2 Linking 'Socio-' and 'Bio-' Diversity: The Stakes of Indigenous and Non-indigenous Co-management in the Bolivian Lowlands

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Abstract

Biodiversity conservation policies are intrinsically related to ethnic issues in the Bolivian Amazon. The great social diversity that prevails in Bolivia is rooted in specific institutional arrangements according to categories which make the implementation of participatory mechanisms difficult to carry out. The present case study investigates the relation between social diversity and co-management governance of the Biosphere Reserve and Indigenous Territory of Pilón Lajas, located in the Beni department of Bolivia. Starting in the 1960s, productivist colonisation policies brought thousands of Quechua and Aymara people into the Amazonian areas, bringing with them their cultivation methods as well as their social institutions. In the face of this wave of migration, populations considered indigenous, the Tsimane' and Mosetene, had to adapt by adopting some non-native practices. These new forms of collaboration seriously call into question the borders of the protected areas, making it difficult to apply the principles of nature conservation, especially in the buffer zone of the Biosphere Reserve but also in some parts of the core zone. The election of Evo Morales foretells a reconfiguration of the baselines between eastern and western Bolivia with regard to conservation policy.

Keywords: participatory conservation in the Bolivian Amazon; protected areas governance; indigenous territory; institutional diversity; territorial history; Tsimane' and Mosetene people.

2.1 Introduction

From 1939 until the end of the 1990s, the Bolivian government recognised by decree the existence of 26 protected areas in a total area of almost 17 million hectares. Along with those measures, a National System of Protected Areas (NSPA) has been set up to try to guarantee biodiversity conservation in the areas considered of primary importance at a global level.

It turns out, however, that the principles of management defined in the regulations of protected areas are clashing with the multiplicity of local and national logics. The conjunction between the colonisation policies of the eastern parts of the country and those of nature conservation brings up logics of appropriation of natural resources which are very different and even oppose one another. Moreover, it is interesting to analyse these opposing logics in a context where the Quechua and Aymara populations are presently at the threshold of significant changes in the government and in official institutions with the election of Evo Morales to the Presidency.

The case study presented here on the Pilón Lajas Biosphere Reserve and Indigenous Territory puts in perspective the multiplicity of space occupation logics in what we will call the area of influence[2] of the protected area. An analysis of the territorial historicity of Pilón Lajas makes it possible to understand the difficulties in the application of the biodiversity conservation mode. What are the consequences of agricultural colonisation by the Quechua and Aymara of Andean origin, on the eco-social systems of the indigenous Tsimane' and Mosetene? What links can one establish between institutional diversity and the conservation of biological diversity in the context of the governance processes of Pilón Lajas?

This contribution begins with an examination of the social and historic processes which led to the implementation of the current governance mechanisms of Pilón Lajas. This is followed by an explanation of the consequences these processes have for the local forms of appropriation of natural resources. A final section points out in what way the change in government has brought new baselines within the framework of governance of protected areas in Bolivia.

2.2 General characteristics of the Biosphere Reserve and communal lands of Pilón Lajas

2.2.1 Geographical characteristics

The Biosphere Reserve and Indigenous Territory of Pilón Lajas is located 350 km north of La Paz in the outer limits between the western cordillera of the Andes and the plains of the Beni department.[3] It is situated between two biogeographical subregions: montane cloud forests (yungas) and the Madeira humid forest. The altitude variation within the reserve ranges between 300 and 2,000 meters. The longitudinal centre of the reserve marks the border between La Paz Department and that of Beni (VSF 1995). It is characterised by its intertropical position, with hot and wet winds from the north and a very strong wet condensation facilitated by the barrier constituted by the Andes cordillera. The climate is marked by an average temperature of 24.9°C within the reserve with constant and high precipitation with an annual average of 2,444 mm, oscillations between 1,500 mm and 3,500 mm and a dry period between June and July (300 mm). The existence of internal climatic variations in the protected area is a major factor in biological diversification. The highest areas are even wetter and rainier and have the lowest temperatures with the moisture present for most of the year (VSF 1998). This ecosystem diversity (Figure 1)[4] justifies zoning in 4 categories of use, each divided into several polygons: strict protection (37 %); extensive extractive use (41 %); intensive extractive use (17 %) and moderate use (5 %).

2.2.2 Hydrology and soils

Pilón Lajas contributes to the water supply of the Amazonian system through the Beni and Mamore rivers. It accommodates 5 main riverbeds: Alto Beni, Maniqui, Quiquibey, Yacuma, and Beni. The soils are characterised by the following categories: Orthent, Tropept and Ochrept, which are not very deep in most cases. The heavy precipitation causes leaching of mineral salts contained in the soil, danger of erosion, strong acidity, poor organic matter content, and excessive moisture. This results in poor fertility and requires special conservation practices (VSF 1995; WCS 2005).

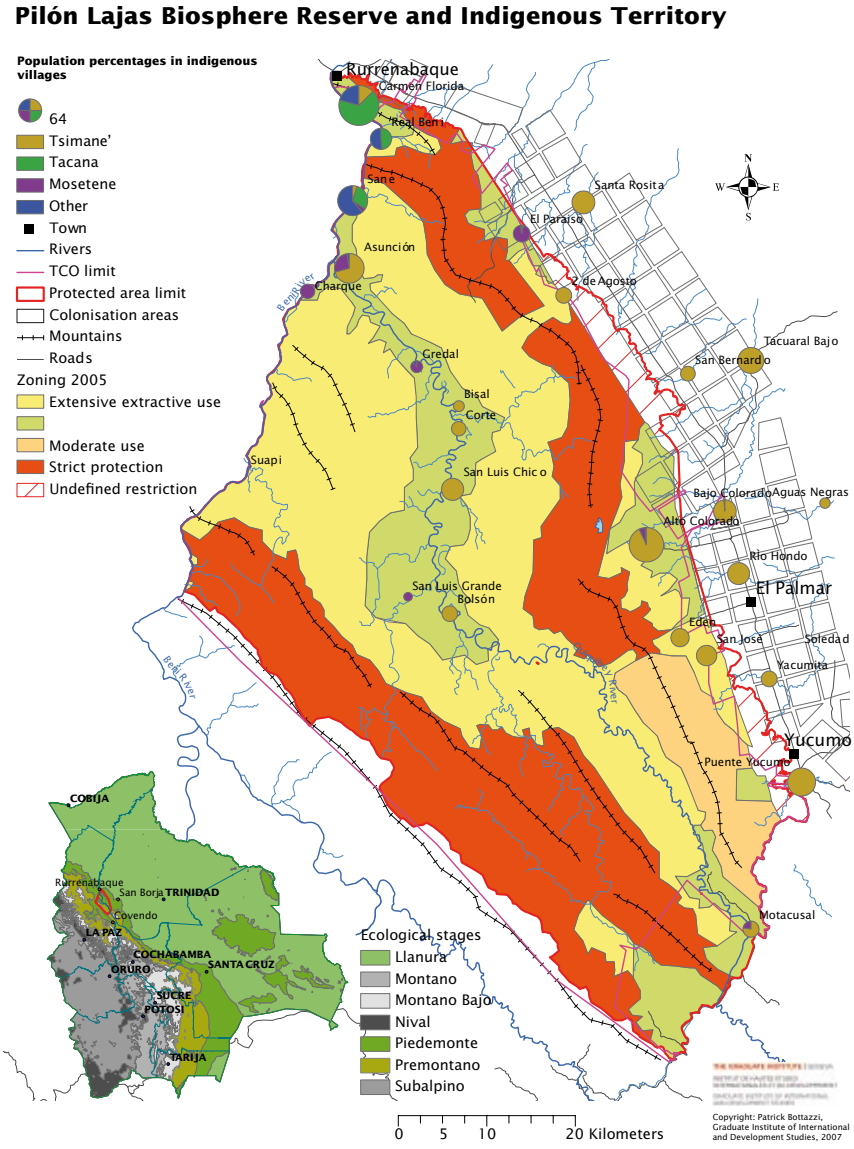

Fig. 1
The Pilón Lajas Biosphere Reserve and Indigenous Territory. (Map by Patrick Bottazzi)

