Protected Area Profile – Peru

Machiguenga

Communal Reserve

Written by: Diego Shoobridge, ParksWatch—Peru
Assistant data collector and field photographer: Miguel Morán Morán
Bibliographic support: Norma Alzamora Remicio
Publication date: February 2004

Date of last onsite visit: December 2003
Publication date: February 2004
Location: Province of Echarate, Department of Cusco
Year created: 2003
Area: 218,905.63 hectares
Ecoregion: Ucayali River Moist Forests, Peruvian Yungas
Habitats: Montane tropical rainforest, montane subtropical rainforest, lowland montane tropical rainforest, lowland montane subtropical rainforest, premontane tropical rainforest, subtropical rainforest, very moist premontane tropical forest, and very moist subtropical forest.

Summary

Description

Machiguenga Communal Reserve is one of the most pristine places on earth. Numerous tributaries of the Urubamba River flow east from the Vilcabamba Mountains, creating an intricate topography in the central part of the mountain range's eastern slope. The communal reserve conserves half of the courses of the streams flowing towards the Urubamba River. The reserve, along with neighboring Otishi National Park, conserves intact headwaters and entire sub watersheds.

Biodiversity

The mountainous area is covered by tropical vegetation that differs in each of its altitudinal levels, overall encompassing high biological diversity. The reserve maintains large enough ecosystems to protect populations of uncommon species. Habitat diversity is extraordinary. The area has not been well studied, however it is known that typical humid tropical forest species thrive, as do large mammals such as jaguar, tapir, deer, wild pigs and monkeys. Cedars and mahogany are among the reserve's great floral diversity.

Threats

Geographic isolation and difficult access are the main reasons why Machiguenga Communal Reserve has been so well conserved until now. Nonetheless, the Camisea Natural Gas Project, specifically the pipeline crossing through the communal reserve, is a serious, direct threat to the protected area; therefore, we have determined that the reserve is **vulnerable**. Natural resource use tendencies and activities carried out in surrounding areas also represent risks to the protected area. Principal threats include migration and new colonists in the region, timber extraction in the surrounding indigenous lands and neighboring forestry concessions, highway and road construction, and lack of management implementation.

Photo © Antonio Salas of the Grupo de Especialistas de la Sociedad Civil para el Proyecto de Camisea[*]

Description

Physical description

Machiguenga Communal Reserve is located in the district of Echarate, province of La Convención, department of Cusco. It covers 218,905.63 hectares.[1] It is located between the southern latitudes 11°10´ - 12°20´ and western longitudes 72°50´ - 73°35´. Machiguenga Communal Reserve is found in the middle of the eastern slope of the Vilcabamba Mountain Range in the transitional area between mountainous forests and tropical basal forests as well as between the tropical and subtropical zones.[2]

[*] The *Sociedad Civil para CAMISEA* is made up of national and international institutions working in Peru. The group is working to ensure that the Camisea Project develops considering the following aspects:

1. That it safeguards social and environmental components of the area.
2. That it significantly contributes to Peru's long-term sustainable development.
3. That it serves as a model for future mega-development projects in these regards.

Climate

Meteorological data specific to the protected area is unavailable. The closest stations are in Sepahua and El Sepa. The regional climate is hot and humid, typical of tropical rainforests and lowland environments. The equatorial and tropical maritime airs converge here, creating low-pressure zones that cause severe downpours and conventional storms.[3]

Average monthly temperature varies between 26º C and 23º C. Temperatures below 1000 m are typically 25º C, and between 1000 to 2000 m in altitude, the average temperature falls to 22º C, while above 2000 m, the temperature is less than 20º C.[4]

Prevailing winds are typically calm and originate from the southeast, south, and east. The southern winds are of special note since they come from Antarctica and bring cold temperatures to the region during certain times of the year, usually in June. These winds can lower the temperature to 10º C. Precipitation varies depending on the life zone and time of year. There is a general increasing tendency in precipitation from south to north. Average annual precipitation can reach 3,000 mm. The dry season is between May and October and the rainy season from November to April.[5] Precipitation in lowland areas is 3000 mm/year and in the highlands, it is approximately 4000 mm/year.[6]

Hydrology

An intricate labyrinth of streams and creeks originates in the upper altitudes of the communal reserve. These streams flow from west to east and from southwest to northeast and they are part of the largest watershed of the Picha River, a tributary of the Urubamba. Its hydrology is made up of a series of streams that flow from the upper Vilcabamba Range and cross the reserve parallel to one another as they flow into the Urubamba River.[7] The drainage system is made up of interconnected canals of fine-texture due to the large number of tributaries per unit area. Valleys are made up of sedimentary rocks and the regional slope is steep.[8] Several headwaters of important tributary rivers and streams of the lower Urubamba's left blank originate here including: Saringabeni, Parotori, Mayapo, Picha, Kochiri, Pagoreni, Mipaya, Huitincaya, Sensa and Miaría.

Geology

Both sedimentary and igneous rocks are common in the area, while metamorphic rocks are rather scarce.[9] Sedimentary rocks form the most common geological structures of the region and they are made up of mostly limestone, sandy quartz and other sandy stones.[10]

Geomorphology and relief

Highland terraces: Generally located close to second order rivers and streams. In some areas, they are located in the highest parts and look like mesetas. They are flat to slightly hilly; their gradients vary from 0% to 8%. These areas do not have any draining problems and they are made up of previously deposited alluvial materials.

