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A COMPARISON BETWEEN TWO MANAGEMENT SYSTEMS OF PROTECTED AREAS FROM MEXICO (SIERRA DEL ABRA TANCHIPA BIOSPHERE RESERVE) AND FROM ECUADOR (YASUNI NATIONAL PARK)

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ABSTRACT

Protected areas have been created as a tool to stop habitat loss and provide help in biodiversity conservation. They are essential for the conservation of cultural heritage, promoting cultural values and encouraging sustainable practices of land use. The goods and services that these spaces provide are essential for society and life. They are important for the sustainable development of local communities. Furthermore, they are essential for recreation, tourism, and education; they also contribute to local and regional economies.

With this background, two protected areas were analyzed: Sierra del Abra Tanchipa Biosphere Reserve (RBSAT - for Mexico) and Yasuni National Park (PNY - for Ecuador). Both areas face a number of threats; in PNY´s case, the main concern is related to the oil extraction activities developed within the area. In the case of RBSAT, the main threats include: fires, illegal hunting, changes in land use, extraction of wildlife, among others.

Although management tools exist in both areas (programs or plans), they still face high external pressure. For this reason, evaluating each area´s main characteristics and performance was fundamental. In order to accomplish it, a framework analysis was performed, including important information regarding: the countries, the systems of protected areas and the selected areas. A comparison of legal frameworks was necessary to detail the legal documents at different administrative levels (international, national/federal, provincial/state, districts/municipal/ and parishes/local). It was also required to employ the "Kelsen Pyramid", in order to organize legal documents and establish supremacy. Employing an evaluation of management effectiveness was important to monitor each area´s performance. Finally, a SWOT analysis was developed.

Ultimately, it was possible to understand the future steps required to strengthen the organization in both areas. As a result of the comparison between the areas' realities, backgrounds, management tools, legal documents and performances, several recommendations were detailed at the end of this study. This will facilitate decision-making processes for authorities and reinforce the areas´ management.

KEY WORDS: Ecuador, Mexico, Protected Areas, Kelsen Pyramid, SWOT analysis, management effectiveness.

ABBREVIATIONS:

*The abbreviations will be written in Spanish and will be used in this way throughout the whole document, but their individual meaning is specify in English in the following section:

ADVC: Areas voluntarily destined for conservation

CBD: Convention on Biological Diversity

CEMEX: Mexico´s Cement

CEPA: Environmental Communication, Education and Participation Program.

CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora

CONABIO: National Commission for the Knowledge and use of Biodiversity

CONAFOR: National Forestry Commission

CONAGUA: National Water Commission

CONANP: National Commission of Natural Protected Areas.

DNB: National Direction of Biodiversity

DNF: National Direction of Forestry

DOF: Federation´s Official Journal

EEM: Evaluation of Management Effectiveness

EP: External Perception

GADs: Autonomous and Decentralized Governments

GIS: Geographic Information Systems

IBAs: Important Bird Areas

IMTA: Mexican Institute of Water Technology

INE: National Institute of Ecology

INEFAN: Ecuadorian Forestry Institute and Natural Areas and Wildlife

IUCN: International Union for the Conservation of Nature

LGEEPA: General Law of Ecological Equilibrium and Environmental Protection

MAE: Ministry of Environment of Ecuador

MAGAP: Ministry of Agriculture, Livestock, Aquaculture and Fisheries

METT: Management effectiveness tracking tool

MINTUR: Ministry of Tourism

NGO´s: Non-governmental Organizations

NSPA: National System of Protected Areas (Ecuador)

PIAs: Indigenous Communities under Voluntary Isolation

PNY: Yasuni National Park

PROCEDE: Certification Program regarding Ejidal Rights and Titling of House Plots

PROFEPA: Federal Government's Environmental Protection Agency

PUCE: Pontifical Catholic University of Ecuador

RBSAT: Abra Tanchipa Biosphere Reserve

RPC: Priority regions for Conservation

SAGARPA: Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food

SECTUR: Secretariat of Tourism

SEDARH: Secretariat of Livestock Development

SEDENA: Secretary of National Defense

SEDESOL: Secretary of Social Development

SEDUE: Secretary of Urban Development and Ecology.

SEGAM: Secretary of Ecology and Environmental Management

SEMAR: Secretary of the Navy

SEMARNAT: Secretary of Environment, Natural Resources and Fishing

SENPLADES: Ministry of Foreign Affairs and Human Mobility, National Secretariat for Planning and Development

SHCP: Secretariat of Finance and Public Credit

SINANP: National System of Natural Protected Areas (Mexico)

SRE: Secretariat of Foreign Affairs

SWOT: Strengths, weaknesses, opportunities and threats

TULAS: Unified Text on Environmental secondary legislation

UMA: Management Units for the conservation of Wildlife

USFQ: San Francisco University of Quito

ZITT: Intangible Zone Tagaeri Taromenane

GLOSSARY:

Biodiversity	It includes four levels: the genetic diversity, species diversity, ecosystem diversity and functional diversity (Nunes and Van Den Bergh, 2001). Genetic diversity means the information contained in the DNA of each plant and animal (variability within species) (Wilson, 1994). Species diversity refers to variability of species and it is connected in a direct way with genetic diversity. Ecosystem diversity refers to the variability in the communities of organisms and includes their specific habitats and the particular physical conditions in which they live in (Nunes and Van Den Bergh, 2001). Functional diversity makes reference to the capacity of the ecosystems to absorb some level of stress or disturbance without changing the current conditions into another regime of stability or behavior (Turner et al., 1999). This last type of diversity includes a wide range of functions provided by ecosystems including life support functions and processes (Turner et al., 2000).
Management Categories:	Corresponds to a worldwide standard used to organize and manage protected areas. Corresponds to the management levels or level of intervention assigned to each protected areas, according to ecological characteristics, presence of local communities, among others (MAE, 2013).
Management of a protected area	It is a political, social, technical and administrative process that starts with the creation and design of the area, continues with planning through a long term proposal, is consolidated through the operative management that implements management actions and ends up with the management effectiveness evaluation (Columba, 2013).
Management Plan:	Management tool of a protected area. The aspects regarding the area´s surrounding , the intervention areas, objectives , strategies, results, goals, activities, zones´ division , the particular objectives of each zone, the permitted uses, monitoring mechanisms, financial, administrative and communicational procedures are consolidated through a management plan. This document is generally approved through an administrative resolution

	(Columba, 2013).
Management Program:	Main regulative instrument that establishes the activities, actions and basic procedures for the management and administration of a particular protected area (Reglamento LGEEPA de ANP, 2014).
Management	Conjunction of politics, strategies, programs and regulations established with the objective to determine actions related with conservation, sustainable use, research, restoration, education, production of goods and services, recreation and other activities related with sustainable development in protected areas (Reglamento LGEEPA de ANP, 2014).
Protected Area	"A geographical space clearly defined, recognized, dedicated and managed through effective means in order to accomplish the conservation of nature and its environmental services and associated cultural values in a long term period" (Dudley, 2008). *For Mexico the term "natural protected area" is employed. For this thesis the international term "protected areas" will be employed to talk about these areas for both countries.
Ejidos	A term only employed in Mexico. It refers to communities or populations with legal existence and owned patrimony that possess lands that have been given or acquired through any title. They operate according to an internal regulation that must be inscribed in the National Agrarian Register and must contain the general rules for their social and economic organization, details regarding how to admit new "ejitdatarios", the regulations to use shared lands, among others (Ley Agraria, 2012).
Huasteca Potosina Region	A region in Mexico that was settled by the ancient communities called "huastecos" (Mayas´s descendants) that spoke "Huasteco language". In the "Huasteco language" they recognized themselves as teenek. Before the Spanish settlers arrived, this group used to share their territories with other ethnic groups, especially the "nahuas". (SEMARNAT and CONANP, 2014).

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1 INTRODUCTION

Biodiversity provides a range of direct and indirect benefits to human beings. Despite this, human activities are contributing to accelerated rates of biodiversity loss. As a consequence, the ecosystems' continuity and stability and their capacity to provide human beings with different goods and services have been put in threat (Nunes and Van den Bergh, 2001). As a respond to this, protected areas have appeared as a tool to protect biodiversity by trying to stop habitat loss (Langhammer, et al., 2007).

With this background, the International Union for Conservation of Nature (IUCN) defines a protected area as:

> "A geographical space clearly defined, recognized, dedicated and managed through effective means in order to accomplish the conservation of nature and its environmental services and associated cultural values in a long term period" (Dudley, 2008).

Protected areas are essential for the conservation of cultural and natural biodiversity. The goods and services that these spaces provide are essential for society and life, in general. They are furthermore important for the sustainable development of local communities (especially for indigenous populations) that depend on them for their survival. Additionally protected areas are spaces used to promote cultural values and reflect sustainable practices of land use. They are fundamental for research, tourism, recreation and education; they also contribute to local and regional economies (IUCN, 2009).

The term "zone" can be applied to identify the different zones within the protected areas, that search to accomplish different purposes (for example core zones, buffer zones, rehabilitation zones, among others) (Dudley and Stolton, 2008). In most cases core zones (which are strictly protected) are usually surrounded by other areas in which human use intensity can vary widely (Mcneely, 1994). In the case of Biosphere Reserves, the zoning is mainly divided into three main areas:

- One or more **core areas** that search for the long-term protection of natural resources and the accomplishment of the conservation objectives within the Biosphere Reserve. The area must contain enough surface to accomplish these conservation goals (UNESCO, 1996).

- One or more clearly defined **buffer zones** surrounding the core areas. Activities related with the conservation objectives are allowed within this zone (UNESCO, 1996).

- An external **transition area** in which activities related with the sustainable use of natural resources are allowed (UNESCO, 1996).

Despite this, the establishment of the different zones depends on the area´s particular characteristics, objectives and management category. In this way, the management categories can be used for planning within the protected area. Several zones responding to different management objectives can be identified if it contributes to the area´s overall performance. Temporary zones can also be considered (Dudley and Stolton, 2008).

In this thesis, one protected area of Ecuador and one protected area of Mexico were analyzed. In the case of Mexico, Sierra del Abra Tanchipa Biosphere Reserve (RBSAT) and in Ecuador´s case, Yasuni National Park (PNY). As part of this analysis an evaluation of management effectiveness was performed for both areas. According to Izurieta (1997) management effectiveness can be defined as a group of actions based on the attitudes, capacities and particular competences that allow fulfilling, in a satisfactory way, the function for which the protected area was created. For other authors such as Flather, et al., (1997) the evaluation of the efficiency within a protected areas ´system implies its capability to conserve or protect the ecosystems or species established in a determined region. According to Secretaría de Ambiente y Desarrollo Sustentable de la Nación (2007) the evaluation of management effectiveness is a tool that contributes to strengthening the transparency and sense of belonging within the areas´ managers, the support from the communities, and provides and objective baseline for resources assignation. For SEMARNAT (1996), it makes reference to making effective decisions and effective use of

resources within a protected area. For IUCN/BID (1993) the terms "management effectiveness" and "management efficiency" have been employed without making a distinction.

With this background, for this thesis "management effectiveness within a protected area" will imply the group of actions required for the effective use of resources, in order to conserve the area´s biodiversity and accomplish the functions and objectives that led to its creation.

1.1 Countries´ description and political-administrative division

1.1.1 Ecuador

The Republic of Ecuador is located in the nor-occidental part of South America and the Ecuadorian imaginary line passes through it at exactly 22 Km from Quito, its capital city. The country contains a territorial extension of about 270 670 Km2 (INOCAR, 2012).

Ecuador is located in a tropical zone, due to its geographic characteristics. In spite of that, due to the presence of other factors, such as the sea, cold Humboldt currents, warm Panamá currents, the presence of the Andes Mountain range and the trade winds; Ecuador has a huge variability of climates. There a variety of sub climates and micro-climates. Ecuador does not have 4 seasons; there is only a rainy season (known as winter) and a dry season (known as summer) (INOCAR, 2012).

Considering that the Andes Mountain range goes through Ecuador from north to south, this has created a diversity of regions (INOCAR, 2012). The regions are detailed in figure 1.

GALAPAGOS ISLANDS:
- Volcanic originated islands
- Located at 600 miles from the continent.
- 13 islands have a big size, while 64 are small- sized islands, commonly named as islets.
- 5 islands are characterized by the presence of human settlements: Santa Cruz, San Cristobal, Isabela, Baltra and Floreana.
- Declared "Humanity's Natural Patrimony", due to its particular characteristics and presence of unique flora and fauna (INOCAR, 2012).

AMAZON REGION:
- Located at the East of the central mountain range
- Faces Peru.
- The Oriental Mountain Range, divides the region in: High Amazon and Low Amazon.
- Human settlements are mainly located in the High Amazon
- The Low Amazon is characterized by the presence of wide jungles, forests and swamps; usually near rivers (INOCAR, 2012).

COAST:
- From the occidental Andes range until the coast.
- It counts with the presence of the Pacific Ocean.
- It is a low-altitude region, but counts with certain elevations.
- Contains wide plain spaces (perfect for agriculture), salt areas and mangroves.
- The presence of organic matter in the soils, make them extremely fertile (INOCAR , 2012).

ANDEAN REGION:
- It is between the Central and Occidental mountain range.
- The mountain ranges can come together at certain points, which lead to the formation of valleys, where populations are settled.
- The Andean valleys count with an average altitude of 2500 meters above sea level and their average temperature is 14°C. (INOCAR, 2012).

Figure 1 Regions in Ecuador
Source: www.redestravel.com/ecuador/regiones/
Adapted by: Andrea Jaramillo

Ecuador is divided in regions, provinces, districts and parishes (rural parishes) (Constitución de la República del Ecuador, 2008). The country counts with 24 provinces, as detailed below in Figure 2
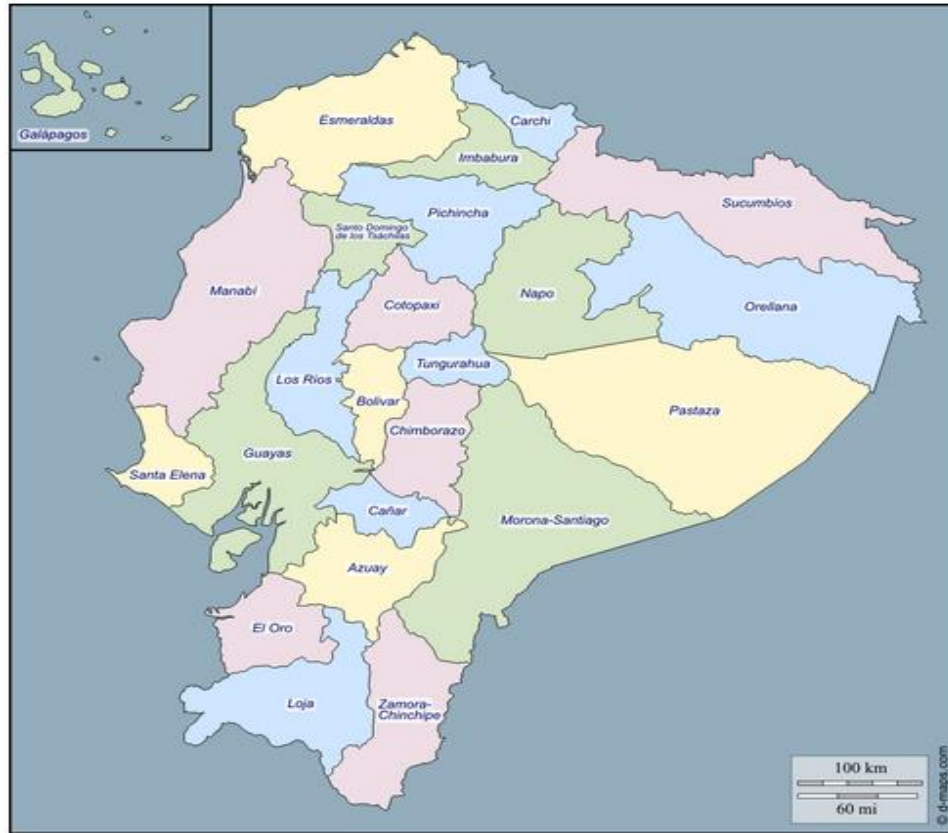
Figure 2. Ecuador´s Map detailing provinces
Source: www.d-maps.com

1.1.2 Mexico

Mexico´s total surface contains the continental surface and the maritime surface. The continental surface makes reference to the zones corresponding to the American continent and isles. The maritime surface corresponds to the territorial sea (sea located adjacent to the continent and the isles, including a total of 22.2 Km.) and the Exclusive Economic Zone (sea area located adjacent to the territorial sea and corresponds to 370.4 Km) (INEGI web page, 2016). Mexico´s extension is detailed in Figure 3.

Figure 3: Mexico´s Extension
Source: INEGI web page, 2016

Mexico´s territorial organization is defined in its Political Constitution from 1917. Mexico City is the capital and contains the 3 branches of Government (legislative, executive and judicial). Mexico is divided in 32 States (figure 4). From them, 31 are Free States able to count with their own Constitution and to govern themselves in an autonomous way. The last State corresponds to "Federal District" under the management of the Mexican Federation and local governments (INEGI web page, 2016).

Each State contains different municipalities and there are 2456 municipalities around the country. Mexico City has 16 political delegations (INEGI web page, 2016).

Figure 4: Map detailing Mexico´s States
Source: INEGI web page, 2016

1.2 Protected Areas

1.2.1 International Historical Background

The conservation of natural spaces has its origin various centuries ago. In Europe, different members of the Royalty preserved a few areas for hunting and wood production reasons. In the XIX century the Portuguese royal family started the ecological restauration of water basins that provided this resource to Rio de Janeiro. This area is nowadays known as Tijuca National Park. In 1846 Barva Volcano in Heredia, Costa Rica was declared as a conservation area (Karin 2013). In spite of these efforts, the concept of protected areas was born in the United States with the creation of "Yellowstone National Park" in 1872. By the same time, Canada, New Zealand and other countries started some efforts to conserve certain spaces under the denomination of "National Parks" and "National Forests". The first declarations responded mainly to scientific or recreational motives (MacFarland, 2012).

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After World War II, the countries started worrying about the conservation of natural resources and considered it was necessary to create an International Cooperation Organism. The idea was supported by Switzerland for Nature´s conservation, the French government and The United Nations Educational, Scientific and Cultural Organization (UNESCO). Finally, in 1948 the idea was crystalized and the International Union for the Conservation of the Nature (IUCN) was created in a meeting that took place in Fontainebleau, France (Vargas, 2010).

The IUCN considered it was essential to support national governments for the creation processes of protected areas. In the General Assembly carried out in Athens in 1958, the Members considered that IUCN should provide the creation of a "United Nations´ List of National Parks and equivalent Reserves". Nowadays it is called the "Worldwide Data Base of Protected Areas" and contains around 10 000 places (IUCN, 2012).

In 1980, the concept related to "sustainable development" started acquiring relevance when IUCN presented the Worldwide Conservation Strategy, which could only be reached through the conservation of natural resources. This Strategy was prepared by IUCN with funds from PNUMA and World Wildlife Fund (WWF) and presented to FAO and UNESCO in 1980. This document represented an effort to spread the conservation of nature in a global scale and showed the way in which conservation could contribute to the accomplishment of development objectives (Foladori and Pierri, 2005). This concept was rapidly adopted for protected areas and their systems. It was understood that Protected Areas played a fundamental role at achieving a sustainable development at any level (local, regional, national or international). The participation in the management processes of protected areas also started being considered. Local communities and other industrial and social sectors that were related with these areas started being a part of the administrative processes (MacFarland, 2012).

Around the 20th century there was big growth in the number of protected areas. Nowadays almost 12% of the world´s land surface corresponds in some extend to a form of protected area, although not all of them are correctly managed or implemented. Protected areas vary widely in terms of size, location, habitats and management. With the growth of protected areas, came the need to count with an organization in charge of them. In this way, the

IUCN World Commission on Protected Areas (WCPA) was created. The WCPA tries to meet the challenges created by the interaction of people and protected areas, both locally and globally. Its mission is "to promote the establishment and effective management of a world- wide representative network of terrestrial and marine protected areas as an integral contribution to IUCN" (IUCN, 2010).

The main objectives of the WCPA are:

- "To provide advice to policy makers"
- "To strengthen capacity and effectiveness of protected areas´ managers"
- "To increase investment in protected areas, by encouraging donors"
- "To participate and collaborate with IUCN members and partners" (IUCN, 2010).

1.2.2 The evolution of declarations´ criteria

Until 1960, the declaration of protected areas was characterized by:

- The natural resources that were preserved were only the ones found inside the protected area, without taking into account other socio-economic or ecological boundaries outside the area.
- The vision did not included ecosystems' concepts or ecological concepts. It only focused on particular species or landscapes.
- The conjunction of areas was not considered as a "system" but as individual spaces.
- The goal was only to conserve the natural resources, but didn't have a specific management.
- There was no concern for the populations living in the protected areas or in the buffer zones, which depend on natural resources for their survival.
- The declaration processes were mainly based on preserving beautiful landscapes, or for historical, cultural or scientific reasons (MacFarland, 2012).

With the time, paradigms for areas´ declaration have been changing. In this way, areas are being declared also for scientific, economic and cultural reasons. Areas are also being declared in order to restore degraded and endangered ecosystems. Nowadays the areas´ management includes local communities and areas are being declared also to support these

communities. Now, management procedures are participative, adaptive and planned to accomplish long-term goals, taking into account social factors. Protected areas are being considered as benefit for local communities and of great importance locally, regionally and even in global terms (MacFarland, 2012).

Some of the criteria employed nowadays in protected areas, has its basis in some of the IUCN resolutions, such as:

- Use of ecological criteria to establish limits for protected areas (Banff, 1972)
- Categories for Protected Areas (New Delhi, 1969 and actualized in Buenos Aires, 1994).
- Acknowledgement of private protected areas (San Jose, 1988).
- Generation of normative and legal documents for ecological restauration within these natural spaces (Barcelona, 2008).
- Declaration of protected areas between different countries (Bangkok, 2004).
- Acknowledgement of Sacred Natural places located inside protected areas (Barcelona, 2008) (UICN, 2012).

1.2.3 Worldwide management categories:

The International Union for Conservation of Nature (IUCN) has established a categories system for protected areas. The categories were established according to their management objectives. These categories are recognized by international organisms such as United Nations and are considered a global standard. These categories are detailed below:

Table 1: Worldwide Management Categories

CATEGORY	DEFINITION
Ia: Strict Nature Reserve	• Searches to protect biodiversity, geological/geomorphological features, cultural and spiritual values. • Human visitation is strictly controlled • Activities performed: scientific research and biological monitoring.
	• Unmodified or slightly modified areas that maintain their natural characteristics and processes, cultural and spiritual values • There is low human activity and no modern infrastructure.

Ib: Wilderness Areas	• The low level of intervention allows the presence of wilderness and permits indigenous communities to maintain their traditional customs. • Activities allowed: minimal environmental education and scientific research.
II National Park	• Natural or nearly natural areas • Search to protect large-scale ecological processes, biodiversity and to promote recreation and education • Visitor opportunities: for educational, spiritual, recreational purposes • These areas are supposed to contribute to local economies through tourism. • Take into account indigenous people´s need to use natural resources for subsistence.
III Natural Monument or Feature	• Searches to preserve a particular natural monument: landform, sea mount, submarine cavern, geological feature (cave) or even an ancient grove. • Small-sized protected area with a high level of visitors. • Tries to conserve specific features and their related biodiversity and habitats. • The protected features could be: natural, geological and geomorphological features, culturally-influenced, natural features, natural- cultural sites or only cultural sites.
IV Habitat / Species Management Area	• Searches to protect particular species or habitats. • Monitoring required to know the needs of particular species or to maintain habitats. • Tries to develop public appreciation for specific species or habitats
V Protected Landscapes / Seascapes	• Search to protect the integrity of the interaction between human beings and nature (including cultural, biological, ecological and scenic values) • Try to preserve important landscapes/seascapes and the values developed form their interaction with human beings • Activities allowed: recreation and tourism. • The conservation of agrobiodiversity and aquatic biodiversity is also encouraged.
VI Protected areas with sustainable use of natural resources	• Try to preserve ecosystems and habitats associated with cultural values and traditional natural resource management systems. • Activities allowed: a low, non-industrial, sustainable use of natural resources, recreation, small- scale tourism, scientific research and environmental monitoring • Promotes social and economic benefits for the communities living near.

Source: IUCN web page, 2014

1.2.4 Ecuador

1.2.4.1 Historical Background

The first conservation actions in Ecuador were developed in 1936, when the Galapagos Islands were declared as the first protected area. Thirty years after this first declaration, another area was declared as a protected area. It was the case of "Pululahua Geo-botanic Reserve". During this time there was a lack of strong political and legal frameworks that would support these declarations. There was also a lack of knowledge related to the institution that would be in charge of managing protected areas. In this way, its management was first assigned to the Ministry of Agriculture, then to the Ministry of Production and then returned back to the Ministry of Agriculture (MAE, 2006).

In 1970, the Government focused in protected areas' declaration processes mainly in un-colonized areas, due to certain factors and pressures such as: the development of oil extraction activities, the construction of highways and fast urban growth. In 1976, the Ministry of Agriculture through the National Forestall Program and with cooperation of international organisms developed a Preliminary Strategy for the Conservation of Remarkable Wildlife Areas in Ecuador (Putney, et al. 1976). This strategy was important for the consolidation of the National System of Protected Areas (NSPA). The strategy also represented a shift form a commercial vision of forestall resources into a focus related to biodiversity conservation. It left the basis for the development of different laws like the "Forestall Law and Conservation of Natural Areas and Wildlife" (1981), which is still applied nowadays (MAE, 2006).

The Preliminary Strategy for the Conservation of Remarkable Wildlife Areas in Ecuador lasted around 12 years. During this time, Ecuador established 6 national parks, 3 ecological reserves, 1 biological reserve, 2 national recreational areas and 1 wildlife production reserve. Despite these accomplishments, the Strategy couldn't be well implemented mainly due to two main reasons:

- Its objectives were mainly based on international standards and didn't respond to the country´s reality.

- The system´s management was not supported by national policies.

In 1989, a second strategy was released and it was the first time in which the government and the conservationist community (mainly represented by an institution called "Fundacion Natura" started working together (Cifuentes, et al., 1989). This new document proposed policies and actions more focused on the national reality, such as the incorporation of the NSPA into planning processes and territorial management processes. It also proposed the participation of communities in the management and development of conservation areas (MAE, 2006).

In 1991, the Ecuadorian Forestry Institute and Natural Areas and Wildlife (INEFAN) was created, following the recommendations detailed in both strategies (from 1976 and 1989). With the creation of this institute, the country started developing a new consciousness that took into account the conservation of natural resources and differ a lot from the uncontrolled exploitation. INEFAN was socially recognized as a system in charge of the control of forestalls issues, wildlife traffic and protected areas management. In 1996 the INEFAN was dissolved to create the Ministry of Environment, an institution responsible of the coordination, unification, execution and supervision of policies related to environmental matter (MAE, 2006).

In 1998 Ecuador´s National Constitution formally established the existence of the NSPA inside the country, detailing "the national system of protected areas should guarantee the conservation of biodiversity and the maintenance of ecological services, according to international treaties and conventions" (MAE, 2006). Between 1998 and 1999, the "Strategic Plan for the System of Natural Protected Areas of Ecuador was developed (MAE, 1999). This plan was not approved but represented a reference for the NSPA management (MAE, 2006).

In 2008 Ecuador´s Constitution recognized the rights of nature and remarked the importance of biodiversity, detailing: "The National System of Protected Areas will guarantee the conservation of biodiversity and the maintenance of its ecological functions" (Constitución de la República del Ecuador, 2008). The structure of the NSPA was also defined, according to 4 subsystems: 1) State 2) Autonomous and Decentralized 3) Community Based 4) Privately owned (Columba, 2013).

1.2.4.2 Ecuador´s National System of Protected Areas

There are several institutions in charge of environmental issues and natural resources management, among them: The Ministry of Environment of Ecuador (MAE), the Ministry of Agriculture, Livestock, Aquaculture and Fisheries (MAGAP), National Institute of Biodiversity, Ministry of Education, Ministry of Tourism (MINTUR), Ministry of Foreign Affairs and Human Mobility, National Secretariat for Planning and Development (SENPLADES), among others. The institutions´ main offices are located in Quito and respond directly to the National Government requirements. Other offices are located in the different provinces. Although Ecuador functions in a decentralized way, the elaboration of laws and policies is directly issued by Quito´s authorities and they must be executed in all the country (SENPLADES web page, 2016).

The Ministry of Environment of Ecuador (MAE) is in charge of the National System of Protected Areas (NSPA). MAE´s mission is "to execute in an efficient way the environmental management and guarantee a harmonic relationship between the economic, social and environmental aspects, in such a way that the sustainable management of strategic natural resources could be assured". MAE´s vision is "to accomplish the sustainable use of strategic natural resources, so that Ecuador could reach the "Well-Being´" (MAE web page, 2016). MAE is organized in the following way:
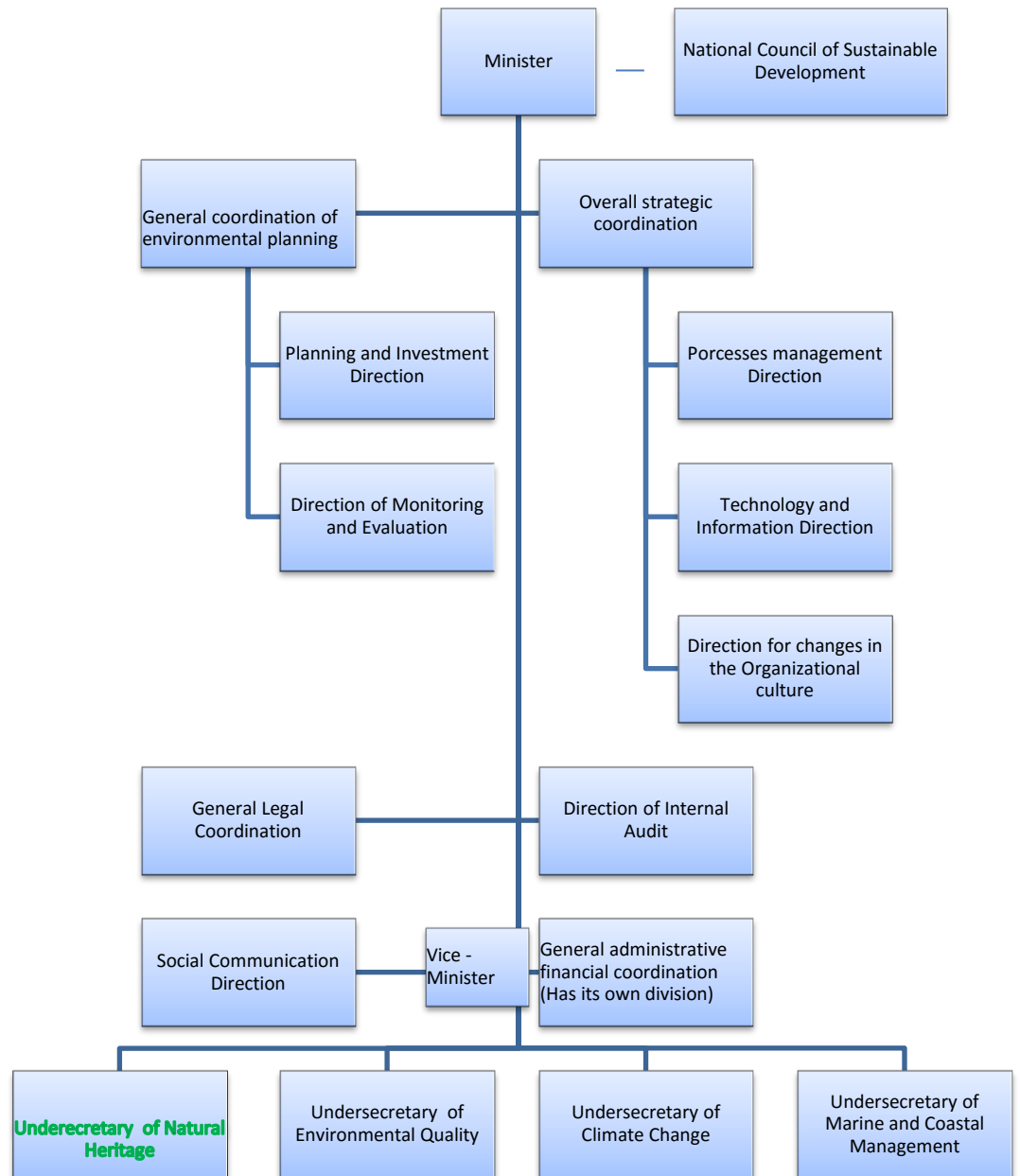
Figure 5: Ministry of Environment of Ecuador (Organization Chart)
Source: MAE web Page, 2016
Adapted by: Andrea Jaramillo