2.3 Fauna and flora

In Pilón Lajas there are between 2,000 and 3,000 species of vascular plants (Killeen 1993). Among these, there are approximately 162 species of various trees, such as mahogany (*Swietenia macrophylla*); cedar (*Cedrela* sp.), *roble* (*Amburana cearensis*), and approximately 26 other valuable species of high monetary value on the markets, such as *almendrillo* (*Dipteryx odorata*), *cuchi* (*Astronium urundeuva*), *ochoó* (*Hura crepitans*), *palo maría* (*Calophyllum brasiliense*) and *verdolago* (*Terminalia* sp.). Furthermore, there are 33 cheap species such as *bibosi* (*Ficus* sp.), *momoqui* (*Caesalpina* spp.), *mara macho* (*Tapirira guianensis*), and *trompillo* (*Guarea* sp.). One of the specificities of the reserve is its great diversity of palm trees, such as *pachiuva* (*Socratea exorrhiza*), *tembe* (*Bactris gasipaes*), *copa* (*Iriartea deltoidea*), *motacú* (*Scheela princeps*), *chontas* (*Astrocryum*), and ivory palm (*Phytelephas macrocarpa*). A plant very often used in the area for building roofs, the *jatata* (*Geonoma* spp.), is also found there. This plant is an economic pillar for the local populations, who specialise in its transformation and sale on the local markets.

Pilón Lajas is also the home 755 different animal species, among which there are 73 mammals, 485 birds, 103 fish, 58 reptiles, and 36 amphibians. The rarest are the black spider monkey (*Ateles paniscus*), the lowland tapir (*Tapirus terrestris*), the spectacled bear (*Tremarctos ornatus*), the jaguar (*Panthera onca*), the giant otter (*pteronura brasiliensis*), the harpy eagle (*Harpia harpyja*), and the chestnut eagle (*Oroaetus isidori*).

2.4 Settlement history of the area in ancient times

As shown by some archaeological sites, the settlement of the Bolivian lowlands dates back at least 1300 years and corresponds to the Barrancoïde culture, which originated in the northern part of the continent. Lathrap thus identifies the Chimay site and the lower Velarde phase as the two oldest complexes in the Bolivian lowlands, dating between 600 and 700 AD. These migratory movements started in Bolivia through the Itenes and the Beni and constitute the roots of the Tsimane' and Mosetene cultures as they are known today (Lathrap in Jiménez Vaca 2003).

Gregorio de Bolívar was the first missionary to be in contact with the Mosetene and Tsimane' in 1621. He drowned during another voyage in the

area a few years later. However, the historical elements of the region were only known starting from the 16th century with the arrival of the first explorers in search of mythical places. Thereafter, the discovery of gold mines in the Kaka and Guanay rivers favoured a significant flow of Western conquerors. Towards the end of the 17th century, the region was under the influence of three great missionary orders: the Dominicans (1670), the Franciscans (1680), and the Jesuits (1682). In 1693 the Jesuits founded the Reduction of San Francisco de Borja, which would become the main pole regrouping the Tsimane' communities in the area. Tsimane' populations, contrary to their Mosetene cousins, are very difficult to contain. In spite of their highly pacifist character they could not stand the change of life within the Jesuit reductions. This led to an uprising in 1696 (Daillant 2003). A little further, in the Covendo area, the beginning of the systematic conversion of the Mosetene started with the San Miguel de Muchanes Mission in 1804 (Métraux 1963, pp 486-487). The Mosetene maintained much closer relations with the Jesuits than the Tsimane' ever did, who, by then, were known for their minimal capacity to integrate into Western society. Tsimane' and Mosetene continue to inhabit the region in which they were colonised by the missionaries in the 17th century. Colonisation had an enormous impact on their societies – one could actually formulate the hypothesis that the current conception of 'community' is strongly influenced by the missionary reductions. This idea is supported by the present differences between Tsimane' and Mosetene in the configuration of their villages.

A little further north, in the San Buenaventura and Riberalta region, the Tacana people were completely integrated into the colonial economy. Thanks to their labour force they were involved in the most important industries of the region: rubber, cashew nuts (*castaña*) and quinoa. The Tacanas did not have the socio-economic characteristics by which we currently know them prior to their forced enrolment in extractive economies. They are the product of an important migration originating from the east, and thus suffered drastic acculturation; this shows particularly in the introduction of Spanish as the lingua franca, the integration of a cash economy, and the gradual loss of their own language and pre-colonial institutions.

This powerful change in the indigenous social and economic systems induced by the missionaries had a considerable influence on all populations in the region, even though there was a marked interruption of the process in 1767, when the Jesuits were expelled. A new wave of religious colonisation came in the 1950s, with the arrival of the American evangelist missionaries of Nueva Tribu. In 1953, Nueva Tribu founded the Fatima de Caracara Mis-

sion, and the Bible was translated into the Tsimane' language. This marked the beginning of a new era for the Tsimane' populations in the region. The time was one of pacifist integration, but it inescapably led to the adoption of the Judeo-Christian values of Western society. Transmission took place primarily through the training of bilingual schoolteachers, among whom were the first modern Tsimane' leaders.

Next to the secular existence of indigenous populations in the region and that of their new evangelist colonisers, a demographic category of equal importance must be considered: the mestizos of Western origin called the Camba. Despite their much more recent origin, these populations are nonetheless the most numerous in the region – at least they were so prior to the massive colonisation by Quechua and Aymara of Andean origin. The Camba were great landowners and cattle breeders; they came in successive waves from Europe, the Middle East and Asia since the economic expansion of rubber, benefiting from economic opportunities offered by the exploitation of the area's natural resources (quinoa, rubber, wood, narcotics, agriculture and cattle breeding). While these populations are very numerous in the Beni department, they are virtually non-existent in the area of influence of the reserve. The Camba are concentrated in the town and in the pampa, where grazing activities are more extensive. They are therefore not included in the present analysis.

Table 1

Indigenous populations in the area of influence of Pilón Lajas.

	Tsimané	Mosetene	Tacana	Others	Total	Colonist
In the area of influence	934	131	187	142	1,394	8,237
In the reserve	508	130	187	142	967	
On the road outside the reserve	332	1	0	0	333	
On the road inside the reserve	371	47	1	3	422	
On the riverside	231	83	186	139	639	
On the roadside	703	48	1	3	755	

Source: Compiled data from management plan (WCS 2005). Statistics for indigenous populations are also represented on the map (Figure 1).