Lowland hills I: These are slightly hilly areas originating from tectonic movements. Their gradients reach 30%. These hills can reach 40 m in relative height. Lowland hills II: These areas also originated from tectonic movements, but they have been modified by wind erosion and their topography is therefore more rugged; they have slopes of 70% gradients. They can reach 80 m in relative height.

Highland hills I: These hills reach 120 m in relative height. Their slopes are very pronounced. Highland hills II: These are found mostly in the sub Andean belt and numerous creeks and streams flowing through these have easily eroded the soft rocks. Mesetas: These are flatlands located in the highest portions of the mountainous areas. Generally they have poor drainage because they are slightly concave and trap rainwater.

Photo © Antonio Salas of the Grupo de Especialistas de la Sociedad Civil para el Proyecto de Camisea

Mountain I: Topography in these areas varies between mildly rugged to rugged. They reach 800 m above the local base (relative height). Mountain II: Topography in these areas varies very to extremely rugged. They also reach 800 m in relative height.[11] Topography in the Communal Reserve is mostly hilly lands of tectonic origin and these landscapes are physiographically suited for protection and not other land uses.

Photo © Diego Shoobridge, ParksWatch – Peru

Biodiversity

Due to its varying topography and its location along the meridian limits of the equatorial region, several biogeographic and ecological zones are present in the communal reserve. In addition, the transition between tropical and subtropical climates occurs at this latitude and creates many transition zones between ecosystems.

Originally, Machiguenga Communal Reserve was part of the Apurimac Reserved Zone. When categorizing the Apurimac Reserved Zone, several rapid biological studies were conducted (Rapid Assessment Program RAP). The three sampled sites correspond to what is today Otishi National Park; sites from within Machiguenga Communal Reserve were not sampled at that time. The results presented, such as species inventories, were done so for the entire reserved zone. Studies conducted as part of the Smithsonian Institute's biological monitoring program contributed a significant amount of information regarding the biodiversity found within Machiguenga Communal Reserve's buffer zone, as did studies conducted with the help of Shell Prospecting Development—Peru during the first phase of the Camisea Natural Gas Project.

Flora

The following vegetation types have been identified:

- Tall forests: These forests have clearly distinct forest layers in which emergent, wide canopied individuals stand out and appear with other co-dominant trees. This makes it appear as if the terrain were rough. This is typical of a healthy forest.
- Forest with bamboo: Presence of bamboo (*Guadua sp.)* and small trees, typical of poor sites.
- Grasslands: Generally found in the highest parts of the mountains.
- Vegetation in converted lands: In certain areas there has been agricultural intervention and the result is a mix between pasture grasses, secondary forests in different stages of growth, and newly invaded primary forests. This forms a mosaic in which distinguishing between vegetation types is difficult.

- Areas without vegetation: mostly rocky outcroppings and eroded areas.[12]

Principal traditional forestry species found within the communal reserve include: *Spondias Mombin, Anaxagorea pachipelata, Duquetia* sp., *Aspidosperma macrocarpon*i, *Anthurium* sp., *Dracontium* sp., *Didimopanax morototoni*, *Asclepas* sp., *Begonia* sp., *Arrabidea* sp., *Jacaranda copaia, Tabebuia capitata*, and *Bixa* sp.[13]

Fauna

According to Conservation International's Rapid Biological Evaluation Program (RAP), 150 tropical bird species were identified, including important species like *Phaethornis koepcheaem, Heliodora branickii, Hemitricctus rufigularis, Phylloscartas parkeri, Pipreola chlorolepidota, Ampelidoes tshudii, Ipaugus subularis,* and *Oxyrunus cristatus.*

During the RAP, scientists registered the presence of a tree frog, *Gastrotheca* sp., a species which had yet to be scientifically described and the area could be one of the lowest locations for members of this genus in Peru. One other species, *Colostethus sp*., also lacks scientific description and it belongs to the venomous frog family (*Dendrobatidae*). The genus *Colostethus sp*., has very few large species at the base of the Andes, and its taxonomy is not very well-studied.

Fifty-eight mammals were registered. Most mammal diversity is made up of lowland species. The most common small mammal in the area is Simon's spiny rat (*Proechimys simonsi*), especially common in bamboo-dominated areas where it is also common to find dense populations of the Bolivian bamboo rat (*Dactylomys boliviensis*). Another abundant species is the rice rat *Oryzomys macconnelli.* Within the communal reserve's elevation range, as elevation increases, the more distinct and divergent the fauna composition.

Most often identified mammal species in the communal reserve include: *Agouti paca, Bradypus fuscicollis, Alouatta seniculus, Callicebus moloch, Cebus apella, Saimiri sciureus, Mazama americana, Dasypus novemcinctus, Dinomys branickii, Puma concolor,* and *Panthera onca*. The principal bird species identified in the reserve include: *Buteo magnirostris, Chloroceryle sp*., *Casmerodius alba, Monasa flavirostris, Cathartes aura, Coragyps atratus, Sarcorramphus papa, Columba subvinacea, Geotrygon montana, Cyanocorax violaceus, Lipaugus vociferans, Aburria pipile, Mitu tuberosa, Artalis motmot,* and *Penélope jacquacu*.[14]

