<input type="checkbox"/> Other mean. Which one? _____	

14. What is or will be the daily expense of your stay in the park and its surroundings (including food, lodging)? \_\_\_\_\_

15. How did you know about the existence of the Rincón de la Vieja Volcano National Park?

As part of a course. From what educational organization? \_\_\_\_\_  
 Internet. From which website? \_\_\_\_\_  
 Other. Specify \_\_\_\_\_

16. What is the area of your interest in research?

Fauna. Which species? \_\_\_\_\_  
 Volcanology / Seismology \_\_\_\_\_  
 Forest species. Which species? \_\_\_\_\_  
 Other. Specify \_\_\_\_\_

17. Are you going to prepare a report on your visit? Yes  No

Where? \_\_\_\_\_ What kind of report? \_\_\_\_\_

18. What is the target audience of your research?

Students  
 Academicians  
 Other. Specify \_\_\_\_\_



19. What is the source of funding for your work in the national park?

- Own resources
- Donation. Specify \_\_\_\_\_
- Research project. Specify \_\_\_\_\_
- Other. Specify \_\_\_\_\_

20. In your opinion, what percentage of researchers is attracted by?

- i. Only the park \_\_\_\_\_
- ii. Other attractions \_\_\_\_\_ Specify which ones? \_\_\_\_\_

21. Does the current economic crisis have affected the funds allocated to students for fieldworks in the Rincon de la Vieja Volcano National Park?  YES /  NO

Explain \_\_\_\_\_  
How? \_\_\_\_\_

22. Approximately, how much raises the cost of research carried out in the Rincón de la Vieja Volcano National Park? \_\_\_\_\_  NS / NR \_\_\_\_\_

23. Do you know if your academic institution is financially supporting or in any other way the maintenance of any protected area?

- YES, how much? \_\_\_\_\_
- NO, do you know if they would be willing to do so in the future? \_\_\_\_\_

24. Do you know what the National System of Conservation Areas of Costa Rica is (SINAC in Spanish)?

- YES. Please continue with question number 19.
- NO. Please continue with question number 18.

25. The administration of the Wild Protected Areas in Costa Rica is in charge of the Ministry of Environment, Energy and Telecommunications through the System of Conservation Areas (SINAC in Spanish). SINAC is in charge of dictate policy, planning and implementing processes aimed at sustainable management of natural resources in Costa Rica. Please continue with the questions number 26.

26. Do you agree with the management of SINAC in the National Park?  YES/NO

Why? \_\_\_\_\_  
\_\_\_\_\_

27. Do you think the services offered by the park could be improved?  YES / NO  , which ones?

\_\_\_\_\_

28. Are you thinking of visiting other attractions or places in the zone?  YES / NO  which ones?

- Lomas de Barbudal Biological Reserve
- Surrounding communities. Which ones? \_\_\_\_\_
- Palo Verde National Park
- Cipanci National Wildlife Refuge
- Others \_\_\_\_\_

29. Are you willing to pay more in the entrance fee to improve the services that the National Park offers?

How much and which services? \_\_\_\_\_  
\_\_\_\_\_