The analysis will focus on the populations considered as indigenous and migrant residing in the area of influence of the Pilón Lajas reserve (Table 1). According to data collected in 2004 by the Wildlife Conservation Society (WCS) team, the total indigenous population was 1394 people with 333 outside the reserve.[5] They were divided into 238 families in 25 communities, and had an annual population growth rate of 2.31%. The ethnic distribution

was as follows: Tsimane' made up 65.4%, Mosetene 9.1%, Tacana 14%, and others 10.1% (WCS 2005). Only 16% of the total population, i.e. 221 people, were located on the section of the road extending from Yucumo (not included) to Rurrenabaque (not included) in what was seen as the buffer zone of the reserve. This was the focus area of our study. The total migrant population in the area of influence of Pilón Lajas amounts to 8,237 people. According to urban poles (Yucumo, El Palmar) this population numbers 3,198 people, with the following ethnic distribution: Quechua make up 28% and Aymara 34%. The annual growth rate is 14.64% spread over 25 localities (WCS 2005).[6] We do not know the exact amount of migrant population inside the reserve, which is mostly concentrated in the southern part outside the indigenous territory.

2.5 Institutional history of the reserve and governance mechanisms

2.5.1 From establishment of the reserve to indigenous co-administration

In 1975 Pilón Lajas was for the first time proposed as a National Park within the legal framework of the Law on Forestry, National Parks, Game and Fish[7] with an area of 280,000 hectares. In 1977, the UNESCO Man and Biosphere (MAB) programme nominated it as a Biosphere Reserve. These first two recognitions did not, however, lead to concrete measures in the field. The zone was truly considered a territorial entity only a few months after the great march for "land and dignity" organised by the eastern indigenous delegations between Trinidad and La Paz, in November 1989. In August 1991, an important meeting was organised by the Centre of Agro-ecological Services (CESA), a non-governmental organisation (NGO) in Alto Colorado – one of the oldest communities of Pilón Lajas – in order to discuss the problems related to the region and elaborate a territorial claim addressed to the central government. During this first meeting, known as the "First Ethno-cultural Tsimane' Meeting", a Tsimane' and Mosetene Regional Council (CRTM) was set up, and the first indigenous representatives were elected. One year later, by the supreme decree of 9 April 1992, the Bolivian President officially created the Biosphere Reserve and Indigenous Territory of Pilón Lajas in the name of the Tsimane' and Mosetene indigenous populations, the majority of whom lived in the forest belts. The reserve covered an area of 400,000 hectares and was given a dual status already at this point: on the one hand

it was considered a biosphere reserve, and on the other hand it was seen as an indigenous territory. At the time, indigenous territories did not yet have a definite status according to the Bolivian land law. It was only in 1996, when the National Institute of Agrarian Reform (INRA) law was adopted, that the indigenous territories acquired the status of Communal Territories of Original Inhabitants (TCO). These titles were granted upon request from the indigenous people on areas of up to 2 million hectares.

With the official recognition of Pilón Lajas both as an indigenous territory and as a biosphere reserve in 1992, the interest of international organisations was quickly aroused. At that time, the regional manager of the French NGO Vétérinaires Sans Frontières (VSF), who was providing assistance to cattle-breeders in the area, decided to get involved in integrated conservation activities with the populations of Pilón Lajas. They quickly managed to obtain joint financing from the European Union and the Swiss Agency for Development and Cooperation, amounting to EUR 4 million over a six-year period, to be shared between conservation and development activities. Several diagnoses were worked out, and a management plan was elaborated in 1997. During that time a first corps of park guards was trained. It was made up mostly of indigenous members and was primarily devoted to protection activities. At the same time, VSF engaged in numerous activities with agricultural colonists in the buffer zone of the reserve. A new forestry law was adopted by the Bolivian government in 1996 and, due to pressure exerted by VSF and indigenous organisations, logging companies which had not been authorised before 1992 were ordered to leave the reserve. These measures aroused the anger not only of powerful logging lobbies in the region but also of a whole segment of the Bolivian population whose incomes were directly related to the exploitation of forest resources.

The important financial means brought in by VSF, combined with the area's forest resources, made Pilón Lajas an important stake for the government's political elite. As for the indigenous population, they could not understand the NGO activities. Most of the productive projects benefited colonists, whereas indigenous people only benefited from nature conservation projects. The leaders of colonist federations such as the Rurrenabaque Colonist Federation (FECAR) and the Yucumo Colonist Federation (FECY) wished to be given more power and, above all, to continue their cattle-raising activities. VSF, in order to meet conditions imposed by sponsors (especially German and Dutch), had to find economic alternatives that were ecologically more acceptable. This constellation of opposing forces resulted in VSF offi-

cials being held hostage and forced to leave by the colonists' organisation. This event marked the beginning of a new era for the reserve, which from now on was managed by the Bolivian government, first through the Biodiversity Department (DGB) and later through the National Protected Areas Service (SERNAP) created in 1998. The reserve has benefited from World Bank funding, even if the funds are not disbursed on a regular basis, making Pilón Lajas one of the best equipped and most operational protected areas in Bolivia (Pauquet 2005). In the time of VSF management, all members of the park guard corps were indigenous people from the reserve. However, the position of a guard was very difficult to assume for indigenous inhabitants. Tsimane' and Mosetene were very resistant to the strict discipline required by the profession. Moreover, relations with their own families became difficult for those who were state representatives. Since the change of regime, the park guard corps has consisted of one half indigenous people and one half mestizos.

The dual categorisation of Pilón Lajas as a Biosphere Reserve and as communal lands of original inhabitants implies substantial participation by local populations in the management of the area. The Tsimane' and Mosetene Regional Council (CRTM) was founded in 1991 through a dynamics between the Tsimane' Grand Council (the main organisation representing the Tsimane' in the area), the Centre of Agro-ecological Services (CESA) and the evangelist missionary organisations of Nueva Tribu. Its first representative was Lucio Turene, elected during the "Ethno-cultural congress" organised by the CESA. In 1993, pressure exerted by the Tsimane' Grand Council led to the election of Claudio Hualiatta as the head of the CRTM. He held this position until 1999. That year, VSF, which continued its activities in the area even though it was longer in charge of managing Pilón Lajas, organised an important workshop on fauna management. At the time, an NGO called Ecobolivia that was interested in developing ecotourism projects in the reserve, launched the idea of organising new elections to choose CRTM representatives. The idea was unexpected, but it met the approval of the indigenous population. Lucio Turene was once again elected President, with José Caimani as the Vice President. The two were accused of maintaining non-transparent trade relations with Ecobolivia. New elections were organised one month later – however, without the approval of the entire population. Claudio Hualiatta was re-elected President and Triniti Tayo Vice President. This led to the co-existence of two Tsimane' and Mosetene Regional Councils, a situation that persisted for nearly two years, during which there was much uncertainty about the legitimacy of the second

organisation. As the sponsors refused to finance the organisation, new elections were organised in 2002. Triniti Tayo and Edwin Miro were elected President and Vice President, respectively. The period coincided with funding obtained from a Danish NGO called IBIS, and there was also financing for specific projects from Conservation International (CI). Starting in 2003, very important negotiations with the government led to a legalisation process for the Pilón Lajas territory, which was completed in 2005, the year when Triniti Tayo decided not to run for President and Edwin Miro was elected instead. The leadership of the CRTM has not been important with regard to individual ambitions as it represents little financial and symbolic interest. The CRTM focused much more on external stakeholder strategies and interests, with a view to maintaining control in decision-making regarding the Biosphere Reserve. The international public good dimension of Pilón Lajas is, to some extent, a factor causing indigenous demobilisation. Leaders are seen by local communities as 'co-opted' by external actors, and the CRTM is losing legitimacy.