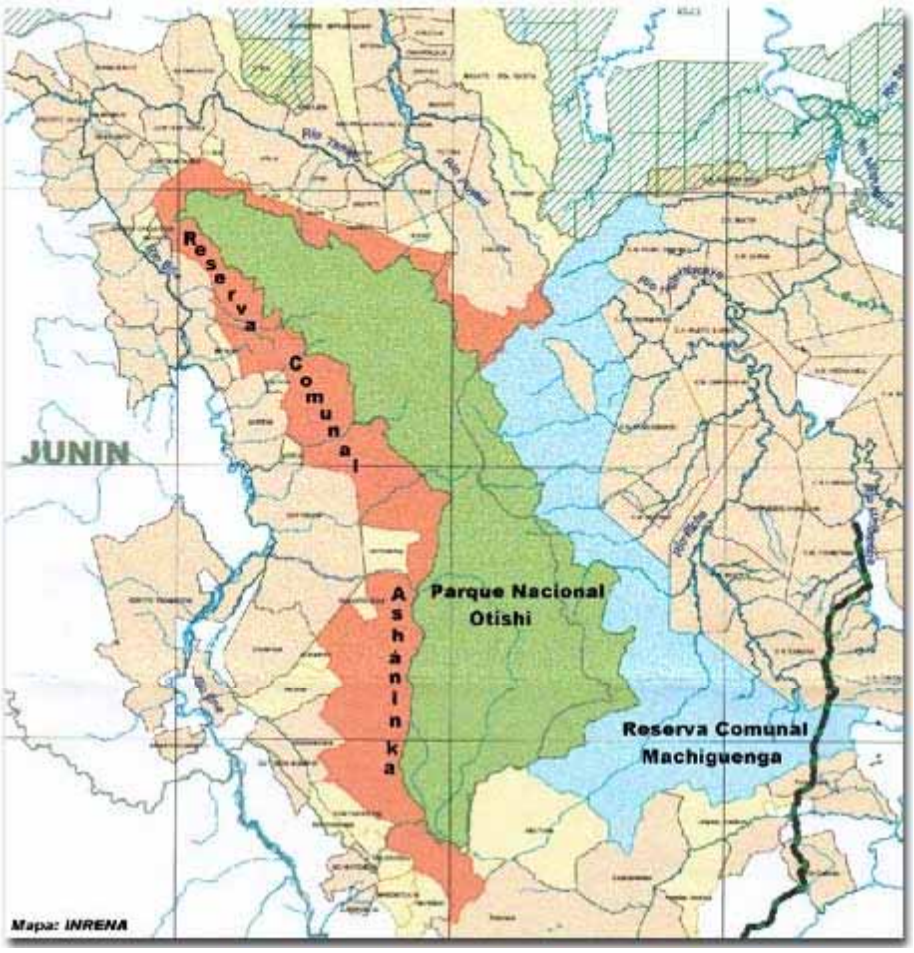
Management

Background

Interest in protecting and managing the area began over 40 years ago when Eduardo Jensen's studies (1962) drove the Ministry of Agriculture's Forestry and Hunting Service to propose declaring 1,464,250 hectares as a forestry reserve. Subsequently, on October 9, 1963, Supreme Resolution 442-63-AG created the Apurimac National Forest that covered 2,071,700 hectares. After 25 years as a national forest, in which the primary goal was forestry activities, the area was included as part of the National System of State Protected Areas as a Reserved Zone, a

temporary, transition category. In 1988, Supreme Resolution 0186-88-AG created the Apurimac Reserved Zone, which covered 1,699, 2000 hectares in the departments of Junín (province of Satipo) and Cusco (province of La Convención) in order to protect the region's forests.

Fifteen years later, on January 14, 2003, Supreme Decree 003-2003-AG declared Apurimac Reserved Zone's final categorization and the next day they published the official establishment of two communal reserves and one national park: 1) Asháninka Communal Reserve (RCA) covers 184,468.38 hectares and is located on the western slope of the Vilcabamba Range in the province of Satipo, department of Junín. 2) Machiguenga Communal Reserve (RCM) covers 218,905.63 hectares and is located on the eastern slope of the Vilcabamba Range in the province of Echarate, department of Cusco. 3) Otishi National Park (PNO) covers 305,973.05 hectares and is located between Asháninka and Machiguenga communal reserves in the province of Satipo, department of Junín and the province of Echarate, department of Cusco.



Map: INRENA

Of the original Apurimac Reserved Zone, which covered 1,699,200 hectares, 709,347.06 hectares were recategorized as the three new protected areas. The other 989,852.94 hectares were not included and are now part of the buffer zone, which lack official national territory protection. The buffer zone borders are currently provisional and they will be determined during the participatory process used to create the master plan and will be included in the plan itself.

Asháninka and Machiguenga Communal Reserves were established in order to guarantee biological diversity conservation for the benefit of neighboring native communities. Within these communal reserves, new settlements are prohibited as are expansion of agricultural or livestock activities, and timber extraction. Communal reserve establishment does not grant property rights to the communities. Instead, the state recognizes and protects the right of traditional access to natural resources for subsistence-based activities. In this case, the state recognizes the rights of the native communities of the Asháninkas and Machiguengas, and the Yines of the Urubamba; they should exercise their user rights in harmony with the objectives of the natural protected areas as established by law.