Protected areas are managed specifically in the Undersecretary of Natural Heritage as detailed in Figure 6:

```
                    ┌─────────────────┐
                    │ Undersecretary of│
                    │ Natural Heritage │
                    └─────────────────┘
              ┌────────────┴────────────┐
   ┌────────────────────┐    ┌────────────────────┐
   │ National Direction │    │ National Direction │
   │   of Biodiversity  │    │    of Forestry     │
   │       (DNB)        │    │                    │
   └────────────────────┘    └────────────────────┘
   ┌────────────────────┐    ┌────────────────────┐
   │ Unit of Protected  │    │  Unit of Forestry  │
   │       Areas        │    │      Policy        │
   └────────────────────┘    └────────────────────┘
   ┌────────────────────┐    ┌────────────────────┐
   │  Unit of Wildlife  │    │  Unit of Forestry  │
   │   and Ecosystems   │    │ Management and     │
   │                    │    │     control        │
   └────────────────────┘    └────────────────────┘
   ┌────────────────────┐
   │ Unit of Biosecurity│
   └────────────────────┘
   ┌────────────────────┐
   │ Unit of Access to  │
   │ Genetic Resources  │
   └────────────────────┘
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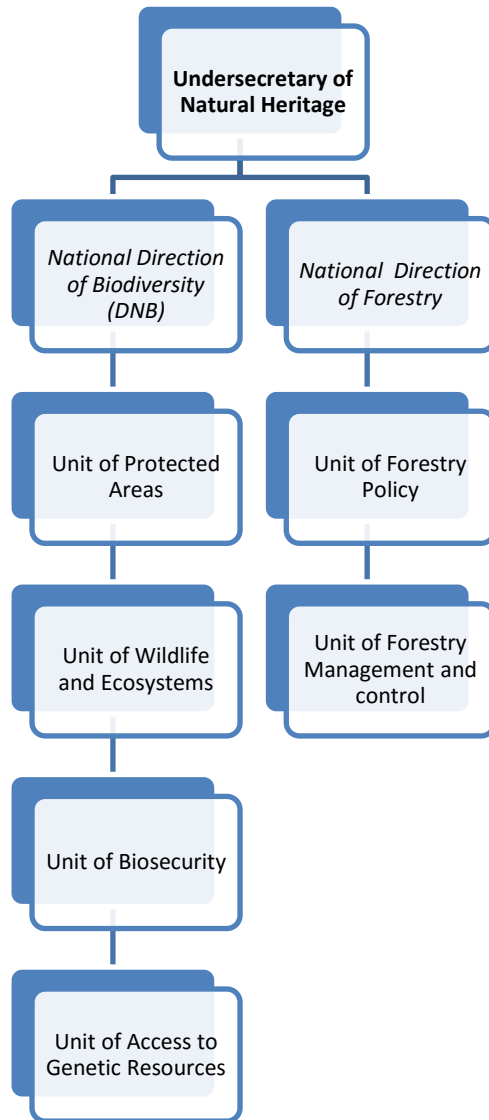
Figure 6: Undersecretary of Natural Heritage (Organization Chart)
Source: MAE Web Page, 2016
Adapted by: Andrea Jaramillo

The National System of Protected Areas (NSPA) tries to ensure the coverage and connectivity of important ecosystems at: terrestrial, marine and coastal marine levels; preserve their cultural resources and principal water sources (MAE, 2006). The NSPA covers the four regions and includes 50 protected areas, which represents 20% of the Ecuadorian surface (NSPA web page, 2015).

The conservation objectives of the NSPA are detailed in table 2.

Table 2: NSPA´s Conservation Objectives

General Objectives:
• "To conserve the biological diversity and genetic resources within the NSPA".   • "To offer alternatives for the sustainable use of natural resources".   • "To improve life quality of local communities".

Source: NSPA web page, 2015

The NSPA is divided in 4 subsystems (detailed in table 3):

1. <u>State</u> (counts with 49 protected areas)
2. <u>Autonomous and decentralized</u> (counts with 1 protected area)
3. <u>Community based</u> (none declared area yet)
4. <u>Privately owned</u> (none declared area yet)

Table 3:NSPA´s Subsystems

SUBSYSTEM	DESCRIPTION
1. State	• Also called "Natural Heritage Areas form the State". • Counts with 49 protected areas.
2. Autonomous & decentralized	• Declared by the Autonomous Decentralized Governments. • Only counts with one protected area: "Siete Iglesias" in 2012.
3. Community based	• For the indigenous and afro-Ecuadorian communities • Still being structured and no area has been declared yet. • Several initiatives have been developed: For example the proposal done by the Shuar Arutam community for the declaration of a protected indigenous territory in the Condor mountain range.
4. Privately Owned	• Still being consolidated and no area has been declared yet • MAE considers that the involvement of society is essential for developing conservation actions. • MAE is working in the development of guidelines for private areas' declarations.

Source: NSPA web page, 2015

The NSPA counts with different management categories (detailed in table 4):

Table 4: Ecuador´s Management Categories

Management Category	Description	Management
National Park	- Large conservation area (more than 10,000 hectares). - Diversity of flora and fauna species - Important geological features - It is important for science, education and recreation. - Exploitation and occupation are forbidden (MAE, 2006). - There are 11 National Parks in Ecuador (Figure 7)	State Subsystem
Marine Reserves	- They can widely vary in size. - Priority conservation elements: marine ecosystems and their species - Alteration level: little to moderate. - The fishing´s intensity must be adjusted to the conservation needs and the zoning established (NSPA web page, 2015). - There are 3 Marine Reserves in Ecuador (Figure 7).	State Subsystem
Ecological Reserve	- Size around 10 000 hectares - Contain important wildlife species or species that are endangered. - Activities forbidden: exploitation and occupation (MAE, 2006). - Little level of human intervention - Searches to protect genetic resources, ecological diversity, beautiful landscapes, and special phenomena - Activities allowed: scientific research, environmental education, recreation and regulated tourism. - There are 9 areas within Ecuador (Figure 7) (NSPA web page, 2015).	State Subsystem
Biological Reserve	- Big conservation areas (more than 10,000 hectares). - Searches to conserve entire ecosystems and species. - Alteration level: little - Allows minimal human presence - Allowed activities: Biological, ecological and environmental research and environmental education - The use of natural resources is highly restricted (NSPA web page, 2015).	State Subsystem

	• There are 5 Biological Reserves within Ecuador (Figure 7)	
Flora and Fauna Production Reserve	• Medium-sized areas (from 5,000 to 10,000 hectares). • Searches to protect susceptible ecosystems and species. Alteration level: little • Allows a medium level of human intervention. • Activities allowed: wildlife sustainable management, environmental education, restoration and ecotourism (NSPA web page, 2015). • There are 5 areas in Ecuador (Figure 7)	State Subsystem
Wildlife Refugee	• Small sized conservation area (less than 5,000 hectares). • Searches to protect threatened species and their ecosystems. • Alteration level: little • Allows a minimum level of human intervention. • Allowed activities: habitat and species management, research, monitoring, ecosystems´ restoration and environmental education. • Use of natural resources: highly restricted (NSPA web page, 2015). • There are 10 Wildlife Refuges inside Ecuador (Figure 7)	State Subsystem
National Recreation Area	• Size: 1,000 hectares or more, • Presence of scenic beauties and touristic or recreational resources, in a natural environment. • High accessibility level (MAE, 2006). • Searches to conserve natural landscape, • Alteration level: medium. • Allows a medium level of human intervention. • Allowed activities: tourism, restoration, recreation, environmental monitoring and research. • Use of natural resources: low restriction level (NSPA web page, 2015) • There are 6 Natural Recreation Areas inside Ecuador (Figure 7)	State Subsystem
Geo-botanical Reserve	• Searches to protect wild flora and remarkable geological resources. Tries to conserve diverse ecosystems, landscapes and outstanding geological formations • Seeks for the recovery of altered areas due to human intervention. • Allowed activities: recreation, tourism, cultural education • Values: Historical, cultural and scientific.	State Subsystem

| | • It represents a germplasm bank of endangered flora and fauna species (NSPA web page, 2015).
• There is only one Geobotanical Reserve in Ecuador (Figure 7) | |

Besides these management categories, it is important to name "Siete Iglesias" the protected area tat belongs to the Decentralized Autonomous Government Subsystem, which doesn't fall into these specific categories.

1.2.4.3   Other ways of conservation

In Ecuador, besides protected areas, there are other ways to conserve biodiversity, such as:

- **Biosphere Reserves:** Terrestrial or coastal/marine ecosystems or a combination of them, recognized in the International ambit thorough UNESCO´s Man and Biosphere Program. Biosphere reserves must accomplish three main functions: conservation, development and logistic (UNESCO, 1996). In Ecuador, Biosphere Reserves correspond to an international declaration, done in coordination with local governments, national government and UNESCO. Biosphere Reserves were recognized in Ecuador on December 2008, through the legal document: "Acuerdo #168" (Acuerdo #168, 2008).

- **RAMSAR areas:** The Ramsar Convention related to worldwide important wetlands focuses on the conservation and rational use of wetlands, since they are home of various species of aquatic birds. Ecuador is part of the convention since January 7[th], 1991. The country has 18 Ramsar areas (NSPA web page, 2015).

- **Protective Woodlands:** they are arboreal, grassy, farmed, bushy or natural vegetation patches, owned by public or private landowners. They are located in places with uneven topography, near water basins and in places that due to their climatic, edaphic or hydric conditions are not appropriate for agriculture and livestock. Their main functions are: conservation of water, soil and wildlife (NSPA web page, 2015).

- **Important Bird Areas (IBAs):** The International program tries to identify and protect a network of places that are critical for the long-term maintenance of birds populations,

based on their distribution ranges. In Ecuador, "Aves y Conservación" in alliance with Bird Life International started the program in 1997 (NSPA web page, 2015).

- **Connectivity corridors:** Route or vegetation path that allows the movement of plants and animals from one region to another, allowing connectivity and migration. Corridors allow the exchange of genetic material (NSPA web page, 2015).

With all this information, the percentage of territory managed by the Ministry of Environment of Ecuador represents 20% (NSPA web page, 2015).

Source: NSPA map MAE, 2014

Figure 7: NSPA´s Map
Adapted by: Andrea Jaramillo

1.2.5 Mexico

1.2.5.1 Historical Background

For Mexico, the conservation strategies related to Protected Areas started with the protection of "Desierto de los Leones" in 1876. The original purpose was to preserve 14 natural springs that provided water to Mexico City. In 1917 Mexico´s Political Constitution stated the concept of property as a social function. It also established the limitations and regulations for the use and appropriation of natural resources. With this legal framework "Desierto de los Leones" was declared as the first National Park. In spite of this, during the next five decades Mexico didn't define public policies related to the conservation of ecosystems and biodiversity (CONANP web page, 2011).

Despite the lack of legal framework, several initiates were carried out, some of them leaded by Miguel Ángel de Quevedo. The result of these efforts was the protection of water basins and the declaration of a few National Parks and Forestry Reserves in spaces with remarkable environmental and scenic value. Many of these declarations were imposed and not supported by legal and technical tools. For this reason, some people name these areas as "Paper Parks" (CONANP web page, 2011).

In 1970 conservation acquired a new focus. On one hand, there was a need to conserve biodiversity, environmental and ecological services; on the other hand, human communities started being included in this conservation model, through the incorporation of Biosphere Reserves. In spite of this, public policies were also supporting projects that required the destruction of several types of ecosystems and the conversion of big jungle extensions into cattle areas (CONANP web page, 2011).

During Miguel de la Madrid´s presidential period (1982-1988) the Secretary of Urban Development and Ecology (SEDUE) was created. It was in charge of protected areas´ management through the National System of Natural Protected Areas (SINANP). Its main objective was to contribute in biodiversity´s representativeness, including endemic species and endangered species (Vargas, 2010).

In 1988 the general Law of Ecological Equilibrium and Environmental Protection (LGEEPA) was declared. It promoted the rational use and sustainable exploitation of

natural resources. The Law also provided a framework to regulate the areas included in the SINANP. The law also recognized that the conservation of protected areas could only be accomplished through a sustainable development scheme (Vargas, 2010).

During the following two decades, declaration processes of protected areas restarted. In 1992, Rio Earth Summit was very important for Mexico because the country acquired international environmental responsibilities. Through the "Agenda 21" the country assumed commitments to declare protected areas in an effective way, beyond the "paper parks" that had ruled for over 75 years. During this period, society gained more knowledge related to environmental issues and several conservation leaders started promoting their ideas (CONANP web page, 2011).

In 1992 the National Commission for the Knowledge and use of Biodiversity (CONABIO) was created. Time later, the Mexican Fund for the Conservation of Nature was also developed. These two institutions were nationally and internationally recognized and started influencing on public policies. CONABIO started working in the public sector trying to search, rescue, organize and use information related to biodiversity, in order to influence on the Government's decision-making process. The Mexican Fund for the Conservation of Nature started working in the private and philanthropic sectors, trying to obtain, manage and distribute strategic financial and technical resources for conservation projects / programs and strengthen already existing conservation institutions (CONANP web page, 2011).

In 1994 the "Secretary of Environment, Natural Resources and Fishing" (SEMARNAT) was created (Vargas, 2010). In 1996, the management of protected areas was transferred form one Direction with a reduced budget into a Coordinating Unit inside the National Institute of Ecology (INE). INE was inside a Secretary that had direct operational capacity in 80% of the protected spaces. In 2000 the National Commission of Natural Protected Areas (CONANP) was created, as a decentralized institution from SEMARNAT (CONANP web page, 2011). In 2002, CONABIO started the development of State Strategies about Biodiversity (EEB) with the help of State Governments and different stakeholders form diverse sectors of society (Vargas, 2010).

1.2.5.2 Mexico´s National System of Protected Areas

From an environmental point of view there are some important institutions in charge of environmental issues and natural resources management, organized depending on the different administrative levels (Federal Government, State Government and Municipal Government). Some of them are named below:

Federal Government

Corresponds to the National Executive Branch: There are different institutions such as:

- Secretary of Ecology and Environmental Management (SEGAM)
- Secretary of National Defense (SEDENA)
- Secretary of the Navy (SEMAR)
- Secretary of Social Development (SEDESOL)
- Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA)
- Secretariat of Foreign Affairs (SRE)
- Secretariat of Finance and Public Credit (SHCP)
- Secretariat of Tourism (SECTUR)
- **Secretary of Environment, Natural Resources and Fishing (SEMARNAT**), among others.

State Government

Includes:

- Secretariat of Livestock Development (SEDARH)
- Secretary of Ecology and Environmental Management (SEGAM)

Municipal Government

Includes:

- Ecology Directions in Municipalities

Figure 8: Environmental institution in the Federal, State and Municipal Governments
Source: Vargas, 2010
Adapted by: Andrea Jaramillo

SEMARNAT is the Secretary in charge of issues related to environment and natural resources. Its mission is "to incorporate in the different ambits of society and public function, criteria and tools that will ensure the optimal protection, conservation and use of natural resources within the country, in order to generate an inclusive and integral environmental policy that could let the country accomplish sustainable development". Its vision is " to count with a country in which society has an authentic concern to protect and conserve the environment and use natural resources in a sustainable way, reconciling the economic development, the harmonic living with nature and the cultural diversity" (SEMARNAT web page, 2016). The institution works within 4 main aspects:

- Conservation and sustainable use of ecosystems and biodiversity
- Pollution prevention and control
- Integral management of hydric resources
- Fighting against climate change (SEMARNAT web page, 2016).

SEMARNAT was created during the presidential period of Dr. Ernesto Zedillo Ponce de León. There are 7 decentralized institutions that depend on SEMARNAT and that have to be monitored by this Secretary (Vargas, 2010). These institutions are:

- Federal Government's Environmental Protection Agency (PROFEPA)
- National Institute of Ecology (INE)
- National Water Commission (CONAGUA)
- National Commission for the Knowledge and use of Biodiversity (CONABIO)
- National Forestry Commission (CONAFOR)
- Mexican Institute of Water Technology (IMTA)
- National Commission on Natural Protected Areas (CONANP). This last institution is in charge of protected areas management (Vargas, 2010).

SEMARNAT´s division is detailed below:
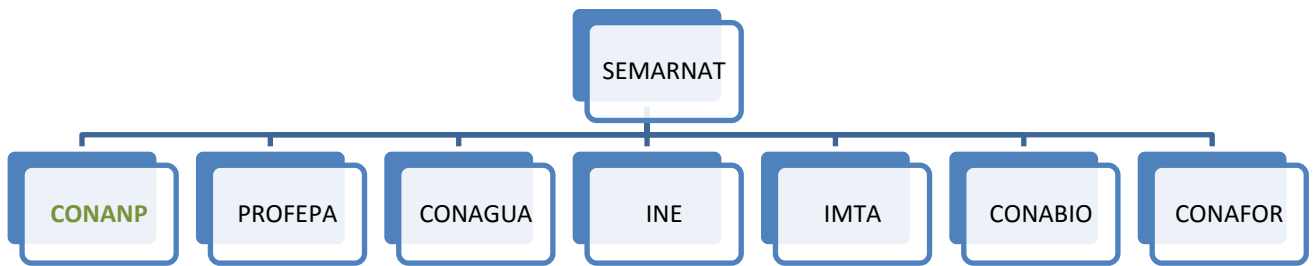
Figure 9: SEMARNAT´s decentralized institutions
Source: Vargas, 2010
Adapted: Andrea Jaramillo

CONANP as an institution is charge of protected areas management, has the following mission: "To conserve the most representative ecosystems of Mexico and their biodiversity, through Protected Areas and other conservation modalities, encouraging culture based on conservation and the sustainable development of the communities located in their surroundings, using inclusive and equitable criteria". CONANP´s vision is "Until 2018, the National Commission of Natural Protected Areas would have strengthen the National System of Protected Areas and other ecosystems´ conservation modalities, that are representative to Mexico and its biodiversity, in a co-responsible way with all the other sectors of society and in coordination with the three Government's orders (Federal, State and Municipal), encouraging sustainable use of natural resources and contributing to sustainable development, well-being of the communities located in the Protected Areas of the country, using inclusive and equitable criteria" (CONANP web page, 2014)

Mexico has the following conservation scheme:

- **<u>Protected Areas:</u>** They are terrestrial or aquatic portions of national territory represented through the different ecosystems, in which the original environment has not been greatly altered, or the areas are meant to be preserved and restored because they provide a series of benefits and environmental services to society (PNANP, 2014). These areas have been created through Presidential decree and their allowed activities are detailed in the LGEEPA, ecological regulations, ecological zoning and the regulations established in its management program. Nowadays Mexico counts with 176 protected areas under federal management (PNANP, 2014).

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- **Areas voluntarily destined for conservation (ADVC):** they are private, public-centralized, public-parastatal, community-based properties or properties owned by "ejidos", that are voluntarily certified by its landowners as protected areas. This conservation modality has been widely accepted since its appearance in 2002 because it represents an opportunity to include civil society in activities related to the conservation of ecosystems and natural resources. Nowadays, Mexico counts with 362 areas belonging to this type of conservation scheme (PNANP, 2014).

- **Priority regions for Conservation (RPC):** they are areas that due to their importance need to be conserved in order to contribute to sustainability. They do not count with a federal, state or municipal Decree. Inside these areas it is important to name wetlands of International Importance. Mexico has signed as a member of the International Ramsar Convention. Nowadays there are around 140 Ramsar areas, of which 79 are found outside protected areas (PNANP, 2014).

Mexico counts with 8 management categories. According to article 46 of the LGEEPA, 6 of them are managed by the Federal State. The management categories are detailed in table 5.

Table 5: Mexico´s Management Categories

Management Category	Description	Management
Biosphere Reserve	• Declaration: in relevant biogeographic areas. • Ecosystems that have not been significantly transformed by human action and could be preserved and restored • Home of representative biodiversity, including endemic species, threatened species or endangered species. • Allowed activities: preservation, scientific research and ecological education. • Limited use of resources (Vargas, 2010). • 41 Biosphere Reserves in Mexico (CONANP web page, 2016)	By Federal State
National parks	• One or more ecosystems that contain scenic beauty, educational, recreational, scientific or historical value or remarkable flora and fauna. • The area has aptitude for the development of tourism	By Federal State

	• Allowed activities: protection of natural resources, increment of their flora and fauna, preservation of ecosystems, research, recreation, tourism and ecological education (LGEEPA, 2015). • 66 National Parks in Mexico (CONANP web page, 2016).	
Natural Monuments	• Contain one or more natural elements (places or natural objects) that due to their exceptional historical, scientific or aesthetic need an absolute protection regime. • Do not contain the variety of ecosystems or the required size to be declared in another management category • Allowed activities: preservation, scientific research, recreation or education (LGEEPA, 2015). • 5 Natural Monuments in Mexico (CONANP web page, 2016).	By Federal State
Areas destined to the protection of natural resources	• Search the prevention and protection of the soil, water basins, water resources and natural resources located in forestry areas. • Include areas focused on the protection of rivers, lagoons, lakes, springs and other bodies considered as national water, particularly if they are destined to providing water service to communities nearby. • Allowed activities: conservation, protection and sustainable use of natural resources, research, recreation, tourism and ecological education (LGEEPA, 2015). • 8 Areas in Mexico (CONANP web page, 2016).	By Federal State
Flora and Fauna protection areas	• To preserve and develop wildlife species (Vargas, 2010). • Allowed activities: preservation, repopulation, spreading, acclimatization, refugee of species and activities related to research, education, communication and sustainable use of species. • The sustainable use of natural resources will also be allowed to the communities living within the area, at the moment of the area´s declaration process (LGEEPA, 2015). • 39 areas in Mexico (CONANP web page, 2016).	By Federal State
Sanctuaries	• Contain exceptional richness of flora and fauna or the presence of species, subspecies or habitats of restricted distribution. • Include: glens, plains, caves, cenotes or other topographic or geographic unit that requires being preserved and protected.	By Federal State

	• Allowed activities: research, recreation and environmental education	
	• Not-extractive activities are limited (LGEEPA, 2015).	
	• 18 Sanctuaries in Mexico (CONANP web page, 2016).	
Areas voluntarily destined for conservation	• Present any of the characteristics and biological elements previously detailed; provide environmental services or contribute to the accomplishment of conservation objectives. • The lands will be considered as productive areas dedicated to public interest. • Declared through a Certificate issued by the Secretariat, recognizing them as Protected Areas (LGEEPA, 2015). • 370 Areas in Mexico (CONANP web page, 2016).	By the landowner according to the management strategy detailed in the Certificate.
Besides this, the LGEEPA recognizes: - State Parks and Reserves or other categories established by local regulations - Municipal Ecological Conservation Zones or other categories established by local regulations (LGEEPA, 2015)		

Mexico also has other ways to conserve biodiversity such as Important Bird Areas (IBAs) for example. With all this information, the percentage of territory managed by CONANP represents 18.82% (PNANP, 2014).

Figure 10: Federal Protected Areas of Mexico

Source: PNANP, 2014
Adapted by: Andrea Jaramillo

1.3   Selected Protected Areas

1.3.1   Reasons for selecting the areas:

Yasuni National Park- PNY- (from Ecuador) and Sierra del Abra Tanchipa Biosphere Reserve- RBSAT- (from Mexico) were the selected areas to be analyzed. The reasons for this selection remain on the following aspects:

- Both areas share certain physical and biological characteristics, for example they are located in rainforests (one a tropical rainforests and the other deciduous and semi-deciduous tropical rainforests). They share a warm- humid weather (with high

average temperatures) and contain a very high level of endemism and enormous biodiversity.

- Both areas are of local and even regional importance. In the case of RBSAT, it is considered as a terrestrial priority, hydrologic priority and an important area for the conservation of Birds. The area is also considered a natural corridor connecting tropical forests in the south with humid mountain forests and temperate rainforest in the north part. On the other hand, PNY is one of the places with higher biodiversity per surface area in a global scale. The ecological services that it provides contain importance in a local, regional and even global scale.

- In order to make the comparison feasible it is important to compare places that contain a connection point. In this case, the compared areas belong to the same administrative levels. On one hand, in the case of Ecuador, "National Park" is a management category that belongs to the State Subsystem (as detailed above) and is considered of national importance. On the other hand, RBSAT is an area that belongs to the "Biosphere Reserve" management category from Mexico and its management is done through the Federal State. In this sense, it is an area of Federal (national) importance. It wouldn't have been possible to choose Yasuni Biosphere Reserve, due the fact that for Ecuador "Biosphere Reserve" is an international recognition provided by UNESCO, in coordination with the National Government and the corresponding stakeholders. In the case of Mexico, "Biosphere Reserve" is a federal management category that can, afterwards, be proposed to UNESCO for an international recognition. With all this background, both areas are considered of national importance and are managed by the national/federal government; therefore the comparison can be performed in a proper way.

- I have visited and known both areas; therefore it is easier to analyze the different ecological and social dynamics through an "*in situ*" experience.

1.3.2 Yasuni National Park (PNY)

1.3.2.1 *General characteristics and location*

PNY was created as a response to try to protect the amazon rainforest from the oil extraction activities. It contains a terrestrial surface of around 1´022.736 hectares. It was

created on July 26th, 1979, through Ministerial Agreement #0322 and published on Official Record on November 20th, 1979. The area is important due to its natural and cultural heritage and it is considered as one of the most biodiverse places around the world. It has been scientifically called a "Pleistocene Refugee" (MAE, 2011).

The area is located in the Amazon region of Ecuador within Orellana Province (Aguarico and Coca Districts) and Pastaza Province (Pastaza district), between Napo and Curaray rivers (Figure 11). PNY is a strategic protected areas, due to its importance for biodiversity, ecosystems, ecological processes and because it is the home of numerous indigenous nationalities and communities under voluntary isolation (MAE, 2011).
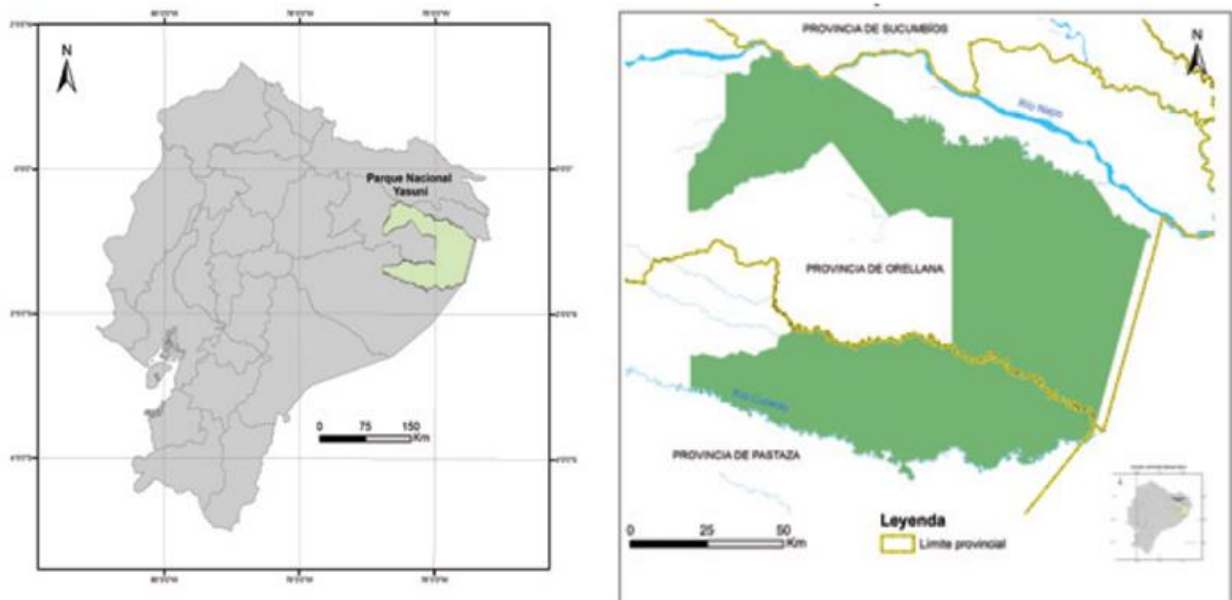
Figure 11: PNY´s location
Source: MAE, 2011

PNY´s climate is characterized by a warm temperature, with an average temperature of 24°C - 27°C during the whole year. Precipitations are high (3.200 mm per year approximately) and it presents a relative humidity of around 80% - 94% throughout the year (Plosone, 2010). PNY is inside the "Amazon Heart", which is a region characterized by its high humidity and doesn't count with the presence of a severe dry season (MAE, 2011).

The elevations´ average is low (from 190m to 400m over the sea level). The area contains a few peaks of around 25m to 70m (MAE, 2011). The soils are geologically young, as a result of river sediments from the Andes´s erosion (Plosone, 2010).

PNY is a tropical rainforest, which includes 4 main types of vegetation:

- Mainland located in the upper part
- Flooded Forests (only during seasons)
- Permanently flooded Forests
- Swamp forest known as "moretal" (MAE, 2011).

1.3.2.2 Biodiversity

PNY´s biogeographic position enables it to count with a high richness of species. Different efforts have been performed to estimate a number of species living within this ecosystem. The results (monitored until year 2004) are expected to rise, as researches continue. These results are detailed below:

- 2274 species of trees and shrubs
- 201 species of mammals (90 are bats)
- 610 species of birds.
- 121 species of reptiles.
- 139 species of amphibians.
- More than 268 species of fish
- Hundreds of thousands of species of insects (MAE, 2011).

1.3.2.3 Main Stakeholders

PNY is also an area with a high cultural diversity. The communities living inside the area and its surroundings include the following nationalities: Waorani, Kichwa and Shuar. There are also "Indigenous Communities under Voluntary Isolation" (PIAs) and various mestizo settlements (MAE, 2011).

1.3.2.3.1 Indigenous communities and mestizo settlements:

Waorani and PIAs communities haven been historically in the area; the Kichwa nationality arrived some time later and established as an ancestral community. The Shuar Nationality

and the mestizo settlements arrived in year 1970 due to the opening of highways used for the oil extraction activities (MAE, 2011). Nowadays the area counts with 16 indigenous communities (8 Kichwas and 8 Waoranis). The Shuar community counts with around 1.000 people, settled in different areas, mainly located in the Auca-Shiripuno highway (MAE, 2011).

Since 1999 the PIAs located inside the area count with legal documents created to protect them from external interventions, through the "Intangible Zone Tagaeri Taromenane (ZITT) and the plan containing Precautionary Measures. These measures are under the management of the Ministry of Justice (Decreto Ejecutivo # 503). Maintaining the ecological integrity and functions is essential to ensure the PIAs´s survival (MAE 2011).

The main stakeholders in the area are detailed in table 6

Table 6: PNY´s main stakeholders

GADs	National Entities	Control Boards	Non-governmental Organizations	Private Institutions	Communities	Others
From the Provinces: Pastaza and Napo	MAE	Armed Forces	National entities	Oil companies	PIAs	Universities
From the Districts: Orellana, Arajuno, Aguarico	Provincial Directions	National Police	International entities	Touristic companies	Waronai Territories	Scientists
From the Parishes: Curaray, Rocafuerte,		Navy			Kichwas Territories	Millennium Schools (Yasuni and Nuevo

Tiputini, Alejandro Labaka, Cononaco, Ines Arango, Dayuma						Rocafuerte)
					Shuar Territories	
					Mestizo settlements	

Source: MAE, 2011
Adapted: Andrea Jaramillo

1.3.2.4 Main threats

The protected area´s management plan has detailed the following threats (table 7):

Table 7: PNY´s main threats

Human Threats	Due to oil extractive activities, highways were built. In some cases, close to the main freeways, illegal roads were also constructed. These processes caused high levels of migration. The development of disorganized productive activities and the intensive exploitation of natural resources have caused more problems. Besides this, the presence of these communities has caused land-conflicts due to disagreements regarding the limits of the area (MAE, 2011). Illegal logging and hunting are also other conflicts within the area. Wildlife trafficking is also done to satisfy international markets (MAE, 2011).
Oil extraction activities	Inside the area there are 5 oil blocks (14, 15, 16, 31, ITT) (Figure 12). Despite technology has been improved and laws have been strengthened; there are still accidents associated to oil extraction activities. The potential negative environmental impacts include: pipes´ leaking, accidental oil spilling, accidents in the oil wells, among others. There are also other secondary effects of the oils extractive activity, such as: opening of highways, opening of illegal roads, migration processes, the creation of ecological fragmentation processes, soil and water contamination risks and conflicts with local communities and authorities (MAE 2011).

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Scientific research	The Pontifical Catholic University of Ecuador (PUCE), counts with a scientific station in the area since 1994 and San Francisco University of Quito (USFQ) counts with another biologic station, but this one is outside the protected area over the Tiputini river. Both stations have generated a big flux of students and researchers who have generated a wide number of publications. Despite creating a source of opportunities within the area, not all the efforts have been coordinated with the area´s mangers. In this way, they are not always contributing to the area´s conservation objectives, management requirements and local needs (MAE, 2011).
Tourism inside the area	Intensive and disorganized tourism could cause the destruction of touristic areas. Within the area, this activity has developed without the proper planning process. Besides this, local communities mainly rely on tourism as a way to solve their economic problems. These conceptions have created social and environmental conflicts that might affect the area´s integrity in the long-term (MAE, 2011).
Overlapping of jurisdictions	PNY contains the ZIIT zone, the area containing the oil blocks and the local communities´ territory (Waorani ancestral territory). These areas' territory is overlapping one another and creating problems for managing them in a proper way (figure 13). There is a lack of communication, coordination and clarification of responsibilities between the park and the oil companies. Additionally the Oil activities´ Good Practices Code doesn't recognize PNY´s zones as sensitive areas and only focuses on the ZITT area. There is also a lack of acknowledgement regarding the existence of the Biosphere Reserve (MAE, 2011).
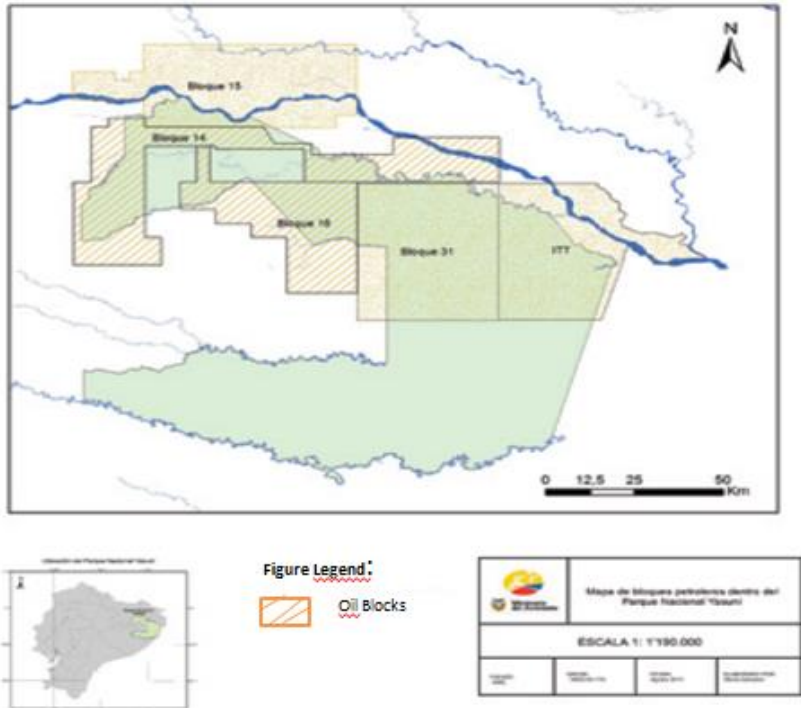
Figure 12: Oil Blocks in PNY
Source: MAE, 2011
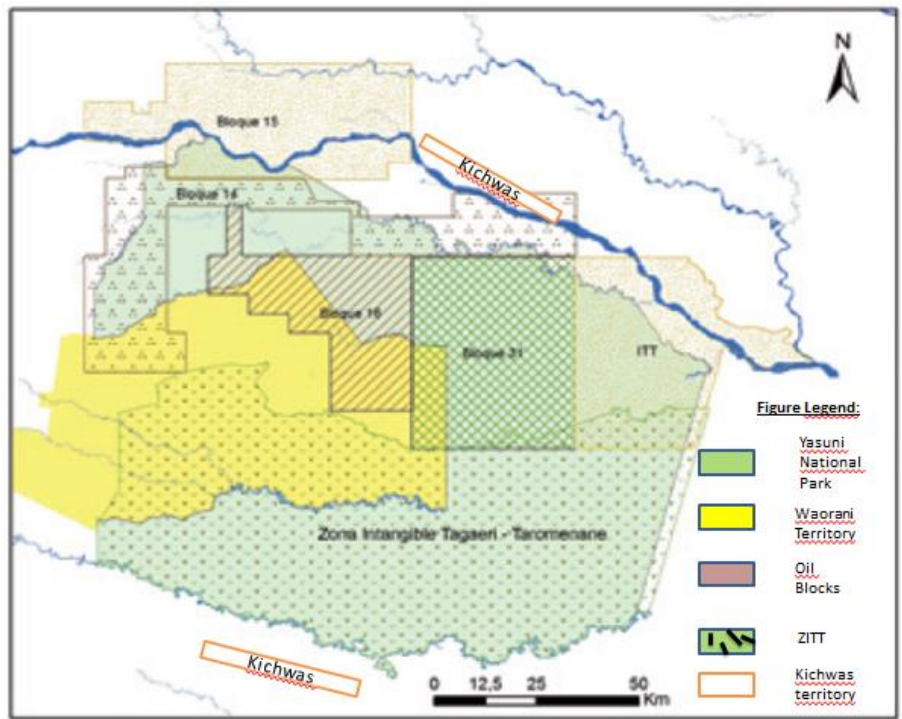
Figure 13: PNY, oil blocks, ZITT and Waorani Territory
Source: MAE, 2011
Adapted by: Andrea Jaramillo

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1.3.2.5 *Management tools*

The management plans and programs are important because they define the standards, rules, activities and orientation in each administrative component from a protected area. The programs define activities, resources, objectives, detailed activities and infrastructure required to accomplish the area´s management goals (Stolton et al. 2007).

In the case of PNY, the management plan is the document that rules the area's performance and provides the basis for the planning and operational actions. It was elaborated in year 2011. Each one of the programs responds to one particular objective and contains action lines as detailed in table 8.

Table 8: PNY´s management programs:

Objective	Program	Description	Action lines
To manage the protection and sustainable use of natural resources in PNY and its buffer zones	Conservation of the Natural and cultural Heritage	Searches to involve in a direct way the participation of the local communities as strategic allies for the conservation of the natural and cultural heritage.	• To protect and use in a sustainable way all natural resources. • To monitor biological diversity. • To strengthen the area´s management. • To promote ancestral knowledge through the development of sustainable initiatives.
To strengthen the control and surveillance within the area and its buffer zone.	Control and Surveillance	The program searches to establish coordination and monitoring procedures in order to prevent environmental offences, through a control and surveillance system, the adequate delimitation of the area and coordinated monitoring of the oil extraction activities.	• To strengthen the control and surveillance system inside the area. • To maintain and conclude the area´s delimitation. • To monitor oil extractive activities.

To strengthen environmental communication, education and participation processes.	Environmental Communication and Education	The program searches to involve in a direct way all the communities involved in the conservation of the area and consider them strategic allies.	• To define an environmental communication program. • To define an environmental education program. • To define a participative program that involves the communities around the area.
To promote and regulate scientific research within the area	Research program	The program searches to coordinate and organize scientific studies that have been developed within the area, in order to optimize resources and satisfy the area´s needs.	• To develop a scientific research program • To modernize the registration system and provide monitoring to administrative processes related to scientific research
To promote and regulate tourism, according to the area´s zoning and institutional policies.	Tourism program	The program searches to strengthen touristic services provided by the area, ensuring an adequate visitors' registration process and regulating the selection of touristic places	• To design a system for the touristic control and management.

Source: MAE, 2011

1.3.2.6 Yasuni Biosphere Reserve and the Zoning Process