Currently the protected area is governed under the co-management concept. The governmental Reserve Administration receives the major part of the funds intended for operating the reserve and for implementing conservation and development projects. The CRTM is to coordinate activities with local communities and serves as an intermediary when decisions have to be made in relation with the TCO. Communities send representatives to the general assemblies that are convened on an irregular basis. It is on these occasions that the most important decisions, such as the election of the members of the Council, are made in a vote by raising of hands. These elections are not organised on a regular basis but depending on financial factors. This uncertainty about the election process partly explains the relative legitimacy accorded by the local communities to their leaders in town. Relations between the Reserve Administration and the CRTM have been changing constantly since their creation. From 2001 to 2005 they were largely conflictive, especially because all important decisions were taken by the director of the reserve. Since 2007, when the principle of co-administration was replaced with the more comprehensive principle of co-management, cooperation has become more productive. The new conventions made the working mechanism between the CRTM and the Reserve Administration more consensual. Both entities are now taking decisions in a more informal and efficient way.

The main task of the CRTM in these past years has been to ensure the process of territorial legalisation with the state authorities to clearly define the

boundaries of the territory and obtain a final land title. The process has made it possible to secure a land title (TCO) on most of the area recognised in 1992. However, a very large part of the territory was lost and titled in the name of colonist federations located in the south of the protected area (Figure 1). This area, which was not occupied by the Tsimane' or Mosetene at the time, could not be claimed as an integral part of the territory, and was allocated to the populations of Andean origin who were actually occupying it. The CRTM was forced to sign the cession of this part of the territory to the colonist organisation. Even if the area has formally remained under the Reserve Statutes, the TCO is now divided into two polygons – one in the name of the indigenous people and one in the name of the colonist federations.

External funds coming from international organisations play an important role in Pilón Lajas Biosphere Reserve governance – and thereby considerably reduce the decision-making autonomy of the Reserve Administration (under SERNAP) and the CRTM. These funds, earmarked mainly for conservation objectives, enforce the economic line policies defined by local authorities. Irregular disbursement based on presentation of regular planning is a way of maintaining constant financial uncertainty and establishing control over local governance.

2.5.2 The colonisation process

While recognising the territorial claims of the indigenous Tsimane', the Bolivian government had very different intentions for the area bordering Pilón Lajas. In 1979, a colonisation law provided a legal framework to the so-called "Rurrenabaque – Secure Colonisation Project". The National Institute of Colonisation (INC) and the National Agrarian Council (CNRA), created in Bolivia in 1965, were used to back up the main objectives in the organisation of a migration campaign intended primarily for former miners that had been idled by the economic crisis in the 1980s.

There were two main stages in the colonisation process. The first began in 1978 and ended in 1980, and the second resumed the process in 1983 and has not finished yet. The first colonists of Andean descent mainly originated from Alto Beni and Potosi and came through the relocation programme for idled miners. These miners had been victims of both sectoral liberalisation measures[8] and the collapse of the international tin markets. The objective was to favour agricultural production in the region and solve the problems of land precariousness in Andean areas. During the first and second stages

of colonisation (between 1978 and 1987) nearly 850 families were settled in the course of planned colonisation (VSF 1998). The INC was in charge of organising the occupation of the colonisation zone, by granting land titles to the colonists who declared that they were willing to develop the land in an efficient manner.

With support from the Food and Agriculture Organisation (FAO) and the World Bank, the colonisation programme was planned for an area of thousands of hectares. Plots of land 25 hectares in size were allotted to each family. These allotments were meant to give families access to credits by pawning their property. According to a pyramidal principle of political organisation, a political representative authority corresponded to each level of land division in production. The Colonist Federation, as well as farmers' labour union syndicates and sub-syndicates joined together to defend their common interests. This form of organisation was consolidated by a very strong feeling of ethnic belonging (Aymara, Quechua) which was not very open to the integration of exogenous entities. Contrary to the indigenous communities, Andean populations benefited from a very strong tradition of labour-unionism inherited from the revolution of 1952. Their basis of organisation were regional federations, which, in turn, were constituted by several syndicates. Each federation was composed of three types of producer organisations: the 'colony' established on a *núcleo* of approximately 1,250 hectares (ha) and made up of about 40 families; the 'communal land' which comprised between 15 and 30 families on a territory of 1,000 ha; and 'cooperatives' that were recognised by the National Cooperative Institute and evolved on a territory of approximately 1,000 ha, as well. Two types of colonisation were taken into account: planned colonisation, on the one hand, spontaneous colonisation endorsed post factum by the INC, on the other. The families received a provisional title for two years which could later be converted into a permanent land title on the condition that real land development could be proven. The requirements for the granting of land and for its legal conservation were quite different from those currently prevailing with the Bolivian environmental system. Initially, the colonisation zone was to cover an area of 150,000 ha; this number was later reduced to 75,000 ha. However, the INC maps of 1993 revealed that the combination of planned and spontaneous colonisation covered an occupied area of 175,000 ha (Rasse 1994 in VSF 1998).

This policy – totally opposed to the policy of protected areas or Communal Territories of Original Inhabitants (TCOs) – advanced intensive exploitation

of natural resources as a criterion to gain a land title. All that was needed at the time was to have fodder or perennial cultures to justify that land was efficiently being developed – without farmers necessarily having to be present. Consequently, migrant populations resorted to extensive and precarious crops in development strategies to justify their occupation of the land. The policy resulted in massive deforestation near zones that had been classified as protected areas (VSF 1995; Pacheco 2002). At the time, the INC was encouraging deforestation by guaranteeing land titles to those who practised extensive agriculture and cattle-breeding as long as they could prove their capacity to occupy the space by 'clearing' the forest. It was only in 1992 that the Bolivian government adopted an environmental law and that the idea to preserve biodiversity began to spread. This idea was concretised in practice by creating the Biosphere Reserve of Pilón Lajas.

2.5.3 Forest extraction in informal arrangement

Forestry is the main source of cash for rural areas in the region. The reserve forest represents an important stock of precious wood. Many logging companies settled there after the road between Yucumo and Rurrenabaque was built in the 1980s. For over 15 years these companies, under the official responsibility of the Centre for Forest Development (CDF[9]), have practised short-sighted and unsustainable exploitation of forest resources inside the reserve. Moreover, the indigenous and colonist populations did not benefit at all from this activity. Currently, very few zones remain intact from this plundering. Several valuable species are scattered here and there throughout the reserve in the most poorly accessible areas, such as mountainsides. However, there remains a large, miraculously saved zone in the centre of the reserve, all along the Quiquibey River and in the south. This is what can be dubbed the heart or the lung of the reserve – the area where all the rivers have their sources. This zone has been subject to close monitoring since the establishment of the corps of park guards and is the destination of an increasing flow of migration by colonists from the high plateaus.

Nevertheless, forest exploitation is still permitted within the reserve: since the adoption of the 1996 forestry law, local communities or small enterprises can apply for legal concessions in the "intensive extractive use" zone (Figure 1). Following a study of ecological impact, the application becomes subject to a process of deliberation between the Reserve Administration and the CRTM. Moreover, concessions must also be applied for at the State Forest Service[10]. Since the forced departure of logging companies due to the joint

efforts of conservation NGOs and indigenous organisations, it is the colonists who have taken over intensive exploitation of forest resources in the area. Their system of functioning is completely different from that of the logging companies. Their farmer federations have obtained community concessions for several areas ranging between 1,000 and 8,000 ha. These areas are located in zones of great ecological fragility and where forestry is, theoretically, prohibited. These concessions provide the basis of a new form of plundering in the region which is seriously endangering the ecological balance in the protected area. Since the beginning of the new forestry regime, a management plan has been approved only for the indigenous community of Paraiso. Other demands are in progress.