Many institutions were involved in the process creating the three protected areas. The Asociación para la Conservación del Patrimonio de Cutivireni (ACPC, Association for Conservation of Cutivireni Heritage) was heavily involved and they were most interested in the Ene River Basin; the Centro para el Desarrollo del Indígena Amazónico (CEDIA, Center for Amazonian Indigenous Development) whose interest was focused on territorial planning in the Urubamba River Basin; the Instituto del Bien Común (IBC, Common Good Institute) who works in defining territorial borders; Conservation International (CI) contributed mostly to the biological evaluation of the area; the National Institute of Natural Resources (INRENA) is the governmental agency responsible for National System of State Protected Areas; grassroots federations and organizations such as Consejo Machiguenga del Río Urubamba (COMARU, Machiguenga Council of the Urubamba River); la Central de Comunidades Nativas Machiguenga (CECONAMA, Machiguenga Native Communities Central); la Federación de Comunidades Nativas Yine Yami (FECONAYY, Federation of Yine Yami Native Communities); la Confederación de Nacionalidades Amazónicas del Peru (CONAP, Confederation of Amazonian Nationals of Peru); and la Asociación Interétnica de Desarrollo de la Selva Peruana (AIDESEP, Interethic Association of Peruvian Jungle Development) also participated. Many years ago, additional institutions were involved such as the General Fauna and Forestry Office (DGFF), which was at one point responsible for the protected areas; and the National Office of Natural Resource Evaluation (ONREN), the Amazonian Center of Anthropology and Practical Application (CAAAP), and the Research and Amazonian Promotion Center (CIPA), which were involved providing information. The Missionaries (Misioneros Dominicos) of the Urubamba River also participated in the process. Initially, financing for the categorization of the reserved zone came from the World Bank's Global Environmental Facility in coordination with Conservation International's Critical Ecosystem Partnership Fund.

Three people trained in anthropology with a shared vision of development and territorial planning based on natural watersheds delineation and community-based resource management founded CEDIA in 1982. According to current member Ricardo Risco, CEDIA's objectives are focused on recognizing and protecting native communities' territory by helping them solicit their titles and expand their territorial limits. In the lower Urubamba they have promoted and consolidated various initiatives like creating the Nahua - Kugakapori Territorial Reserve for uncontacted native communities, which set a precedent in Peru. They have also been involved in developing the creation of the Megantoni—Machiguenga Sanctuary (currently in process at the time of this writing), and they helped create the Vilcabamba Reserve Complex with Asháninka Communal Reserve, Machiguenga Communal Reserve and Otishi National Park.

The idea for creating the Machiguenga Communal Reserve in the Urubamba region was conceived in the early 90s. In 1995, the first real proposal was presented to INRENA. INRENA did not respond to this file until 1998, when they said that a communal reserve project was impossible for the area because it only included a portion of the Apurimac Reserved Zone and not the entire area. They recommended that any proposal should be for the entire reserved zone. Because of this, CEDIA approached CI, who in turn promoted creating a national park, and ACPC, who had the same idea but for the Ene River side. In 2000, CEDIA, CI and ACPC created a consortium whose mission was to formally protect the reserved zone. The three institutions submitted a joint-proposal to GEF. There were some incompatibilities along the way, mostly having to do with the overall vision and field conduct, which resulted in CI's departure and GEF's funding withdrawal from the consortium; nonetheless the rest of the consortium continued to finalize the project. INRENA was incorporated into the group as a leader and native communities and organizations from Urubamba, Ene, Tambo, and the central jungle were also included. Interesting alliances were formed in the sense that individual visions were abandoned. Despite certain political difficulties, the project was consolidated and finally formalized.

The consortium began working with the Consejo Machiguenga del Río Urubamba (COMARU) to conduct training workshops in the communities along the upper and lower Urubamba and with the communities along the reserve's borders. An intense awareness raising campaign was carried out to spread the word about the Machiguenga Communal Reserve. At first, the communities resisted the idea, mostly because they were unfamiliar with the concept. Regarding the new national park creation, the communities feared that their destiny would be similar to those Machiguenga, Tayacome and Yomibato communities incorporated within Manu National Park. Community members from the lower Urubamba clearly indicated that they did not want to live like the people in Manu. Initially, there was strong opposition to creating Otishi National Park, but details were explained and native communities were told that their territories would be secured and even increased for their traditional activities before the communal reserves and national park were created.[15]

When the technical documents were presented, as part of the process to create the protected areas, there was disagreement between involved institutions that resulted in delays and uneasiness. According to Iván Brehaut, CI (which was in charge of the GEF – Vilcabamba program) presented out of date information, distorted the land use tendencies in the zone because their maps were poorly made, irresponsibly disseminated information, and basically spoiled the work. This caused enormous confusion. CEDIA and ACPC had developed the official land register and collected the field information. Unfortunately, the staff for GEF - Vilcabamba either misinterpreted or completely ignored this information and created an erroneous database. These technical documents were rejected by CEDIA and ACPC, "not because Conservation International did the work on their own, and not because they did it behind our backs even though we were supposedly associates, but because it was terrible work." They used a technical method that neither the governmental Special Land Titling Project (PETT), which is responsible for legalizing land uses, nor INRENA, nor the German development agency that was helping the process could understand. The technical documents had serious problems, there were 40,000 hectares-worth of errors and they were not totally recognized by the indigenous communities since they were not consulted. While INRENA, the organizations, and the communities were in

the process of defining new titled areas, in the middle of the consultation process, CI presented their report to INRENA that included an incorrect map. An entire year of work was lost; ACPC, CEDIA, IBC, INRENA and other indigenous organizations were using funds they did not have. All of the technical documents had to be redone. Later, in coordination with the Instituto del Bien Común the consortium completed the land cadastre. It is important to recognize that despite these problems, Conservation International's contribution was essential in creating the protected areas. They participated with the Smithsonian Institution and the Field Museum of Chicago to conduct the RAP scientific field research expeditions in Vilcabamba, which provided the biological justification for creating the protected areas.[16]