PNY´s limits have been modified twice: one time in 1990 and another time in 1992. This last modification led to the actual area´s limits. PNY with the ZITT and the Waorani territory were declared as a Biosphere Reserve recognized by UNESCO in 1989 (MAE, 2011). The declaration considered PNY as its "Core Area"; the Waorani territory as the "Buffer Zone" and a surface of over 10km at the north and south of these territories as a

"Transition Zone" (MAE, 2010). The Biosphere Reserve is located in 3 amazon provinces: Pastaza, Napo and Orellana. It includes the following districts: Francisco de Orellana and Aguarico (in Orellana Province), Tena (in Napo province) and Arajuno (in Pastaza province) (MAE, 2010). Figure 14 shows the map of Yasuni Biosphere Reserve
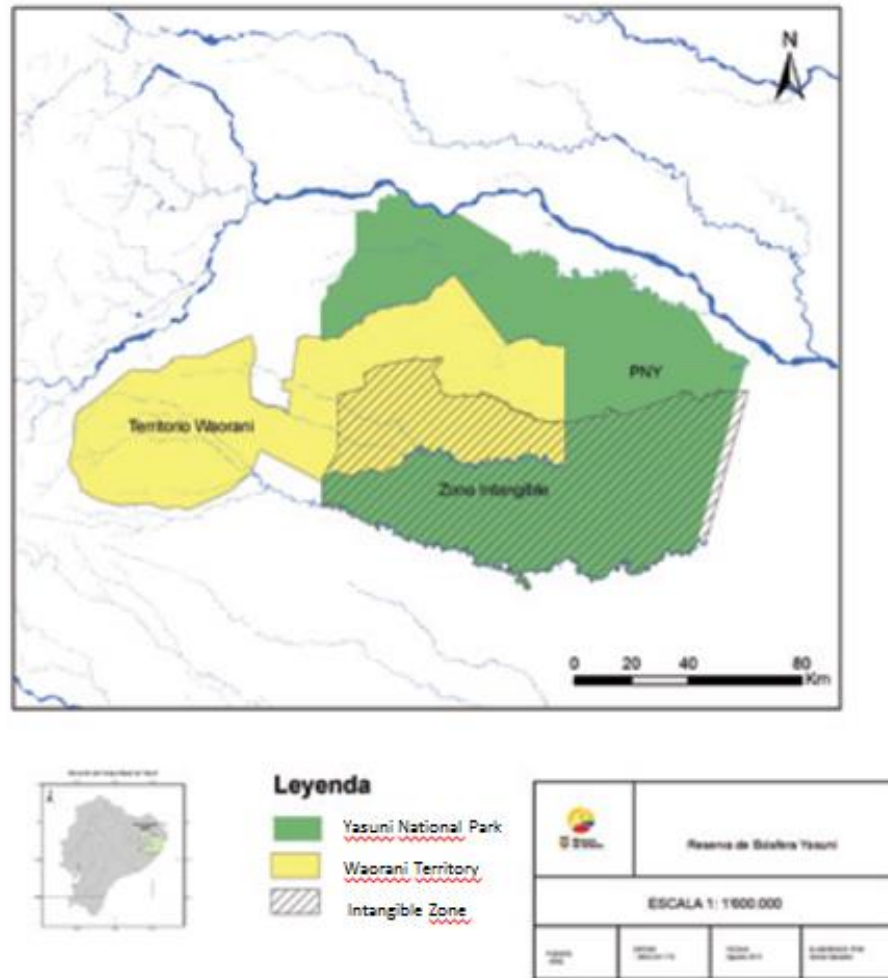
Figure 14: Yasuni´s Biosphere Reserve
Source: MAE, 2011
Adapted by: Andrea Jaramillo

With the pass of the time and due to its complexity, the zoning was done to the Biosphere Reserve and the National Park was included in this zoning process. There have been several zoning proposals; the last one is detailed below:

- **Intangible core area:** Includes Yasuni National Park, the ZITT area and 783.311 hectares of the Waorani territory (MAE, 2010).

- **Buffer zone:** it includes: Part of the Waorani territory which is not in the Core area, the Kichwa territories located at the North and South part of Yasuni National Park and the Mestizo settlements located near the Napo River and at the nor occidental part of Yasuni National Park (MAE, 2010).

Transition zone: It includes 2 main areas: the zone located at the occident part of the Auca road and the banks of the Napo River (MAE, 2010). Figure 15 shows the Yasuni Biosphere Reserve´s zoning
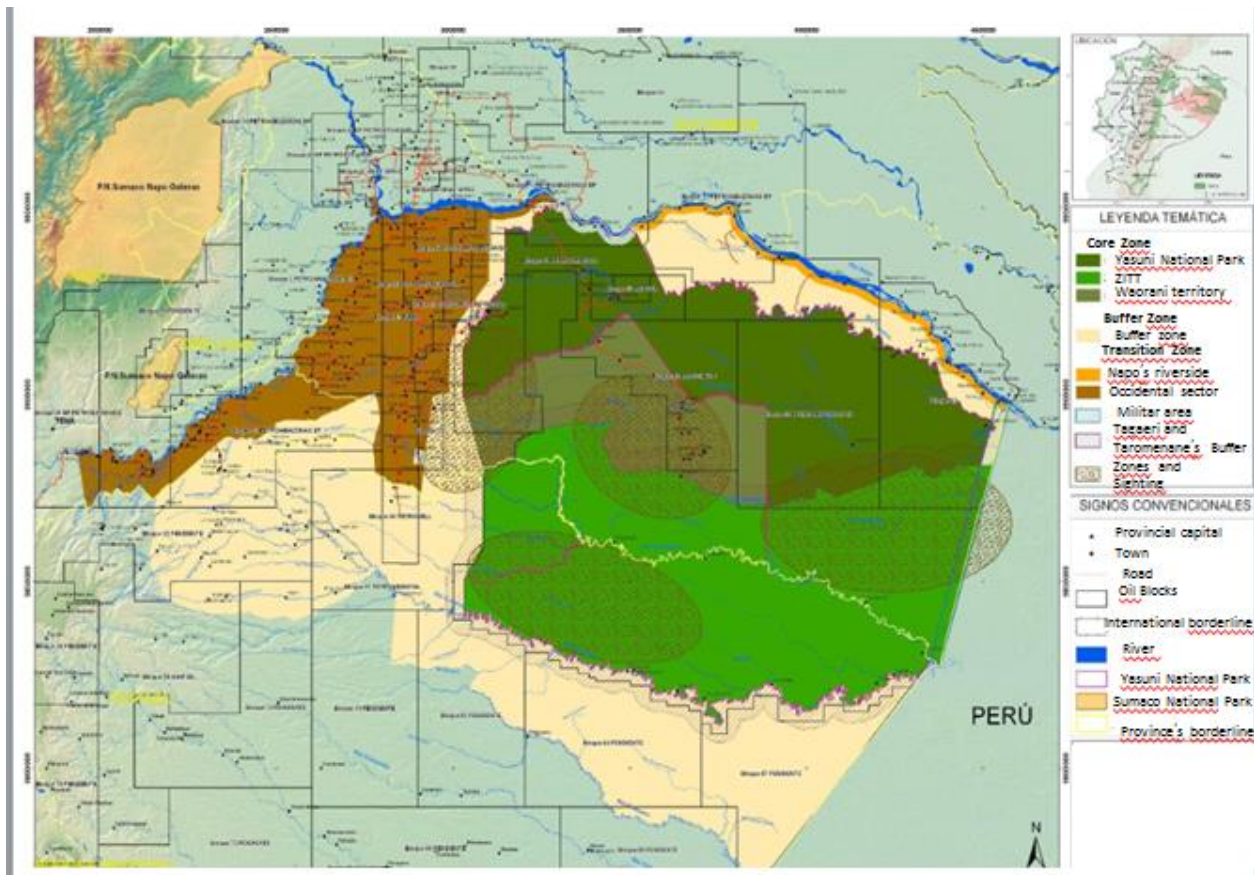
Figure 15: Yasuni Biosphere Reserve´s Zoning
Source: MAE web page, 2016
Adapted by: Andrea Jaramillo

1.3.3   Sierra del Abra Tanchipa Biosphere Reserve (RBSAT)

1.3.3.1   *General characteristics and location*

In Mexico there are protected areas under federal and state regime, classified according to the LGEEPA. From the categories, the most restrictive one corresponds to "Biosphere Reserves" (Vargas, 2010).

RBSAT is located in the municipalities of Ciudad Valles and Tamuin in the state of San Luis Potosi. The state of San Luis Potosi has 19 protected areas (7 federal and 12 from the State), but Abra Tanchipa is the only Biosphere Reserve within the State. The area was created on June 6[th], 1994, due to the concern derived from the quick vegetation cover loss in the zone, the accelerated forest clearance, the growth of the agricultural frontier, the growth of the livestock activities and to protect the groundwater reserves. The area contains a total surface of around 21,464.44-25 hectares (SEMARNAT and CONANP, 2014).

The area has a warm, sub-humid climate, with periods of heavy rains. The heaviest rain period corresponds to July and September. On the other hand, there is a period of rain absence from December until May. The average temperature is 25.7 °C (SEMARNAT and CONANP, 2014).

The area contains a wide extension of deciduous and semi-deciduous tropical rainforests in a good degree of conservation and a low level of fragmentation. The area presents a high biological diversity; for this reason it is considered of national and regional importance. The area is considered a priority since it is of terrestrial importance (Arriaga, et al., 2000), hydrologic importance (Arriaga, et al., 2002) and an area of importance for the conservation of birds (Benitez, et al., 1999). RBSAT is also considered a natural corridor connecting tropical forests from Veracruz, Hidalgo, Querétaro and patches of rainforests in San Luis with temperate forests in the north part in Nuevo Leon and Tamaulipas (SEMARNAT and CONANP, 2014).

The area contains different types of vegetation, among them, the low and medium dry deciduous forests. The types of vegetation reported inside the area have given it an importance within the ecosystems from the "Huasteca Potosina region" (SEMARNAT and CONANP, 2014).

1.3.3.2 Biodiversity

There are endemic species, such as: "soyate" (*Beaucarnea inermis*) "torito morado" (*Stanhopea tigrina*), "palma de Guadalupe" (*Brahea edulis*), among others. There are also endangered species such as: green macaw (*Ara militaris*), ocelot (*Leopardus pardalis*),

Tamaulipeco parrot (*Amazona viridigenalis*), among others (SEMARNAT and CONANP, 2014).

According to reports, the area contains:

- 148 species of mammals
- 458 species of birds
- 80 species of reptiles
- 25 species of amphibians
- 269 species of vascular plants (SEMARNAT and CONANP, 2014).

1.3.3.3 Main Stakeholders

The area is stablished in the "Huasteca Potosina Region". This region was settled by ancient communities called "Huastecos" (Mayas´s descendants) that spoke "Huasteco language". In the "Huasteco language" they recognized themselves as teenek. Before the Spanish settlers arrived, this group used to share their territories with other ethnic groups, especially the "nahuas" (SEMARNAT and CONANP, 2014). RBSAT doesn't contain human settlements inside the area, but there are communities legally constituted called "ejidos" in the "Influence area". Within the area´s limits there are 2 mining concessions (Clavo de Oro III and La Costeña). Nowadays both of them are inactive (SEMARNAT and CONANP, 2014).

Some indigenous populations move towards the area, especially populations speaking "teenek" and "nahuatl" language and coming from different parts of the "Huasteca Region" (SEMARNAT and CONANP, 2014). According to Torres and Sierra (2009), inside the area there is a mixed land ownership which includes 3 "ejidos" and 21private owners. The "ejido" called "Laguna del Mante" owns the central- north part of the Biosphere Reserve; the "ejido called "Los Sabinos" owns the south and southwest part of the Reserve and finally the ejido called "Las Palmas" owns the southeast part of the Biosphere Reserve. "Laguna del Mante" owns 73% of the whole Biosphere Reserve´s territory and 77% of the Core area. "Laguna del Mante" and "Los Sabinos" belong to Ciudad Valles Municipality and "Las Palmas" to Tamuin Municipality. According to Torres and Sierra (2009), "Laguna del Mante" and Los Sabinos" are licensed inside the Certification Program regarding Ejidal

Rights and Titling of House Plots (PROCEDE), but "Las Palmas" is not inside this Program. Therefore, for this last "ejido" there is not legal certainty about their lands. "Las Palmas" has also unsolved farming trials. The three ejidos own 17,419.50-55 hectares (Torres and Sierra, 2009).

According to information obtained from interviews (detailed ahead) and the Management Program, table 9 shows the main stakeholders in RBSAT.

Table 9: RBSAT´s main stakeholders

Government´s institutions	Municipalities	Communities	Control Boards	NGOs	Private Institutions	Others
CONANP	Ciudad Valles	Laguna del Mante	State Police	National Entities	CEMEX	Schools, high-schools and universities: Universidad Intercultural, Universidad Autónoma de San Luis Potosi, Instituto Tecnológico de Ciudad Valles, Centro de bachillerato tecnológico agropecuario (CBTA 121), Adolfo López Mateos (high-school), José López Portilla, 24 Enero, Ponciano Arriaga (Laguna
CONAFOR	Tamuin	Los Sabinos	Militaries	International Entities		
SEDESOL	*Includes Directions of Ecology in the Municipalities	Las Palmas				
PROFEPA						
SEDARH						
SEGAM						
SAGARPA						
*Usually these institutions have certain environmental and social programs for the communities						

						del Mante), schools from Gustavo Garmendia and Las Palmas

1.3.3.4 Zoning

RBSAT has defined the following zones and subzones:

- **Core Area**: Includes the Tanchipa´s Protection Subzone with 16,758.0850 hectares. It is located in the Protected Area's central zone. It is forbidden to use natural resources or to settle within this zone. It contains well- preserved deciduous lowland rainforest and high biodiversity. This zone is supposed to contribute to the groundwater recharge processes and to mitigate climate change due to the carbon dioxide´s capture (SEMARNAT and CONANP, 2014). In the area it is allowed to perform scientific research and flora and fauna monitoring, as long as these activities don't interfere with the wildlife´s processes. The extraction of specie´s samples and the habitat's modification is also forbidden (SEMARNAT and CONANP, 2014).

- **Buffer zone**: it is divided in 2 main subzones:

  - **Sabino´s traditional use Subzone:** It includes a surface of 482.9838 hectares. The main activities include traditional agriculture for self-consumption (including corn, beans and pumpkins). In the area it is also allowed to develop productive systems that mix trees, with cattle and crops. Traditional activities are permitted since they do not cause significant negative impact in the ecosystems. In the zone it is also allowed to develop scientific research, environmental education, low-impact tourism, small-scale fishing and construction of infrastructure only through ecological techniques (SEMARNAT and CONANP, 2014).

- o **Subzone for the sustainable use of natural resources and hills:** the area contains a surface of 4,223.3737 hectares. It contains deciduous lowland rainforests and sub-deciduous medium rainforest. The main activities performed include: the extraction of wood for domestic use (only using trees that have been demolished by natural phenomena) , the use of palm leaves for the construction of houses and the extraction of medicinal plants (*Zanthoxylum fagara, Pseudobombax ellipticum*, among others). These activities do not represent a threat for the environment due to the fact that they are performed in a small-scale. According to LGEEPA, (2015) in the zone it is also allowed: scientific research, environmental education, low-impact tourism, and the controlled use of wildlife as long as their reproduction and maintenance is guaranteed.

- **Influence Zone**: It is represented by the jungle area close to the RBSAT. This zone includes 12,869.82 hectares and was delimited according to the legal boundaries of the communities living nearby (ejidos and private owners). In this zone it is allowed to use natural resources only if the extraction is selective, causes low impact and is destined to self- consumption (SEMARNAT and CONANP, 2014).
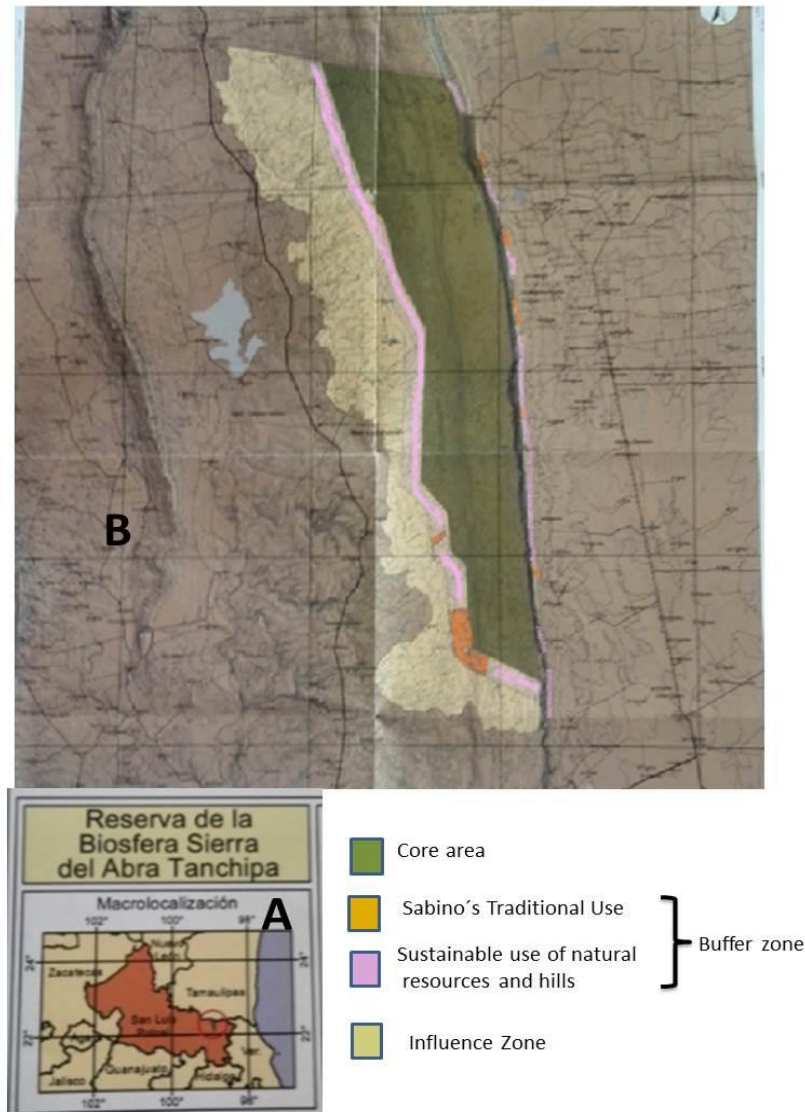
Figure 16:RBSAT´s zonal description:
A) RBSAT´s state location
B) RBSAT´s zoning map
Source: SEMARNAT and CONANP, 2014
Adapted by: Andrea Jaramillo

1.3.3.5 Main threats

- **Fires**: In the "Influence Zone" sometimes fire is produced as a result of the development of different activities, such as: farming and sugarcane burning procedures (SEMARNAT and CONANP, 2014).

- **Droughts:** From 1980 to 2000 there was a severe drought period throughout Mexico. The most difficult year was 1988 for Abra Tanchipa Biosphere Reserve. Droughts usually cause the loss of crops, loss of animals, diminishment of industrial production

and the corresponding economic problems, which in some cases, led to migration processes (SEMARNAT and CONANP, 2014).

- **Hurricanes:** This type of disturbance affected mainly the vegetation, crops, cattle, caused the fell off of trees as well as floods, and landslides. It also caused damages in houses, buildings and highways. Sierra del Abra Tanchipa is the first mountain range that faces strong winds and hurricanes coming from the Gulf of Mexico (SEMARNAT and CONANP, 2014).

- **Climate Change:** Diverse projects show that the basins from the Panuco River (where the area is located) will experience a 3°C increment in its average annual temperature and that the average annual precipitation will diminish at about 200 mm for the period 2020-2025 (SEMARNAT and CONANP, 2014).

- **Extraction of wildlife:** different plants are illegally extracted from the area, mainly *Chamaedorea radicalis* because its leaves are used by the community. Different types of orchids are also used for ornamental reasons. From the fauna species, the most affected group corresponds to the birds, which are usually extracted to sell them in the markets or to use them as pets. One of this species is the *Amazona autumnalis* (Yellowish-cheeked parrot) (SEMARNAT and CONANP, 2014).

- **Illegal hunting:** This activity mainly affects the white-tailed deer (*Odocoileus virginianus*). Most species are destines to self-consumption but others have been employed for the markets. Reports have also shown the affection of pumas (*Puma concolor*) and ocelots (*Leopardus pardalis*) (SEMARNAT and CONANP, 2014).

- **Changes in land use:** Extensive livestock and agriculture occupies around 500 hectares of the area. Nowadays it doesn't represent a significant impact, but as the agricultural frontier grows and there are changes in the land use for urban and industrial reasons; the impact will also increase (SEMARNAT and CONANP, 2014)

- **Pollution:** Not all the communities living in the "Influence Area" recognize the protected area. These populations cause pollution to the water and soil, especially due to an inadequate trash management system (SEMARNAT and CONANP, 2014).

- **Cutting down of trees:** it is usually done to use the timber for construction purposes (SEMARNAT and CONANP, 2014).

1.3.3.6 Management tools

RBSAT´s Management Program is the tool that guides the administrative and operational issues inside the area. The subprograms detailed on the management program were based on the "National Program of Natural Protected Areas (2007-2012)". This document proposed a strategic planning process according to 6 strategic lines:

- Protection

- Restoration

- Management

- Knowledge

- Culture

- Administration (SEMARNAT and CONANP, 2007).

With this background, the management sub-programs and their corresponding components are detailed in table 10.

Table 10: RBSAT´s Subprograms and components

Sub-program	Definition	Components
Protection	Searches to conserve biological diversity and control the ecosystems'' damage. Tries to ensure the integrity of natural, archeological and cultural elements within the area	• Inspection and Surveillance • Identification of large-scale disturbance patterns and ecological processes • Prevention, control, firefighting and creating environmental contingencies • Preservation and integrity of core areas and sensitive areas • Protection against exotic invasive species and controlling species and populations that turned harmful for the area • Mitigation and adaptation to climate change

Management	Tries to accomplish conservation, protection training, restoration and education objectives through sustainable projects.	• Strengthening the communities´ development • Alternative and traditional productive activities • Sustainable use and management of agro-ecosystems and livestock • Sustainable use and management of wildlife • Maintenance of Environmental Services • Public use, tourism and recreation
Restoration	Searches to recover and reestablish original ecological conditions previous to disturbances; allowing the continuity of natural processes.	• Connectivity and Landscape ecology • Recuperation of endangered species • Water and soil conservation • Ecosystems´ restoration • Rehabilitation of river corridors and systems.
Knowledge	Tries to generate or rescue traditional knowledge or new knowledge and practices.	• Encouraging research • Environmental and socioeconomic inventories and monitoring. • Information systems
Cultural	Searches to publish conservation actions and encourage environmental education	• Encouraging education and culture to promote conservation • Training related to sustainable development • Environmental communication, publishing and interpretation
Administrative	Searches to establish the instruments that will define the area´s organization, administration and the participation mechanisms.	• Administrative and Operational procedures • Civil protection and risks mitigation • Infrastructure, signaling and public works • Human resources and professionalization
Each component (from each subprogram) includes a series of actions to be carried out and specific time for their fulfillment (long-term, medium-term and short-term).		

2 OBJECTIVES

2.1 General Objective

To generate planning strategies on two Protected Areas: from Mexico (RBSAT) and from Ecuador (PNY), through a comparison of their management systems, administrative levels, legal frameworks and management tools.

2.2 Specific Objectives:

- To compare the current status of the management systems of Protected Areas from Ecuador and Mexico and from the selected areas.
- To identify the legal frameworks for both countries and selected areas
- To evaluate each area's management effectiveness, in order to understand the areas´ performance and the aspects that need to be strengthened
- To analyze each protected area´s strengths, weaknesses, opportunities and threats.

3 METHODOLOGICAL DESCRIPTION

This thesis employed different methodological approaches and elements, such as: a framework analysis, a comparison between legal frameworks, an evaluation of management effectiveness (including field trips and interviews) and a SWOT analysis. Each one is detailed below:

3.1 Framework analysis

In first place, an analysis was made about the historical backgrounds that lead to the development of conservation strategies and the description of the first places that were declared as "Protected Areas" for Mexico and Ecuador. The international management categories for protected areas and the ones employed particularly in Mexico and Ecuador were also studied. For this analysis, a comparison between the management categories' objectives, characteristics, level of intervention and allowed activities was required. In the end, the categories that shared certain level of similarities were highlighted with the same colors. If most of the characteristics were shared but some relevant differences were found,

the management categories were not highlighted, but underlined and marked with an asterisk.

Furthermore it was required to perform a description of the systems of Protected Areas for both countries. Finally, PNY and RBSAT were analyzed and relevant information was studied including: general characteristics, location, biodiversity, zoning, main stakeholders, main threats and management tools (management plans or programs). A specific analysis for each one of the area´s zonings and stakeholders (detailing the stakeholders´ impact and influence) were also developed.

3.2   Comparison of legal frameworks:

A comparison of legal documents was done for each country including relevant information, such as: legal documents that rule each country, the systems of protected areas and the legal framework for the selected areas. In order to perform this analysis, it was necessary to detail the legal documents at different administrative levels (international, national/federal, provincial/state, districts/municipal/ and parishes/local).

It was also required to employ the "Kelsen Pyramid", used to organize the legal documents by applying a hierarchical criteria and therefore establishing supremacy. This way, it was possible to recognize which law had more weight, especially when two rules coming from different laws are encountered in dealing with a common topic (La Roche, 2007).

Figure 17 details the document´s hierarchical order established in Kelsen´s pyramid and the colors employed for each level (used for the results in table 14).
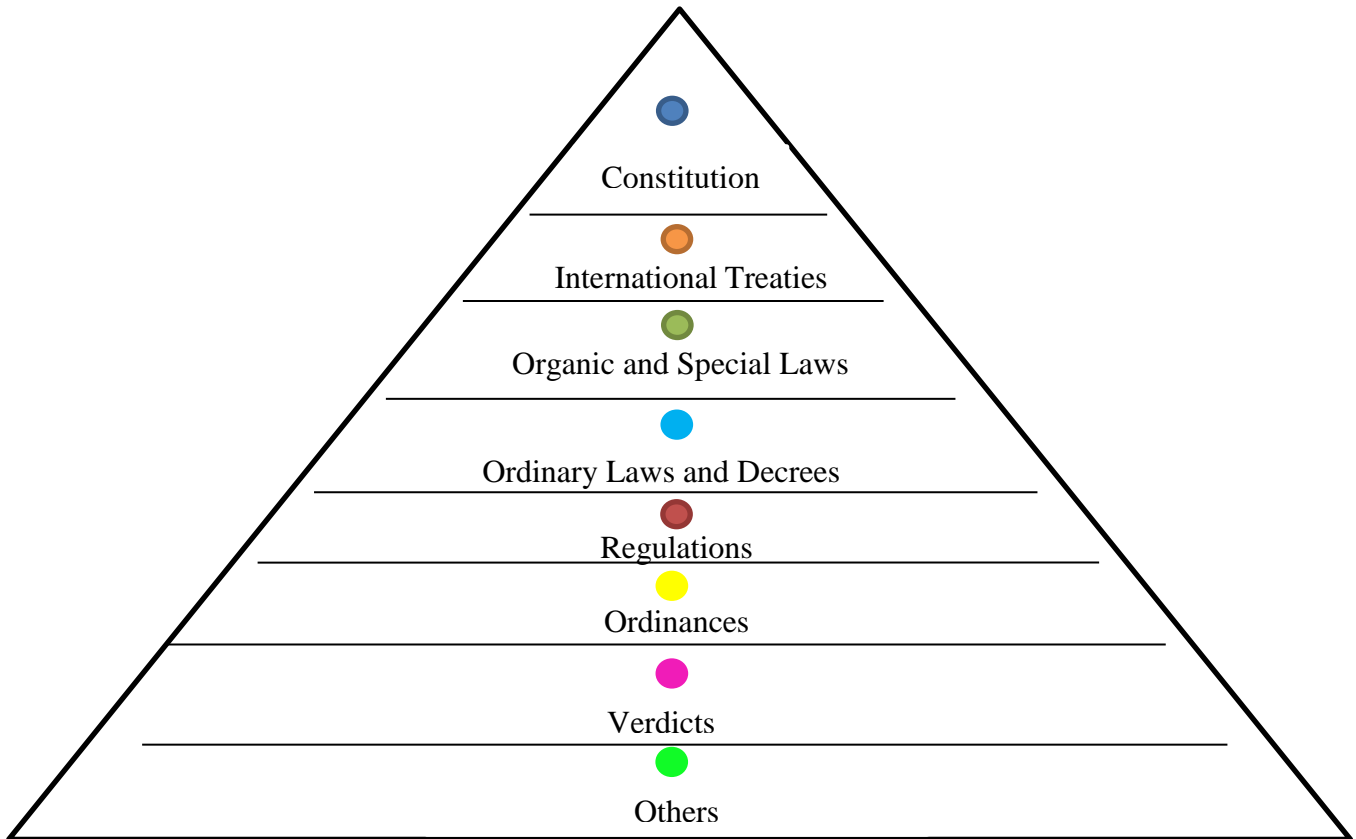
Figure 17: Kelsen´s pyramid and color per level

In order to understand the differences between each one of the legal documents, it is important to define them as follows:

- **Constitution:** Government system that each state has adopted or fundamental decree that determines the political rights of a nation, its way of government and the organization of its public powers (IIJ- UNAM, 2015)

- **International Treaties:** Convention issued by International laws signed by a specific country (that assumes a commitment) and one or more subjects of Public International Law (IIJ-UNAM, 2015)

- **Organic Laws**: Laws related to the development of fundamental rights and public liberties approved through general electoral regime and other ways stated in the Constitution (Alzaga, 2000).

- **Ordinary Laws:** They make reference to non- constitutional laws (Bono, 2001).

- **Decrees:** They are general arrangements, abstract and obligatory that come from a legislative procedure and directed to a particular governed sector (López, 2000).

- **Regulations:** the Mexican Doctrine has established it as a group of legal norms of abstract or impersonal character issued by the Executive Power and its purpose is to facilitate the accomplishment of the laws issued by the Legislative Power (IIJ-UNAM, 2015).

- **Ordinances:** Laws or Statutes used for observance procedures. They are created especially for military regime or for the good governance of a city, community, corporation or guild (IIJ-UNAM, 2015)

- **Verdict:** the legitimatized decision of a judge over a controversial cause in a court (IIJ-UNAM, 2015).

3.3 Evaluation of management effectiveness- EEM (including field trips and interviews)

In order to analyze the effectiveness of the management of protected area, several techniques have been developed. One of them was developed by WWF, GTZ, and UICN. The document is "Measuring the management effectiveness in protected areas". It was developed in year 2000(Cifuentes, et al., 2000). In 2007, WWF and the World Bank developed the Management Effectiveness Tracking Tool (METT) to track and monitor the performance and progress towards archiving and improving management effectiveness in a protected area (Stolton, et. al., 2007).

This last international tool was adapted to Ecuador´s context through a document published in year 2014 by MAE. The document´s name is "Evaluation of Management Effectiveness in the Natural Heritage Areas form the State- Methodological Guide". The EEM used the concepts from the questionnaire of the METT and adapted it to Ecuador's protected areas (MAE, 2014). This tool was applied to all areas inside the NSPA (including the area selected for this thesis, PNY). The results already obtained in PNY were used for this thesis. MAE provided this information. Ecuador´s methodology was adapted to Mexico´s selected area (RBSAT). Interviews and field trips were required. The final results of each analysis allowed comparing each area´s performance.

The tool contained a questionnaire with 4 sections:

- General information regarding the area
- Threats within the area
- The Evaluation of Management Effectiveness
- Strategic stakeholders

Taking into account that the first 2 sections were already described in this thesis, only the last 2 sections were taken into account for both countries' analyses. Each one of the questions from the METT´s questionnaire received a value between 0 and 3("0" meaning no progress or almost no progress; "1" representing some progress; "2" good but can be improved and "3" approaching an optimal situation). The criterion for selecting each one of the different values (0, 1, 2, and 3) was explained in each one of the questions (see original Spanish questionnaire in Annex 1). The results were written in percentages (0→0%; 1→33.33%; 2→66.67% and 3→ 100%).

In order to obtain the results, 3 analyses were performed:

- The analysis of the management programs.
- The analysis of the management ambits (context, planning, inputs, processes, products and results), based on the following definitions:
  - **Context:** it seeks to answer the question: what is the actual situation? Evaluates the area´s priorities, threats and policies (MAE, 2014).
  - **Planning:** It seeks to answer the question: Where do we want to go? It evaluates the design and planning within the protected area (MAE, 2014).
  - **Inputs:** It searches to answer the question: What will be required? It tries to show the resources that are needed in order to execute the area´s management. (MAE, 2014).
  - **Processes:** It searches to answer the question: How are the activities developed? (MAE, 2014).
  - **Products:** It searches to answer the question: What has been done? This ambit tries to evaluate the implementation of the management programs and all the goods and services provided by the area (MAE, 2014).

- o **Impact:** tries to answer the question: What have we accomplished? It evaluates the accomplishment of the area´s objectives and their impact. They try to evaluate the impact and are not measured through a numeric value. They search to provide a perspective regarding the area´s management effectiveness (MAE, 2014).

- The Final analysis of the specific protected area

With this background, 3 results were obtained per area: 1) a result based on the management programs 2) a result based on management ambits 3) the area´s final evaluation (MAE, 2014). To interpret the results; the following table was employed:

Table 11: Results´ interpretation

%	Level of management effectiveness	Management situation
76-100	Very satisfactory	The area counts with enough means to ensure and efficient management in the present and maybe some future demands. The accomplishment of the area´s objectives is guaranteed.
51-75	Satisfactory	The means required to manage the area are enough; the activities are developed in a regular way and in an overall view the results are good. In spite of this, they can always be better. In general terms, the area´s objectives tend to be satisfied
26-50	Little satisfactory	The area contains certain means but a lot of indispensable elements are missing. Therefore the area might present a high vulnerability towards internal or external factors, which might threat its permanency in a long-term. It is difficult to accomplish the area´s objectives.
<25	Not satisfactory	The area does not count with minimal resources to function properly. Its permanency in the long-term is threatened. Under these conditions, the area´s objectives will not be accomplished.

Source: MAE, 2014

Once the questions to the Authorities and technicians were performed, it was required to make an analysis about the external perception (EP) of other stakeholders involved in the areas´ management. The idea was to contrast the information given by the Authorities with

the answers obtained by other strategic stakeholders. By contrasting both answers 3 possible EP´s were obtained: (High, The same or Low external perception).

3.4 SWOT Analysis

Additional interviews were done to technicians working in the selected areas, including relevant information such as: main threats, mains strengths, importance and sufficiency of legal framework, involvement with stakeholders and importance of evaluation tools.

A SWOT Analysis was performed (Strengths, Weaknesses, Opportunities and Threats). Through this analysis it was possible to know the inner characteristics of the systems and specific areas, as well as the external environment. As stated by Kauffman (2013), the SWOT analysis is a suitable analysis tool, especially considering it is a versatile and adaptable instrument. In this way, it can be applied to a business, a department, a product, to industry, or even to personal, familiar and interpersonal relations. Kauffman (2013) also stated that the idea to apply this tool involves the possibility to: increase the strengths, reduce or eliminate weaknesses, take advantage of the opportunities and avoid threats. In order to do this, it was important to define each one of the terms, as follows:

- **Strengths**: are special capacities that the area has. It can include the amount of available resources, the technical capacities and the activities that are developed in a positive way (Kauffman, 2013).
- **Opportunities:** they are positive factors that could be found in the external environment and advantage could be taken from them (Kauffman, 2013).
- **Weaknesses:** they include all the lacking resources, not acquired skills, activities that are developed in a negative way, among others (Kauffman, 2013).
- **Threats:** They are situation found in the external environment and that could affect directly the protected area (Kauffman, 2013).

Opportunities and threats come from the external environment and the strengths and weaknesses from the internal environment.

4 RESULTS

4.1 Framework Analysis

Table 12: Comparison between Mexico and Ecuador

	ECUADOR	MEXICO
History	1936: Galapagos Islands were declared as the first protected area 30 years later → Declaration of Pululahua Geo-Botanic Reserve - Lack of strong political or legal framework - Lack of knowledge regarding the institution that will be in charge of managing Protected Areas 1976: The preliminary Strategy for the Conservation of Remarkable Wildlife Areas in Ecuador was developed. This strategy stated the importance of counting with a NSPA 1989: A new strategy more adapted to the country´s reality was developed 1991: A institution called INEFAN was created (for the conservation of natural resources) 1996: INEFAN was dissolved to create MAE 1998: the Constitution declares the existence of a NSPA 2008→ Constitution has given "rights" to nature	1876: Protection of "Desierto de Los Leones" in order to preserve 14 natural springs that provided water to Mexico City - There were certain initiatives to protect water basins and some national parks and forestry reserves were declared. As they were no supported by any legal or technical tool, they were called "paper parks" 1970: New consciousness and people start talking about conservation and the inclusion of human populations. 1982-1988: SEDUE was created as an organism in charge of protected areas through SINAP. 1988: LGEEPA was created 1992: Through the Rio Earth Summit, Mexico acquired international environmental responsibilities. 1992: CONABIO was created. Time later the Mexican Fund for the Conservation of Nature was also developed. These institutions started influencing on public policies 1994: SEMARNAT was created 2000: CONANP was created as a decentralized institution from SEMARNAT

Institution in charge		MAE is in the institution in charge of protected areas. The Unit of Protected areas belongs to the National Direction of Biodiversity, which belongs to the Undersecretary of Natural Heritage.	SEMARNAT is the secretary in charge of issues related to conservation and the sustainable use of ecosystems and biodiversity. There are 7 decentralized institutions that depend on SEMARNAT; one of them is CONANP.
Systems and conservation schemes		The NSPA counts with 50 protected areas. It is divided in 4 subsystems: • State • Autonomous and Decentralized • Community based • Privately owned	The conservation scheme counts with: • Protected Areas • Areas voluntarily destined for conservation • Priority regions for Conservation
% of Protected Areas		20%	18.82%

IUCN Management categories

Ia: Strict Nature Reserve

Ib: Wilderness Areas

II National Park

III Natural Monument or Feature

IV Habitat / Species Management Area

V Protected Landscapes / Seascape

VI Protected area with sustainable use of natural resources
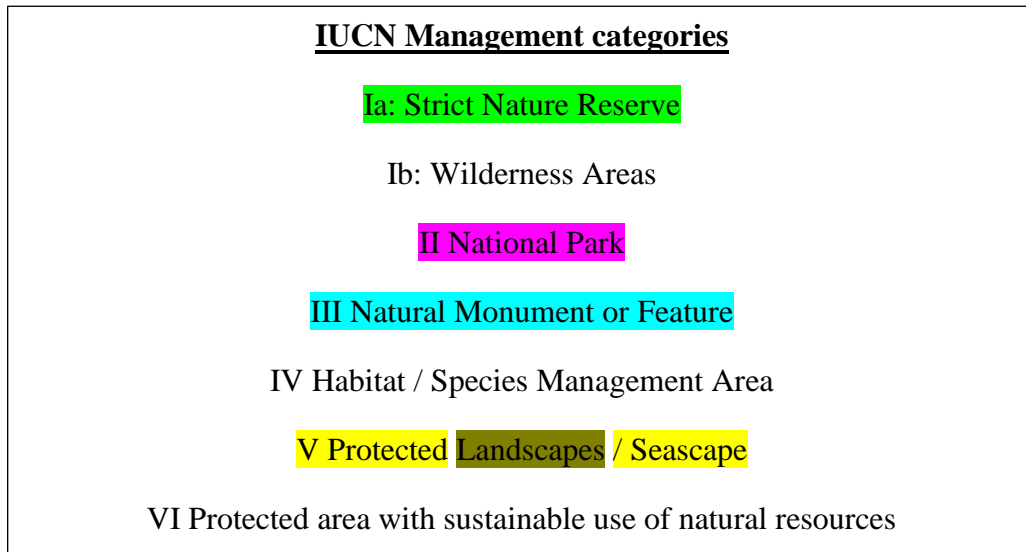
Management categories in Mexico

Biosphere Reserve

Areas destined to the protection of natural resources

National parks

*Natural Monuments

Flora and Fauna protection areas

Sanctuaries

Areas voluntarily destined for conservation

Management categories in Ecuador

Biological Reserve

* National Park

Marine Reserves

Ecological Reserve

Flora and Fauna Production Reserve

Wildlife Refugee

National Recreation Area

Geo-botanical Reserve

Figure 18: Management categories´ comparison (IUCN- Mexico-Ecuador)
Elaboration: Andrea Jaramillo

As can be noticed, the international management categories are just suggestions regarding the different intervention degrees and activities that should be regulated within the areas. Despite this, the management categories vary widely and are adapted to each country's reality. In this case, for example for Mexico, a Biosphere Reserve is the most restrictive management category. In the case of Ecuador, Biosphere Reserve is another way of conservation under international declaration and doesn't form part of the NSPA. In the case

of Ecuador one of the most restrictive management categories corresponds to Biological Reserve and Wildlife Refuge. The only difference relies in the fact that the first one protects entire ecosystems and species and the second one protects threatened species; but the alteration level and the allowed activities are similar. For IUCN the most restrictive category corresponds to Strict Nature Reserve.

Figure 18 also shows that in some cases some characteristics are shared but not all (that is the case of Ecuador´s National Parks and Mexico´s Natural Monuments (both of them were not highlighted but underlined and marked with an asterisk). In the case of Ecuador´s National Parks is a category that shares similarities with the description of National Parks form Mexico and IUCN such as the development of activities like recreation, education and science. Despite this, the area also includes ecological features and in this area exploitation and occupation are forbidden. These characteristics were different from the characteristics found in the other descriptions. This can show that in some cases, despite having the same management category name, the characteristics and restriction level might vary depending on the country. In the case of Mexico´s Natural Monuments, despite sharing characteristics with the Ecuador´s Geo-Botanical Reserve and IUCN´s Natural Monument or Feature, there are also big differences. Among the similarities it is important to name the presence of natural elements with exceptional historical, scientific or aesthetic value and the development of activities including: research, preservation, recreation and education. The big difference relies on the absolute protection regime that is not specified in the other management categories. In this way, in this case, the restriction level varies, too.

Table 13: Comparison between PNY and RBSAT

	PNY	RBSAT
General Characteristics and location	PNY was created as a response to try to protect the amazon rainforest from the oil extraction activities. It is located in the Amazon region of Ecuador within Orellana Province and Pastaza Province. It contains a terrestrial surface of around 1´022,736 hectares. PNY´s climate is characterized by a warm temperature, with an average temperature of 24°C - 27°C during the whole year. It is a rainforest inside the "Amazon Heart"	The state of San Luis Potosi has 19 protected areas (7 federal and 12 from the State), but Abra Tanchipa is the only Biosphere Reserve within the State. RBSAT is located in the municipalities of Ciudad Valles and Tamuin. The area contains a total surface of around 21,464.44-25 hectares. The area has a warm, sub-humid climate, with periods of heavy rains. The average temperature is 25.7 °C. The area contains a wide extension of deciduous and semi-deciduous tropical rainforests.

Biodiversity	PNY counts with flagship species of importance because of their national and international demand to be conserved. Some of these species have been recognized in Ecuador´s Red list of endangered species or in CITES. • The Giant Otter (*Pteronura brasiliensis*) and the Amazonian Manatee (*Trichechus inunguis):* CITES, appendix I (the Giant Otter: also inside the globally endangered list and the Amazon Manatee: globally vulnerable) • The Jaguar (*Panthera onca*) and the Spotted Highland Cat (*Leopardus tigrinus*): in Appendix I, vulnerable in Ecuador and almost endangered globally. • The Ocelot (*Leopardus pardalis*) and Margay (*Leopardus wiedii):* Appendix I and almost endangered for Ecuador. • The Gray Dolphin (*Sotalia fluviatilis*): Appendix I and in risk of extinction for Ecuador. • The Pink Dolphin (*Inia geoffrensis*): in danger of extinction for Ecuador and in Appendix II. • The howler monkey (*Lagothrix lagotricha*): appendix Ii and vulnerable for Ecuador and globally (Bass, et al., 2004).	The area presents different flagship species; some of them are important because are endemic to the area and others are protected through the Official Mexican Norm. Among the endemic species, it is important to name: "soyate" (*Beaucarnea inermis*), "torito morado" (*Stanhopea tigrina*), "tiotamal" (*Dioon edule*), which is also in danger of extinction. The Jaguar ((*Panthera onca*), the Green Macaw (*Ara militaris*), the Margay (*Leopardus wiedii*), the Ocelot (*Leopardus pardalis*) and the Tamaulipan Parrot (*Amazona viridigenalis*), are in danger of extinction and protected through Nom-059-Semarnat-2010. It is also important to name the Guadalupe Palm (*Brahea edulis*), which has special protection (SEMARNAT and CONANP, 2014).

Main stakeholders	• Autonomous and Decentralized Governments • National Entities • Control Organisms • Non-Governmental Organizations • Private Institutions(oil companies, touristic companies) • Communities (PIAs, Waorani, Kichwa, Shuar territories and mestizo settlements) • Others (universities, high schools and schools)	• Government´s institutions • Municipalities • Ejidos ("Laguna del Mante", "Los Sabinos" and "Las Palmas") • Control Organisms • Non-Governmental Organisms • Private Institutions (CEMEX) • Others (Universities, scientists Millennium Schools- Yasuni and Nuevo Rocafuerte)
Main Threats	• Human threats (including migration processes, new settlements, over-exploitation of natural resources, illegal logging and hunting) • Oil extraction activities • Scientific Research • Tourism • Overlapping of jurisdiction	• Fires • Droughts • Hurricanes • Climate Change • Extraction of wildlife • Illegal hunting • Changes in land use • Pollution • Cutting down of trees