2.5.4 The decentralisation process of protected area management

The recognition of the Biosphere Reserve and Indigenous Territory of Pilón Lajas took place in the context of important state reforms initiated in the early 1990s. What is referred to as a "Bolivian Environmental Regime" (REB)[11] includes a series of new official state institutions whose role it is to regulate access to natural resources and define in what terms local populations can participate in the management of these natural resources. In the particular case of the forestry regime, the Forest Service, through its local operative units, carries the responsibility for managing forests on the national territory by granting concession titles to logging groups (local communities, municipal associations and private companies). In order to obtain a concession, loggers need to submit management plans certified by experts from the Forest Service. Concessions granted can cover areas of up to 200 ha, but are only partially exploited (by plots of 10 or 20 ha) according to a rotation logic, thus allowing for the remainder of the area under concession to regenerate. Only companies equipped with an approved sawmill are authorised to exploit the forest. By prohibiting the use of chainsaws, the forestry law was built around a production logic that excludes farmers or local indigenous populations who cannot afford to purchase the authorised equipment. These radical constraints imposed on local populations have led to an escalation in generalised disobedience. As a forest engineer says, "for norms to be respected, rights need to be given". Currently, some actors are trying to initiate a reform of the forestry law at various levels; this has already led to some exemptions for small logging groups.

Along with the forestry reforms, the Bolivian government has also adopted very important measures in the fields of biodiversity conservation and land legalisation. The General Protected Area Regulation (RGAP) defines procedures ensuring participation of a majority of the stakeholders involved in the administration of a protected area. The decree on the RGAP[12] was approved following negotiations between civil society organisations[13] and the state. Every 6 months, management committees (MC) are extended to include representatives of indigenous populations, original communities, municipalities, prefectures and other public or private organisations involved.[14] These committees must consist of indigenous people, farmers, and colonists by up to 50%, with the remaining half made up of state representatives.[15] Formally, only indigenous or farmers' organisations recognised by the state as "territory-based organisations" in accordance with the principles of the Law on Popular Participation (1994) were invited to attend protected area management committee meetings. In practice, these management committees did not gain as much influence as expected. Most of the actors are not very interested in participating, and the main political lines adopted are not followed.[16]

The principal task of management committees is to approve elaboration of a management plan defining the main development and conservation policies pursued. In Pilón Lajas only two management plans have been approved since the creation of the reserve in 1992. The first was elaborated by VSF without significant participation by indigenous people. The second was directed by the WCS, who tried to build up a much more complete process of indigenous participation. Colonists were not invited to participate, but a small commission with indigenous members of the CRTM was formed in order to follow the whole participatory process in the communities and at the different interfaces. Nevertheless, from the CRTM position the process was not participatory enough. Indigenous populations were not integrated into public discussions about planning, a concept which is not included in WCS vocabulary. Based on the present study, the main problem of the management plan seems to be its focus on the global aspect of the reserve without taking into account the micro-zonation at the communal level. Holistic communal resource management practices, low mobility facilities, the fragility of each separate economic sector, and the uncertainty of markets are sufficient arguments for focusing more on communal management complexity. For these different reasons, several indigenous assemblies rejected the entire document during one year, before presenting a revised version called a "live plan" instead of a "management plan." Apart from the title, this "live plan" remained very similar to the original version, thus clearly showing

the difficulty felt by indigenous people to enter into this type of normative process based on very different symbolic referents such as scientific and bureaucratic writing.

The decentralisation process and protected areas management are completely dependent on the legal level, and the social and economic implications are important. The municipalities are thus key participants in management committees of protected areas. Their representatives (mayor or councillor) have to approve the management plans.[17] However, as noted above, the management committee does not play such an important role in the governance of Pilón Lajas; municipal participatory planning processes are much more important for the development and conservation of protected areas. This institution has been very strong since the participation law of 1994, which foresees the presence of indigenous representatives at municipal meetings almost five times a year to define their priorities, mostly in terms of basic infrastructure. One of the key stakes of conservation is precisely for the municipalities to take into account the needs of communities living inside the protected areas. These communities, like most social groups, are currently completely in favour of development. They express needs in all sectors under the responsibility of the modern state: education, health, and basic facilities. However, one can note that based on the traditionalist conception of indigenous societies that is still maintained, and because the latter find it difficult to adapt to public spaces of dialogue (due, among other things, to the problems of distance, language and communication habits), municipal planning processes have practically been abandoned. The members of the CRTM try to be present at the municipal assemblies as frequently as they can, but their capacity to persuade is still very weak in the face of colonist federations and urban committees. Therefore, it is not astonishing that local populations exploit wood resources in their immediate environment to cover the costs of development on their own. Field studies have shown that in the case of the two main municipalities responsible for the indigenous communities of Pilón Lajas, the share of the municipal budget which is allotted to them is still ridiculously small.[18]

2.6 Resources, livelihood strategies and institutional change

2.6.1 Institutional change and agricultural practices

Analysis of the settlement history of the area of influence of Pilón Lajas explains to a large extent the changes that have occurred in livelihood strategies for the Tsimane' and Mosetene populations, who have been living in the region from time immemorial. Nevertheless human habitation of the Pilón Lajas reserve began only around 50 years ago. Before the 1980s the funnel represented by the Quiquibey basin was more of a temporary hunting and fishing zone for both Tacana and Tsimane' people than a permanent space for settlement. According to ethnographic studies carried out, these populations are presently characterised by a very high mobility, scattered human settlements, agriculture on small areas called *chacos* with alternating periods for the cultivated spaces, combined with hunting and fishing (Métraux 1963). Their small camps are mostly found on riverbanks. An absence of family ties in close human settlements is almost impossible. Their family tie structures are divided between 'marriageable' (*fom*) and 'non-marriageable' people. Preference is given to cross and parallel cousins.

We note an absence of clear rules of residence, which can be patrilocal, matrilocal or neolocal, depending on need. In many cases young couples oscillate between the residences of the two parents-in-law. The principle of *sóbaqui* or mobility is very important. In Tsimane' the term is defined as walking, travelling, or visiting (Ellis 1998).

The Tsimane' economic production system is limited to the satisfaction of basic needs, i.e. to subsistence. Piland (1991, in WCS 2005) has shown that the Tsimane' grow more than 80 different species of plants. These are used primarily for subsistence, although they are also increasingly sold on the market. The land can be used in three different ways: as a *chaco*, as fallow land (*barbecho*) and as a vegetable garden (*patios o canchones*). The average size of a *chaco* is 0.32 ha according to Piland's studies at the Beni biological station in 1991 (Piland in WCS 2005). Silva (1997) calculated an average area of 2 hectares per family in the colonisation zone between Yucumo and Rurrenabaque (Silva in VSF 1998). According to her, there are extensions of up to 4 ha of rice monoculture intended for sale. Field studies conducted for the present study in 3 Tsimane' communities in the colonisation zone showed that exploited areas vary between 1 and 2 hectares, depending on

each family's productive capacities. These areas are generally divided into several smaller plots of approximately 0.5 ha each. Their distribution falls under a complex system of rotation combining social and spatial logics.