The Instituto del Bien Común (IBC) has a project called the Native Communities Information System. The project's goal is to create georeferenced land cadastres of the titled properties that the Ministry of Agriculture granted to the communities and create maps that clearly indicate which lands are titled. Communal maps created by the state between the 1970 and 1980 are not georeferenced and because of this, it was impossible to determine the protected areas' limits. According to IBC members interviewed for this report, the Apurimac Reserved Zone was categorized in the most appropriate way. First, the community borders were defined, then, a consultation process was conducted with the communities to see which areas they wanted in order to increase their territories. Next, the protected areas' borders were formally determined and georeferenced. In this way, the protected areas were created harmoniously with the neighboring communities. Categorizing this reserved area was exemplary because the communities were consulted often, indigenous communities and organizations had significant participation, and technical support and advice by the consulting groups (ACPC in the west, CEDIA in the east, and IBC who created the maps and cartographically delineated the protected areas) was important.

IBC's philosophy is that in order to create official protected areas, the neighboring communities' limits must be defined. In order to ensure that a protected area that will be managed for long-term protection, it must be created in harmony with the neighboring communities so that the people will be willing to get involved in its management and survival. If it is created any other way, the process will turn conflictive.[17]

Erick Meneses, CI's Vilcabamba Regional Director, confirms that his institution conducts studies in Vilcabamba to determine the area's biological characteristics. He explained that they solicited along with CEDIA and ACPC, a medium-sized World Bank GEF grant. The project's objective was to categorize Apurímac Reserved Zone into formal protected areas. With complementary funding, they set out to create a land use plan that coincided with the legal ordering of the area using a participatory process. At the same time, they completed biological, social, and economic diagnostics that allowed them to complete the information needed to justify the categorization of the protected area. This took three years. In addition, the GEF allowed them to start to introduce the idea of sustainable development. They did so by implementing model activities for communities to see and be convinced that they can survive and prosper by implementing activities such as forest management, crafts, and fauna management.

According to Mr. Meneses, ACPC and CEDIA separated from CI at the end of the process. He said that those organizations took advantage of CI's fieldwork and community relations to reach

their objective, which was to increase the communities' territories. The first proposal for the area's categorization included biologically and culturally important zones, but the communities claimed these places to increase their territorial limits even though they did not live there. This created a conflict between the project (which was backed by the entire consortium) and the communities. Because of this, ACPC and CEDIA said that they were not involved in the first proposal. It was a favorable opportunity for these organizations to reach their goals. IBC entered at this juncture because they already had experience with rapid titling in cases of territorial increases. Once the territories were increased, the communities were satisfied and then the new consortium presented another protected area proposal to INRENA.[18]

Conservation International has promoted for several years creating a Vilcabamba Amboró Conservation Corridor, of which Asháninka and Machiguenga Communal Reserves and Otishi National Park are part. The corridor is a strategy to conserve one of the most biologically diverse places on earth within the tropical Andes region. In total, the corridor is 30 million hectares and expands from the Vilcabamba Mountain Range in Peru to the Amboró National Park in Bolivia and includes a chain of 16 protected areas that contribute to the survival of thousands of species.[19]

Administration

The Natural Protected Areas Agency of the National Institute of Natural Resources (INRENA) within the Ministry of Agriculture is responsible for Peru's natural protected areas. Law Number 26834, Natural Protected Areas Law passed June 30, 1997, and its corresponding Supreme Decree 038-2001-AG regulate their administration.

Machiguenga Communal Reserve's principal objectives are to protect the areas providing biological and aquatic resources to the Machiguenga and Yine native people settled along the left banks of the Urubamba River as well as protect the area's scenic beauty and intrinsic cultural values. The communal reserve also contributes to natural resource conservation on the eastern slope of the Vilcabamba Range. It is supposed to guarantee permanent food supply for nearby indigenous populations through their hunting, fishing and collecting activities. The reserve is supposed to ensure participation of the native communities from the lower Urubamba valley in conserving their environmental, by validating their natural resource management practices, helping to improve their living conditions, and respecting their legitimate right to sustainably use and recompose their ancestral territories. The reserve is also supposed to help Otishi National Park remain intangible since it is between the park and the native communities' territories and settled colonists.[20] It covers a biological diversity conservation priority as defined in the Master Plan of the National System of State Protected Areas (SINANPE).

Article 17 of the Natural Protected Areas Law says that the State recognizes and promotes private participation for natural protected areas management, which means that administrative contracts over the area could be granted. These contracts or administrative agreements are intersectorial management mechanisms used by legally established non-profit-organizations to manage and administer an area. Such administrative agreements with third parties do not remove or lessen INRENA's responsibilities or their supervisory or regulatory powers.[21]

According to the legislation, the beneficiaries conduct management of a communal reserve in their way using their organizations over the long-term, in which the beneficiaries strengthen their conservation and sustainable resource use knowledge and exercise their rights and obligations with the State to administrate national heritage. In terms of managing a protected area, coordination and general supervision of a communal reserve is the responsibility of a protected area director under mandate of the Natural Protected Areas Agency of INRENA. In addition, an executor from the administrative contract is required that would coordinate the area's management. Also, a management committee is required that would help keep the area functioning and would represent involved stakeholders and beneficiaries. This process in Machiguenga is just beginning and there is much to do to complete it.

The State maintains the responsibility of control; the communities implement the reserve's management. The communities along with INRENA should elaborate the protected area's master plan. In order to do so, surrounding communities should directly and actively participate. Developing participative management models and local organization are currently underway. The native communities will establish which areas are special use areas, which ones are strict protection areas, which are use areas, etc. and they will be written into the communal reserve's master plan.