Management Tools and personnel	The area's management plan and the programs detailed in it: Conservation of the Natural and cultural Heritage, Control and Surveillance Program, Environmental communication and education program, research program and tourism program. In spite of this, since 2013 MAE defined 5 programs to be employed in all areas inside the NSPA. These programs are: • Management and Administration • Control and Surveillance • Environmental education, communication and participation (CEPA) • Tourism and public use • Biodiversity management 19 people work in the area (1 manager and18 rangers) (CEPP, 2012). 1 person will be in charge of 53,828.21 hectares. All of them are being trained through an institutional program called "Aula Verde"	The management program is the tool used to manage the area. It contains the following subprograms. • Protection • Restoration • Management • Knowledge • Culture • Administration Each component (from each subprogram) includes a series of actions to be carried out and specific time (long-term, medium-term and short-term). 4 people work in the area (1 manager and 3 technicians). 1 person will be in charge of 5,366.11 hectares. There is an online Portal for training towards technicians and other trainings done with external funding.

Zoning	The zoning is done to the Biosphere Reserve, in the following zones:
	• **Intangible core area:** Includes PNY, the ZITT area and 783.311 hectares of the Waorani territory
	• **Buffer zone:** Part of the Waorani territory, the Kichwa territories and the Mestizo settlements
	• **Transition zone**
		The area has the following zoning:
		• **Core Area**
		• **Buffer Zone**
		    ○ Sabino's traditional use subzone
		    ○ Subzone for the sustainable use of natural resources and hills
		• **Influence Zone**

Figure 19 describes a comparison between the zoning from each one of the areas and the estimated percentage for each one of the zones
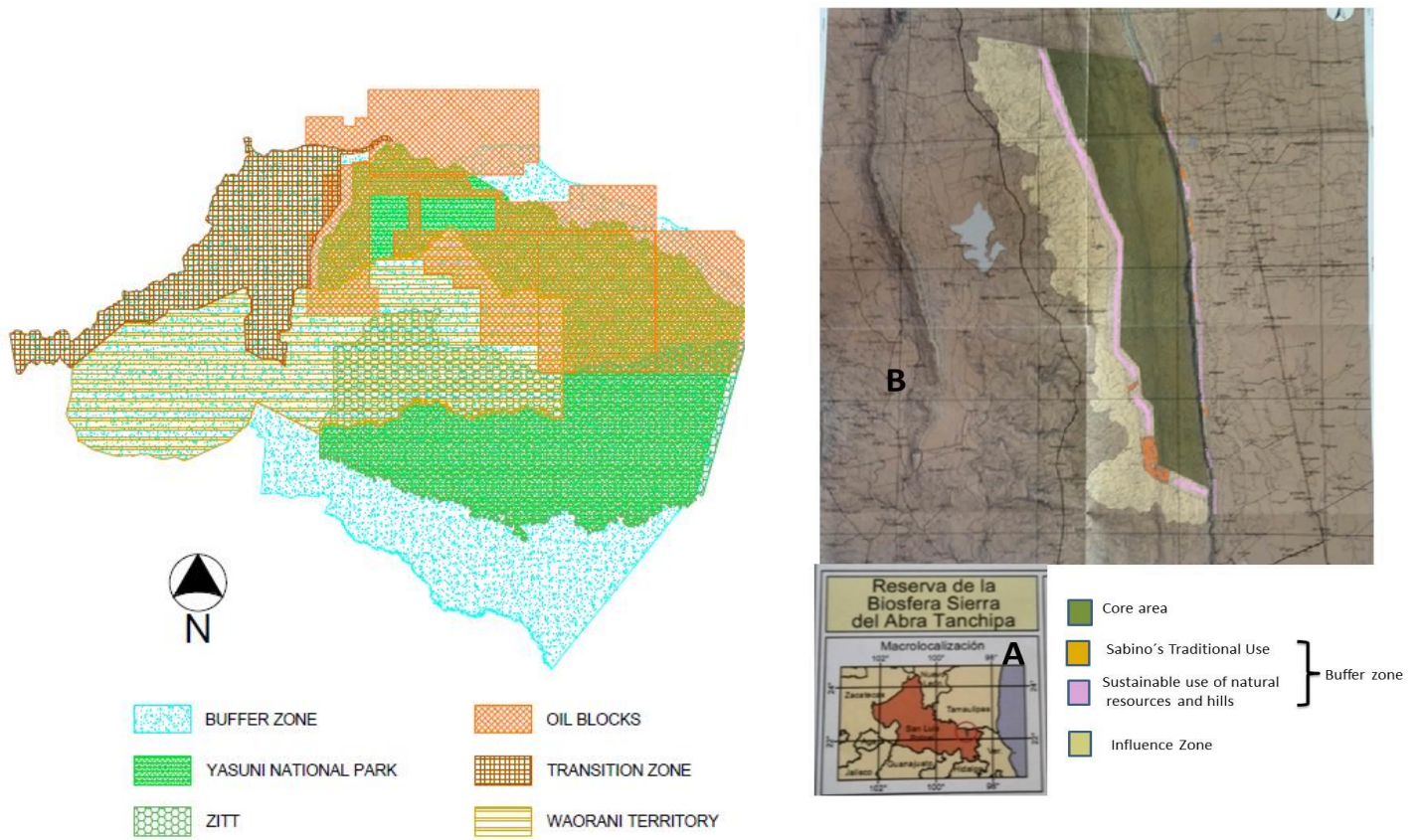
Figure 19: Comparison between PNY and RBSAT´s zonings

It is important to state that PNY does not have its own zoning. For that reason the zoning from Yasuni Biosphere Reserve (which includes a bigger surface) was employed and PNY was placed over it. With this background, according to the zoning form Yasuni Biosphere Reserve, all PNY corresponds to the core zone and it is supposed to be untouchable. Despite this, it is important to remember that several oil blocks are found within the park. The only intangible area from the core zone would correspond to the ZIIT and the Waorani territory; in percentage it could represent around the 49% of the core area. In Figure 19 it is also visible to analyze the patches of Buffer zone and transition zone (which are outside PNY), where the buffer zone appears bigger than the transition zone. On the other hand, for RBSAT the 100% of the core area is protected and there aren't any extractive activities or human settlements nearby. RBSAT presents a smaller buffer zone (divided into two subzones) than the influence zone.

66

For the stakeholders´ analysis a table describing each one of the stakeholder's interests and potential negative or positive influence was done (see Annex 2 for PNY and Annex 3 for RBSAT). With this background, the following figures describe the final results.
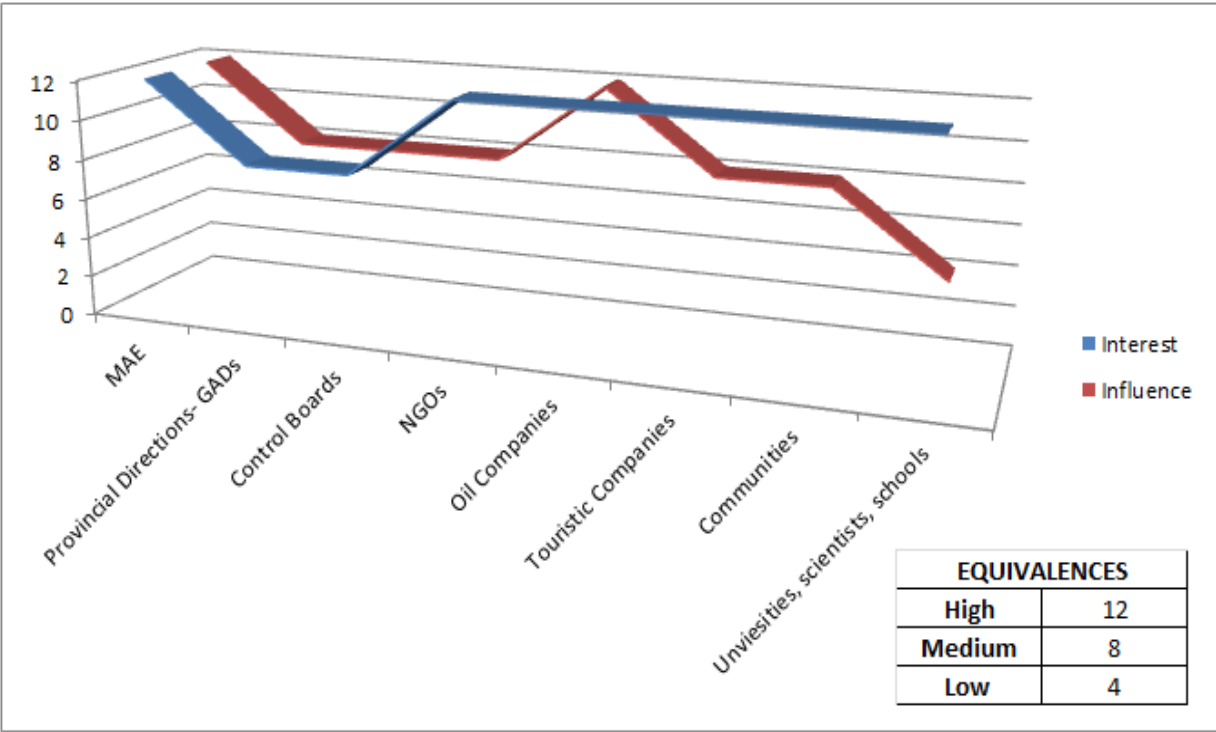
Figure 20: PNY´s stakeholders analysis

In PNY, the stakeholders that present the highest interest and influence are: MAE and the Oil Companies. There are other stakeholders that present a medium interest and medium influence, such as the Provincial Directions and Control Boards. Finally other stakeholders present a high interest but their influence is lower, such as: the touristic companies, the communities, universities/ scientists / schools and NGOs.

EQUIVALENCES	
High	12
Medium	8
Low	4
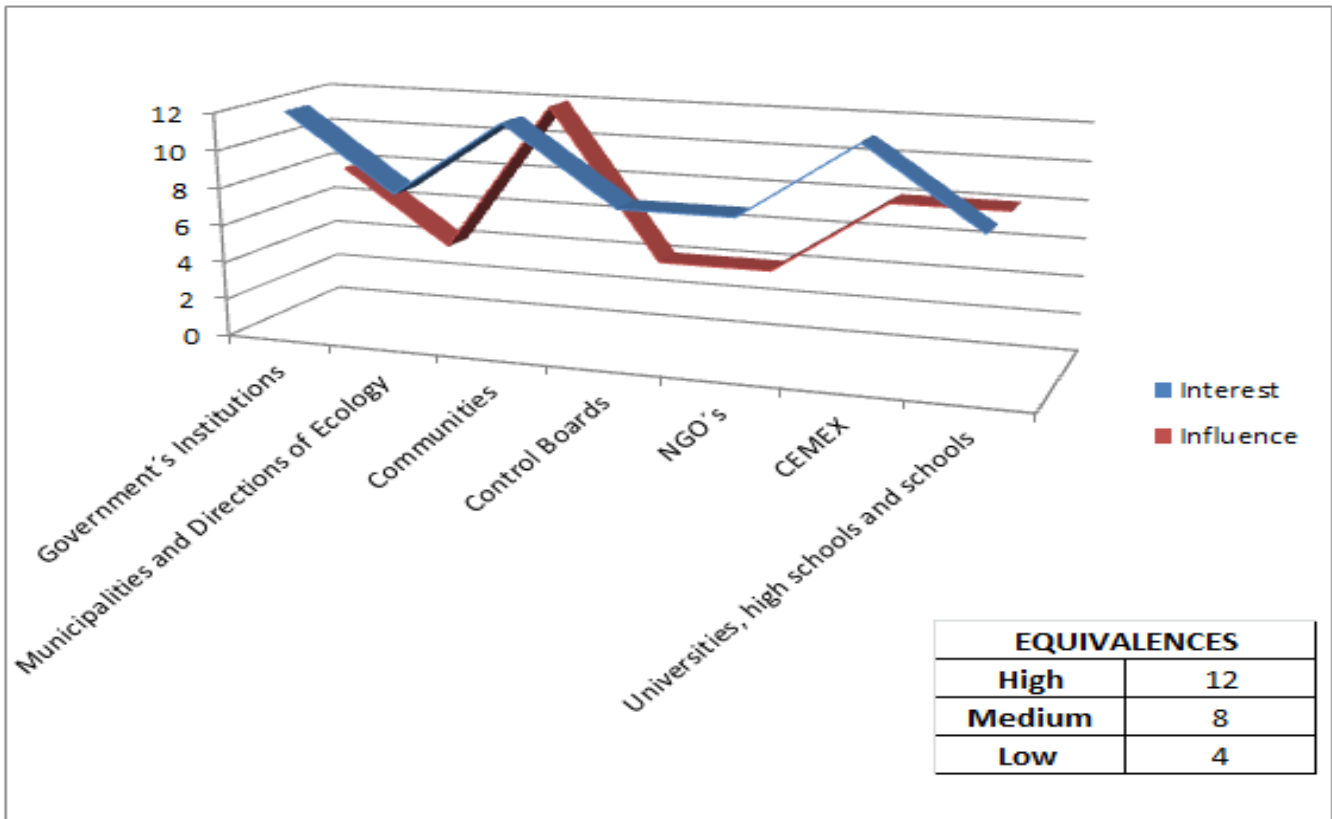
Figure 21: RBSAT´s stakeholders´ analysis

In RBSAT the highest interest and influence come from the communities that live near the protected area. Other stakeholders, such as the Government´s institutions, the directions of ecology, control boards, NGOS´s and CEMEX present a high or medium interest but their influence is lower. Finally for universities and schools, the influence and interest is the same (medium).

4.2 Legal Framework

Table 14 shows the legal documents at different administrative levels and the colors employed in each level from Kelsen´s pyramid (detailed in the methodological description).

Table 14: Legal documents per administrative levels and employing the pyramid´s colors

Adm. Level	Ecuador		Adm. Level	Mexico	
	Biosphere Reserves			**Biosphere Reserves**	
		Seville Strategy			Seville Strategy
		Statutory Framework of the World Network of Biosphere Reserves (UNESCO, 1996)			Statutory Framework of the World Network of Biosphere Reserves (UNESCO, 1996)
	International Treaties			**International Treaties**	
International		UNESCO´s Convention on the Protection of worldwide Natural and cultural Heritage	International		International Whaling Commission
		Convention on Biological Diversity (CBD)			Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol
		RAMSAR Convention			Rotterdam Convention
		Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)			Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.
		Convention on the Protection of flora, fauna and natural scenic beauties			Stockholm Convention on Persistent Organic Pollutants
		UN Framework Convention on Climate Change			Convention on Biological Diversity (CBD)
		Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal			RAMSAR Convention
		Rio Declaration on Environment and Development			Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
		International Whaling Commission			Kyoto Protocol
		Convention on the conservation of wildlife migratory species			UN Framework Convention on Climate Change
		Convention on the conservation of marine resources, among others (Columba, 2013).			Convention for the Conservation and Protection of Sea Turtles
					UN Convention to Combat Desertification, among others (Vargas, 2010).

Adm. Level	Ecuador	Adm. Level	Mexico
National	Ecuador´s Constitution (2008). Rights to Nature (Chapter 7) and protected areas´ system (Art. 405).	Federal	Mexico´s Constitution (1917). Regulate the utilization of natural elements that can be appropriated and take care of its conservation (Art. 27)
	Organic Law for the Special Regime of Galapagos´s province.		Wildlife General Law
	Law of Forestry and Conservation of Natural Areas and Wildlife		General Law of Ecological Equilibrium and Environmental Protection (LGEEPA)
	Hydrocarbons Law		Tourism's General Law
	Law for Environmental Management		General Law for Sustainable Forestry Development
	Executive Decree #503 (Intangible zones)		RBSAT´s creation Decree, published on the Federation´s Official Journal (DOF) on June 6th, 1994National Development Plan (2013-2018)
	Special Regulation on Tourism in Protected Areas		Regulation of the LGEEPA (Protected Areas)
	Ecuador´s National Plan for Well-Being (2013-2017)		Regulation for the Wildlife General Law
	Unified Text on Environmental secondary legislation (TULAS)		Mexico´s National Development Plan (2013-2018)
	National Strategy for Biodiversity		National Program for Protected Areas (2014-2018)
	Policies and strategic Plan for the NSPA		National Strategy for Environmental Education in Protected Areas
	Agreement #168 Recognizing Biosphere Reserves.		Strategy 2040
	Ministerial Agreement # 0322. Creation of PNY. Official Record 69 (November 20th, 1979).		

Adm. Level	Ecuador		Adm. Level	Mexico
Provincial	**Pastaza**		State	Environmental Law for San Luis Potosí´s State
		Ordinance for the environmental Policies in Pastaza Province		Water Law for San Luis Potosí´s State
		Ordinance for the actualization (2015) of the development Plan and territorial planning in Pastaza Province (Pastaza web page, 2016)		Climate Change Law for San Luis Potosí´s State
	Napo			Law to encourage Forestry Sustainable Development in San Luis Potosí´s State (Periódico Oficial del Estado de San Luis Potosí, 2016)
		Projects for Environmental Regulations		Sierra del Abra Tanchipa Management Program
		Environmental Agenda adapted to the provincial development plan and territorial planning (Napo Web page, 2016).		Agreement to publish the summary of RBSAT´S management program
		Yasuni National Park Management Plan, published on 2011		

Adm. Level	Ecuador	Adm. Level	Mexico
District	Ordinance for the Strategic Development Plan for Arajuno District	Muncipal	Ecology´s Regulations for Ciudad Valles Municipality
	Development Plan and Territorial Planning for Orellana District		Regulations for Ecology and environmental management in Tamuin´s Municipality
	Development Plan for Aguarico District		Tamuin´s Municipal Development Plan
			Ciudad Valles´s Municipal Development Plan

Adm. Level	Ecuador		Adm. Level	Mexico	
Parishes		Territorial Planning for Tiputini Parish	Local		Ejidos´ internal regulations
		Territorial Planning for Rocafuerte Parish			
		Development Plan and Territorial Planning for Cononaco Parish (2025-2025)			Communal territorial Planning for "Ejido Laguna del Mante
		Development Plan and Territorial Planning for Alejandro Labaka Parish (2014-2019)			
		Development Plan and Territorial Planning for Dayuma Parish (2014-2019)			
		Development Plan and Territorial Planning for Ines Arango parish (2015-2019)			
		Development plan and territorial Planning for Curaray parish			

As can be observed in the table, in the first administrative level, both countries have established commitments for the accomplishment of international treaties. In some cases, they have signed the same treaties such as CBD, RAMSAR, CITES, among others. In most of the administrative levels, the countries contain the same amount of legal documents. Despite this, the hierarchy of the documents varies a little bit in each level. The only big difference relies on the last administrative level, in which Ecuador had more territorial plans, for each one of the rural parishes, contained within the protected area. For Mexico there are fewer documents at the local level. This can be explained because of the differences in the areas´ sizes which determine that more rural parishes are involved in the biggest area (PNY) than in the other one (RBSAT).

4.3 Evaluation of Management Effectiveness (EEM)

4.3.1 PNY´s analysis:

Ecuador developed the EEM for all protected areas from the State Subsystem since 2013. In this section the results from PNY provided by MAE are detailed. The METT questionnaire contained 44 questions. In spite of this, 2 questions corresponded to a global perception of the area and did not receive a numerical value; therefore the final number of questions was 42. These questions were analyzed in order to get 3 results: results by management programs, results by management ambits and the final value representing the area´s performance.

Finally, the stakeholders´ analysis was done. In the case of PNY, the questions were developed to the following strategic stakeholders:

- National Direction of Biodiversity
- Touristic Operators
- Autonomous Decentralized Governments
- Communities involved in the area´s management

4.3.1.1 Results by Management Programs

PNY had the following management programs: Conservation of the Natural and Cultural Heritage, Control and Surveillance Program, Environmental Communication and Education Program, Research Program and Tourism Program (MAE, 2011). In spite of this, since 2013 MAE defined 5 programs to be employed in all areas inside the NSPA. They are:

- Management and Administration (were analyzed as two separate programs, but the final average was done together)
- Control and Surveillance
- Environmental education, communication and participation (CEPA)
- Tourism and public use
- Biodiversity management (MAE, 2013).

With this background, for the programs´ analysis these 5 programs were used. The final results are detailed in table 15 (see full description in Annex 4).

Table 15: PNY´s Final results by Management Programs

Management Programs	Percentage obtained by Program
Management and Administration	59.52%
Control and Surveillance	66.67%
CEPA	61.91%
Public Use and Tourism	57.14%
Biodiversity Management	38.09%

Source: MAE Results for PNY (2014)

As can be seen in the results, the highest performance was obtained by the "control and surveillance management program" and the lowest result was obtained in the "Biodiversity Management Program"

4.3.1.2 Results by Management Ambits

The analysis includes 5 ambits (Context, planning, inputs, processes, products and impact) and their corresponding indicators. The final results by management ambits are detailed in table 16 (see full description in Annex 5):

Table 16: PNY´s final results by Management Ambits

Ambit	Percentage obtained by Ambit
Context	77.78%
Planning	41.67%
Inputs	62.96%
Processes	53.33%
Products	55.56%
Impacts (not measured)	66.67%

Source: MAE Results for PNY (2014)

As can be seen in the results, the highest performance was obtained in "context" and the lowest result was obtained in the "Planning".

4.3.1.3 The area´s final result

For the final analysis the 42 questions were detailed and an average was obtained. Table 17 contains the final evaluation of management effectiveness for PNY (see full description in Annex 6):

Table 17: PNY´s Final EEM

Value	%
1.71	57.14%

Source: MAE Results for PNY (2014)

The final percentage obtained corresponds to a "Satisfactory" level of management efficiency

4.3.1.4 PNY´s external perception (EP):

Once the results from the authorities were obtained, an analysis of the different stakeholders was done. The questions were developed in the following way:

- 13 questions were done to the Communities involved in the area´s management
- 11 questions were done to the National Direction of Biodiversity (DNB)
- 4 questions were done to Touristic Operators
- 1 question was performed to Autonomous Decentralized Governments

The final results of the external perception for the communities in PNY are detailed in table 18 (see full description in Annex 7)

Table 18: PNY´s communities – EP

Questions	1	2	3	4
1. Is there enough support and help between the area´s managers and the local stakeholders?	Low	High	Low	The same
2. Do the technicians participate in activities or are there any programs to strengthen the communities´ wealth?	High	Low	High	Low
3. Is there an environmental communication program (or permanent communication activities) where the visitors and local population are informed about the area´s importance?	Low	Low	Low	The same
4. Does the area provide direct economic benefits	Low	High	The	Low

(income, employment, tourism) to the local communities? It is important to exclude illegal activities.			same	
5. Are the area´s limits clearly defined and physically signaled? Are the limits recognized and respected by the population?	Low	The same	Low	Low
6. Are there other external stakeholders involved in the control and surveillance activities? (For example: volunteers, policemen, armed forces, among others).	Low	Low	Low	Low
7. What is the level of acceptance and conformity from the stakeholders towards the protected area?	The same	Low	The same	Low
8. Are the local communities benefitted from the tourism that the area provides?	The same	Low	Low	Low
9. Do the local stakeholders participate in the decision-making processes that influence the management and the planning processes? Is this participation representative?	Low	Low	The same	Low
10. What do you think about the actual conservation condition of the area if you compare it with the time it was declared as a protected area?	The same	High	The same	The same
11. Does the area regulate the use of natural resources by the local communities or visitors? (For example the regulation of activities such as hunting, fishing, recollection of samples, extraction of natural resources, among others)	The same	The same	High	High
12. Are there any specific actions for the sustainable management of natural resources, which might benefit the local populations' quality of life? (For example: native species production, use of alternative energies, etc.)	Low	Low	The same	Low
13. Is there an environmental education program that has incidence over the schools from the zone and is related with the area´s objectives and needs?	Low	Low	High	Low

Source: MAE Results for PNY (2014)

Very diverse answers were got form the communities. For Communities 1, 2 and 4 most answers were "low". For Community 3 "the same" and "Low" obtained the same number. The results did not specify the communities´ names.

DNB´s EP is detailed in table 19 (see full description in Annex 8)

Table 19: DNB´s EP

Questions	EP
1. Does the area contain systematized information for the adequate management of the natural and cultural heritage?	The same
2. Are there technical or financial sources that support the area´s management, besides the funds obtained from the government?	The same
3. Is the assigned Budget enough to solve the area´s needs?	The same
4. Are the touristic operators and nature guides regularized and properly registered?	The same
5. Is the area´s management category adequate to its actual management and goes according to its main problems?	Low
6. How effective are the monitoring processes and the capacities of the human resources in order to respond to legal processes?	Low
7. Until what extend has the Annual operation plan been accomplished?	The same
8. Does the area contain the adequate size, shape and spatial location, in order to accomplish its management objectives and conservation purposes?	High
9. Until what extend is the Management Plan implemented?	High
10. Is there a system used for touristic management and are the impacts from this activity measured?	Low
11. Are specific actions carried out to protect, conserve or recover endangered species? (The question includes the actions to eradicate exotic species).	High

Source: MAE Results for PNY (2014)

In this case, most of the answers were "the same" which implies that the EP got from the Area and from DNB were similar. Only 3 "Low" answers and 2 "High" were obtained.

Touristic Operators´ EP is detailed in table 20 (see full description in Annex 9).

Table 20: Touristic Operators´ EP

Questions	EP
1. Is the infrastructure and equipment used for public use adequate and in a good shape?	High
2. Do tourism operators and nature guides provide support to the area´s management? (For example with waste management, logistic, etc.)	Low
3. Is touristic registration and visitors' control regulated within the area?	High
4. Are there any mechanisms to manage emergencies derived from the touristic activities and coordination with other entities?	The same

Source: MAE Results for PNY (2014)

In the EP from touristic operators diverse answers were obtained; half of them corresponded to a "high external perception".

GADs´ EP is detailed in table 21 (see full description in Annex 10)

Table 21: GADs´ EP

Questions	GAD 1	GAD 2	GAD 3	GAD 4
1. Do the planning procedures take into account external elements related to the area's objectives (biological corridors, water basins, distribution areas for species, among others) and are they introduced in regional development plans?	The same	Low	Low	Low

Source: MAE Results for PNY (2014)

For the GADs´ EP most answers were "Low" and only 1 was "the same".

4.3.2 RBSAT´s Analysis

The METT´s questionnaire was developed to CONANP´s authorities in Tamuin: Alejandro Durán (the area's manager), Romina Gutierrez, Mauricio Sánchez and Obed Godinez Vizuet (technicians). RBSAT´s questionnaire contained 39 questions and not the 44 that were employed in PNY. For RBSAT the questions regarding tourism were taken away, due to the fact that the area doesn't receive much tourism (only a little in the caves from "Los Sabinos"). The authorities decided that it was not possible to answer these questions because tourism has not been widely developed and most of the visitors arrive for scientific reasons. In spite of this, some questions regarding tourism were performed in "Los Sabinos

ejido". As well as in PNY, 2 questions corresponded to a global perception of the area and did not receive a numerical value; therefore the final number of questions was 37.

Finally, the stakeholders´ analysis was done. In the case of RBSAT, the questions were developed to the following strategic stakeholders:

- CONANP´s regional administration
- CEMEX (working close to the protected area)
- The Direction of Ecology (from Ciudad Valles Municipality and from Tamuin Municipality)
- Communities (Laguna del Mante, Los Sabinos and Las Palmas)
- **Additional questions:** 4 questions regarding tourism were done to "Los Sabinos ejido" taking into account that this zone contains special caves that receive little tourism.

4.3.2.1 Results by Management Subprograms

As previously described, RBSAT had the following management subprograms:

- Administration
- Protection
- Management
- Restoration
- Knowledge
- Culture

The questions were adapted to area´s management subprograms and their components. The final results are detailed in table 22 (See full description in Annex 11).

Table 22: RBSAT´s Final Results by Management Subprograms

Management Subprograms	Percentage obtained by Program
Administration	64.81%
Protection	75%
Management	55.56%
Culture	33.33%
Knowledge	58.33%
Restoration	75%

As can be seen in the results, two management subprograms obtained a high result: "Restoration" and "Protection". The lowest result was obtained in "Culture".

4.3.2.2 Results by management ambits:

The 5 same management ambits were analyzed: Context, planning, inputs, processes, products and impacts. The indicators used to evaluate the impacts were not measured, as in PNY´s case. The results are detailed in table 23 (See full description in Annex 12).

Table 23: RBSAT´s final results by Management Ambits

Ambit	Percentage obtained by Ambit
Context	83.33%
Planning	58.33%
Inputs	62.50%
Processes	66.67%
Products	54.17%
Impacts (not measured)	100%

As can be seen in the results, impact received a very high percentage but these results are not measured and only correspond to a perception regarding the area. Therefore the highest result was obtained by "context" and the lowest result was obtained by "Products"

4.3.2.3 The area´s final result

For the final analysis, the 37 questions were detailed and an average was obtained. Table 24 contains the final EEM for RBSAT (see full description in Annex 13)

Table 24: RBSAT´s final EEM

Value	%
1.92	63.96%

The final percentage obtained corresponds to a "Satisfactory" level of management efficiency

4.3.2.4 RBSAT´s external perception:

An analysis of the different stakeholders was done. The questions were developed in the following way:

- 16 questions were done to CONANP´s regional administration (the selected questions are different from the ones performed to PNY taking into account that touristic questions were taken out and other questions were analyzed)
- 11 questions were done to CEMEX (working close to the protected area)
- 1 question was performed to The Direction of Ecology from Ciudad Valles Municipality and from Tamuin Municipality
- 13 questions were done to the Communities (Laguna del Mante, Los Sabinos and Las Palmas)
- **Additional questions:** 4 questions regarding tourism were done to "Los Sabinos ejido" taking into account that this zone contains special caves that receive little tourism. These were additional questions, considering that the Authorities did not answer questions related to tourism.

The final results for the Communities´ EP in RBSAT are detailed in table 25 (see full description in Annex 14)

Table 25: RBSAT´s communities - external perception

Questions	Laguna del Mante	Los Sabinos	Las Palmas
1. What is the level of acceptance and conformity from the stakeholders towards the protected area?	The same	Low	Low
2. What do you think about the actual conservation condition of the	The same	The	Low

Question			
area if you compare it with the time it was declared as a protected area?		same	
3. Are there other external stakeholders involved in the control and surveillance activities? (For example: volunteers, policemen, armed forces, among others).	The same	Low	Low
4. Are the area´s limits clearly defined and physically signaled? Are the limits recognized and respected by the population?	The same	The same	Low
5. Does the area provide direct economic benefits (income, employment, tourism) to the local communities? It is important to exclude illegal activities.	The same	The same	Low
6. Is there enough support and help between the area´s managers and the local stakeholders?	The same	The same	Low
7. Do the local stakeholders participate in the decision-making processes that influence the management and the planning processes? Is this participation representative?	High	High	Low
8. Do the technicians participate in activities or are there any programs to strengthen the communities´ wealth?	High	The same	Low
9. Are the local communities benefitted from the tourism that the area provides?	Low	The same	Low
10. Is there an environmental communication program (or permanent communication activities) where the visitors and local population are informed about the area´s importance?	The same	The same	The same
11. Is there an environmental education program that has incidence over the schools from the zone and is related with the area´s objectives and needs?	High	Low	Low
12. Does the area regulate the use of natural resources by the local communities or visitors? (For example the regulation of activities such as hunting, fishing, recollection of samples, extraction of natural resources, among others)	High	The same	The same
13. Are there any specific actions for the sustainable management of natural resources, which might benefit the local populations' quality of life? (For example: native species production, use of alternative energies, etc.)	The same	The same	Low

In most of the cases it is visible that the "Laguna Del Mante" contains an external perception that is the same or even higher that the results got from the Authorities. This can be a result of the good relationships between this Ejido and the Authorities. The only question in which they get a low perception is in the one related to tourism due to the fact that there isn't touristic visitation (only mainly researchers and students). On the other hand, in most cases, "Los Sabinos" has got an external perception similar to the results from the Authorities (including tourism since it is the only Ejido that receives little touristic visitation). The relationship with the Authorities is gentle and there is cooperation for the Fire Brigades, but it is not as close as with "Laguna del Mante". Finally, in most cases, the results obtained from "Las Palmas" show that the perception is low. The relationship between the Authorities and this ejido is very distant and there is not communication with the ejido´s leader.

The final results of the EP for CONANP´s regional administration are detailed in table 26 (see full description in Annex 15).

Table 26: CONANP´s regional administration (EP)

Questions	EP
1. Are there technical or financial sources that support the area´s management, besides from the funds obtained from the government?	High
2. Does the financial administration respond effectively to the critical needs of the area?	The same
3. Do the infrastructure and equipment receive regular and adequate maintenance?	Low
4. Until what extend has the Annual Operation Plan been accomplished?	High
5. Is the Budget always sure?	The same
6. Is the assigned Budget enough to solve the area´s needs?	Low
7. Do the planning procedures take into account external elements related to the area's objectives (biological corridors, water basins, distribution areas for species, among others) and are they introduced in regional development plans?	The same
8. Do the technicians from the area participate, possess adequate tools and are trained to intervene in planning processes?	The same
9. Until what extend is the Management Plan implemented?	Low
10. Does the area contain the adequate size, shape and spatial location, in order to	The same

accomplish its management objectives and conservation purposes?	
11. Are the area´s limits clearly defined and physically signaled? Are the limits recognized and respected by the population?	Low
12. Does the management program contain concrete and detailed control and surveillance activities?	The same
13. Is there enough support and help between the area´s managers and the local stakeholders?	The same
14. Are the local communities benefitted from the tourism that the area provides?	Low
15. Does the area contain systematized information for the adequate management of the natural and cultural heritage?	High
16. Are specific actions carried out to protect, conserve or recover endangered species? (The question includes the actions to eradicate exotic species).	Low

The results obtained from the regional CONANP vary widely depending on the question, some perceptions are "low", others are "high" and others are "the same". There is not a specific standard. From the 16 questions, 6 are low, 3 are high and 7 are the same.

The final results of the EP for CONANP´s regional administration are detailed in table 27 (see full description in Annex 16).

Table 27: Direction of Ecology´s EP

Question	Ciudad Valles	Tamuin
1. Do the planning procedures take into account external elements related to the area's objectives (biological corridors, water basins, distribution areas for species, among others) and are they introduced in regional development plans?	N/A. There is not awareness.	Low

In both cases the external perception is low and in the other case there is not even awareness. Despite this, it is important to state that between Tamuin Municipality and CONANP´s offices there is a lot of coordination and communication, but this is not the case for Ciudad Valles Municipality.

CEMEX´s EP is detailed in table 28 (see full description in Annex 17).

Table 28: CEMEX´s EP

Questions	EP
1. Is there an environmental communication program (or permanent communication activities) where the visitors and local population are informed about the area´s importance?	High
2. Is there an environmental education program that has incidence over the schools from the zone and is related with the area´s objectives and needs?	High
3. Is there enough support and help between the area´s managers and the local stakeholders?	High
4. Do the technicians participate in activities or are there any programs to strengthen the communities´ wealth?	High
5. Does the area provide direct economic benefits (income, employment, tourism) to the local communities? It is important to exclude illegal activities.	The same
5. Are there other external stakeholders involved in the control and surveillance activities? (For example: volunteers, policemen, armed forces, among others).	Low
6. Are the area´s limits clearly defined and physically signaled? Are the limits recognized and respected by the population?	The same
7. Does the area regulate the use of natural resources by the local communities or visitors? (For example the regulation of activities such as hunting, fishing, recollection of samples, extraction of natural resources, among others)	Low
8. What do you think about the actual conservation condition of the area if you compare it with the time it was declared as a protected area?	The same
9. What is the level of acceptance and conformity from the stakeholders towards the protected area?	The same
9. Are the local communities benefitted from the tourism that the area provides?	Low
11. Is there any scientific research program that provides knowledge regarding the area´s biodiversity and management? Are the results systematized?	High
12. Are there enough inputs (trained human resources, infrastructure, equipment) so the area can develop acceptable standards of research, sustainable use of natural resources and monitoring?	The same

In most of the answers CEMEX´s external perception is the same or even higher that the results provided by the Authorities. Only 3 answers got a lower external perception (stakeholders involved in control and surveillance, tourism and the regulation of activities

within the area). The relationship between the CEMEX and the area´s managers is very good.

The final results of the Additional questions are detailed in table 29

Table 29: Additional questions

Questions	%	Comments
1. Do touristic operators and nature guides provide support to the area´s management? (For example with waste management, logistic.)	0%	There are no tourism operators going to the area. The management of wastes and logistics are topics that just started being discussed with the Municipality.
2. Is touristic registration and visitors' control regulated within the area?	33.33%	Once a year there is a registration
3. Is the infrastructure and equipment used for public use adequate and in a good shape?	33.33%	Just basic items and the cabin is dismantled.
4. Are there any mechanisms to manage emergencies derived from the touristic activities and coordination with other entities?	0%	

The tourism cannot be contrasted with the results from the Authorities since they did not have information regarding this topic. In general terms, the results are very low, tourism is barely developed in this area, and there is little registration, no facilities and no touristic operators.

4.4 SWOT Analysis

Additional interviews were performed. In the case of RBSAT, the interviews were performed to the same CONANP Authorities that answered the METT questionnaire. In the case of PNY, interviews were performed to technicians working in the Unit of Protected Areas from MAE and an external advisor: Marcela Torres (Unit´s coordinator), David Veinitimilla (DNB), Sebastian Sierra (Specialist in Tourism in Protected Areas), Lenin Núñez (DNB), Stephanie Arellano (external advisor). The interviews to MAE´s technicians were performed on March 9[th], 2016; the interviews to CONANP´s technicians were developed on April 12[th], 2016. A field trip to RBSAT was carried out on October 2014, June 12[th], 2015 and from April 11[th] until April 15[th], 2016. PNY was already a visited area

form previous years. During these field trips it was possible to notice the main management tools, the ecological priorities and the environmental and social dynamics. The results are detailed below:

Table 30: Interviews to technicians in selected areas

Questions	PNY	RBSAT
Is the legal framework sufficient to ensure the conservation of these natural spaces?	All the answers were "No". due to the following reasons: • It is necessary to update procedures related to judgements for individuals attempting against protected areas • The legal framework should not only be detailed, but should be executed and the technicians should be trained in order to apply the law • The legal framework cannot be accomplished as there is not enough monitoring and the personnel isn't enough trained in topics regarding the legal framework • The legal framework responds to old needs and since nowadays the areas´ management has changed, the legal framework cannot always be applied. • Some policies from one sector are overlapping other sectors´ policies.	All the answers were "yes", due to the following reasons: • The legal and economic instruments and the technicians´ abilities are enough to ensure the conservation of protected areas • The legal framework is enough. Despite of this, the application sometimes is not accomplished. • It provides enough tools to accomplish the conservation objectives
Is the evaluation of management effectiveness required to measure the	All answers, with the exception of one, were "yes". The reasons for answering "yes" are detailed below: • The source is reliable since the personnel living inside the territory and dealing with the conflicts is the one in charge of this evaluation. There should also exist complimentary tools • Provides a monitoring of the planning tools and management programs • Yes, it provides reliable information regarding the	The answer was given mainly by the area´s manager. It was "yes", due to the following reasons: • The evaluation of effectiveness is even established in the area´s management program, but only considers a comparison between the management program and its execution in the annual operation plan. An elaborated

performance of a protected area?	area´s performance. The same analysis should be performed to the visitors. One of the answers was "no" due to the fact that the tool only provides a general overview of the area´s performance but not a detailed analysis of the area´s management.	methodology has never been applied, although it is important to count with it. • This methodology has been applied to other areas inside Mexico, but never inside RBSAT. It is very important to know its performance.
Is there enough involvement with the stakeholders living close to the area? What mechanisms exist?	All answers were "no", due to the following reasons: • There is some involvement , but must be strengthen • There is not enough involvement between the protected area and the oil companies, • There is not enough awareness about the importance of the area. • The interactions mechanisms area not efficient **Mechanisms:** Management committee from Yasuni Biosphere Reserve, meetings with communities, workshops	The answers were "yes" because the communities have conventions every three months and there is a level of involvement. In spite of this, the communities don't have direct access to decisions regarding the area´s management **Mechanisms:** General conventions
What are the area´s main threats?	Oil extraction, disorganized tourism, lack of involvement with stakeholders, lack of updated management tools, unawareness of the area´s limits, lack of enough quantity of technicians and economic resources.	Fires, lack of connectivity due to fragmentation processes and loss of habitat, growth of the agricultural frontier, loss of vegetation cover, extraction of flora and fauna and lack of acknowledgement regarding the concept of "sustainable use".
What are the area´s main strengths?	The presence of 2 scientific stations, trained personnel, support of various national and international institutions, its biodiversity, publications have been developed over Yasuni, international importance, the capacity to develop a wide range of researches and the cultural values.	Enough technical and legal tools, the communities´ participation in activities related with conservation, trained personnel (knowledge of biodiversity and ecological processes).