The main crops grown by the Tsimane' in the buffer zone of the reserve are, in qualitative terms: *plátano* (plantains), *yucca* (cassava), *arroz* (rice), *maíz* (corn), *maní* (groundnuts), *locotos* (red pepper), *camote* (sweet potatoes), *sandía* (water melon), *paltas* (avocado). Each *chaco* is planted in rotation, first with rice combined with corn, combined or followed by yucca. The last crop grown on each *chaco* before it is left to fallow is plantain. The productivity duration of each *chaco* varies between 2 and 3 years. The fields left fallow continue to be productive thanks to perennial crops and the fact that these fields attract wild animals like the *jochi* (a type of beaver) or the *chancho de tropa* (a type of wild boar). Work in the fields is divided among nuclear families. Seldom is assistance offered by the rest of the community. It should be noted, however, that in the colonisation zone of Pilón Lajas, such assistance is becoming more common. In theory only one crop of rice is grown on each *chaco*, then it is left in semi-fallow with *plátanos* until fallow is complete. 0.25 hectare of rice can yield up to 15 *arroba*[19] each year. They are then converted into 350 kg of peeled rice that can be sold for BOB 420 (approx. US$ 46). Generally, half of the production is used for consumption and the other half is sold, which represents an approximate value of BOB 210 annually. A study has shown that in the Yaranda area, on the banks of the Maniqui River, the yearly income of a Tsimane' family could vary between US$ 187 and 398, depending on proximity to urban centres (Reyes García 2001). The consumption unit is the restricted family or the domestic unit. Food is seldom shared with visitors. Only *chicha*[20] is very widely shared, it plays an important role in socialisation (Ellis 1998).

The Tsimane' cosmology has been recognised as directly related to natural elements and to society's reproductive system (Daillant 2003). Hunting parties are marked by purification and warning rituals addressed to natural elements. In theory the Tsimane' limit their hunting to the quantities needed for direct feeding. In certain mythical animals (such as the panther) they recognise a 'spirit' whose role it is to supervise reasonable use of the forest. Although these representations can still be found in the Tsimane' living along the banks of the Maniqui River, they are no longer common among the populations living in Pilón Lajas, especially in the buffer zone of the reserve. Social and economic reproduction conditions have changed considerably since the arrival of strangers (logging and farming companies). Hunting

and fishing are currently losing ground. The activities of logging companies have considerably affected the presence of wild animals in the area (hunting resources). Fishing practices with dynamite are destroying fishing stocks in the area and have greatly decreased the availability of animal proteins. Communities living in the buffer zone have to walk for several days to reach areas suited for hunting and fishing. The draining of water bodies due to uncontrolled deforestation along rivers is another factor that affects not only fishing resources but also the agricultural future of the vast plateaux spreading in the eastern part of the country.

2.6.2 The migrant world: a different logic of economic productivity

The activities of the big logging companies, however, are part of history now. The greatest pressure is currently exerted on the Andean colonisation front. Indeed, economic production and social reproduction logics of the migrant communities originating from the Andes differ completely from those of the Tsimane' populations. Their agricultural and political traditions are the product of a long cooperative heritage imported from the Andean zones. A 1997 study shows overall production distribution. The following production could be observed on all the parcels studied: corn (19.73%), rice (27.46%), plantains (20.27%), and fodder (8.64%) (Villegas in WCS 2005). In most of the cases families wish to conduct cattle-raising activities in these areas that are not very suitable for agriculture. The farming parcels are developed in an extensive manner, starting with the parts closest to roads or access paths and moving gradually towards the interior of the parcel. Conquest of the forest is seen as an asset by migrant families. It is seen as proof of the efficient use of land and is also used as a criterion when INRA brigades carry out their land surveys within the framework of the land legalisation process. A great number of colonies located in the buffer zone of Pilón Lajas had obtained land titles before the government recognised the reserve in 1992, and they resort to this precedence when defending their agroforestry practices overlapping with the reserve land.

It is interesting to note that an important part of the Tsimane' and Mosetene people currently living in the buffer zone were integrated as Andean migrants into the colonisation programme for the region. They came from the Maniqui River or from Covendo, respectively. Before moving into the reserve itself, they lived with the colonists for several years, acting as daily workers on the colonists' concession areas. Some of them even obtained plots in the form

of land titles within the colonies managed by the INC. Only in 1996, when Pilón Lajas was recognised as a communal territoriy for indigenous people, that the Tsimane' partially abandoned their concession areas. However, some of them have maintained their agricultural activities in the colonisation zone. The situation is thus far from the traditionalist conception of the territory with migrants on one side of the border and indigenous people on the other. Even if some of the indigenous settlements pre-date the beginning of colonisation, an important part of the Tsimane' and Mosetene populations arrived during the process of colonisation. A great part of Tsimane' and Mosetene were integrated into the colonisation 'system' before becoming 'free indigenous' and living in the wild parts of the reserve. Even if, from a formal point of view, the spatial borders between Tsimane' territory and the colonisation zone are clearly defined, historical forms of collaboration between the Tsimane' and the Andean migrants challenge identity borders. That phenomenon has resulted in mutual borrowing of natural resource management institutions, which tended to increase the pressure on forestry resources even more.

It is thus not surprising that the indigenous people living in the Pilón Lajas reserve, particularly in the buffer zone located along the road between Yucumo and Rurrenabaque, are considerably changing their dependence on ecosystems currently weakened by exogenous anthropogenic actions. An understandable reaction from the Tsimane' and Mosetene people was to adapt in their turn to the mechanisms of accelerated exploitation of resources before they are completely exhausted. Actually, we are witnessing an alliance rather than a conflict for the appropriation of forest resources. The recent titling of Pilón Lajas to the Tsimane' and Mosetene as Community Territory of Original Inhabitants gave those people greater local legitimacy in the eyes of migrant communities. The latter had to negotiate their access rights inside the territory. Two forms of collaboration were established between the colonists and the indigenous people within the framework of illegal exploitation of the forest. In the first case, it was the indigenous people themselves who were given the responsibility for cutting down the trees and chopping them before they are carried away along terrestrial accessways. Then, tradesmen coming from La Paz have to transport them to the capital. In the second case, the indigenous people simply indicate where the valuable species are found, and the colonists carry them where needed. Faced with this alliance, the Agrarian Service and the Reserve Administration are relatively powerless. The shortage of means for monitoring and the lack of legitimacy in the view of unions of farmer organisations politically backed by the new government

oblige the decentralised state authorities to give up. In a few cases the local government even supports the aforementioned practices by creating its own taxation mechanisms, independent from those set up by the state through environmental reforms. Such mechanisms explain why there is an acceleration of deforestation in the area. The yearly rate of deforestation in the buffer zone inside the reserve increased from 36 ha between 1975 and 1987 to 465 ha between 2001 and 2005 (WCS 2005).

2.7 Discourse and narration: perception, wishes and motivations

2.7.1 The colonisation of mentalities

Scientific frameworks offered by interactionist and constructivist sociology provide interesting readings within the governance framework of protected areas. Through discourse, each stakeholder is trying to legitimate his position in local arenas, even if the discourse is no more than a reduced and strategically oriented representation of reality. The paragraphs above addressed cultural, but also institutional diversity revolving around the territorial stakes of Pilón Lajas. The historicity of legitimacies in the appropriation of territorialised resources has led to the crystallisation of agents in social and identity positions, evaluated and recognised by their counterparts. Thus for most of the local observers, the Tsimane' are seen as nature protectors whereas the colonists or the Andean migrants are imprisoned in their mould of relentless producers and destroyers of biodiversity.