INRENA has created a commission that includes the Interethnic Development Association of the Peruvian Jungle (AIDESEP) and other non-governmental organizations to discuss a proposal for a special communal reserve regime. According to staff from IBC, El Sira Communal Reserve began the process for forming the co-management style administration described above, but the results were less than satisfactory because the underlying law on this protected area category is not clear. There is an old special regime for communal reserves but under current conditions, it makes things more confusing. In El Sira, the communities tried to work under the regime but it ended up being more confusing. Since the process ended in ruins, INRENA created a new special regime proposal. AIDESEP also has a proposal, so they are in discussions in order to bring the two proposals together in one.

The proposal presented by AIDESEP along with the Confederación de Nacionalidades Amazónicas del Peru CONAP, and other NGOs included creating various administrative entities for a communal reserve, since they are enormous territories with various indigenous organizations involved, each with several towns and even distinct ethnicities. It is very complicated. Because of this, IBC and AIDESEP and CONAP recommended creating an administration for each part of the communal reserve. However, INRENA rejected the idea and insisted that the communal reserves have only one administration. Now INRENA has realized that it is impossible, they recognize that the Asháninka and Machiguenga reserves are immense and this makes their administration extremely challenging.

According to IBC, there is a long history associated with communal reserves. Originally, they were created under the Forestry and Wildlife Law of 1975 (Decree 21147) when the countries' forests were nationalized and thereby inhibited native communities from acquiring property rights over these territories. The Native Communities Law of 1974 gave property rights to native communities in specific territories, but outside of those, the land and forests were considered state property. The Forestry Law included the communal reserve provision, which authorized use

of the territory even though it was national land. This was not regulated and it was not part of the System of Natural Protected Areas, rather it was part of an independent process related to forestry issues.

Indigenous people have always seen the communal reserves as a way to extend certain control over their traditional territories, but as it turns out since the forestry law was created in 1975, the government did not promote communal reserve creation. It wasn't until more than 10 years later that Yanesha Communal Reserve was declared in 1988; and it was declared only because of a serious internal conflict. The second communal reserve declared in Peru was El Sira in 2001, thirteen years after the first. In the time between Yanesha's creation and El Sira's creation, the System of National Protected Areas' Master Plan incorporated communal reserves into the national protected areas system. As a result, the Natural Protected Areas Law determines the communal reserves' management regime and this creates a lot of confusion. The indigenous communities thought that the communal reserves were part of their territory and that they could treat them in their way. Finally in 2001, dialog with the Multisectoral Commission of Native Communities, which coincided with the natural protected areas regulations, began to clarify the situation.

During this dialog, the idea for a special regime for communal reserve management was included in the natural protected areas regulations. In other words, the regulations recognized that communal reserves should not be treated like a national park or a national reserve. However, how to actually manage the communal reserves in practice remains undetermined. The greatest challenge today is to clarify legal loopholes and reach a consensus on the communal reserves' special management regime.[22]

According to Ricardo Risco with CEDIA, the next step is to pass the communal reserve management to the indigenous communities located around the reserve, but as he said, unclear laws frame them in. The law that states that the communities are in charge of managing the resources does not go on to explain how. It is hard enough for local people to understand the significance of protected areas like communal reserves and national parks let alone to understand the process for managing them. Furthermore, they do not have any idea what a master plan or a management plan is, only the authorities understand these concepts; they do not reach the local people. Nonetheless, despite all of this, there are great expectations.

Budget

World Bank's Global Environmental Facility GEF has provided approximately $700,000 for Apurimac Reserved Zone's categorization process.

The Interamerican Development Bank (IDB) has provided Peru with $5 million credit to finance their institutional strengthening program, Institutional Coordinating Technical Group (GTCI), in order to accompany implementation of the Camisea Natural Gas Project. Of these funds, approximately $300,000 has been designated to INRENA, which they use to implement Otishi National Park. For example, they have designated a park director, hired two professionals and four park guards, purchased two motorcycles, two 60 HP outboard motors, and office furniture,

in addition to other actions. While these activities are focused on Otishi National Park, they do benefit the communal reserves in the meantime.

Human influence

The mid and high zones of the Vilcabamba Range are very important for the native communities that live in the lower zones, because these areas provide forest products and they have magical, religious significance. The area that is today the communal reserve has been traditionally used by communities settled on the left bank of the Urubamba River to gather flora and wildlife for food, medicine, construction materials, among other uses.[23]

Native communities living next to the communal reserve are of the Machiguenga, Asháninka, Caquinte and Yine ethnolinguistic groups of the Arahuaca linguistic family. There are 25 native communities in the areas surrounding Machiguenga Communal Reserve, with approximately 6000 inhabitants. These communities harvest terrestrial and aquatic wildlife, gather wild flora, and farm.

There are no settled communities within the borders of the Machiguenga Communal Reserve. Communities directly surrounding the reserve are Poyeni, Puerto Rico, Miaría, Porotobango, Kitepampani, Tangoshiari, Kochiri, Mayapo, Camaná, Timpía, Poyentimani, Chakopishato, Koribeni, Alto Picha, Chakopishiato. Fifteen communities are of native origin and there is one colonist settlement; their total population is 3,800 inhabitants in approximately 768 families. The smallest community is Kitepampani with 30 inhabitants, 8 families. Miaría is the most populated community with 680 inhabitants, 122 families. The native Taini community is located within the interior of the communal reserve as an "island"; its territory is excluded from the communal reserve territory (see map in the Management section).