Source: Interviews, 2016

After gathering all the bibliographic information, the information from the EEM and the information collected from the interviews and the field trips, a SWOT analysis was

performed. For the SWOT analysis it was required to examine each area´s strengths, weaknesses, opportunities and threats. The results are detailed in tables 31 and 32

Table 31: PNY´s SWOT Analysis

	POSITIVE	NEGATIVE
E X T E R N A L E N V I R O N M E N T	**Opportunities:** • International interests, money and programs developed within the area • International scientists have published scientific articles about PNY • International awareness and promotion of the area • Support of international and national NGOs related to conservation issues. • Regular meeting are developed through the "Management Committee from Yasuni Biosphere Reserve". During these meetings different stakeholders, such as: members from national and international NGOS´S, authorities from the GADs, the area´s manager and technicians, communities, universities, and civil society are gathered together to discuss problems, projects, management and conservation issues regarding the Biosphere Reserve. This is a perfect space to involve different stakeholders in the area´s management. • The legal framework is strong. There are legal regulations throughout all the different administrative level and the highest legal document (The Constitution) provides rights to nature and describes the system of protected areas.	**Threats:** • Oil extraction activities (outside and inside the area) • Construction of highways (and the illegal roads in different areas were constructed as well) • Migration processes (usually from nearby provinces) that led to overpopulation, changes on land use, fragmentation processes and land-conflicts. • Overlapping on responsibilities with other Ministries and authorities (the ZIIT zone within the area is also a responsibility form the Ministry of Justice), therefore coordination should be strengthen. • Limited economic resources
	Strengths: • PNY is one of the places with higher biodiversity per surface area in a global scale. The ecological services that it provides contain importance in a	**Weaknesses:** • Scientific research is not done in coordination with the area´s manager (not always solving the area´s needs)

local, regional and even global scale.

- High cultural diversity (Waorani, Kichwas, Shuar, PIAs and mestizo settlements).

- The presence of the scientific stations that has led into a production of a great amount of scientific research and publications

- Trained personnel within the area (there is a government´s program called "Aula Verde" focused on strengthening the capacities of technicians- area´s managers, rangers and technicians in charge of wildlife).

- All the areas within the NSPA must be evaluated through the "evaluation of Management effectiveness tool". This provides a wide overview of the areas´ performance. PNY is also part of this analysis. With the results, corrective measure could be taken into account.

- Not enough quantity of technicians working for the area. It is one of the biggest areas and only counts with 19 people. 1 person will be in charge of 53,828.21 hectares.

- Illegal logging inside the area

- Illegal extraction of flora and fauna samples

- Disorganized tourism within the area might cause negative impacts

- Communities do not recognize the importance of the protected area or the Biosphere Reserve and there is some unawareness regarding the area´s limits

- Not enough involvement with stakeholders.

- Oil companies do not recognize the protected area as a sensitive zone; only consider the ZITT area as a sensitive zone.

- The programs within the management plan do not contain a restoration program (even taking into account that within the area, oil extraction activities are developed); a program focused on mitigation and adaptation to climate change and a specific program destined to the communities' strengthening capacities and activities focused on sustainable development.

- Lack of communication between the area´s managers and the chief in charge of the oil companies

- For Ecuador, National Park is not the most restrictive management category, therefore more activities are allowed to be developed and the area´s conservation could be put in threat.

- PNY does not count with a zoning. It only counts with a zoning for Yasuni Biosphere Reserve,

	which includes a bigger surface. Overlapping of zones is visible and it is more difficult to define specific areas inside the national park.

Table 32: RBSAT´s SWOT Analysis

POSITIVE	NEGATIVE
Opportunities: • The area counts with external visitors. In some cases these visitors are tourists that search for the caves located in "Los Sabinos ejido". This area has not been adapted, the control of tourists is only barely done and tourist facilities started being built but couldn't be finished and are abandoned. Opportunities for developing a well-organized, low-impact tourism could be taken into account. • The area also counts with external visitors, most of them students and researchers. In Laguna del Mante ejido there is a center destined for environmental education (cultural center) and a museum. Besides the environmental center, there should be an area destined to scientific research (perhaps a small scientific station) • GIZ and other international institutions have recognized the area´s importance and developed tools for the area (the Adaptation Program for Climate Change "Sierra Madre Oriental – Central Region, for example). • The relationship between Mexico´s Cement (CEMEX) and CONANP is close; both of them work together in the development of conservation programs and environmental education programs. • The Direction of Ecology from Tamuin Municipality	**Threats:** • The disorganized arrival of indigenous populations to the region might create problems regarding: land-conflicts, fragmentation processes, change of land uses and lack of inclusion in the conservation plans, among others. • The application of the legal frame is not always executed in an accurate way. • Droughts, hurricanes and the effects of climate change are external factors that have negatively influenced the area. • The Direction of Ecology from Ciudad Valles Municipality and CONANP´s authorities don't have as much interaction and coordination. They develop projects in an individual way (for example reforestation projects). In this way, they might be doubling efforts. • The legal framework includes documents at all administrative levels. Some legal documents are particularly focused in environment and protected areas (like LGEEPA, Wildlife General Law, General Law for Sustainable Forestry Development, regulation for LGEEPA, among others). Despite this, the highest document (The Constitution) does not describe

The left side of the table is labeled vertically: EXTERNAL ENVIRONMENT

	and CONANP´s authorities share good relationships and are invited to participate in workshops, environmental education programs, among others. For the development of reforestation programs the personnel from Tamuin Municipality ask for CONANP´s assessment. Recently they had had a workshop about jaguar and its incidence in livestock activities.	widely about nature or environment and does not even include a system for protected areas.
I N T E R N A L E N V I R O N M E N T	**Strengths:** • For Mexico, Biosphere Reserve is the most restrictive Management category; therefore the activities are more controlled and conservation measures could be more easily executed. • The area counts with a good degree of conservation and a low level of fragmentation. • The area counts with high biodiversity and it is a priority area of terrestrial importance, hydrologic importance and of importance for the conservation of birds. • There is a good relationship between CONANP and "Laguna del Mante" and "Los Sabinos". These ejidos are located in the Influence Zone of the area. In this way, the relationship with "Laguna del Mante is excellent and the communication and cooperation are remarkable. The relationship with "Los Sabinos" is good; there is a good level of communication and cooperation. • The subprograms within the management program are widely detailed. • Enough number of technicians for the size of the area and trainings done with external funding and through on Line Portals.	**Weaknesses:** • The evaluation of management effectiveness has been developed in other areas within Mexico but never inside RBSAT. Not executing these types of tools does not allow analyzing the area´s performance and taking into account corrective measures. • Extraction of wildlife • Illegal hunting • Illegal logging • Fires • Lack of connectivity due to fragmentation processes and loss of habitat. • "Las Palmas" had suffered various expropriation procedures. Due to this their relationship with government´s institutions (including CONANP) are not close. • From the management subprograms, tourism is just a component and not a complete subprogram (considering that in "Los Sabinos" there are some caves that receive certain amount of tourism).

5   DISCUSSION

5.1   Analysis of the Methodology:

Employing the EEM methodology (the METT questionnaire) was important because this tool provided a rapid assessment to each one of the selected areas. The methodology was also useful to identify constraints, trends and strengths within each area, so that actions to improve their effectiveness could be taken into account in the future. Another advantage was the fact that it can be applied to individual areas or to groups of areas (Leverington, et al., 2008). The methodology is also suitable for replication and easy to understand. The original METT questionnaire contained 30 questions. Adapting the questionnaire to each area´s realities was important since more topics were included (42 questions were scored for PNY and 37 questions were scored for RBSAT). Also irrelevant topics (for example tourism for RBSAT) were not analyzed. These adaptations permitted to have more accurate results.

Despite this, the methodology also showed certain weaknesses. According to Leverington, et al., (2008) the tool provides a superficial assessment (since it is a rapid analysis that provides a quick overview) and does not deepen into results. In this way, for example in the questions, information regarding biodiversity programs is present, but it does not detail the number and type of programs. The same happens with the questions regarding the existence of technical and financial sources (besides the funds from the government), but it does not specify the budget´s quantity and which organizations support the area (and in which percentage). For this reason, MacKinnon and Higgins-Zogib (2006) stated that it should not be used as an independent tool or to replace other methodologies and should be employed in conjunction with other monitoring and evaluation tools. In some cases, additional questions must be added to the methodology (Leverington, et al., 2008). This last statement was visible, because additional questions were needed (before the SWOT analysis) in order to fulfill certain relevant information regarding both areas.

Besides this, the evaluation and scoring of questions was complicated. As described by Stolton, et al., (2007) it is possible to reach situations in which none of the four answers seems to fit the conditions within the area. This was visible in RBSAT´s interviews where in several questions none of the answers seemed to fit or the best answered was a result of

in-between options. Scoring the results was also difficult because it created a possibility of distortion since not all questions cover topics that represent equal weight (Stolton, et al., 2007). Also, as detailed by Leverington, et al., (2008), the evaluation of the outcome is not clearly detailed. In this thesis, scoring the final results also brought a certain level of difficulty, because despite being such different areas with totally different threats (where PNY represented more complexity), the final average placed both areas in a "Satisfactory" level of management efficiency. This could be explained due to the fact that the methodology only provided a quick overview and did not specify details that would show the areas´ big differences. Also, for the final results, wide ranges were employed, which can lead to surprising outcomes when comparing the area´s final results.

5.2   Results´ analysis:

5.2.1   Management categories´ analysis:

According to MAE (2006) within national parks exploitation and occupation are forbidden. Despite this, in reality inside PNY there are several oil blocks and extractive activities are developed inside the protected area. Several human settlements are also present in this area and even scientific stations have been built. On the other hand, for Mexico, according to Vargas (2010) Biosphere Reserves allow a limited use of natural resources and contain ecosystems that have not been significantly transformed by human action and could be preserved and restored. The allowed activities include preservation, research and education. From Mexico´s management categories, the most restrictive one corresponds to Biosphere Reserve (Vargas, 2010). In this case, in RBSAT these characteristics have been mainly respected and most of the area is in a good state of conservation.

From the comparison between the different management categories detailed for IUCN, for Mexico and for Ecuador several matching points were found. In this way, according to IUCN (2014) a Strict Reserve has as a main objective to protect biodiversity, geological cultural and spiritual value; visitation is strictly controlled and the only allowed activities include: research and monitoring. This management category shares similarities with Mexico´s Biosphere Reserve that according to Vargas (2010) does not allow significant transformation, allows only activities related to research and education and is the most restrictive category. Finally, they share similarities with Ecuador´s Biological Reserves and

Wildlife Refuges which according to NSPA (2015) present highly restricted use of natural resources, little alteration level, minimum human presence and allow only research and education.

Other similarities were found between Mexico´s and IUCN´s National Parks because in Mexico according to LGEEPA (2015) a National Park searches to protect natural resources and allows tourism, education and recreation. For IUCN (2014) a National Park protects biodiversity and ecological processes and allows education, recreation and tourism to encourage local economies. On the other hand for Ecuador, despite allowing activities such as recreation, education and science; national parks don't allow exploitation or occupation and also protect important geological features (MAE, 2006). These characteristics were different from the characteristics found in the other descriptions and for this reason Ecuador´s National Park was not highlighted and only underlined and marked with an asterisk. This can show that in some cases, despite having the same management category name, the characteristics and restriction level might vary depending on the country.

Other similarities were found between IUCN ´s Natural Monument or Feature, Mexico´s Natural Monuments/ Sanctuaries and Ecuador´s Geobotanical Reserves. According to IUCN (2014) a natural monument or feature searches to preserve: landform, sea mount, submarine cavern, geological feature (cave) or even an ancient grove. The protected features could be: natural, geological and geomorphological features, culturally-influenced, natural features, natural- cultural sites or only cultural sites. They are small-sized areas with high level of visitors (UICN web page, 2014). For Mexico, according to LGEEPA (2015) a natural monument includes natural elements (places or objects) with exceptional historical, scientific or aesthetic value. The allowed activities include research, preservation, recreation, education. This management category counts with a big difference that is the absolute protection regime (that is why it´s not highlighted, only underlined and marked with an asterisk). Sanctuaries can also be considered as a special feature because it includes cenotes, glens, caves, plains, or any topographic or geographic unit that needs to be protected. The allowed activities also include education, recreation and research (LGEEPA, 2015). For Ecuador, Geobotanical reserves try to protect landscapes, ecosystems and

outstanding geological formations and the allowed activities also include: recreation, and education (NSPA, 2015).

Finally, for IUCN (2014) a protected landscape/seascape tries to conserve the interactions between human beings and nature and the values developed from this interaction. It also encourages the conservation of agrobiodiversity and aquatic biodiversity. The allowed activities include: tourism and recreation (IUCN web page, 2014). The protected landscape shares similarities with Ecuador´s National Recreation Area. According to MAE (2006) they are areas with high accessibility level that contain scenic beauties and touristic or recreational resources, in a natural environment. As described by NSPA (2015) they search to preserve natural landscape; it has a medium level of human intervention and its allowed activities include tourism and recreation, but also monitoring, research and restoration. IUCN´s protected seascapes share similarities with Ecuador´s marine reserves that search to conserve marine biodiversity and there is human intervention (from little to moderate) (NSPA web page, 2015).

5.2.2 Zoning analysis:

Zoning makes reference to the activities that can and cannot be performed in the different zones within the protected area, in terms of human use and benefit, management of natural resources, cultural resources management, visitor experience, access, maintenance, operations and the protected area´s development (Rotich, 2012). According to Sabatini, et al., (2007) zoning is a key tool for protected areas´ management. Through zoning, the limits of acceptable use and development inside a protected area are established (Rotich, 2012). According to Rotich (2012) zoning helps to eliminate or diminish conflicts between the diverse uses within a protected area in order to improve activities such as tourism. Zoning is a method also employed to limit the access of people into recovering, sensitive or ecologically important areas and for restricting the impact of tourism (Rotich, 2012).

According to Sabatini, et al., (2007) the lack of zoning inside protected areas is very common in developing countries. As a consequence of this, many protected areas are not completely effective in achieving the objectives for which they were created (Sabatini, et al., 2007). This can be observed in Ecuador´s area in which despite counting with a zoning for Yasuni Biosphere Reserve (where PNY is the core zone); there is not a specific zoning

for PNY. The lack of zoning within the protected areas has led to unawareness regarding the level of restriction among zones within the area. It also important to understand that the Biosphere Reserve includes a bigger surface and that not all the core zone (PNY) is strictly preserved, taking into account that there are several oil blocks within the National Park (which according to figure 19 represent around 51% of PNY). The only intangible area from the core zone would correspond to the ZIIT and the Waorani territory (in percentage around 49% of PNY). On the other hand a big difference can be observed in RBSAT, because it has established a clear zoning throughout the protected area including a core area, a buffer zone (divided into two subzones) and an influence zone.

5.2.3   Stakeholders´ analysis:

In PNY, the stakeholders that present the highest interest and influence are: MAE and the Oil Companies. MAE is the national authority in charge of the NSPA´s management and in this case, of PNY´s management. That is the reason why its influence and interest are high. In the case of oil companies their presence in the area represents around the 51% of PNY (according to figure 19 describing a comparison between the area´s zonings) which explains their high influence in the area. There are other stakeholders that present a medium interest and medium influence, such as: the Provincial Directions, that manage the area at a lower administrative level (province) and Control Boards that help in monitoring and surveillance activities especially because the protected area is in a border zone. Finally, other stakeholders present a high interest but their influence is lower, such as: the touristic companies, that cannot have access to all areas within the territory (some of them are protected, others are occupied by oil blocks and others are dangerous); the communities because some of them have been forced to migrate due to the extractive activities; universities/ scientists / schools, that according to MAE, (2011) represent a threat because researches haven't been always developed in coordination with the area´s manager in order to solve the area´s needs; and the NGOs, that have presented several project, but not all have had a high impact in the area.

In RBSAT the highest interest and influence come from the communities, because according to SEMARNAT and CONANP, (2014) the 3 ejidos have a direct relationship with the protected area. Other stakeholders, such as the Government´s institutions, the

directions of ecology, control boards, NGOS´s and CEMEX present a high or medium interest but their influence is lower. In the case of the Government´s institutions the influence is lower because although several programs have been developed within the different ejidos, not all have been successful (according to the interviews in some cases some government's programs have provided them with seeds in season were they are not productive, for example). For the Directions of ecology there is certain interest but the influence is low because, based on the interviews, their projects have not been coordinated with CONANP and the relationships are not close. The Control Boards´ influence is very low because, based on the interviews; they only provide help in control and surveillance activities when they are called, but not in a regular way. NGO´s influence is also low because only some international institutions (such as GIZ) have intervened at some point inside the area, but not so many others. CEMEX´s influence is medium because, based on the interviews; it has participated in several environmental education programs, but not in all the ejidos. Finally for universities and schools, the influence and interest is the same (medium). In this case it is medium because, based on interviews, several efforts have been developed for monitoring, research and environmental education, but still it is not very high.

5.2.4 Legal frameworks analysis:

According to La Roche, (2007) "Kelsen´s Pyramid" is used to organize the legal documents by applying a hierarchical criteria and therefore establishing supremacy. Based on its hierarchy, the most important document corresponds to the Constitution of a country. Based on Ecuador´s Constitution (2008), article 405 describes the NSPA for the country and there is a complete chapter (#7) detailing the Rights of Nature. On the other hand, according to Mexico´s Constitution (1917, with reforms) the national system of protected areas is not described and there is just an article (art. 27) that describes the regulation of the natural elements that could be appropriated, with the objective to distribute them in an equitable way and to take care of their conservation (Constitución Política de los Estados Unidos Mexicanos, 1917). Topics related to biodiversity and protected areas are not described.

The next hierarchical level corresponds to international treaties. In this level, both countries have established commitments for the accomplishment of international treaties. In some cases, they have signed the same treaties such as CBD, RAMSAR, CITES, among others. In the following hierarchical criteria and administrative levels (detailed in table 14) both countries contain almost the same amount of legal documents with some little differences. In total (from the information detailed in table 14), Ecuador counts with 1 Organic Law, 4 Ordinary Laws, 1 Regulation, 3 Ordinances and 18 other legal documents. For Mexico, 9 Ordinary Laws, 5 regulations and 9other types of legal documents. The greatest difference can be appreciated in the Parish/local administrative level in which the areas´ differences in size, results in the presence of more territorial plans, for each one of the rural parishes from Ecuador and fewer documents at the local level for Mexico.

5.2.5 Management Programs and Ambits' analysis:

In PNY´s management programs, despite being a big area where "control and surveillance activities" could represent a difficulty, it is the management program that obtained the highest result. This can be due to the fact that since the area is in a frontier zone, other control boards are also involved in this activity. According to MAE, (2011) control boards include: armed forces, national police and the navy. The lowest result was obtained in the "Biodiversity Management Program", where the area´s big size and the presence of an intangible area can represent a problem for monitoring and biodiversity management.

For RBSAT, the highest result was obtained in the Protection and Restoration subprograms. According to SEMARNAT and CONANP (2014) the protection subprogram searches to encourage the conservation and permanency of the biologic diversity within RBSAT. On the other hand, the restoration subprogram searches to recover and reestablish original ecological conditions previous to disturbances; allowing the continuity of natural processes in RBSAT. The high results obtained in these two subprograms can be reflected in the area´s good degree of conservation, and its low level of fragmentation (SEMARNAT and CONANP, 2014). Considering that the area´s category is the most restrictive one, it was also expected to obtain high results for these two management subprograms. The lowest result was obtained in the "Culture Subprogram". Based on SEMARNAT and CONANP (2014), this subprogram searches to publish conservation actions and encourage

environmental education. A low result in this subprogram could mean that despite encouraging social participation programs and environmental education programs, not all Ejidos count with the same level of interaction with the area´s managers. For this reason, the development of these activities cannot be equally high for all the communities living near the protected area.

In terms of Management Ambits, both areas obtained the highest result in "Context". Based on MAE (2014), "context" makes reference to the area´s actual situation. In this sense, the highest result was obtained in the areas´ policies employed at the present time and the nowadays identified threats and priorities. Both areas have clearly identified their current status, have been studied and count with a baseline clearly detailed in their management plan/program. For PNY, the lowest result was obtained in the "Planning" ambit. According to MAE, (2014) "planning" makes reference to the area´s design, planning and searches to know in which direction the area wants to develop in the future. In this way, the lowest percentage was obtained in topics related to PNY´s future plans in a long-term period. In RBSAT, the lowest result was obtained in the "Products" ambit. According to MAE (2014), this ambit searches to know what has been done in the area, evaluate its performance and the implementation of its programs, goods and services. Since the EEM and the METT questionnaire have never been done in RBSAT before, and there was a lack of knowledge regarding its performance, the low result obtained in "products" is understandable.

 There were two not measured questions inside the questionnaire. These questions only provided an idea regarding the perception of the areas´ management. In PNY´s case the result was 66.67% and RBSAT obtained 100%. It is visible that the perception regarding RBSAT´s conservation status will be higher than in PNY´s case (taking into account the extractive activities, migration processes and previously detailed threats in PNY, compared to a better preserved area for Mexico). Also taking into account the diversity of stakeholders within PNY and the conflicts regarding the oil extraction activities, it is understandable that the level of conformity within the stakeholders will be lower in PNY than in RBSAT.

5.2.6   Management Effectiveness´s analysis:

According to the definition established in the introduction of this thesis, "management effectiveness within a protected area" implies the group of actions required for the effective use of resources, in order to conserve the area´s biodiversity and accomplish the functions and objectives that led to its creation. In this sense, according to MAE (2011) PNY was created to conserve its biodiversity and to maintain its ecological processes. On the other hand, according to SEMARNAT and CONANP (2014) RBSAT´s creation objective was: "To conserve a protected area that contains various ecosystems that have not been altered by human action, in which representative species inhabit (important national biodiversity including endangered, threatened or endangered species)"

With this background, in order for an area to use wisely its resources, conserve biodiversity and fulfill its creation objectives; actions must be developed to count with sufficient means, resources and tools. In the case of PNY, its huge size will require an enormous number of human resources and technicians working to satisfy its needs. In spite of this, the area only counts with 19 people working (which will mean that 1 person will be in charge of 53,828.21 hectares). In the case of RBSAT being a small area, it seems sufficient to count with 4 technicians (which will mean that 1 person will be in charge of 5,366.11 hectares). Also, economic resources and a strategy to count with financial sustainability are fundamental for the areas to develop in a proper way and to achieve the material and technological resources required for their adequate functioning. On the other hand, actions related to strengthening the areas´ relationships with the different stakeholders will also be required, in order to count with strategic allies that will help in the planning, monitoring and conservation activities within the protected areas. Planning tools such as the areas´ management programs/ plans and their correspondent annual operation plan will also be required to administrate the areas' resources properly.   Once all these means, resources and tools are planned and sufficient, it is more probable that the protected areas will accomplish their conservation objectives and will fulfill an effective management. In this thesis, the area that showed better management efficiency was RBSAT (with 63.96%), over PNY that obtained 57.14%.

5.2.7 EP´s analysis:

In general terms, it was difficult to determine EP because through the interviews and questionnaires, answers were very diverse and mainly depended on the relationships established between the protected area and the different stakeholders. In PNY´s case, the EP obtained from the communities showed that in most cases the EP was "Low". Since the results did not specify the communities´ names, it was difficult to determine the reasons for these selections. The exact same result was obtained in GAD´s EP (mostly "low perception" and the names were not specified). In DNB´s EP, most of the answers were "the same" which implies that the EP got from the Area and from DNB were similar; which shows coordination and communication between these two stakeholders. Only 3 "Low" answers and 2 "High" were obtained. In the EP from touristic operators diverse answers were obtained; half of them corresponded to a "high external perception".

Regarding RBSAT´s EP the results were diverse depending on the stakeholder. In the case of the "ejidos", the area´s managers maintain a good relationship with most of them. With "Laguna del Mante" their close relationship represented a high EP; in "Los Sabinos´s case", the results were mainly "the same" because despite not having a really close relationship, there is still cooperation and communication; with "Las Palmas" their uncertainty about their lands (since they are not inside PROCEDE program), their unsolved farming trials and their expropriation, reflects distant relationships with CONANP and low EP. Regarding the EP from the Directions of Ecology, it is important to state that from Tamuin Municipality, their physical closeness with CONANP (since both offices are in the same municipality) led to certain level of communication and a low EP. On the other hand, there is no communication between CONANP and Direction of Ecology from Ciudad Valles Municipality, which was reflected in the unanswered result. Finally, the relationships between CEMEX and CONANP are close and it can be reflected in the high external perception obtained in the results.

6   CONCLUSIONS

- PNY and RBSAT are areas that share certain characteristics such as an average temperature, their high biodiversity, their local and regional importance. Despite this,

PNY is a much bigger area with more amount of threats (including the presence of oil companies), with the presence of communities not only in the buffer zones but inside the area, and is also the core area of Yasuni Biosphere Reserve. All these elements add complexity to the area´s management. Whereas, in the case of RBSAT, it is a much smaller area, with communities not living inside the area and there is not the presence of extractive activities within it.

- The areas´ differences regarding their management categories was also important to determine that one area was being managed and protected in a more strict regime. For Mexico a Biosphere reserve is the most restrictive management category. In the case of Ecuador, the most restrictive categories are Biological Reserves and Wildlife Refuges.

- Although both areas obtained a "Satisfactory" level of management efficiency, RBSAT obtained a higher percentage (63.96%) and PNY obtained a lower percentage (57.14%). The differences in their performance can be a result of the previously explained different levels of complexity regarding the, size, threats, and communities, among others.

7 RECOMMENDATIONS

7.1 For RBSAT:

- Since RBSAT counts with a portion of territory inside "Los Sabinos" that receives little touristic visitation, there is an opportunity to reestablish old and incomplete facilities and to attract touristic operators. Taking into account the previously mentioned aspects, the area´s management subprograms and components should include a chapter that details important information to achieve an organized, controlled and low-impact tourism for the area, which can also bring economic benefits for the community.

- Although the people living inside the ejidos count with meetings every 3 months to discuss the most relevant issues through their "General Conventions", there is not a space to share regular meetings between different stakeholders (members from national

and international NGOS´S, authorities, the area´s manager, technicians, communities, universities, and civil society) in order to discuss problems, projects, management and conservation issues. RBSAT should count with this type of space to involve different stakeholders in the area´s management (which is done in PNY through its "Management Committee from Yasuni Biosphere Reserve").

- Other stakeholders must be involved in the control and surveillance activities (not only if they are called, but in a regular way). In the case of PNY, since the area is in a frontier and contains a lot of complexity, different stakeholders are involved in these activities (including the Armed Forces, National Police, among others).

- It is important to detail certain information that is not specified in the current METT questionnaire and that is important for the area´s management such as: the number and type of biodiversity programs, the area´s budget, the name of the other technical or financial sources (besides the funds obtained from the government), the percentage of technical or financial support that is provided by the government and by other stakeholders or international organizations, questions regarding the training level of the technicians, questions regarding the existence of training programs within the protected area, among others.

- The METT questionnaire must be applied every year to the area in order to measure its progress throughout time and take the required corrective measures.

7.2 For PNY:

- In RBSAT the subprograms and components are very well detailed within the management program. In this way, for PNY more level of detail in its management programs could be important and the inclusion of certain topics such as: a restoration program (especially taking into account that within the area, oil extraction activities are developed). Also a specific program focused on mitigation and adaptation to climate change, and a specific program destined to the communities' strengthening capacities and activities focused on sustainable development, could be added.

- It is important to detail certain information that is not specified in the current METT questionnaire and that is important for the area´s management such as: the number and type of biodiversity programs, the area´s budget, the name of the other technical or financial sources (besides the funds obtained from the government), the percentage of technical or financial support that is provided by the government and by other stakeholders or international organizations, questions regarding the training level of the technicians, questions regarding the existence of training programs within the protected area, among others.