Biological diversity is thus closely linked to institutional diversity. Non-governmental organisations intervening primarily in the field of nature conservation[21] concentrate their collaboration on organisations known as indigenous (Tsimane', Mosetene, Tacana, Esse Ejas), whereas organisations oriented more towards development and production[22] collaborate more with the colonists. This division has become so important that the Reserve Administration has set up what is called the "inter-institutional committee", a meeting platform for organisations intervening in the production field. Until last year the meetings only gathered organisations intervening in the colonisation zone, whereas the management committee of the protected areas still refused to recognise them. An ethnic and cultural appropriation of norms and institutional discourses can be observed, suggesting that biological, cultural and institutional diversities are closely linked. State and non-

state institutions whose duty it is to regulate resource use through distribution of rights are strongly embedded in the mechanisms of social and ethnic differentiation.

The definition of territorial categories is thus maintained despite the bubbling evolution of the micro-societies that compose them. In the face of these changes, new institutional needs are being felt. This assimilation between indigenous people and conservation needs to be strongly moderated. Studies carried out on indigenous people in the Amazon forests have shown that they are particularly sensitive to socio-economic changes (Turner 1999). Weakened by the modification of living conditions, they do not hesitate to use natural resources in a depredatory way even if they are located on their own 'traditional' land. These behavioural changes are accompanied by changes in their own representation as illustrated by the words of a former Tsimane' leader:

> *We are not rich, we are indigenous people, we are poor. Sometimes we go in the forest to hunt animals and monkeys and we eat them. If we do not hunt, we do not eat. Sometimes we only eat rice, you will excuse us, because we are indigenous people, we know how people view us, like barbarians. We did not eat well, we are indigenous people, for that reason, we want to exploit the wood; we want to cut it, because we want to earn money with that wood. We want to change. We are different from our ancestors. We do not want our children to inherit that situation. We have undergone training, we want to live, to change, wear shoes, pants, shirts... really change... we want women... we want to live and that's all... we are not like our ancestors who were living with their* corochon *and that's all...* (C.H., May 2005)

That stereotyped but realistic vision of their situation indicates also their desire for a change of status, which would make them move from passive conservation agents to active development agents. However, indigenous organisations in the lowlands, such as the Tsimane' and Mosetene Regional Council, are finding it hard to build alliances with productive organisations as efficiently as they do with conservation organisations. This situation often puts them in disagreement with their own social basis. Indeed, the Tsimane' communities find that the CRTM is too close to the reserve and that it does not intervene enough in development issues and does not initiate enough productive projects.

The CRTM, in its turn, tries its best to build alliances with producer organisations, particularly with tourist agents, but the benefits have remained quite marginal. Thus the temptation to start productive forestry remains high, as in many other indigenous organisations in the region. Proposals for alliances to open a whole section of the reserve to that kind of exploitation do exist. This would represent important financial income, at least for a few years. As long as the financial resources of 'double conservation', i.e. ecological and social conservation, intervene in the area, the CRTM will manage to cover operational needs and does not yet seem to be ready to succumb to that temptation. In any case, this situation would imply that the CRTM would be shared between conservation and development. This duality is perceived with serenity by the authorities, who consider that their work is trying to relate activities to both concepts.

The tourism sector has grown considerably in recent years and tourism is becoming a very important activity, especially for villages situated on the riverside in the reserve. The Mapajo ecotourism project was created in 1998 in the village of Asunción del Quiquibey. It trains more than 200 tourists every year interested in both natural and social aspects of the reserve. At the beginning, the project was meant to implicate five villages, but conflicts concerning benefit sharing pushed the other villages to create their own business. Even if ecotourism presents some very encouraging results it is a very problematic sector. The daily arrival of boats full of strangers has a strong impact on the socio-economic equilibrium of the community. Some residents do not want to work in this sector but are obliged to accept the presence of foreigners. The big gap between agricultural income and income from tourism activities is creating strong inequalities between communities and between families themselves. Domination of the tourism sector in certain villages like Asunción or Gredal is diminishing interest in other activities such as agriculture or non-ligneous forestry. In consequence, when the low season of tourism arrives or when the Quiquibey River is not deep enough to carry tourists, the inhabitants have to resort to illegal forest activities. In the case of the community of San Luis Grande, for example, the great distance from Rurrenabaque induces them to abandon tourism activities and ask for a forest management plan that has been refused until now by the reserve. Thus, between the river people and the road people, differences of vision can be explained especially by differences of opportunity. These opportunities can change very quickly depending on the season and the availability of resources.

2.7.2 Top-down political drivers of change

The political context, however, seems to lend itself more and more to this kind of alliance, particularly with the colonisation sector. When Evo Morales arrived on the political scene, there seemed to be a reconfiguration of the contents of the oppositions between indigenous people and migrants, with the colonists being seen as a new category of legitimate stakeholders in the region.[23] Even if the local federations do not hesitate to change their denomination from 'colonists' to 'agroecological producers',[24] nature conservation is very often presented as an exogenous value, imposed by the 'white power' for secondary interests, in comparison with the survival of local people. The arrival in force of 'new indigenous people' in the lowlands, supported by the Aymara or Quechua government, tends in practice to considerably call into question the values of biodiversity conservation. The lowlands are first marked by a resurgence of the Movimiento al socialismo party (MAS) to which not only the migrant populations of the cordillera adhere, but also the great diversity of indigenous ethnic minorities motivated by their recognition as "indigenous nations". We gradually witnessed an institutional strengthening of values centered on intensive and extensive production, private property, agricultural mechanisation, and urbanisation sustained by extremely effective social and political mechanisms.

This type of clientelist ethnicity is also strongly felt at the level of the main offices for state services. The case of the SERNAP is telling enough in this regard. Until December 2005, John Gomez was at the head of the SERNAP. Following a conflict with the vice-minister of natural resources and environment, Marabella Idalgo, he had to step down and took with him many collaborators. Shortly after the election of Evo Morales as President, Erlan Flores was appointed as the head of SERNAP. When he took office, he undertook a series of reorganisation measures within the protected areas located in the eastern parts of the country. As soon as he took office, he decided to appoint new directors who were seen as colonists by the indigenous people inhabiting the lowlands. That was the case with the Isiboro-Secure Indigenous Territory and National Park (TIPNIS), Apolobamba, and the famous Madidi Park, where he tried to appoint a representative of the Federation of Agricultural and Livestock Producers of Abel Yturalde (FESPAY). During his short term of office, he enabled 70 colonist families to settle in a park at Torregua which is included in the TCO of the Indigenous Centre of Lecos de Apollo Village (CIPLA). The Lecos people, who had not been informed beforehand, rejected by a wide margin the settlement of colonists.