It is very common for indigenous people to enter the reserve to hunt, and collect fruit and insects at least twice per year. Because of this, they keep small plantain and yucca farms in the area for food when they enter the reserve. Because of this, it is thought that the territory within the communal reserve has played an important utilitarian role for the native people for many years, even before records were kept.

Santa Rosa Community, photo © Diego Shoobridge, ParksWatch – Peru

Machiguenga communities are made up of extended families that have relationships between one another. They organize themselves in a way to make use of their territory. Their traditional settlement pattern was dispersed and migratory, however they have adopted more sedentary, nuclear and linear settlement patterns around a school, religious mission, or airport. They have their own values and beliefs system that forms their cultural identity. Their social system is based on mutual help and reciprocity.

The Machiguengas have an agricultural subsistence-based economy, supplemented with hunting, fishing, collecting, and some craftsmanship, that is traditionally focused on satisfying the family needs. The little surplus that they have plays an important social role since they share or trade it, thereby reinforcing family ties and solidarity. They also have small-scale production of agricultural products like coffee, cocoa, annatto, rice, peanuts, corn, yucca, plantains, and dried/salted fish to trade with the businesspeople that go to the communities in their boats.

The communities along the tributaries of the Urubamba River are the most traditional with an almost exclusive subsistence-based economy. The communities along Urubamba itself however are more connected with the outside market and therefore, need more money. These communities are more centralized, bigger, and have more social services. Each community has a distinct connection and relationship with the market, but in general, all the communities' relationships with the market are becoming stronger.

There are also people of the Yine ethnicity (previously known as "Piros") along the Urubamba River, their place of origin. These people are the traditional hegemony of the zone and they dominated inter-regional trade. They have a more complex development, and their economic activities are orientated towards autoconsumption (subsistence agriculture) and the market. They enter market to sell their products obtained through hunting, fishing, timbering, and craftsmanship. They are the principal fish suppliers in the town of Sepahua.[24] They reside in the communities of Miaría, Bufeo Pozo and Sensa; Miaría is the only community actually bordering the communal reserve.

There is one group of the Caquinte ethnicity, located in the community of Kitepampani. They migrated from the Tambo River Basin two generations ago looking for better lands and because of the pressure they felt from migrating Andean people from central Peru. Another group present is the Asháninkas of Puerto Rico, originally from the Tambo and Ene Rivers. They were forced from their traditional lands by strong colonization and political violence. The communities of Kochiri and Tangoshiari are also of the Asháninka ethnicity. In 1991, the Catholic Church flew these Asháninka out of the Ene River towards the lower Urubamba to basically save their lives from terrorism.[25] Today, they live along the Urubamba in Kochiri and Tangoshiari. Actually, some of these families are trying to return to their native homes along the Ene River.

Initially, Andean small farmers arrived in the zone to work temporarily on large haciendas. However after the 1969 agrarian reform, priority was given to developing a cooperative system. The cooperatives located along the upper Urubamba decided to migrate to the mid and lower Urubamba in order to increase their farmland and grazing areas, without success.[26] There is occasional colonist presence in the lower Urubamba parallel to the communal reserve, between the Pongo de Mainique and Sepahua; from there, the number of colonists' settlements increases

approaching Atalaya. The Pongo de Mainique has acted as a natural barrier preventing large number of colonists from Cusco from settling the area. Nonetheless, immigration pressure is strong; colonists settled upriver of Pongo de Mainique are waiting to extend their settlements. Close to the communal reserve, downriver of Pongo de Mainique there is one colonist settlement called Quitaparay. Colonists are dedicated to commercial agriculture and cattle raising.

Organization

Local indigenous populations are affiliated with three regional grassroots organizations: El Consejo Machiguenga del Río Urubamba (The Machiguenga Council of the Urubamba River, COMARU), Central de Comunidades Nativas Machiguenga (Machiguenga Native Communities Central, CECONAMA) and the Federación de Comunidades Nativas Yine Yami (Federation of Yine Yami Native Communities, FECONAYY). These organizations are involved in defending native communities' rights and territories and they advocate for indigenous development. They are very active in processes related to the Camisea Natural Gas project. The regional grassroots organizations CECONAMA and FECONAYY are affiliated with the Confederación de Nacionalidades Amazónicas del Peru (Confederation of Amazonian Nationals of Peru, CONAP), a national level organization, and COMARU is affiliated with the Asociación Interétnica de Desarrollo de la Selva Peruana (Interethic Association of Peruvian Jungle Development, AIDESEP), which also has national level representation. These regional grassroots organizations differ when it comes to their diverse ideas, and their plans and methods, which makes joint projects sometimes difficult.

There is a regional working group that has been created formally, as a legal entity, with a written by-laws and a manual, made up of institutions and local organizations present in the lower Urubamba called the Comité de Gestión para el Desarrollo Sostenible del Bajo Urubamba (Management Committee for Sustainable Development of the Lower Urubamba). This group works to coordinate interinstitutional actions in defense of and for the development of the region. CEDIA, the Institute of Water and Environmental Management (IMA), the District Municipality of Echarati and other grassroots organizations have worked as a part of this committee for the last four years. As of this writing, they have created several management tools including an operative plan for the Urubamba Basin, and a development plan through 2006. They have also created on-the-ground coordination that allows the institutions to unite their work in the lower Urubamba with local, active participation.