- PNY must count with its own and well-defined zoning that clearly determines its core area, buffer zones and influence area (obviously taking into account the already known zoning from Yasuni Biosphere Reserve). Not having a well-established zoning led to lack of knowledge regarding the most restrictive and not restrictive zones within the national park and conflicts because of overlapping zones.

- As previously described, besides MAE, other stakeholders that represent a high level of interest and influence are the oil companies. As their presence is so important for the area, they should contribute with the area´s manager in the area´s adequate planning procedures and helping to develop an adequate zoning for the area (obviously taking into account the participation of other stakeholders and the already existing zoning of Yasuni Biosphere Reserve).

- When performing the communities´ EP it is necessary to detail the names of the interviewed communities in order to know which relationships need to be strengthened and to understand the reasons for selecting different answers. The same explanation can be applied for the GADs´ EP.

- The METT questionnaire must be applied each year and results must be compared between years, in order to notice the different management progress levels.

8 REFERENCES:

- Acuerdo #168. 2008. Registro Oficial #481. Reconocimiento de las Reservas de Biosfera. Ediciones Legales. Quito- Ecuador.

- Alzaga, O. 2000. En torno a concepto de Ley orgánica en la Constitución. UNED. Teoría y Realidad Constitucional., #5. Págs. 115-142. Available on line: http://www.juridicas.unam.mx/publica/librev/rev/trcons/cont/5/est/est5.pdf

- Arriaga, L., C. Aguilar, J.M. Espinoza, L. Gómez, E. Loa y E. Martínez. 2000. Regiones terrestres prioritarias de México. México. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad.

- Arriaga, L., V. Aguilar y J. Alcocer. 2002. Aguas continentales y diversidad biológica de México. México. Comisión Nacional para el Conocimiento y uso de la Biodiversidad.

- Bass, M., Bilsborrow, R., Canaday C., De Angelo, M., Dew, J., DiFiore, A., Greenberg, J., Harper, G., Hebertson, P., Finer, M., Franzen, M., Kreft, H., McCracken. S., Mertl, A., Pitman, N., Quesenberry, T., Villa, G., Guevara, J. 2004. Reporte Técnico sobre: la biodiversidad del Parque Nacional Yasuni, el significado de su conservación, los impactos de las vías y nuestra declaración oficial. Reporte científico- científicos preocupados por el PNY. 25 páginas.

- Benítez, H., C. Arizmendi y L. Márquez. 1999. Base de datos de las AICAS. Mexico- CIPAMEX, CONABIO, FMCN, CCA- Available on line: www.conabio.gob.mx

- Bono. M. 2001. Ley. Revisión técnica de Manuel Ferrer Muñoz. Instituto de Investigaciones Jurídicas UNAM. Available online: http://bibliohistorico.juridicas.unam.mx/libros/1/22/8.pdf

- CEPP. 2012. Programa de Capacitación Profesional de funcionarios encargados de la conservación del Patrimonio de Áreas Naturales del Estado y Vida Silvestre: Resultados del Diagnóstico de necesidades de capacitación profesional. Alianza EcoFondo & CEPP. Quito- Ecuador. 194 páginas.

- Cifuentes M, Izurieta A., De Faria, H., 2000. Medición de la efectividad del manejo de áreas protegidas. WWF: IUCN: GTZ, 2000. ISBN 9968-825-05-0. Turrialba. 105 p.

- Cifuentes, M., A. Ponce, F. Albán, P. Mena, G. Mosquera, J. Rodríguez, D. Silva, L. Suárez, A. Tobar y J. Torres. 1989. Estrategia para el Sistema Nacional de Áreas Protegidas del Ecuador, Fase II. MAG-Fundación Natura. Consultoría. Quito.

- Columba, K. 2013. Manual para la Gestión Operativa de las Áreas Protegidas de Ecuador. Ministerio del Ambiente de Ecuador – USAID. Imprenta Mariscal. 194 págs. Available on line: http://www.ambiente.gob.ec/wp-content/uploads/downloads/2014/02/04-Manual-para-la-Gesti%C3%B3n-Operativa-de-las-%C3%81reas-Protegidas-de-Ecuador.pdf

- Comisión Nacional de Áreas Naturales Protegidas (CONANP) web page. 2011. Historia. Last update November 9th, 2011. Entered on March 17th, 2015. Available on line: http://www.conanp.gob.mx/quienes_somos/historia.php

- CONANP web page. 2014. Last update September 25th, 2014. Entered on June 6th, 2015. Available on line: http://www.conanp.gob.mx/que_hacemos/sinap.php

- CONANP web page. 2016. Entered on My 23rd, 2016. Available on line: http://www.conanp.gob.mx/

- Constitución de la República del Ecuador. 2008. Registro Oficial 449. 165 pages. Available on line: http://www.pichincha.gob.ec/phocadownload/leytransparencia/literal_a/normasderegulacion/constitucion_republica_ecuador_2008.pdf

- Constitución Política de los Estados Unidos Mexicanos, 1917. Texto Vigente. Reforma de 29-07-2010. Available on line: http://www.finanzas.df.gob.mx/pbr/pdf/ConstitucionPolitica.pdf

- Decreto Ejecutivo No. 503. 2010. Transferencia del Plan de Medidas Cautelares al Ministerio de Defensa. LEXUS.

- Dudley, N. (Editor). 2008. Directrices para la aplicación de las categorías de gestión de áreas protegidas.

- Flather, C.H., K.R Wilson, D.J. Dean & W.C. McComb (1997). "Identifying GAPS in Conservation Networks: Of Indicators and Uncertainty in Geographic-Based Analyses". Ecological Applications 7:531–542.

- Foladori, G and Pierri, N., (2005), ¿Sustentabilidad? Desacuerdos sobre el desarrollo sustentable, Colección América Latina y el Nuevo Orden Mundial. México: Miguel

Ángel Porrua, UAZ, Cámara de Diputados LIX Legislatura, ISBN 970-701-610-8. Capítulo 2: Historia del concepto de desarrollo sustentable. Págs. 27-56. https://portals.iucn.org/library/efiles/edocs/2012-007-Es.pdf.

- INEGI Web Page, 2016. Entered on June 27th, 2016. Available on line: http://cuentame.inegi.org.mx/territorio/extension/default.aspx?tema=T#.

- Instituto de Investigaciones Jurídicas de la UNAM (IIJ-UNAM). 2015. Diccionario Razonado de Legislación y Jurisprudencia. Available on line: http://bibliohistorico.juridicas.unam.mx/libros/libro.htm?l=364

- Instituto Oceanográfico de la Armada de Ecuador (INOCAR). 2012. Capítulo 1: Información General de la República del Ecuador. 24 páginas. Available on line: http://www.google.com.ec/url?sa=t&rct=j&q=&esrc=s&source=web&cd=7&ved=0CE EQFjAG&url=http%3A%2F%2Fwww.inocar.mil.ec%2Fdocs%2Fderrotero%2Fderrote ro_cap_I.pdf&ei=pT0wVK-HBpCxogTG-IGABA&usg=AFQjCNHlCqbgnpSGN3fl-B5J9hbeoC6oew&bvm=bv.76802529,d.cGU

- International Union for Conservation of Nature (IUCN) Web Page. 2014. Protected Area Categories. Last update on January 2014. Entered on June 06, 2015. Available on line: http://www.iucn.org/about/work/programmes/gpap_home/gpap_quality/gpap_pacategor ies/

- International Union for Conservation of Nature (IUCN) web page. 2009. Entered on February 23rd, 2015. Available on line: https://www.iucn.org/es/sobre/union/secretaria/oficinas/sudamerica/sur_trabajo/sur_apr otegidas/ap_quees.cfm.

- International Union for the Conservation of Nature (IUCN). 2010. 50 Years of Working for Protected Areas. A brief history of IUCN World Commission on Protected Areas. Gland, Switzerland.28 pages.

- IUCN, BID. 1993. Parques y Progreso. Ed: Valerie Barzetti, UICN, Cambridge, UK.258 p

- Izurieta, A. 1997. Evaluación de la Eficiencia de Manejo de Áreas protegidas: Validación de una Metodología Aplicada a un Subsistema de Áreas Protegidas y sus

Zonas de Influencia en el Áreas de Conservación Osa, Costa Rica. Tesis Mag. Scientiae. CATIE. Turrialba, Costa Rica

- Kauffman, S. 2013. Acerca de la planeación estratégica y el análisis FODA. Instituto de Investigaciones y Estudios Superiores de las Ciencias Administrativas de la Universidad Veracruzana. México. Págs. 56-77. Entered on March 9th, 2015. Available on line: http://www.uv.mx/iiesca/files/2013/01/planeacion2002-2.pdf.

- La Rocha, A. 2007. Estrategia legal para la inclusión de la Homeopatía en el Sistema Nacional de Salud. Gaceta Homeopática de Caracas. ISSN 1315-3080. Available link: http://www2.scielo.org.ve/scielo.php?script=sci_arttext&pid=S1315-30802007000100002&lng=es&nrm=i. Entered on November 14th, 2015.

- Langhammer, P.F., Bennun,L.A, Brooks, T.M., Clay, R.P., Darwall, W., De Silva, N., Edgar G.J., Eken, G., Fishpool, L.D.C., Fonseca G.A.B da., Foster, M.N., Knox, D.H., Mariku, P., Radford, E.A.,Rodrigues, A.S.L.,Salaman, P., Sechrest, W., and Tordoff, A.w. 2007.Identification and Gap Analysis of Key Biodiversity areas: Targets for comprehensive Protected area Systems. Gland Switzerland, IUCN. 978-2-8317-0992-5. 117 páginas. Available on line: https://books.google.com.mx/books?hl=es&lr=&id=9SLvkm6kFUIC&oi=fnd&pg=PP2&dq=protected+areas+biodiversity+research+gate&ots=coVBSEBQMj&sig=jTANKhTiyxjRXwt0rWHgGrpNC-Y#v=onepage&q&f=false

- Leverington, F., Hockings, M., Pavese, H., Lemos K., Courrau, J. 2008. 'Management effectiveness evaluation in protected areas – A global study. Supplementary report No.1: Overview of approaches and methodologies.' The University of Queensland, Gatton, TNC, WWF, IUCN-WCPA, AUSTRALIA. 192 páginas. Available on line: https://cmsdata.iucn.org/downloads/methodologyreportdec08_final.pdf

- Ley Agraria. 2012. Publicada en el Diario Oficial de la Federación el 26 de febrero de 1992. Última Reforma DOF 09-04-2012. Available on line: http://www.diputados.gob.mx/LeyesBiblio/pdf/13.pdf

- Ley General de Equilibrio Ecológico y Protección Ambiental (LGEEPA). 2015. Última modificación 2015. 128 páginas.

- López, M. 2000. Lineamientos de técnica legislativa para la elaboración de leyes en México. Biblioteca Jurídica Virtual del Instituto de Investigaciones Jurídicas de la

UNAM. Available on line:
http://www.juridicas.unam.mx/publica/librev/rev/facdermx/cont/229/dtr/dtr7.pdf.

- MacFarland, C. 2012. MB2. Generalidades Sobre Áreas Protegidas. Programa Aula Verde Subprograma Guardaparques. Ministerio de Ambiente de Ecuador. Quito-Ecuador.

- MacKinnon, K. and L. Higgins-Zogib (2006) World Bank/WWF Alliance Tracking Tool: Reporting conservation progress at protected area sites. In 'Evaluating effectiveness: a framework for assessing the management of protected areas second edition'. (Eds Hockings, M., S. Stolton, N. Dudley, F. Leverington and J. Courrau). (IUCN Best Practice Protected Area Guidelines Series: Gland, Switzerland and Cambridge, UK).

- MAE Web Page. 2016. Organization Chart. Entered on May 18[th], 2016. Available on line: http://www.ambiente.gob.ec/wp-content/uploads/downloads/2013/01/organigrama.jpg

- McNeely, J. 1994. Protected areas for the 21st century: working to provide benefits to society. Biodiversity and Conservation 3, 390-405. Available on line: http://download.springer.com/static/pdf/563/art%253A10.1007%252FBF00057797.pdf?originUrl=http%3A%2F%2Flink.springer.com%2Farticle%2F10.1007%2FBF00057797&token2=exp=1465950350~acl=%2Fstatic%2Fpdf%2F563%2Fart%25253A10.1007%25252FBF00057797.pdf%3ForiginUrl%3Dhttp%253A%252F%252Flink.springer.com%252Farticle%252F10.1007%252FBF00057797*~hmac=9a26654be80500e1607d70d636b3112b507e9167c82db4666c70c3cc8006fb35

- Ministerio del Ambiente (MAE). 1999. Plan Estratégico del Sistema Nacional de Áreas Naturales Protegidas del Ecuador. Plan elaborado por Wladimir Valarezo, Juan Gómez, Yolanda Celleri, Felipe Campos, Luis Mejía, Wilson Méndez, José Rosero, Patricia Zurita y Monserrat Mejía. Quito.

- Ministerio del Ambiente (MAE). 2011. Plan de Manejo del Parque Nacional Yasuní. Quito, Ecuador. 40 Páginas.

- Ministerio del Ambiente (MAE). 2014. Evaluación de Efectividad de Manejo del Patrimonio de Áreas Naturales del Estado Guía Metodológica. Quito-Ecuador. 85 páginas

- Ministerio del Ambiente de Ecuador (MAE). 2010. Reservas de Biosfera del Ecuador: lugares excepcionales. GTZ/GESORENDED-WCS- NCI-UNESCO/Quito. Ecuador. 150 Págs.

- Ministerio Del Ambiente de Ecuador (MAE). 2013. Actualización del Estudio de Necesidades y el Análisis de Brecha de Financiamiento del Sistema Nacional de Áreas Protegidas (SNAP) en un Marco de Gestión y Formación de Capacidades. ISBN: 978-9978-353-63-9. Quito, Ecuador. 120 págs.

- Ministerio del Ambiente del Ecuador (MAE). 2006. Políticas y Plan Estratégico del Sistema Nacional de Áreas Protegidas del Ecuador 2007 - 2016. Proyecto GEF: Sistema Nacional de Áreas Protegidas. Quito, Ecuador. 154 Págs.

- Ministerio del Ambiente del Ecuador. 2010. Reservas de Biosfera del Ecuador: lugares excepcionales. GTZ/GESORENDED- WCS- NCI-UNESCO/Quito. Ecuador. 150 págs.

- Napo Web Page. 2016. Available on line: http://www.napo.gob.ec/website/index.php/gestion-institucional/direccion-de-ambiente-y-recursos-hidricos#

- Nigel Dudley and Sue Stolton. 2008. Defining protected areas: an international conference in Almeria, Spain. Gland, Switzerland: IUCN. 220 pp

- NSPA web page.2015. Quito- Ecuador. Entered on May 19th, 2016. Available on line: http://areasprotegidas.ambiente.gob.ec/

- Nunes, P and Van den Bergh. 2001. Economic valuation of biodiversity: sense or nonsense? Ecological Economics 39(2):203-222. Available on line: https://www.researchgate.net/publication/4840227_Economic_Valuation_of_Biodiversity_Sense_or_Nonsense

- Página del Instituto Geográfico Militar (Geoportal- Ecuador), 2009. Ecuador´s Political Map. Available on line: http://www.geoportaligm.gob.ec/portal/index.php/descargas/geoinformacion/mapas-oficiales/

- Pastaza Web page. 2016. Available on line: http://www.pastaza.gob.ec/obras-y-proyectos/planes

- Periódico Oficial del Estado de San Luis Potosí. 2016. Legislación Ambiental. Available on line: http://legismex.mty.itesm.mx/estados/_ley-slp.htm

- Plosone. 2010. Global Conservation Significance of Ecuador's Yasuní Nacional Park, Vol. 5, issue 1, e8767,

- PNANP. 2014. Programa Nacional de Áreas Naturales Protegidas (2014-2018). Gobierno de la República. México. 87 páginas.

- Putney, A. 1976. Estrategia Preliminar para la Conservación de Áreas Silvestres Sobresalientes del Ecuador. Quito. MAG – Dirección General de Desarrollo Forestal. UNDP/FAO-ECU/71/527, Documento de Trabajo No. 17. Quito.

- Reglamento de la Ley General de Equilibrio Ecológico y la Protección al Ambiente en materia de Áreas Naturales Protegidas. 2014. Cámara de Diputados del H. Congreso de la Unión. Secretaría de Servicios Parlamentarios. Última Reforma DOF 21-05-2014. Available on line: http://www.diputados.gob.mx/LeyesBiblio/regley/Reg_LGEEPA_ANP.pdf

- Rotich, D. 2012. Concept of zoning management in protected areas. Journal of Environment and Earth Science. ISSN 2224-3216 (Paper) ISSN 2225-0948 (Online) Vol 2, No.10, 2012. Available on line: http://www.iiste.org/Journals/index.php/JEES/article/viewFile/3309/3355

- Sabatini, M., Verdiell, A., Rodríguez, R. and Vidal, M. 2007. A quantitative method for zoning of protected areas and its spatial ecological implications. Journal of Environmental Management. Volume 83, Issue 2, April 2007, Pages 198–206. Available on line: http://www.sciencedirect.com/science/article/pii/S030147970600082X

- Secretaría de Ambiente y Desarrollo Sustentable de la Nación, Fundación Patagonia Natural y Fundación Vida Silvestre Argentina, 2007. EFECTIVIDAD DEL MANEJO DE LAS ÁREAS PROTEGIDAS MARINO-COSTERAS DE LA ARGENTINA. - 1a ed. - Buenos Aires. Vida Silvestre Argentina

- SEMARNAP. 1996. Programa de Áreas Naturales Protegidas de México 1995-2000. México. 138 p

- SEMARNAT web page. 2016. Mexico DF – Mexico. Entered on May 20[th], 2016. Available on line: http://www.gob.mx/semarnat/que-hacemos

- SEMARNAT y CONANP. 2007. Programa Nacional de Áreas Naturales Protegidas (2007- 2012). México D.F.- México. 50 páginas.

- SEMARNAT y CONANP.2014.Programa de Manejo de la Reserva de la Biosfera Sierra del Abra Tanchipa. Primera Edición. México. 200 páginas.

- SENPLADES web page. 2016. Quito- Ecuador. Available on line: http://www.planificacion.gob.ec/

- Stolton S., M. Hockings, N. Dudley, K. MacKinnon, T. Whitten & F. Leverington (2007). "The Management Effectiveness Tracking Tool (METT)", WWF International, Gland, Switzerland

- Torres, J.J.G y M.S. Sierra. 2009. Padrón de usuarios de la Reserva de la Biosfera Sierra del Abra- Tanchipa y su zona de influencia. Informe Final. Iniciativa de México para la protección del clima en el corredor ecológico Sierra Madre Oriental y en las Lagunas Costeras Laguna Madre y Marismas Nacionales (cambio Climático en Áreas Naturales Protegidas). GTZ, Cooperación técnica Alemana. Ministerio Federal de Medio Ambiente, Protección a la Naturaleza y Seguridad Nuclear (BMU) en cooperación con la Comisión Nacional de Áreas Naturales Protegidas (CONANP).

- Turner, R.K., Button, K., Nijkamp, P. (Eds.), 1999. Ecosystems and Nature: Economics, Science and Policy, Elgar.

- Turner, R.K., van den Bergh, J.C.J.M., Soderqvist, T., Baren-dregt, A., van der Straaten, J., Maltby, E., van Ierland Ekko, C., 2000. Ecological-economic analysis of wetlands: scientific integration for management and policy. Ecological Economics 35, 7–23

- Unesco, 1996. Reservas de biosfera: La Estrategia de Sevilla y el Marco Estatutario de la Red Mundial. UNESCO, Paris. 22 páginas.

- Unión Internacional para la Conservación (UICN). 2012. Un análisis del Impacto de las Resoluciones de la UICN en los esfuerzos internacionales de conservación. Congreso Mundial de la Naturaleza. Entered on March 16th, 2015. Available on line:

- Unión Internacional para la Conservación (UICN). 2012. Un análisis del Impacto de las Resoluciones de la UICN en los esfuerzos internacionales de conservación. Congreso Mundial de la Naturaleza. Entered on March 16th, 2015. Available on line: ttps://portals.iucn.org/library/efiles/edocs/2012-007-Es.pdf.

- Vargas, A. 2010. La Reserva de la Biosfera Sierra del Abra Tanchipa: Las ANP de lo Internacional a lo Local. Programa Multidisciplinario de Posgrado en Ciencias Ambientales. Tesis para la obtención de la Maestría en Ciencias Ambientales.

- Wilson, E.O., 1994. The fundamental unit. In: The Diversity of Life, UK: Penguin. Penguin Group, UK, pp. 33–46.

9 ANNEX

Annex 1: Original Spanish EEM Questionnaire

Pregunta	Referencia para contestar	Opciones	Opción seleccionada	Comentarios
¿Es suficiente el presupuesto asignado para el manejo del AP?	Esta pregunta evalúa la deficiencia y suficiencia del presupuesto anual de un área. El encuestado podrá remitirse, por ejemplo, al nivel de cumplimiento del Plan de Manejo por motivos presupuestarios.	**OPCION 0:** El presupuesto actual es inexistente o inadecuado al punto que no cubre las necesidades mínimas para el manejo del área. **OPCION 1:** El presupuesto actual es inadecuado y apenas cubre las actividades básicas de manejo y es un limitante serio para el manejo efectivo del área. **OPCION 2:** El presupuesto actual es aceptable, pero podría mejorase aún más para lograr el manejo efectivo. **OPCION 3:** El presupuesto actual es suficiente para atender todas las necesidades de manejo.		
¿Existen fuentes de apoyo técnico, financiero u otros independientemente de los fondos fiscales?	Esta pregunta evalúa si existe diversificación de las fuentes de apoyo técnico, financiero u otros o si se depende exclusivamente de fondos fiscales. La respuesta depende del número de fuentes de apoyo técnico, financiero u otros y de las perspectivas futuras que inciden en que la situación se mantenga.	**OPCION 0:** No hay presupuesto o éste depende totalmente de los fondos fiscales (una sola fuente financiera). **OPCION 1:** El presupuesto del AP cuenta con dos fuentes de apoyo técnico, financiero u otros **OPCION 2:** El presupuesto del AP cuenta con tres o más fuentes de apoyo técnico o financiero pero no hay buenas perspectivas futuras de mantener esas fuentes. **OPCION 3:** El presupuesto del AP cuenta con una buena diversificación de las fuentes de apoyo técnico, financiero u otros (tres o más fuentes) este escenario seguramente se mantendrá por varios años.		
¿El manejo financiero responde ágilmente a las necesidades críticas de manejo?	Este indicador evalúa la gestión en el manejo del presupuesto, es decir si se utilizan eficientemente los recursos y procesos administrativos de acuerdo al presupuesto (retrasos en pagos a proveedores y empleados, prontitud en la gestión, garantía de existencia de fondos presupuestados, desperdicio de recursos en actividades o bienes no priorizados, etc.)	**OPCION 0:** El manejo presupuestario es débil y socava la efectividad de manejo. **OPCION 1:** El manejo presupuestario es regular y dificulta la efectividad de manejo. **OPCION 2:** El manejo Presupuestario es adecuado, pero puede mejorarse.		

Pregunta	Referencia para contestar	Opciones	Opción seleccionada	Comentarios
		OPCION 3: El manejo presupuestario es excelente y apoya la efectividad de manejo.		
¿Es seguro el presupuesto?	Esta pregunta evalúa si las fuentes de financiamiento son seguras a lo largo del tiempo. La estabilidad por lo general dependerá de la existencia de fondos públicos. A mayor cantidad de fuentes de financiamiento externa como por ejemplo proyectos, aportes de cooperación u ONG's, mayor estabilidad presupuestaria.	**OPCION 0:** El presupuesto no es estable, la gestión del AP depende totalmente del financiamiento externo o de fuentes de financiamiento muy variables. **OPCION 1:** Existe muy poco financiamiento estable. El AP no podía funcionar Adecuadamente sin financiamiento externo. **OPCION 2:** El AP dispone de recursos económicos para cubrir sus gastos operativos pero depende de fuentes externas para cubrir gastos de inversión. **OPCION 3:** Existe Financiamiento seguro para el AP y las necesidades de manejo.		
¿En qué medida se cumple el Plan Operativo Anual?	El Plan Operativo Anual (POA) es una herramienta administrativa de gestión presupuestaria. El indicador evalúa la existencia física del POA (cronograma y presupuesto) y el grado de cumplimiento (objetivos programados vs objetivos logrados) de este proceso de planificación administrativa.	**OPCION 0:** No se hace el Plan Operativo Anual, o si se lo hace se lo implementa en mínimo grado. **OPCION 1:** Existe un Plan Operativo Anual, pero se implementa muy poco de él. **OPCION 2:** Existe un Plan Operativo Anual y se implementa una gran parte. **OPCION 3:** Existe un Plan Operativo Anual y se lo implementa plenamente.		
¿Existe personal de apoyo para labores administrativas/ financieras?	Esta pregunta evalúa la existencia o ausencia de personal de apoyo para labores administrativas y financieras y determina el grado de capacitación del mismo.	**OPCION 0:** No existe personal de apoyo en el tema y se presentan dificultades en el desarrollo de actividades relacionadas a la administración y finanzas. **OPCION 1:** No existe personal de apoyo en administración y finanzas, pero el personal existente realiza las labores administrativas y financieras básicas.		

		OPCION 2: Existe personal de apoyo para las labores administrativas y financieras, pero éste es aún insuficiente en términos de número y capacidad. **OPCION 3:** La cantidad de personal y sus capacidades son adecuadas para los intereses de manejo del área.		
¿La infraestructura y los equipos operativos son mantenidos de forma adecuada?	La respuesta a esta pregunta debe ser consistente con el inventario de bienes del área y su estado de funcionamiento, sin embargo independientemente del estado actual de los bienes, la pregunta hace referencia a las acciones de cuidado que reciben los bienes (limpieza, mantenimiento, almacenamiento, ocupación de infraestructura, etc.).	**OPCION 0:** No existe en el área infraestructura ni equipos, o si los hay no existen acciones para su mantenimiento. **OPCION 1:** Por diversas situaciones (presupuesto, factibilidad, personal, etc.) se realizan acciones limitadas de Mantenimiento de infraestructura y equipos. **OPCION 2:** La infraestructura y los equipos operativos son mantenidos adecuadamente, pero la situación podría mejorar. **OPCION 3:** Existe un plan de mantenimiento del equipo y la infraestructura el cual se ejecuta a plenitud y el estado de los mismos es más que aceptable.		
¿La categoría del manejo del área protegida (Parque Nacional, Reserva Ecológica, etc.) es acertada en relación a su forma de manejo y problemática?	Esta pregunta evalúa si la categoría es adecuada considerando la forma de manejo y problemática actual, en relación con los objetivos establecidos para el manejo del área protegida, los cuales generalmente se encuentran en el Acuerdo Ministerial de creación del área o en los respectivos Planes de Manejo.	**OPCION 0:** La categoría de manejo del área no corresponde a la realidad del lugar y los objetivos de manejo no son claros. **OPCION 1:** La categoría del área es acertada pero los objetivos de manejo no son claros ya que se contraponen a la categoría. **OPCION 2:** La categoría de manejo no corresponde a la realidad del lugar pero los objetivos de manejo son apropiados para la conservación del área. **OPCION 3:** La categoría del área es apropiada y los objetivos de manejo son claros y contribuyen a la conservación del área.		I
¿En qué medida se implementa el Plan de Manejo del AP?	El principio que apoya este indicador es que toda área protegida debe contar con un Plan de Manejo, como la principal herramienta de planificación a largo plazo que debe orientar las acciones de manejo. Este indicador establece principalmente el grado de cumplimiento del Plan de Manejo, restando un poco de importancia al hecho de si está actualizado, vigente o caducado. El estado de ejecución del Plan de Manejo se mide por el nivel de cumplimiento de objetivos, actividades, presupuesto, etc.	**OPCION 0:** No hay un Plan de Manejo para el AP. **OPCION 1:** Hay un Plan de Manejo desactualizado que no se implementa, o hay un Plan de Manejo en proceso de elaboración. **OPCION 2:** Hay un Plan de Manejo aprobado, pero se implementa en forma parcial, solamente algunos programas **OPCION 3:** Hay un Plan de Manejo vigente y que se implementa.		
¿En qué medida el personal del área protegida participa y posee herramientas necesarias y está capacitado para intervenir en los procesos de planificación?	Este indicador mide el nivel de participación del personal del AP en los procesos de planificación y evalúa la existencia de herramientas y la capacidad del personal para su uso (principalmente Sistemas de Información Geográficos que incluyen no solamente mapas, sino equipos y personal capacitado para el uso y análisis de información).	**OPCION 0:** El personal del AP no participa ni posee las herramientas necesarias para los procesos de planificación. **OPCION 1:** El personal del AP participa en los procesos de planificación pero no cuenta con herramientas adecuadas o no está suficientemente capacitado para los procesos de planificación. **OPCION 2:** El personal del AP participa en los procesos de planificación y de manera parcial cuenta con herramientas adecuadas para el efecto y/o se encuentra capacitado para los procesos de planificación. **OPCION 3:** El personal del AP participa en los procesos de planificación, cuenta con herramientas adecuadas para el efecto y se encuentra capacitado para los procesos de planificación.		
¿Tiene el AP el tamaño, la forma y ubicación espacial adecuada para cumplir con sus objetivos de manejo y/o conservación (protección de especies, hábitats,	Para la respuesta a esta pregunta no considere el estado de conservación de ciertas zonas del AP. La pregunta hace referencia al tamaño regular o irregular (lo cual constituye más extensión de perímetro y por consiguiente mayor susceptibilidad a amenazas) con relación a la conservación de	**OPCION 0:** El área tiene una forma, tamaño o ubicación espacial inadecuadas para el manejo y el cumplimiento de sus objetivos. **OPCION 1:** Deficiencias en el tamaño, la forma y ubicación espacial del AP generan dificultades para lograr los objetivos primarios y su replanteamiento es		

procesos ecológicos, control, recreación, etc.)?	ciertos elementos (hábitat o poblaciones viables de especies), o ubicación espacial con referencia a ecosistemas críticos o zonas de importancia como cuencas hidrográficas, etc.	necesario. **OPCION 2:** El tamaño, la forma y ubicación espacial del AP no limita considerablemente el logro de los objetivos pero requiere pocas acciones específicas para mejorar su manejo. **OPCION 3:** El tamaño, la forma y ubicación espacial del AP ayudan al logro de sus objetivos primarios; es apropiado para la conservación de especies y hábitats; y mantiene los procesos ecológicos.		
¿En qué medida se reconocen y se respetan los límites de la zonificación para el manejo y uso?	Este indicador denota la importancia de contar con una zonificación eficiente del área protegida. La zonificación permite que el manejo esté mejor organizado y se evalúa por la existencia de planos y la demarcación en el terreno, sin embargo considere el respeto y la aceptación de los usuarios como elemento fundamental de la respuesta.	**OPCION 0:** No existe zonificación para el uso o conservación de los recursos **OPCION 1:** Hay zonificación pero no es operativa ni funcional **OPCION 2:** Existe zonificación para el uso y conservación, pero ésta funciona parcialmente **OPCION 3:** Existe zonificación adecuada y se respetan las zonas.		
¿Los procesos de planificación incorporan elementos externos asociados a los objetivos del área (corredores biológicos, cuencas hidrográficas, poblaciones, áreas de distribución de especies o hábitat críticos) y están insertos en estrategias regionales de desarrollo (PDOT)?	Este indicador mide si el AP funciona como ecosistema aislado o se es parte de acciones o actividades para establecer un paisaje funcional en la región. Además, mide el nivel de coordinación de actividades a nivel local, provincial y regional y, la inserción de los Planes de Manejo en otros instrumentos de planificación a nivel local o regional, por ejemplo Planes de Desarrollo y Ordenamiento Territorial (PDOT).	**OPCION 0:** El AP no toma en cuenta el territorio fuera de sus límites. No existe información alguna sobre la conectividad del área o la importancia de los espacios externos. No participa en procesos de planificación a nivel regional. **OPCION 1:** La conectividad actual y potencial del área protegida ha sido evaluada y está en proceso de ser documentada, pero los Planes de Manejo no se encuentran insertos en los instrumentos de planificación territorial. **OPCION 2:** La conectividad actual y potencial del área protegida está documentada y se han iniciado acciones de campo, existe un nivel de participación en procesos de planificación con las autoridades locales, provinciales o seccionales.		

		OPCION 3: El AP forma parte de una estructura integral del paisaje, donde se han definido otras zonas de interés que aportan a la conservación de esta (corredores biológicos, vegetación protectora, usos específicos del espacio). Los Planes de Manejo se insertan en otros instrumentos de planificación (PDOT).		
¿En qué medida el área protegida dispone de información sistematizada para el manejo del patrimonio natural y cultural)?	Este indicador mide la cantidad y calidad de información (listas de especies, especies amenazadas, especies introducidas/plagas, recursos culturales/ atractivos turísticos, ecosistemas, hábitat críticos y amenazas) con las que se cuenta para la toma de decisiones de manejo. Se recomienda que para la respuesta considere el universo de información que es necesario para el manejo de un área con alta diversidad biológica, incluyendo no solamente listas o inventarios de especies grandes, sino todo lo que en su conjunto significa biodiversidad, incluido hábitat y ecosistemas.	**OPCION 0:** No existe información para el manejo del AP. **OPCION 1:** Existe muy poca información sistematizada y en general poca información disponible para el manejo del AP. **OPCION 2:** Existe poca información Sistematizada pero abundante información relativa al manejo del AP. **OPCION 3:** Existe suficiente o adecuada información para el manejo del área y esta se encuentra sistematizada.		
¿Existen operaciones de control y vigilancia concretas dentro del programa?	Esta pregunta se relaciona con las operaciones de control, patrullajes, protección del área, accesibilidad, puestos de control, recorridos etc. y cómo éstas medidas contribuyen a minimizar las amenazas directas. Un programa de control debería abarcar acciones para prevenir, atender y dar seguimiento a actos ilícitos.	**OPCION 0:** No existen operaciones de control (patrullas, puestos de control, recorridos etc.) **OPCION 1:** Existen operaciones de control y vigilancia pero no son eficaces en controlar el acceso/ uso de recursos en el AP. **OPCION 2:** Existen operaciones de control y vigilancia pero son solo parcialmente eficaces para responder ante la cantidad de presiones y/o actos ilícitos. **OPCION 3:** Las operaciones de control y vigilancia son eficaces en controlar el acceso/ uso de los recursos en el AP.		
¿Existen otros actores	Esta pregunta evalúa la participación de otros	**OPCION 0:**		

que apoyan a las actividades de control y vigilancia (voluntarios, cooperación con la policía ambiental, fuerzas armadas, otras entidades gubernamentales y con ONG, etc.)?	actores en las actividades de control y vigilancia y su nivel de involucramiento para llevar actividades programadas. Las acciones de control y vigilancia requieren en la mayor parte de los casos la coordinación con instituciones que tienen autoridad en temas específicos. Es de especial importancia el nivel de participación de la policía, fuerzas armadas y gobiernos seccionales.	El área no cuenta con el apoyo de otros actores. **OPCION 1:** El AP cuenta con apoyo de otros actores de forma ocasional o esporádica. **OPCION 2:** Existe cooperación de uno o más actores para las actividades de control y vigilancia, pero falta coordinación. **OPCION 3:** Las actividades del programa de control y vigilancia se realizan en forma conjunta y coordinada con otros actores		
¿Qué tan efectivos son los procesos de seguimiento y las capacidades del personal para responder a los procesos legales?	Esta pregunta pretende evaluar la existencia de instrumentos legales que respaldan la gestión del programa de control y vigilancia, pero además requiere evaluación en el seguimiento de los procesos, de manera que se puede medir la efectividad a nivel de procesos concluidos y no solamente a nivel de casos ilícitos o no permitidos.	**OPCION 0:** No existen instrumentos legales que regulan o controlan el uso del tierra y las actividades permitidas y no permitidas **OPCION 1:** Existen instrumentos legales, pero el personal tiene limitaciones de autoridad y dificultades en el seguimiento a los procesos legales. No se encuentra debidamente capacitado. **OPCION 2:** Existen instrumentos legales y suficiente autoridad para el cumplimiento de las normativas, el personal está capacitado pero hay limitaciones en el seguimiento de los procesos **OPCION 3:** Existen instrumentos legales y el personal los puede implementar efectivamente y darles adecuado seguimiento		
¿Están los límites claros y demarcados en el terreno, y son éstos conocidos y respetados por la población?	La pregunta conjuga la existencia física de límites (hitos, senderos, letreros, accidentes geográficos claros) con el respeto que la población tiene por los mismos, dando en este caso más importancia al respeto que a la existencia física de los mismos.	**OPCION 0:** No existe una demarcación física de límites y la población no conoce su ubicación. **OPCION 1:** Existe una demarcación física del área en su mayor parte, pero la población no los respeta. **OPCION 2:** No existe una demarcación física de límites en la mayor parte del área, sin		

		embargo, la población entiende los límites y los respeta. **OPCION 3:** La mayoría del área se encuentra físicamente demarcada y la población conoce y respeta los límites.		
¿Existe suficiente personal para el Control y Vigilancia y éste se encuentra debidamente capacitado (procedimientos legales, rescate, primeros auxilios, etc.)?	Esta pregunta evalúa la falta o suficiencia de personal para efectuar las actividades de control y vigilancia y el nivel de capacitación del personal para el desarrollo de sus actividades cotidianas.	**OPCION 0:** El área no cuenta con personal. **OPCION 1:** El personal es insuficiente y no está capacitado. **OPCION 2:** El personal es suficiente pero necesita capacitación. **OPCION 3:** Cuenta con el personal para necesario y capacitado para la cubrir las necesidades de manejo de área.		
¿Existe suficiente equipo y logística para el desenvolvimiento adecuado del personal en las actividades de control y vigilancia?	Esta pregunta evalúa si el AP cuenta con el equipo necesario y las facilidades logísticas para el ejecutar el manejo eficiente de ella. Ayuda en su respuesta la revisión del inventario del equipo existente, el estado en el que se encuentra. Es importante considerar logística (desplazamientos de personal, rotación de personal, transportes, accesibilidad, recursos financieros).	**OPCION 0:** Existe poco o casi nada de equipo y logística para las actividades de control y vigilancia. **OPCION 1:** El equipo y las condiciones logísticas son básicas y claramente evidencian una necesidad de mayores recursos. **OPCION 2:** Equipo y logística para las actividades de control y vigilancia son aceptables pero la situación podría mejorar. **OPCION 3:** El equipo idóneo para el manejo eficiente del área protegida existe y la situación logística permite cubrir en gran medida las necesidades del programa.		
¿La infraestructura disponible para las labores de control y vigilancia es suficiente y	Esta pregunta evalúa las instalaciones, infraestructura que permiten al personal del área realizar el trabajo de control y vigilancia (guardianías, puestos de control, senderos,	**OPCION 0:** No existe casi infraestructura para el control y vigilancia a pesar de que se evidencia una necesidad reconocido.		

adecuada?	centro administrativo/operativo, etc.).	**OPCION 1:** La infraestructura existente no es suficiente para las labores de control y vigilancia. **OPCION 2:** La infraestructura existente es adecuada pero puede mejorarse cualitativa o cuantitativamente. **OPCION 3:** La infraestructura disponible para las labores de control y vigilancia es óptima y facilita la implementación del programa.	