Faced with these actions, representatives of eight indigenous territories, supported by national organisations[25] occupied the SERNAP offices on 11 September 2006. The crisis led to the dismissal of the director, Elan Flores, on 15 September 2007. Before the end of the month a new director was appointed after discussions with the indigenous people. This was Adrian Nogales, the former director of TIPNIS. His experience as the head of TIPNIS and his network of relations maintained with the indigenous communities in the lowlands, gave him a strong social basis at the head of SERNAP. But what undoubtedly constituted his greatest legitimacy was his being a member of the Yuracare ethnic group, a group close to the Tsimane' and Mojeño, mostly situated in the department of Beni. The acceptance of the new director could be explained by the fact that the majority of the indigenous territories included in the protected areas were in the eastern parts of the country. As a matter of fact, whereas only 4 indigenous territories are included in or located next to protected areas[26] in the Andean parts of the country, there are 16 in the eastern parts of the country[27]. Since September 2007, a new coordination organisation for indigenous people living in the protected areas has been implemented: it is the National Indigenous Council for Protected Areas (CIONAP). Its objective is to serve as the main interlocutor representing the indigenous people living in the protected areas, during the implementation process of a new political constitution in Bolivia. CIDOB, the federation of indigenous organisations of the people of eastern Bolivia, is intended to chair the new structure. Its role is still not clearly defined.

2.8 Conclusion

This case study enables us to show to what extent the territorial history is a key element, essential to the understanding of the institutions that control access to natural resources. A purely structuralist analysis of governance situations would not have enabled us to clarify the strength of territorial legitimacies over a long period of time. Even if the recent environmental reforms of the Bolivian government are informed by good ecological intentions, the anteriority of policies of agricultural colonisation and the political strength of the federations of Andean migrants make imposed conservation policies totally inefficient.

It should be said that colonisation occurs not only in a spatial way but also and mainly through institutional mechanisms. The occupation of space is actually only the corollary of an occupation of mentalities in which new

values and new practices are conveyed. Among these values, new farming practices are transferred and end up appearing totally 'natural' even if the ecological contexts are not suitable. Among migrant people, private land rights proved to be one of the main motivations of space occupation, and consequently of the degradation of forests. Private property is after all not recognised as a dominant value in the Andean areas. It is also part of the transferred values which accompany a certain ideological concept of economic growth, of access to credit and a Western way of life.

In the face of many local frictions political organisations as well as regional administrations seem powerless, in particular when it comes to 'educating' local populations with regard to sustainable use of natural resources. The paradigm of community participation protected area management seems totally inefficient when it is separated from its economic dimension. The search for productive alternatives to deforestation is without doubt one of the main priorities for promoters of conservation in protected areas. However, it cannot be carried out without a suitable legal framework. In such a context of de-legitimatisation of local coordination institutions, the power of norms retains all of its efficiency. A reform of the forestry law as well as the implementation of procedures adapted to local populations and enabling them to use forest resources sustainably, would be welcome. Recalling the words of the forest engineer: "For norms to be respected, rights need to be given." The new approach should take into account the holistic necessities of each community to diversify their economic input. The wood sector cannot be treated separately from ecotourism or agriculture, and management planning should integrate micro-zonation at the communal level in its procedures.

At the administrative level, the next big challenge of Pilón Lajas will be what was once called *gestión indígena*. This is no longer co-administration or co-management but indigenous management by itself. The recent election of Evo Morales provides a very good context in which to discuss this theme. The overall question is: Who are the indigenous

Endnotes

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[2] The area of influence is considered here as the area where different actors have strong social, economic or ecological interaction with the reserve.

[3] Geographical coordinates: 66°55'–67°40' western longitude, 14°25'–15°27' southern latitude.

[4] The map shows a zone called "undefined restriction" at the eastern border of the reserve (Figure 1). The undefined status of this zone is due to differences in interpretations related to the presidential decree of creation in 1992. One interpretation is to consider the boundary of the reserve to run at a distance of 5 km from the road. The management plan was elaborated on this first interpretation. The other interpretation is to consider the boundary to be at a distance of 5 km from the road with the exception of the mountain zone. In Figure 1 it was attempted to depict both visions.

[5] These data were available in 2004. However, heavy migration from just outside the border, from the Maniqui River and from Covendo indicates that the population inside the reserve has grown since then.

[6] These surveys are sometimes approximate and are quoted here to give an approximate indication only.

[7] Legislative Decree No.12301.

[8] Decree No. 21060 of 29 August 1985 corresponds to an anticipation of drastic measures for 'good governance' recommended by the World Bank in the famous consensus of Washington of 1989.

[9] Centro de Desarrollo Forestal.

[10] Superintendencia Forestal.

[11] Environmental Law No.1333 of 27 March 1992; Law on Popular Participation No.1551 of 20 April 1994; Decentralisation Law No.1654 of 28 July 1995; Forestry Law No.1700 of 12 July 1996; INRA Law No.1715 of 18 October 1996.

[12] Supreme Decree No. 25925 of 6 October 2000.

[13] Confederación Sindical Unica de Trabajador Campesino de Bolivia (CSUTCB), Confederación Sindical de Colonisadores de Bolivia (CSCB), Central Indígena del Oriente Boliviano (CIDOB).

[14] Art. 47, Section II in the General Protected Areas Act (Supreme Decree No. 24781 of 31 July 1997).

[15] This main point of the decree is made in Art 2.: "Los Consejos de Administración de Áreas Protegidas estarán conformados en un 50% por representantes locales de campesinos, indígenas y colonizadores y en el otro 50% por los gobiernos municipales cuya jurisdicción coincida con el Área protegida, Prefectura y el Servicio Nacional de Áreas Protegidas."

[16] In the event of an overlap between the protected area and the TCO, the "exploitation of natural resources by the TCO in the protected area will be subjected to the legal provisions applicable for each resource", i.e. in case of timber products, to the Forestry Law No. 1700 of 1996 (Art. 149 of Supreme Decree No. 24781 of 31 July 1997).

[17] The division by municipal constituencies of Pilón Lajas varies around 8%, depending one the position of each municipality: Rurrenabaque (46.7% to 38.8%), San Borja (4.6% to 12.5%), Apolo (18.4%), Palos Blancos (30.3%).

[18] In the municipality of San Borja, the share of the yearly municipal budget allocated to community colonies in the buffer zones of Pilón Lajas varies between 0.01% and 0.2%. In the municipality of Rurrenabaque, in 2004 only 7% of its budget was allocated to its rural areas and only 0.7% to the communities residing within the reserve.

[19] Old measurement unit equivalent to 11.5 kg.

[20] An alcohol made from cassava (*yucca*).

[21] These include Conservation International (CI); Instituto para Conservación y Investigación de Biodiversidad (ICIB); Programa Regional de Apoyo has los Pueblos Indígenas del Amazonas (PRAIA); WCS; IBIS; and others.

[22] These include Asociación Nacional Ecuménica de Desarrollo (ANED); German Development Service (DED); Programa para Implementation de Sistemas Agroecológicos (PRISA); Producción, género e ingreso (PROGIN); and others.

[23] Today, colonists want to be considered as 'originarios', another name used to refer to indigenous people.

[24] This is the case with the FECY (Federación de Colonisadores de Yucumo), which changed its acronym to FEPAY (Federación de Productores Agroecológicos de Yucumo).

[25] CIDOB, Consejo Nacional de Ayllus y Markas del Qullasuyo (CONAMAQ), Central de Pueblos Étnicos Mojeños del Beni (CPEMB).

[26] Weenhayeck, Jacha Carangas, Isoso, Guarani Yacuiba.

[27] Bajo Paragua, CIRPAS, Comunidad Ayoreo Guaye Rincon del Tigre, Lecos de Apolo, Lecos de Larecaja, Marka Qamata, Moseten Santa Ana de Mosetenes, Movimas, Multietnio II, San Jose de Uchupiamonas, Pilón Lajas, Tacana I, Tacana II, TICH, TIPNIS.

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