¿Existe un programa de educación ambiental que tenga incidencia en los centros educativos de la zona y que esté relacionado con los objetivos y necesidades del AP?	Esta pregunta evalúa la incidencia del AP en la educación ambiental a nivel de la existencia de un plan o programa de educación, su continuidad a lo largo del tiempo y, la participación en las escuelas y colegios de la localidad.	**OPCION 0:** No existe un programa de educación ambiental ni hay actividades regulares sobre este tema. **OPCION 1:** No existe un programa de educación ambiental, pero se realizan actividades aisladas. **OPCION 2:** Se cuenta con un programa de educación ambiental pero su incidencia e implementación son limitados. **OPCION 3:** Existe un programa permanente de educación ambiental con fuerte incidencia en escuelas y colegios de la región.	
¿Existe un programa (o actividades permanentes) de comunicación ambiental donde se informa a los pobladores o usuarios del AP?	Esta pregunta evalúa la existencia y ejecución de planes o programas de comunicación ambiental que informen sobre el AP o promuevan cambios de actitud y conducta en los grupos de interés. Se puede medir con la existencia de acciones concretas.	**OPCION 0:** No existe un programa de Comunicación ambiental. **OPCION 1:** No existe un programa de Comunicación ambiental pero se realizan charlas informales del personal del área a los pobladores. **OPCION 2:** Existe un programa de comunicación pero su Implementación e incidencia son limitadas. **OPCION 3:** Hay un programa de comunicación elaborado y se implementa	

		adecuadamente: participación ciudadana en acciones de manejo, medios de comunicación audiovisuales o virtuales, etc.	
¿Existe colaboración/apoyo entre los manejadores del AP y los actores locales?	La pregunta pretende evaluar el nivel de comunicación y colaboración que existe entre los manejadores del área protegida y la sociedad civil, donde además de usuarios del área como: pobladores, comunidades, pueblos indígenas; también se incluyen otros actores públicos y privados asociados o relacionados directa o indirectamente al AP y su entorno.	**OPCION 0:** No hay niveles significativos de apoyo/colaboración entre el AP y los actores locales. La comunicación es muy limitada. **OPCION 1:** Existe comunicación limitada entre los manejadores del AP y un número limitado de actores locales. Se concretan pocas acciones de apoyo o colaboración. **OPCION 2:** Existe comunicación regular entre los manejadores del AP y algunos actores locales. Los niveles de apoyo y colaboración son aceptables. **OPCION 3:** Existe comunicación regular entre los manejadores del AP y la mayor parte de actores locales con un gran nivel de participación, apoyo y colaboración ciudadana.	
¿Tienen participación los actores locales, en la toma de decisiones de manejo o procesos de planificación? ¿Es la participación representativa?	El indicador evalúa si los actores locales participan activamente en el manejo y planificación del área. Se puede medir el indicador revisando los procesos de construcción de las herramientas de planificación y los procesos de socialización en el manejo cotidiano del área. La representatividad de los actores es también un importante punto de evaluación, equidad de género grupos indígenas, etc.	**OPCION 0:** Los actores locales del AP no tienen ningún tipo de participación en las decisiones sobre el manejo de esta. Las decisiones son centralizadas. **OPCION 1:** Los actores locales tienen acceso a la discusión de los asuntos relevantes, pero no tienen acceso directo a la toma de decisiones sobre el manejo del área protegida. **OPCION 2:** Los actores locales contribuyen regularmente a la toma de algunas decisiones de manejo del AP, pero es necesaria una mayor representatividad. **OPCION 3:** Un grupo representativo de actores locales relacionados al AP participan regular y directamente en la mayoría de las decisiones de manejo de esta.	
¿Se implementan programas y/o participa	La pregunta evalúa la incidencia del AP en procesos de desarrollo y generación de bienestar	**OPCION 0:** No se implementan programas ni participa el personal del área en	

el personal del área en actividades para mejorar el bienestar de la comunidad local?	de las comunidades locales mediante el manejo de recursos y proyectos de desarrollo, ya sea promovidos por instituciones externas locales o internacionales, o desarrollados e implementados por el propio personal del área.	actividades de desarrollo comunitario. **OPCION 1:** El personal del AP participa en programas y actividades de desarrollo y manejo, pero solo como ente de control y regulación. No ejecuta. **OPCION 2:** El AP cuenta con un programa para apoyar el bienestar de la población local, participa en actividades, pero su impacto es bajo. **OPCION 3:** El AP cuenta con un programa para apoyar el bienestar de la población local, participa en proyectos con un impacto significativo.		
¿El área protegida provee beneficios económicos directos (ingresos, empleos, turismo etc.) a las comunidades o pobladores locales? (Excluye actividades ilícitas)	Este indicador pretende identificar si existe algún tipo de beneficio económico directo del AP a la población residente o cercana a la misma. Considera empleo directo o indirecto a través de actividades como turismo, mano de obra, convenios de co-manejo, pesca, etc. Es especialmente importante identificar beneficios económicos derivados del manejo de especies, sin embargo, descarta el uso y aprovechamiento no sostenible (caza furtiva, explotación de madera, etc.), excluyendo beneficios derivados de actividades ilícitas, o no controladas (caza, pesca, extracción de madera, industrias externas, etc.)	**OPCION 0:** El AP ha reducido las opciones de desarrollo económico para la población local. **OPCION 1:** El AP no ha generado ningún tipo de beneficio directo para los grupos de interés que se encuentran en el área o cercanos a la misma. Los medios de vida se mantienen aproximadamente al mismo nivel. **OPCION 2:** Hay un flujo positivo de beneficios económicos hacia las comunidades y pobladores y los medios de vida han mejorado un tanto. **OPCION 3:** Hay un flujo positivo de beneficios económicos hacia las comunidades y pobladores y los medios de vida han mejorado significativamente.		
¿Existen recursos, equipamiento y personal necesario y capacitado para desarrollar actividades de educación ambiental, comunicación o proyectos de manejo o desarrollo para el beneficio comunitario?	Esta pregunta evalúa de manera general la disponibilidad de recursos, equipos y personal (incluyendo capacidades) para el programa de educación ambiental, comunicación y desarrollo comunitario. Al mismo tiempo evalúa su nivel de repercusión.	**OPCION 0:** Los recursos descritos son incipientes en todo sentido. **OPCION 1:** Existen algunos de los recursos descritos, pero también hay grandes vacíos que impiden el desarrollo de estas actividades. **OPCION 2:** Los cantidad de personal y recursos, el equipamiento		
		y las capacidades del personal permiten desarrollar actividades de educación ambiental, comunicación o proyectos de manejo o desarrollo para el beneficio comunitario, pero aún su nivel de desarrollo e incidencia es bajo. **OPCION 3:** Los cantidad de personal y recursos, el equipamiento y las capacidades del personal permiten desarrollar actividades de educación ambiental, comunicación o proyectos de manejo o desarrollo para el beneficio comunitario. El nivel de incidencia de estas actividades está por arriba de lo aceptable.		
¿Existe registro y control de visitantes al AP?	Esta pregunta evalúa la eficacia de los controles de acceso y uso del área protegida, los cuales procuran disminuir los impactos de los visitantes. La principal forma de medirlos es en relación a la cantidad de zonas sin control que soportan visitas y uso público.	**OPCION 0:** No se realiza control ni registro de visitantes. **OPCION 1:** El registro y control de visitantes es incipiente, esporádico y no abarca la totalidad de área usada. **OPCION 2:** El registro y control de visitantes es moderadamente efectivo, pero aún requieren mayor efectividad. **OPCION 3:** El registro y control de visitantes es amplio o totalmente efectivo y generan importante información que puede apoyar el manejo del área.		
¿Los operadores de turismo y guías naturalistas están regularizados y debidamente registrados?	Esta pregunta evalúa la legalidad o informalidad de las operadoras turísticas y guías naturalistas en el AP, la efectividad en el registro y cobro de patentes o permiso para operar.	**OPCION 0:** No se tienen registros de las operadoras turísticas Ni de los guías naturalistas. **OPCION 1:** Solamente unos pocos operadores turísticos y guías naturalistas se encuentran registrados, existe gran número de informalidad. **OPCION 2:** La mayor parte de operadores turísticos y guías naturalistas se encuentran registrados y se está tratando de regularizar a todos. **OPCION 3:** Sin ninguna excepción, las operadoras turísticas y guías naturalistas están		

Pregunta	Descripción	Opciones		
		debidamente registradas y controladas.		
¿La infraestructura y el equipamiento de uso público existe, es adecuada y se encuentra en buen estado?	Esta pregunta evalúa las instalaciones óptimas para el manejo de visitantes. Dentro de infraestructura y equipamiento se pueden evaluar senderos, miradores, señalética, servicios turísticos, centros de información. Se deben evaluar las necesidades y estado de la infraestructura.	**OPCION 0:** No existen ni facilidades ni servicios para visitantes, a pesar de que se evidencia una necesidad reconocida. **OPCION 1:;** Las facilidades y servicios para visitantes son inadecuados con respecto a los niveles actuales de visitación. **OPCION 2:** Las facilidades y servicios para visitantes son adecuados pero no satisfacen la totalidad de las necesidades. **OPCION 3:** Las facilidades y servicios para visitantes son óptimos para los niveles actuales de visitación.		
¿Las operadoras de turismo y guías naturalistas brindan apoyo al manejo del AP (logística, facilidades, control, manejo de desechos, etc.)?	Esta pregunta permite evaluar la cooperación de las operadoras turísticas con la conservación y protección del AP, sin limitarse al uso del área, sino a su participación como actores clave.	**OPCION 0:** Existe poco o ningún contacto con las operadoras de turísticas y guías naturalistas que usan el área protegida. **OPCION 1:** Existe contacto con las operadoras de turísticas y guías naturalistas, pero está ampliamente restringido a asuntos administrativos o reglamentarios. **OPCION 2:** Existe cooperación limitada con las operadoras de turísticas y guías naturalistas para mejorar las experiencias de los visitantes, proteger los valores del sitio y apoyar en el manejo del AP. **OPCION 3:** Existe buena cooperación con las operadoras de turísticas y guías naturalistas para mejorar las experiencias de los visitantes, proteger los valores del sitio y apoyar en la labores de manejo del AP.		
¿Existe un sistema de gestión turística y se miden los impactos derivados de esta actividad?	Para medir este indicador es necesario realizar una evaluación previa de los impactos negativos que cualquier tipo de aprovechamiento permisible podría generar sobre el área. Esta pregunta evalúa la existencia o ausencia de una herramienta llamada Sistema de Gestión Turística y su efectividad, capacidad de carga, rutas, modalidades de turismo, zonificación, tipos de turismo, etc.	**OPCION 0:** No tiene un sistema de gestión turística, ni se miden los impactos derivados de esta actividad. **OPCION 1:** Se realizan actividades aisladas de manejo turístico. Se han observado impactos derivados de la actividad, pero estos no han sido documentados ni evaluados con objetivos de cambio. **OPCION 2:** Se implementa Sistema de Gestión Turística pero no en su totalidad y requiere mejoras. Se evalúan los impactos parcialmente. **OPCION 3:** Se dispone e implementa un Sistema de Gestión Turística, tanto dentro del área como en su zona de amortiguamiento. Los resultados se incorporan en la planificación del AP.		
¿Existen mecanismos para el manejo de emergencias derivadas de la actividad turística y hay coordinación con otras entidades?	Las AP que reciben turismo, deben estar preparadas para atender emergencias y contar con personal capacitado para ello. Se debe evaluar si existen o no mecanismos sistemáticos para responder ante la eventos emergentes. Se puede utilizar registros de incidentes y evaluar la capacidad de respuesta del AP ante los mismos, es necesario contemplar niveles de coordinación con instituciones de soporte (Cruz Roja, Defensa Civil, hospitales, FFAA, Policía, etc.). Posee un Plan de Seguridad Turística.	**OPCION 0:** No existen mecanismos para responder ante emergencias derivadas de la actividad turística ni coordinación con otras entidades. **OPCION 1:** Parte del personal se encuentra capacitado para responder ante algunas emergencias derivadas de la actividad turística, pero aún hace falta determinar mecanismos, procesos y coordinación. **OPCION 2:** El AP está desarrollando un Plan de Seguridad Turística o cuenta con mecanismos y sistemas para el manejo de emergencias derivadas de la actividad turística, pero se requiere mejorar el nivel de coordinación. **OPCION 3:** Se cuenta con un Plan de Seguridad Turística que se implementa eficiente y coordinadamente.		
¿En qué medida se benefician los actores locales por el turismo que provee el área?	Este indicador puede medirse revisando evidencia (convenios, patentes, etc.) del área protegida y las comunidades/población local, desde la perspectiva de si reciben beneficios directos o indirectos por el turismo en el área. Se incluyen servicios y productos. Administración de terceros.	**OPCION 0:** El AP no ha generado ningún tipo de beneficio directo o indirecto del turismo o recreación para los actores locales. **OPCION 1:** Los actores locales reciben algún tipo de beneficio directo o indirecto por el turismo, pero es escaso.		

		OPCIÓN 2: Una parte considerable de los actores locales reciben algún tipo de beneficio directo o indirecto del turismo. **OPCIÓN 3:** Una gran parte de los actores locales reciben algún tipo de beneficio directo o indirecto del turismo.		
¿Existe un Programa de Investigación Científica que aporte con conocimiento para el manejo del área y su biodiversidad? ¿Se sistematizan los resultados?	Esta pregunta evalúa la existencia o ausencia de un Programa de Investigación Científica en el AP. Además evalúa la utilidad de la investigación desde el punto de manejo, esto puede ser medido por medio del nivel de comunicación entre los manejadores e investigadores, por la presencia de los últimos en los procesos de planificación del AP y la sistematización de resultados.	**OPCIÓN 0:** El AP no cuenta con un Programa de Investigación Científica para la generación de conocimiento para el manejo de la biodiversidad y, no se sistematizan investigaciones diferentes a los objetivos del programa. **OPCIÓN 1:** El AP no cuenta con un Programa de investigación Científica sin embargo, existen varias iniciativas generadoras de información diferentes a los objetivos del programa y, solo algunas investigaciones son sistematizadas. **OPCIÓN 2:** El AP tiene un Programa de Investigación Científica pero es necesario mejorar su orientación hacia los objetivos y necesidades de esta. **OPCIÓN 3:** El AP tiene un Programa de Investigación Científica de gran relevancia que aporta conocimiento para el manejo de esta y su biodiversidad. Las investigaciones son sistematizadas.		
¿Existen mecanismos de monitoreo y evaluación regular enfocados a determinar el estado de conservación o uso de los recursos (especies, agua, clima, uso de recursos, cobertura vegetal, etc.)?	Este pregunta mide el uso de indicadores (en varias áreas) para los procesos de evaluación (pe. porcentajes del área cubierta de especies introducidas, estado de conservación de un área determinada, calidad del agua, comportamiento del clima, etc.). Un programa de monitoreo contempla el comportamiento de varios elementos o indicadores durante tiempos relativamente largos, pero fundamentalmente analiza e interpreta los resultados para convertirlos en acciones de manejo.	**OPCIÓN 0:** No existen mecanismos de monitoreo y evaluación en el AP. **OPCIÓN 1:** Existen mecanismos de monitoreo y evaluación de algunas actividades de manejo, pero no existe una estrategia general y permanente de recopilación y análisis de información. **OPCIÓN 2:** Existen mecanismos de monitoreo y evaluación sin embargo, los resultados no se utilizan sistemáticamente para el manejo. **OPCIÓN 3:** Existe un buen sistema de Monitoreo y evaluación, está bien implementado		
		y utilizado para el manejo adaptativo.		
¿Existen acciones específicas del área protegida que regulan el uso de los recursos naturales por parte de las poblaciones locales o usuarios (cacería, pesca, recolección, extracción)?	Este indicador mide la ausencia o presencia de un programa de manejo de los recursos como cacería, pesca, recolección y extracción. Es importante revisar en el contexto si el programa cuenta con información científica suficiente para el manejo (pe. información para el establecimiento de vedas, tallas mínimas, artes de cacería y pesca de subsistencia o artesanal, permisos, licencias, cuotas).	**OPCIÓN 0:** No existe un programa de manejo enfocado al uso de los recursos naturales (cacería, pesca, recolección, extracción). **OPCIÓN 1:** Se realizan acciones aisladas de manejo de recursos (cacería, pesca, recolección, extracción), pero su incidencia es limitada. **OPCIÓN 2:** Existe un programa de manejo que regula el uso de ciertos recursos, pero existen importantes falencias que limitan su éxito. **OPCIÓN 3:** Existe un programa de manejo de los recursos (cacería, pesca, recolección, extracción) es retroalimentado con información, funciona correctamente y beneficia la conservación de la biodiversidad.		
¿Se desarrollan acciones específicas para la protección, conservación o recuperación de especies amenazas (incluyendo erradicación de especies exóticas)?	Este indicador mide la presencia o ausencia de un programa o actividades para la protección, conservación y recuperación de especies amenazadas e investigación para controlar especies invasoras.	**OPCIÓN 0:** No se realiza ningún tipo de actividad para la protección, conservación o recuperación de especies amenazadas. **OPCIÓN 1:** Se están realizando pocas actividades para la protección, conservación o recuperación de especies amenazadas a pesar de que existen muchos problemas por resolver. **OPCIÓN 2:** Se realizan diversas actividades de protección, Conservación o recuperación de especies y/o actividades que incluyen la erradicación de especies exóticas sin embargo, no son suficientes tomando en cuenta todos los problemas que existen. **OPCIÓN 3:** Se están cubriendo gran parte necesidades existentes para garantizar una adecuada protección, conservación o recuperación de especies amenazadas. Se tienen actividades de control de especies introducidas invasoras. Estas actividades están programadas y presupuestadas anualmente.		
¿Existen acciones	Este indicador mide si se están aprovechando	**OPCIÓN 0:**		

especificas para el manejo sostenible de los recursos (pe. Producción de especies nativas útiles o comerciales, o energías alternativas de bajo impacto) que beneficien la calidad de vida de la población local?	(utilizando, consumiendo, comercializando) especies útiles, o si se está investigando/probando formas de obtener beneficios económicos a través del manejo sostenible (pe. criaderos de fauna y flora, autoconsumo, viveros, obtención subproductos, miel, fibras etc.). Determina además la participación de los manejadores del área.	No existe ningún programa o proyecto relacionado **OPCIÓN 1:** Existen planes para el desarrollo de este tipo de proyectos, pero no cuentan con la participación del AP **OPCION 2:** Existen pocos proyectos de manejo sostenible de recursos en marcha, con o sin la participación del AP que benefician parcialmente a las comunidades locales. **OPCIÓN 3:** Existen varios proyectos de manejo sostenible de recursos, con la participación directa del AP, algunos de los cuales ya están generando beneficios para las comunidades locales.		
¿Se incorporan los resultados de las investigaciones, monitoreo y manejo en los procesos y herramientas de planificación del área?	Este indicador mide si las acciones de investigación, monitoreo y manejo contribuyen efectivamente en la planificación operativa y posteriormente al manejo. La idea es que el AP debe contar con planificación operativa derivada, idealmente, de un sistema de monitoreo e investigación que priorice las actividades de manejo (pe. ¿El programa de erradicación de especies está siendo efectivo? ¿Es necesario modificar las estrategias?, ¿Es necesario incrementar acciones de control en lugares específicos?	**OPCIÓN 0:** Los resultados de las investigaciones, monitoreo y experiencias de manejo no son incorporados al proceso de manejo del AP (incluye la ausencia de investigación, monitoreo, etc.). **OPCIÓN 1:** La información que se genera en el área solo es parcialmente utilizada, no existe una estrategia general para la recopilación regular de resultados y su incorporación en el manejo del AP. **OPCIÓN 2:** La información que se genera en el área es de gran ayuda para la planificación sin embargo, en pocas ocasiones realmente se implementan acciones. **OPCIÓN 3:** La información que se genera en el área es acertadamente incluida en los procesos de planificación y aporta significativamente en la solución de problemas de manejo.		
¿Existen insumos suficientes (personal capacitado,	Esta pregunta evalúa la capacidad de recursos y personal para los programas/ actividades de investigación, manejo sostenible de recursos	**OPCIÓN 0:** Los insumos para el desarrollo de este programa son inexistentes.		
infraestructura, equipos, recursos) para que el área pueda desarrollar estándares aceptables en investigación, manejo sostenible de recursos naturales y monitoreo?	naturales y monitoreo.	**OPCIÓN 1:** Los insumos para el desarrollo de este programa son básicos. **OPCIÓN 2:** Los insumos para el desarrollo de este programa son aceptables pero se pueden mejorar. **OPCIÓN 3:** Los insumos para el desarrollo de este programa son suficientes.		

Annex 2: PNY´s Stakeholders analysis

Stakeholders	Interests	(+) influence /potential	(-) influence /potential
MAE	• Provide tools, human and economic resources for the area´s adequate planning and functioning • In charge of the area´s management • Monitoring and evaluation	Provide support in the area´s management and administration	Sometimes lack of coordination with other institutions and stakeholders.

- Provincial Directions - GADs	• Monitoring and evaluation • Support to the area	Provide support in the area´s management and administration	Sometimes lack of coordination with other institutions and stakeholders
Control Boards	Help with control and surveillance activities	• Provide support in control and surveillance • Provide security	
NGOs	• Conservation programs. • Support, investigation and monitoring of biodiversity	• Provide support t in biodiversity knowledge • Help in communication, education and participation activities	
Oil companies	Develop oil extraction activities	• Provide a source of income	• Opening of roads (migration processes), fragmentation, contamination, • Cultural disruption
Touristic companies	Develop touristic services	• Attract tourism to the area • Communication and distribution of information • Provide a source of income	Uncontrolled, disorganized tourism could lead to negative environmental impacts, (fragmentation processes, changes in land use, etc.).
Communities	Obtain resources to satisfy their basic needs and economic demands	• Specially PIAs (sustainable use of natural resources) • Maintenance of cultural	Wildlife trafficking, opening of roads, migration, illegal logging and hunting,

		heritage	overexploitation of natural resources (not all)
Universities, scientists, millennium schools	• Develop scientific research • Participate in conservation programs • Biodiversity's monitoring	• Strengthen biodiversity knowledge • Environmental communication, education, participation.	Uncoordinated research will not satisfy the area´s needs

Annex 3: RBSAT´s stakeholders analysis

Stakeholders	Interests	(+) influence / potential	(-) influence/ potential
Government´s institutions	• Provide tools, human and economic resources for the area´s adequate planning and functioning • In charge of the area´s management • Monitoring and evaluation	• Usually provide environmental and social programs for the communities • Provide support in the area´s management and administration	Sometimes, lack of coordination with other institutions and stakeholders
Municipalities and Directions of Ecology	Ecological planning	Develop conservation projects	Sometimes, lack of coordination with other institutions and stakeholders
Communities	Obtain resources to satisfy their basic needs and economic demands	• Sustainable use of natural resources (mostly) • Maintenance of cultural heritage	In some cases: illegal hunting and logging
Control	Control and surveillance	• Support in the control and	

Boards		• surveillance activities • Provide security	
NGO´s	• Conservation programs. • Support, investigation and monitoring of biodiversity	• Provide a support in biodiversity knowledge • Help in communication, education and participation activities	
CEMEX	Provide materials (for example: cement and concrete) for construction activities	• Source of income • Environmental education programs in coordination with CONANP • Communication and participation • Sometimes provide water and cement for the communities' constructions	Potential negative impacts: emission of particles, pollutants or combustion gases, spilling of material, contamination of water and soil, etc.
Universities, high schools and schools	• Develop scientific research • Participate in conservation programs • Biodiversity's monitoring	• Strengthen biodiversity knowledge • Communication, participation, environmental education	Uncoordinated research will not satisfy the area´s needs

Annex 4: PNY´s Questionnaire by Management Programs

Programs	Questions	Value	Percentage
Perception	**1. What is the level of acceptance and conformity from the stakeholders towards the**	**2**	**66.67%**

questions (they are not measured)	protected area?		
	2. What do you think about the actual conservation condition of the area if you compare it with the time it was declared as a protected area?	**2**	**66.67%**
ADMINISTRATION	3. Are there technical or financial sources that support the area´s management, besides the funds obtained from the government?	1	33.33%
	4. Does the financial administration respond effectively to the critical needs of the area?	1	33.33%
	5. Do the infrastructure and equipment receive regular and adequate maintenance?	1	33.33%
	6. Are there technicians specifically destined to support the administrative and financial tasks?	3	100.00%
	7. Until what extend has the Annual operation plan been accomplished?	1	33.33%
	8. Is the Budget always sure?	1	33.33%
	9. Is the assigned Budget enough to solve the area´s needs?	1	33.33%
MANAGEMENT	10. Is the area´s management category adequate to its actual management and goes according to its main problems?	3	100.00%
	11. Do the planning procedures take into account external elements related to the area's objectives (biological corridors, water basins, distribution areas for species, among others) and are they introduced in regional development plans?	3	100.00%
	12. Does the area contain systematized information for the adequate management of the natural and cultural heritage?	2	66.67%
	13. Do the technicians from the area participate, possess adequate tools and are trained to intervene in planning processes?	2	66.67%

	14. Until what extend is the Management Plan implemented?	2	66.67%
	15. Does the area contain the adequate size, shape and spatial location, in order to accomplish its management objectives and conservation purposes?	2	66.67%
	16. Are the area´s zoning limits recognized and respected?	2	66.67%
AVERAGE		**1.79**	**59.52%**
CONTROL AND SURVEILLANCE	17. Are there other external stakeholders involved in the control and surveillance activities? (For example: volunteers, policemen, armed forces, among others).	3	100.00%
	18. Is there enough equipment and logistic to accomplish the control and surveillance activities in a successful way?	1	33.33%
	19. Is there enough, adequate and available infrastructure for the control and surveillance activities?	2	66.67%
	20. Are the area´s limits clearly defined and physically signaled? Are the limits recognized and respected by the population?	2	66.67%
	21. Are there enough human resources to develop the control and surveillance activities? Are they adequately trained (legal procedures, rescue, first aids, among others)?	2	66.67%
	22. How effective are the monitoring processes and the capacities of the human resources in order to respond to legal processes?	2	66.67%
	23. Does the management program contain concrete and detailed control and surveillance activities?	2	66.67%

	AVERAGE	**2**	**66.67%**
CEPA	24. Does the area provide direct economic benefits (income, employment, tourism) to the local communities? It is important to exclude illegal activities.	2	66.67%
	25. Is there enough support and help between the area´s managers and the local stakeholders?	2	66.67%
	26. Is there an environmental communication program (or permanent communication activities) where the visitors and local population are informed about the area´s importance?	2	66.67%
	27. Is there an environmental education program that has incidence over the schools from the zone and is related with the area´s objectives and needs?	2	66.67%
	28. Do the local stakeholders participate in the decision-making processes that influence the management and the planning processes? Is this participation representative?	2	66.67%
	29. Do the technicians participate in activities or are there any programs to strengthen the communities´ wealth?	1	33.33%
	30. Are there enough economic resources, equipment and trained human resources to develop activities related to environmental education, communication or special programs to strengthen the communities´ wealth?	2	66.67%
	AVERAGE	**1.86**	**61.91%**
	31. Do tourism operators and nature guides provide support to the area´s management? (For example with waste management, logistic, etc.)	2	66.67%
	32. Are the local communities benefitted from	2	66.67%

	the tourism that the area provides?		
PUBLIC USE AND TOURISM	33. Is touristic registration and visitors' control regulated within the area?	2	66.67%
	34. Is the infrastructure and equipment used for public use adequate and in a good shape?	1	33.33%
	35. Is there a system used for touristic management and are the impacts from this activity measured?	2	66.67%
	36. Are the touristic operators and nature guides regularized and properly registered?	2	66.67%
	37. Are there any mechanisms to manage emergencies derived from the touristic activities and coordination with other entities?	1	33.33%
AVERAGE		**1.71**	**57.14%**
BIODIVERSITY MANAGEMENT	38. Is there any scientific research program that provides knowledge regarding the area´s biodiversity and management? Are the results systematized?	2	66.67%
	39. Are the results form researches and monitoring incorporated into the area´s management processes and planning tools?	1	33.33%
	40. Does the area regulate the use of natural resources by the local communities or visitors? (For example the regulation of activities such as hunting, fishing, recollection of samples, extraction of natural resources, among others)	0	0.00%
	41. Are there any specific actions for the sustainable management of natural resources, which might benefit the local populations' quality of life? (for example: native species production, use of alternative energies , etc.)	2	66.67%

		Value	Percentage
42. Are specific actions carried out to protect, conserve or recover endangered species? (The question includes the actions to eradicate exotic species).	1		33.33%
43. Are there any monitoring and evaluation mechanisms focused on determining the state of conservation or use of resources? (including species, water, vegetal cover, among others)	1		33.33%
44. Are there enough inputs (trained human resources, infrastructure, equipment) so the area can develop acceptable standards of research, sustainable use of natural resources and monitoring?	1		33.33%
AVERAGE	**1.14**		**38.09%**

Annex 5: PNY´s Questionnaire by management ambits

Ambit	Questions	Value	Percentage
	10. Is the area´s management category adequate to its actual management and goes according to its main problems?	3	100.00%
	11. Do the planning procedures take into account external elements related to the area's objectives (biological corridors, water basins, distribution areas for species, among others) and are they introduced in regional development plans?	3	100.00%
CONTEXT	12. Does the area contain systematized information for the adequate management of the natural and cultural heritage?	2	66.67%
	16. Are the area´s zoning limits recognized and respected?	2	66.67%
	20. Are the area´s limits clearly defined and physically signaled? Are the limits recognized and respected by	2	66.67%

	the population?		
	22. How effective are the monitoring processes and the capacities of the human resources in order to respond to legal processes?	2	66.67%
	AVERAGE	**2.33**	**77.78%**
PLANNING	3. Are there technical or financial sources that support the area´s management, besides the funds obtained from the government?	1	33.33%
	4. Does the financial administration respond effectively to the critical needs of the area?	1	33.33%
	8. Is the Budget always sure?	1	33.33%
	9. Is the assigned Budget enough to solve the area´s needs?	1	33.33%
	14. Until what extend is the Management Plan implemented?	2	66.67%
	15. Does the area contain the adequate size, shape and spatial location, in order to accomplish its management objectives and conservation purposes?	2	66.67%
	39. Are the results form researches and monitoring incorporated into the area´s management processes and planning tools?	1	33.33%
	43. Are there any monitoring and evaluation mechanisms focused on determining the state of conservation or use of resources? (including species, water, vegetal cover, among others)	1	33.33%
	AVERAGE	**1.25**	**41.67%**
	6. Are there technicians specifically destined to support the administrative and financial tasks?	3	100.00%
	17. Are there other external stakeholders involved in the control and surveillance activities? (For example: volunteers, policemen, armed forces,	3	100.00%

	among others).		
INPUTS	18. Is there enough equipment and logistic to accomplish the control and surveillance activities in a successful way?	1	33.33%
	19. Is there enough, adequate and available infrastructure for the control and surveillance activities?	2	66.67%
	21. Are there enough human resources to develop the control and surveillance activities? Are they adequately trained (legal procedures, rescue, first aids, among others)?	2	66.67%
	30. Are there enough economic resources, equipment and trained human resources to develop activities related to environmental education, communication or special programs to strengthen the communities´ wealth?	2	66.67%
	34. Is the infrastructure and equipment used for public use adequate and in a good shape?	1	33.33%
	38. Is there any scientific research program that provides knowledge regarding the area´s biodiversity and management? Are the results systematized?	2	66.67%
	44. Are there enough inputs (trained human resources, infrastructure, equipment) so the area can develop acceptable standards of research, sustainable use of natural resources and monitoring?	1	33.33%
	AVERAGE	**1.89**	**62.96%**
	5. Do the infrastructure and equipment receive regular and adequate maintenance?	1	33.33%
	13. Do the technicians from the area participate, possess adequate tools and are trained to intervene in planning processes?	2	66.67%

PROCESSESS	23. Does the management program contain concrete and detailed control and surveillance activities?	2	66.67%
	25. Is there enough support and help between the area´s managers and the local stakeholders?	2	66.67%
	33. Is touristic registration and visitors' control regulated within the area?	2	66.67%
	35. Is there a system used for touristic management and are the impacts from this activity measured?	2	66.67%
	36. Are the touristic operators and nature guides regularized and properly registered?	2	66.67%
	37. Are there any mechanisms to manage emergencies derived from the touristic activities and coordination with other entities?	1	33.33%
	40. Does the area regulate the use of natural resources by the local communities or visitors? (For example the regulation of activities such as hunting, fishing, recollection of samples, extraction of natural resources, among others)	0	0.00%
	41. Are there any specific actions for the sustainable management of natural resources, which might benefit the local populations' quality of life? (for example: native species production, use of alternative energies , etc.)	2	66.67%
	AVERAGE	**1.6**	**53.33%**
PRODUCTS	7. Until what extend has the Annual operation plan been accomplished?	1	33.33%
	24. Does the area provide direct economic benefits (income, employment, tourism) to the local communities? It is important to exclude illegal activities.	2	66.67%
	26. Is there an environmental communication program (or permanent communication activities) where the visitors and local population are informed	2	66.67%

	about the area´s importance?		
	27. Is there an environmental education program that has incidence over the schools from the zone and is related with the area´s objectives and needs?	2	66.67%
	28. Do the local stakeholders participate in the decision-making processes that influence the management and the planning processes? Is this participation representative?	2	66.67%
	29. Do the technicians participate in activities or are there any programs to strengthen the communities´ wealth?	1	33.33%
	31. Do tourism operators and nature guides provide support to the area´s management? (For example with waste management, logistic, etc.)	2	66.67%
	32. Are the local communities benefitted from the tourism that the area provides?	2	66.67%
	42. Are specific actions carried out to protect, conserve or recover endangered species? (The question includes the actions to eradicate exotic species).	1	33.33%
	AVERAGE	**1.67**	**55.56%**
IMPACT	**1. What is the level of acceptance and conformity from the stakeholders towards the protected area?**	**2**	**66.67%**
	2. What do you think about the actual conservation condition of the area if you compare it with the time it was declared as a protected area?	**2**	**66.67%**
	AVERAGE (not measured)	**2**	**66.67%**

Annex 6: PNY´s Questionnaire for the area´s final EEM

Questions	Value	%
1. Are there technical or financial sources that support the area´s management, besides the funds obtained from the government?	1	33.33%
2. Does the financial administration respond effectively to the critical needs of the area?	1	33.33%
3. Do the infrastructure and equipment receive regular and adequate maintenance?	1	33.33%
4. Are there technicians specifically destined to support the administrative and financial tasks?	3	100.00%
5. Until what extend has the Annual operation plan been accomplished?	1	33.33%
6. Is the Budget always sure?	1	33.33%
7. Is the assigned Budget enough to solve the area´s needs?	1	33.33%
8. Is the area´s management category adequate to its actual management and goes according to its main problems?	3	100.00%
9. Do the planning procedures take into account external elements related to the area's objectives (biological corridors, water basins, distribution areas for species, among others) and are they introduced in regional development plans?	3	100.00%
10. Does the area contain systematized information for the adequate management of the natural and cultural heritage?	2	66.67%
11. Do the technicians from the area participate, possess adequate tools and are trained to intervene in planning processes?	2	66.67%
12. Until what extend is the Management Plan implemented?	2	66.67%
13. Does the area contain the adequate size, shape and spatial location, in order to accomplish its management objectives and conservation purposes?	2	66.67%
14. Are the area´s zoning limits recognized and respected?	2	66.67%
15. Are there other external stakeholders involved in the control and surveillance activities? (For example: volunteers, policemen, armed forces, among others).	3	100.00%
16. Is there enough equipment and logistic to accomplish the control and surveillance activities in a successful way?	1	33.33%

17. Is there enough, adequate and available infrastructure for the control and surveillance activities?	2	66.67%
18. Are the area´s limits clearly defined and physically signaled? Are the limits recognized and respected by the population?	2	66.67%
19. Are there enough human resources to develop the control and surveillance activities? Are they adequately trained (legal procedures, rescue, first aids, among others)?	2	66.67%
20. How effective are the monitoring processes and the capacities of the human resources in order to respond to legal processes?	2	66.67%
21. Does the management program contain concrete and detailed control and surveillance activities?	2	66.67%
22. Does the area provide direct economic benefits (income, employment, tourism) to the local communities? It is important to exclude illegal activities.	2	66.67%
23. Is there enough support and help between the area´s managers and the local stakeholders?	2	66.67%
24. Is there an environmental communication program (or permanent communication activities) where the visitors and local population are informed about the area´s importance?	2	66.67%
25. Is there an environmental education program that has incidence over the schools from the zone and is related with the area´s objectives and needs?	2	66.67%
26. Do the local stakeholders participate in the decision-making processes that influence the management and the planning processes? Is this participation representative?	2	66.67%
27. Do the technicians participate in activities or are there any programs to strengthen the communities´ wealth?	1	33.33%
28. Are there enough economic resources, equipment and trained human resources to develop activities related to environmental education, communication or special programs to strengthen the communities´ wealth?	2	66.67%
29. Do tourism operators and nature guides provide support to the area´s management? (For example with waste management, logistic, etc.)	2	66.67%
30. Are the local communities benefitted from the tourism that the area provides?	2	66.67%
31. Is touristic registration and visitors' control regulated within the area?	2	66.67%

32. Is the infrastructure and equipment used for public use adequate and in a good shape?	1	33.33%
33. Is there a system used for touristic management and are the impacts from this activity measured?	2	66.67%
34. Are the touristic operators and nature guides regularized and properly registered?	2	66.67%
35. Are there any mechanisms to manage emergencies derived from the touristic activities and coordination with other entities?	1	33.33%
36. Is there any scientific research program that provides knowledge regarding the area´s biodiversity and management? Are the results systematized?	2	66.67%
37. Are the results form researches and monitoring incorporated into the area´s management processes and planning tools?	1	33.33%
38. Does the area regulate the use of natural resources by the local communities or visitors? (For example the regulation of activities such as hunting, fishing, recollection of samples, extraction of natural resources, among others)	0	0.00%
39. Are there any specific actions for the sustainable management of natural resources, which might benefit the local populations' quality of life? (For example: native species production, use of alternative energies, etc.)	2	66.67%
40. Are specific actions carried out to protect, conserve or recover endangered species? (The question includes the actions to eradicate exotic species).	1	33.33%
41. Are there any monitoring and evaluation mechanisms focused on determining the state of conservation or use of resources? (including species, water, vegetal cover, among others)	1	33.33%
42. Are there enough inputs (trained human resources, infrastructure, equipment) so the area can develop acceptable standards of research, sustainable use of natural resources and monitoring?	1	33.33%
YASUNI´S EVALUATION OF MANAGEMENT EFFECTIVENESS	**1.71**	**57.14%**

Annex 7: PNY´s Communities – 1,2,3,4 (questionnaire of external perception)

Questions	% by Authorities	1	EP	2	EP	3	EP	4	EP
Is there enough support and help between the area´s managers and the local stakeholders?	66.67%	**0%**	Low	100%	High	0%	Low	66.67%	The same
Do the technicians participate in activities or are there any programs to strengthen the communities´ wealth?	33.33%	**66.67%**	High	0%	Low	100%	High	0%	Low
Is there an environmental communication program (or permanent communication activities) where the visitors and local population are informed about the area´s importance?	66.67%	**0%**	Low	0%	Low	33.33%	Low	66.67%	The same
Does the area provide direct economic benefits (income, employment, tourism) to the local communities? It is important to exclude illegal activities.	66.67%	**0%**	Low	100%	High	66.67%	The same	0%	Low

Are the area´s limits clearly defined and physically signaled? Are the limits recognized and respected by the population?	66.67%	**0%**	Low	66.67%	The same	0%	Low	33.33%	Low
Are there other external stakeholders involved in the control and surveillance activities? (For example: volunteers, policemen, armed forces, among others).	100%	**0%**	Low	**33.33%**	Low	66.67%	Low	0%	Low
What is the level of acceptance and conformity from the stakeholders towards the protected area?	66.67%	**66.67%**	The same	33.33%	Low	66.67%	The same	33.33%	Low
Are the local communities benefitted from the tourism that the area provides?	66.67%	**66.67%**	The same	0%	Low	0%	Low	33.33%	Low
Do the local stakeholders participate in the decision-making processes that influence the management and the planning processes? Is this participation	66.67%	**0%**	Low	**33.33%**	Low	66.67%	The same	33.33%	Low

representative?									
What do you think about the actual conservation condition of the area if you compare it with the time it was declared as a protected area?	66.67%	**66.67%**	The same	100%	High	66.67%	The same	66.67%	The same
Does the area regulate the use of natural resources by the local communities or visitors? (For example the regulation of activities such as hunting, fishing, recollection of samples, extraction of natural resources, among others)	0%	**0%**	The same	0%	The same	66.67%	High	66.67%	High
Are there any specific actions for the sustainable management of natural resources, which might benefit the local populations' quality of life? (For example: native species production, use of alternative energies, etc.)	66.67%	**33.33%**	Low	0%	Low	**66.67%**	The same	0%	Low

Is there an environmental education program that has incidence over the schools from the zone and is related with the area´s objectives and needs?	66.67%	**0%**	Low	0%	Low	100%	High	33.33%	Low

Annex 8: DNB´s questionnaire of external perception

Questions	% by protected areas	% DNB	EP
Does the area contain systematized information for the adequate management of the natural and cultural heritage?	66.67%	**66.67%**	The same
Are there technical or financial sources that support the area´s management, besides the funds obtained from the government?	33.33%	**33.33%**	The same
Is the assigned Budget enough to solve the area´s needs?	33.33%	**33.33%**	The same
Are the touristic operators and nature guides regularized and properly registered?	66.67%	**66.67%**	The same
Is the area´s management category adequate to its actual management and goes according to its main problems?	100%	**33.33%**	Low
How effective are the monitoring processes and the capacities of the human resources in order to respond to legal processes?	66.67%	**33.33%**	Low
Until what extend has the Annual operation plan been accomplished?	33.33%	**33.33%**	The same
Does the area contain the adequate size, shape and spatial location, in order to accomplish its management objectives and conservation purposes?	66.67%	**100%**	High

Until what extend is the Management Plan implemented?	66.67%	**100%**	High
Is there a system used for touristic management and are the impacts from this activity measured?	66.67%	**33.33%**	Low
Are specific actions carried out to protect, conserve or recover endangered species? (The question includes the actions to eradicate exotic species).	33.33%	**66.67%**	High

Annex 9. Touristic Operators´ questionnaire of external perception

Questions	% by protected areas	% Touristic Operator	EP
Is the infrastructure and equipment used for public use adequate and in a good shape?	33.33%	**66.67%**	High
Do tourism operators and nature guides provide support to the area´s management? (For example with waste management, logistic, etc.)	66.67%	**0%**	Low
Is touristic registration and visitors' control regulated within the area?	66.67%	**100%**	High
Are there any mechanisms to manage emergencies derived from the touristic activities and coordination with other entities?	33,33%	**33.33%**	The same

Annex 10. GADs´ questionnaire of external perception (GADS 1, 2, 3, 4)

Question	% by Authorities	1	EP	2	EP	3	EP	4	EP
Do the planning procedures take into account external elements related to the area's objectives (biological corridors, water basins, distribution areas for species, among others) and are they introduced in regional development plans?	100%	**100%**	The same	0%	Low	0%	Low	0%	Low

Annex 11: RBSAT´s Questionnaire by Management Subprograms

Subprograms	Questions	Value	%
Perception questions (not measured)	**1. What is the level of acceptance and conformity from the stakeholders towards the protected area?**	**3**	**100%**
	2. What do you think about the actual conservation condition of the area if you compare it with the time it was declared as a protected area?	**3**	**100%**
	3. Are there technical or financial sources that support the area´s management, besides from the funds obtained from the government?	1	33.33%
	4. Does the financial administration respond effectively to the critical needs of the area?	1	33.33%
	5. Do the infrastructure and equipment receive regular and adequate maintenance?	2	66.67%

	6. Are there technicians specifically destined to support the administrative and financial tasks?	2	66.67%
	7. Until what extend has the Annual Operation Plan been accomplished?	2	66.67%
	8. Is the Budget always sure?	1	33.33%
	9. Is the assigned Budget enough to solve the area´s needs?	2	66.67%
	10. Is the area´s management category adequate to its actual management and goes according to its main problems?	3	100%
ADMINISTRATION	11. Do the planning procedures take into account external elements related to the area's objectives (biological corridors, water basins, distribution areas for species, among others) and are they introduced in regional development plans?	2	66.67%
	12. Do the technicians from the area participate, possess adequate tools and are trained to intervene in planning processes?	2	66.67%
	13. Until what extend is the Management Plan implemented?	3	100%
	14. Does the area contain the adequate size, shape and spatial location, in order to accomplish its management objectives and conservation purposes?	2	66.67%
	15. Are the area´s zoning limits recognized and respected?	3	100%
	16. Is there enough equipment and logistic to accomplish the control and surveillance activities in a successful way?	2	66.67%
	17. Is there enough, adequate and available infrastructure for the control and surveillance activities?	2	66.67%
	18. Are there enough human resources to develop the control and surveillance activities? Are they	1	33.33%

	adequately trained (legal procedures, rescue, first aids, among others)?		
	19. Are there enough economic resources, equipment and trained human resources to develop activities related to environmental education, communication or special programs to strengthen the communities´ wealth?	2	66.67%
	20. Are there enough inputs (trained human resources, infrastructure, equipment) so the area can develop acceptable standards of research, sustainable use of natural resources and monitoring?	2	66.67%
AVERAGE		**1.94**	**64.81%**
PROTECTION	21. Are there other external stakeholders involved in the control and surveillance activities? (For example: volunteers, policemen, armed forces, among others).	2	66.67%
	22. Are the area´s limits clearly defined and physically signaled? Are the limits recognized and respected by the population?	3	100%
	23. How effective are the monitoring processes and the capacities of the human resources in order to respond to legal processes?	2	66.67%
	24. Does the management program contain concrete and detailed control and surveillance activities?	2	66.67%
AVERAGE		**2.25**	**75%**
MANAGEMENT	25. Does the area provide direct economic benefits (income, employment, tourism) to the local communities? It is important to exclude illegal activities.	2	66.67%
	26. Is there enough support and help between the area´s managers and the local stakeholders?	2	66.67%
	27. Do the local stakeholders participate in the decision-making processes that influence the management and the planning processes? Is this	1	33.33%

	participation representative?		
	28. Do the technicians participate in activities or are there any programs to strengthen the communities´ wealth?	2	66.67%
	29. Are the local communities benefitted from the tourism that the area provides?	1	33.33%
	30. Is touristic registration and visitors' control regulated within the area?	2	66.67%
AVERAGE		**1.67**	**55.56%**
CULTURE	31. Is there an environmental communication program (or permanent communication activities) where the visitors and local population are informed about the area´s importance?	1	33.33%
AVERAGE		**1**	**33.33%**
KNOWLEDGE	32. Does the area contain systematized information for the adequate management of the natural and cultural heritage?	2	66.67%
	33. Is there an environmental education program that has incidence over the schools from the zone and is related with the area´s objectives and needs?	1	33.33%
	34. Is there any scientific research program that provides knowledge regarding the area´s biodiversity and management? Are the results systematized?	2	66.67%
	35. Are the results form researches and monitoring incorporated into the area´s management processes and planning tools?	2	66.67%
AVERAGE		**1.75**	**58.33%**
	36. Does the area regulate the use of natural resources by the local communities or visitors? (For example the regulation of activities such as hunting, fishing, recollection of samples, extraction of natural resources, among others)	2	66.67%

RESTORATION	37. Are there any specific actions for the sustainable management of natural resources, which might benefit the local populations' quality of life? (For example: native species production, use of alternative energies, etc.)	2	66.67%
	38. Are specific actions carried out to protect, conserve or recover endangered species? (The question includes the actions to eradicate exotic species).	3	100%
	39. Are there any monitoring and evaluation mechanisms focused on determining the state of conservation or use of resources? (including species, water, vegetal cover, among others)	2	66.67%
AVERAGE		**2.25**	**75%**

Annex 12: RBSAT´s Questionnaire by management ambits

Ambit	Questions	Value	Percentage
	Is the area´s management category adequate to its actual management and goes according to its main problems?	3	100%
CONTEXT	Do the planning procedures take into account external elements related to the area's objectives (biological corridors, water basins, distribution areas for species, among others) and are they introduced in regional development plans?	2	66.67%
	Does the area contain systematized information for the adequate management of the	2	66.67%

	natural and cultural heritage?		
	Are the area´s zoning limits recognized and respected?	3	100%
	Are the area´s limits clearly defined and physically signaled? Are the limits recognized and respected by the population?	3	100%
	How effective are the monitoring processes and the capacities of the human resources in order to respond to legal processes?	2	66.67%
Average		**2.5**	**83.33%**
PLANNING	Are there technical or financial sources that support the area´s management, besides the funds obtained from the government?	1	33.33%
	Does the financial administration respond effectively to the critical needs of the area?	1	33.33%
	Is the Budget always sure?	1	33.33%
	Is the assigned Budget enough to solve the area´s needs?	2	66.67%
	Until what extend is the Management Plan implemented?	3	100%
	Does the area contain the adequate size, shape and spatial location, in order to accomplish its management objectives and conservation purposes?	2	66.67%
	Are the results form researches and monitoring incorporated into the	2	66.67%

	area´s management processes and planning tools?		
	Are there any monitoring and evaluation mechanisms focused on determining the state of conservation or use of resources? (including species, water, vegetal cover, among others)	2	66.67%
Average		1.75	58.33%
INPUTS	Are there technicians specifically destined to support the administrative and financial tasks?	2	66.67%
	Are there other external stakeholders involved in the control and surveillance activities? (For example: volunteers, policemen, armed forces, among others).	2	66.67%
	Is there enough equipment and logistic to accomplish the control and surveillance activities in a successful way?	2	66.67%
	Is there enough, adequate and available infrastructure for the control and surveillance activities?	2	66.67%
	Are there enough human resources to develop the control and surveillance activities? Are they adequately trained (legal procedures, rescue, first aids, among others)?	1	33.33%
	Are there enough economic resources, equipment and trained	2	66.67%

	human resources to develop activities related to environmental education, communication or special programs to strengthen the communities´ wealth?		
	Is there any scientific research program that provides knowledge regarding the area´s biodiversity and management? Are the results systematized?	2	66.67%
	Are there enough inputs (trained human resources, infrastructure, equipment) so the area can develop acceptable standards of research, sustainable use of natural resources and monitoring?	2	66.67%
Average		**1.88**	**62.50%**
	Do the infrastructure and equipment receive regular and adequate maintenance?	2	66.67%
	Do the technicians from the area participate, possess adequate tools and are trained to intervene in planning processes?	2	66.67%
	Does the management program contain concrete and detailed control and surveillance activities?	2	66.67%
	Is there enough support and help between the area´s managers and the local stakeholders?	2	66.67%
PROCESSESS	Is touristic registration and visitors' control regulated within the area?	2	66.67%

	Does the area regulate the use of natural resources by the local communities or visitors? (For example the regulation of activities such as hunting, fishing, recollection of samples, extraction of natural resources, among others)	2	66.67%
	Are there any specific actions for the sustainable management of natural resources, which might benefit the local populations' quality of life? (for example: native species production, use of alternative energies , etc.)	2	66.67%
Average		2	66.67%
	Until what extend has the Annual operation plan been accomplished?	2	66.67%
	Does the area provide direct economic benefits (income, employment, tourism) to the local communities? It is important to exclude illegal activities.	2	66.67%
PRODUCTS	Is there an environmental communication program (or permanent communication activities) where the visitors and local population are informed about the area´s importance?	1	33.33%
	Is there an environmental education program that has incidence over the schools from the zone and is related with the	1	33.33%

	area´s objectives and needs?		
	Do the local stakeholders participate in the decision-making processes that influence the management and the planning processes? Is this participation representative?	1	33.33%
	Do the technicians participate in activities or are there any programs to strengthen the communities´ wealth?	2	66.67%
	Are the local communities benefitted from the tourism that the area provides?	1	33.33%
	Are specific actions carried out to protect, conserve or recover endangered species? (The question includes the actions to eradicate exotic species).	3	100%
	Average	**1.63**	**54.17%**
IMPACT	**What is the level of acceptance and conformity from the stakeholders towards the protected area?**	**3**	**100%**
	What do you think about the actual conservation condition of the area if you compare it with the time it was declared as a protected area?	**3**	**100%**
	Average	**3**	**100%**

Annex 13: Questionnaire for RBSAT´s final EEM

Questions	Value	%
1. Are there technical or financial sources that support the area´s management, besides from the funds obtained from the government?	1	33.33%
2. Does the financial administration respond effectively to the critical needs of the area?	1	33.33%
3. Do the infrastructure and equipment receive regular and adequate maintenance?	2	66.67%
4. Are there technicians specifically destined to support the administrative and financial tasks?	2	66.67%
5. Until what extend has the Annual Operation Plan been accomplished?	2	66.67%
6. Is the Budget always sure?	1	33.33%
7. Is the assigned Budget enough to solve the area´s needs?	2	66.67%
8. Is the area´s management category adequate to its actual management and goes according to its main problems?	3	100%
9. Do the planning procedures take into account external elements related to the area's objectives (biological corridors, water basins, distribution areas for species, among others) and are they introduced in regional development plans?	2	66.67%
10. Do the technicians from the area participate, possess adequate tools and are trained to intervene in planning processes?	2	66.67%
11. Until what extend is the Management Plan implemented?	3	100%
12. Does the area contain the adequate size, shape and spatial location, in order to accomplish its management objectives and conservation purposes?	2	66.67%
13. Are the area´s zoning limits recognized and respected?	3	100%
14. Is there enough equipment and logistic to accomplish the control and surveillance activities in a successful way?	2	66.67%
15. Is there enough, adequate and available infrastructure for the control and surveillance activities?	2	66.67%

16. Are there enough human resources to develop the control and surveillance activities? Are they adequately trained (legal procedures, rescue, first aids, among others)?	1	33.33%
17. Are there enough economic resources, equipment and trained human resources to develop activities related to environmental education, communication or special programs to strengthen the communities´ wealth?	2	66.67%
18. Are there enough inputs (trained human resources, infrastructure, equipment) so the area can develop acceptable standards of research, sustainable use of natural resources and monitoring?	2	66.67%
19. Are there other external stakeholders involved in the control and surveillance activities? (For example: volunteers, policemen, armed forces, among others).	2	66.67%
20. Are the area´s limits clearly defined and physically signaled? Are the limits recognized and respected by the population?	3	100%
21. How effective are the monitoring processes and the capacities of the human resources in order to respond to legal processes?	2	66.67%
22. Does the management program contain concrete and detailed control and surveillance activities?	2	66.67%
23. Does the area provide direct economic benefits (income, employment, tourism) to the local communities? It is important to exclude illegal activities.	2	66.67%
24. Is there enough support and help between the area´s managers and the local stakeholders?	2	66.67%
25. Do the local stakeholders participate in the decision-making processes that influence the management and the planning processes? Is this participation representative?	1	33.33%
26. Do the technicians participate in activities or are there any programs to strengthen the communities´ wealth?	2	66.67%
27. Are the local communities benefitted from the tourism that the area provides?	1	33.33%
28. Is touristic registration and visitors' control regulated within the	2	66.67%

area?		
29. Is there an environmental communication program (or permanent communication activities) where the visitors and local population are informed about the area´s importance?	1	33.33%
30. Does the area contain systematized information for the adequate management of the natural and cultural heritage?	2	66.67%
31. Is there an environmental education program that has incidence over the schools from the zone and is related with the area´s objectives and needs?	1	33.33%
32. Is there any scientific research program that provides knowledge regarding the area´s biodiversity and management? Are the results systematized?	2	66.67%
33. Are the results form researches and monitoring incorporated into the area´s management processes and planning tools?	2	66.67%
34. Does the area regulate the use of natural resources by the local communities or visitors? (For example the regulation of activities such as hunting, fishing, recollection of samples, extraction of natural resources, among others)	2	66.67%
35. Are there any specific actions for the sustainable management of natural resources, which might benefit the local populations' quality of life? (For example: native species production, use of alternative energies, etc.)	2	66.67%
36. Are specific actions carried out to protect, conserve or recover endangered species? (The question includes the actions to eradicate exotic species).	3	100%
37. Are there any monitoring and evaluation mechanisms focused on determining the state of conservation or use of resources? (including species, water, vegetal cover, among others)	2	66.67%
FINAL AVERAGE	**1.92**	**63.96%**

Annex 14: RBSAT´s communities (questionnaire of external perception)

Questions	% by Authorities	% by Laguna del Mante	EP	% by Los Sabinos	EP	% by Las Palmas	EP
1. What is the level of acceptance and conformity from the stakeholders towards the protected area?	100%	**100%**	The same	66.67%	Low	66.67%	Low
2. What do you think about the actual conservation condition of the area if you compare it with the time it was declared as a protected area?	100%	**100%**	The same	100%	The same	66.67%	Low
3. Are there other external stakeholders involved in the control and surveillance activities? (For example: volunteers, policemen, armed forces, among others).	66.67%	66.67%	The same	33.33%	Low	0%	Low
4. Are the area´s limits clearly defined and physically signaled? Are the limits recognized and respected by the population?	100%	100%	The same	100%	The same	0%	Low

5. Does the area provide direct economic benefits (income, employment, tourism) to the local communities? It is important to exclude illegal activities.	66.67%	66.67%	The same	66.67%	The same	0%	Low
6. Is there enough support and help between the area´s managers and the local stakeholders?	66.67%	66.67%	The same	66.67%	The same	33.33%	Low
7. Do the local stakeholders participate in the decision-making processes that influence the management and the planning processes? Is this participation representative?	33.33%	100%	High	66.67%	High	0%	Low
8. Do the technicians participate in activities or are there any programs to strengthen the communities´ wealth?	66.67%	100%	High	66.67%	The same	0%	Low
9. Are the local communities benefitted from the tourism that the area provides?	33.33%	0%	Low	33.33%	The same	0%	Low
10. Is there an environmental communication program	33.33%	33.33%	The same	33.33%	The same	33.33%	The same

(or permanent communication activities) where the visitors and local population are informed about the area´s importance?							
11. Is there an environmental education program that has incidence over the schools from the zone and is related with the area´s objectives and needs?	33.33%	66.67%	High	0%	Low	0%	Low
12. Does the area regulate the use of natural resources by the local communities or visitors? (For example the regulation of activities such as hunting, fishing, recollection of samples, extraction of natural resources, among others)	66.67%	100%	High	66.67%	The same	66.67%	The same
13. Are there any specific actions for the sustainable management of natural resources, which might benefit the local populations' quality of life? (For	66.67%	66.67%	The same	66.67%	The same	33.33%	Low

example: native species production, use of alternative energies, etc.)						

Annex 15: CONANP´s regional administration questionnaire of external perception

Questions	% by Authorities	% by CONANP´S regional administration	External perception
1. Are there technical or financial sources that support the area´s management, besides from the funds obtained from the government?	33.33%	66.67%	High
2. Does the financial administration respond effectively to the critical needs of the area?	33.33%	33.33%	The same
3. Do the infrastructure and equipment receive regular and adequate maintenance?	66.67%	33.33%	Low
4. Until what extend has the Annual Operation Plan been accomplished?	66.67%	100%	High
5. Is the Budget always sure?	33.33%	33.33%	The same
6. Is the assigned Budget enough to solve the area´s needs?	66.67%	0% it is reduced every year	Low
7. Do the planning procedures take into account external elements related to the area's objectives (biological corridors, water basins, distribution areas for species, among others) and are they introduced in regional development plans?	66.67%	66.67%	The same

8. Do the technicians from the area participate, possess adequate tools and are trained to intervene in planning processes?	66.67%	66.67%	The same
9. Until what extend is the Management Plan implemented?	100%	66.67%	Low
10. Does the area contain the adequate size, shape and spatial location, in order to accomplish its management objectives and conservation purposes?	66.67%	66.67%	The same
11. Are the area´s limits clearly defined and physically signaled? Are the limits recognized and respected by the population?	100%	66.67%	Low
12. Does the management program contain concrete and detailed control and surveillance activities?	66.67%	66.67%	The same
13. Is there enough support and help between the area´s managers and the local stakeholders?	66.67%	66.67%	The same
14. Are the local communities benefitted from the tourism that the area provides?	33.33%	0%	Low
15. Does the area contain systematized information for the adequate management of the natural and cultural heritage?	66.67%	100%	High
16. Are specific actions carried out to protect, conserve or recover endangered species? (The question includes the actions to eradicate exotic species).	100%	66.67%	Low

Annex 16: Direction of Ecology´s questionnaire of external perception

Question	% by Authorities	% by Direction of Ecology (Ciudad Valles)	External perception-Comments	% by Direction of Ecology (Tamuin)	External perception-comments
1. Do the planning procedures take into account external elements related to the area's objectives (biological corridors, water basins, distribution areas for species, among others) and are they introduced in regional development plans?	66.67%	**N/A. There is not awareness.**	The interview was done to the Director, Ing. Bernardo Saldaña García. He thinks that CONANP should be in Ciudad Valles since more percentage of the protected area belongs to Ciudad Valles and not to Tamuin. There is not coordination between CONANP and this municipality. Nowadays the Municipality is doing a reforestation program but this programs and other initiatives are not related with the protected area or CONANP	0%	Low.\n\nThe interviewed person was the Director's assistant, Professor Blas Bautista Bautista. Despite not considering that planning procedures take into account external elements, the interviewed stated that the Direction of Ecology from Tamuin Municipality and CONANP´s authorities share good relationships and are invited to participate in workshops, environmental education programs, among others. For the development of reforestation programs the personnel from Tamuin Municipality ask for CONANP´s assessment. Recently they had had a workshop about jaguar

					and its incidence in livestock activities.

Annex 17: CEMEX´s questionnaire of external perception

Questions	% by Authorities	% by CEMEX (Claudia Estela Rivera Torres- Advisor for social responsibility and sustainable development)	EP	Comments
1. Is there an environmental communication program (or permanent communication activities) where the visitors and local population are informed about the area´s importance?	33.33%	66.67%	High	Yes, but its implementation is limited
2. Is there an environmental education program that has incidence over the schools from the zone and is related with the area´s objectives and needs?	33.33%	100%	High	A lot of programs including environmental education, training information for the community and environmental restoration. In the cultural center from Laguna del Mante there are ecological camps developed. There is also an environmental program called Eco Chavos for primary school and the program "adopt a tree" for

				the kids from Pre-kinder.
3. Is there enough support and help between the area´s managers and the local stakeholders?	66.67%	100%	High	There is a lot of communication, especially with Laguna del Mante and for the fire brigades. Every June 5th there is a reforestation campaign with volunteers
4. Do the technicians participate in activities or are there any programs to strengthen the communities´ wealth?	66.67%	100%	High	There is support against fires and support to the different Ejidos. CEMEX donates water and cement for construction.
5. Does the area provide direct economic benefits (income, employment, tourism) to the local communities? It is important to exclude illegal activities.	66.67%	66.67%	The same	The means of life have been strengthened a little. More integration, cooperation and organization are still needed
8. Are there other external stakeholders involved in the control and surveillance activities? (For example: volunteers, policemen, armed forces, among others).	66.67%	33.33%	Low	Only when called

9. Are the area´s limits clearly defined and physically signaled? Are the limits recognized and respected by the population?	100%	100%	The same	Physical delimitation and with signals.
10. Does the area regulate the use of natural resources by the local communities or visitors? (For example the regulation of activities such as hunting, fishing, recollection of samples, extraction of natural resources, among others)	66.67%	0%	Low	Only for activities related to clearing of trees.
8. What do you think about the actual conservation condition of the area if you compare it with the time it was declared as a protected area?	100%	100%	The same	People have more consciousness
9. What is the level of acceptance and conformity from the stakeholders towards the protected area?	100%	100%	The same	

9. Are the local communities benefitted from the tourism that the area provides?	33.33%	0%	Low	No tourism inside the area
11. Is there any scientific research program that provides knowledge regarding the area´s biodiversity and management? Are the results systematized?	66.67%	100%	High	Systematized and promoted information
12. Are there enough inputs (trained human resources, infrastructure, equipment) so the area can develop acceptable standards of research, sustainable use of natural resources and monitoring?	66.67%	66.67%	The same	There is an acceptable amount of inputs, but still more technicians are required and more firefighting equipment is also required