Ricardo Risco of CEDIA, mentioned that because of the Camisea Natural Gas Project there is a different dynamic today than there was years ago within the communities. Twenty years ago, CEDIA found a very different situation in the region than there is now. New schools, larger population, new economic opportunities, and "boom" industries that show up almost unexpectedly and disappear almost as quickly, offer a certain level of improved economic situation; but at the same time, create new needs and vices. These experiences in the zone instead of strengthening communal organization have weakened it. Today, the situation is very complex.

It seems as though communities have taken a back seat to personal and family interest, to the point that denouncing negative environmental impacts has become complicated. Even the grassroots organizations are coming apart. In Urubamba, the three representative organizations

each are doing their own thing. The presence of Pluspetrol, the company carrying out the Camisea project, instead of unifying the organizations has split them apart.

Outside actors have also influenced these organizations to take a certain direction or select certain options. In Lower Urubamba, CECONAMA and FECONAYY are in one way or another helping the companies and the State because they support whatever activity proposed without constructively criticizing it. COMARU is more critical, but it has not actually opposed the Camisea project. In fact, none of the organizations opposed the project and that is why it is being implemented today and that is why now they do not adopt critical positions when they are truly needed.

Without doubt, the community monitors/directors, who many times are directors only in name, have received personal benefits. For example, when they are given the chance to travel to Lima, or fly in helicopter, or eat and sleep in camps, or travel in deslizadores, they get so enthused that they forget that they have been named directors or monitors and they are easily deceived sometimes approving processes that they don't even understand. The worst part is that they are distanced from the grassroots communities that they represent and they make decisions without consulting with their constituents like they are supposed to. This phenomenon happens with whatever company that shows up in the zone. As this shows, the communities still need strengthening and unification so that they can adopt a more critical view of outside companies.

Organizational weakening is worrisome. Native communities are newly organized and still in the process of consolidation, but these situations interrupt this process and actually weaken their level of organization. For example, by naming specific community monitors for the project, the responsibility for monitoring and vigilance was taken away from the community as a whole who used to be in charge. Even worse, the community monitors are not armed with the tools needed to socialize the information so that the communities can be involved in the process.

Access

Machiguenga Communal Reserve is accessed via traditional routes used by natives to enter the area for hunting and collection purposes. There are many ways to access the region and then go into the reserve on foot or via river in a boat.

Beginning of the highway in Ivochote Urubamba River. Photo © Miguel Moran, ParksWatch – Peru

There are no terrestrial roads or infrastructure immediately surrounding the reserve. One of the main terrestrial access routes is an unpaved road that reaches Kepashiato, found in the Kumpiroshiato River Basin, a tributary of the upper Urubamba's left bank. This road comes from the city of Quillabamba. Access to the northern part of the communal reserve is from Puerto Ocopa along the Tambo and Urubamba Rivers. There is an unpaved road starting at the Ivochote port on the Urubamba River; transportation vehicles take passengers and cargo from the port to Quillabamba and Cusco, which are 170 and 220 kilometers away respectively.

In the southern part of the reserve, the Urubamba River itself is the most important access route for both cargo and passengers. Using the river, a traveler can reach any of the communities or populated centers of the region including Sepahua, Atalaya, Puerto Ocopa, and Pucallpa among others. The Picha and Mipaya rivers are important for accessing the communal reserve.

There is also air travel to the region. There are airports in Sepahua, and Nuevo Mundo and Las Malvinas (which were built by the Camisea project); there are landing strips in the communities of Kiriqueti and Timpía. Charter flights, mostly related to the Camisea project, and the planes from Peru's Air Force are available for social service related purposes, although on an irregular basis.[27]

Tourism

Tourism is extremely rare in the region because of its isolation from traditional tourism circuits and high operating costs. Backpackers are the most common type of tourist; they travel from Cusco and take the Quillabamba to Ivochote road where they board commercial boats. Even this type of tourism is rare and sporadic.

Studies in the Urubamba area have identified ecotourism and handicrafts as two sustainable economic activities with great potential. Despite lack of resources, a few small-scale initiatives to implement tourism projects were attempted, although they have been discontinued. These initiatives helped locals realize that tourism is a possibility. Accommodations were built in Timpía with the help of an NGO to implement a tourism program with native community members to show of the area's attractions. Also, a business was created called the Communal Business of Multiple Services – Machiguenga Center for Tropical Studies – Sabeti Lodge. The communities of Camaná and Puerto Rico formed a business to help direct production and sale of handicrafts. They also started working with textiles; today, even though they have no financing, those involved are full of expectations.

Yine craftsmanship, photo © Diego Shoobridge, ParksWatch – Peru

Conservation and research

In 1982, the Centro para el Desarrollo del Indígena Amazónico CEDIA began the Urubamba Valley Communities Titling Program, which extended from Mishagua River to Pongo de Mainique.

In 1991, the Centro para el Desarrollo del Indígena Amazónico CEDIA published the book: " El Área de Influencia del Proyecto del Gas de Camisea- territorio Indígena: El Gas de Camisea, reflexiones sobre el impacto ambiental de su explotación y como reducir a mínimos aceptables."

In 1999 the Global Environmental Facility project, managed by Conservation International, began. One of its objectives was to formally categorize Apurímac Reserved Zone. To do so, they implemented the rapid evaluation programs.

Dirk McDermott, consultant with the World Wildlife Fund (WWF-US) wrote the report, "Technical Concerns and Recommendations for the Camisea Gas Field, Peru."

For the Camisea Natural Gas Project, environmental and social impact studies were conducted in the project's zones of influence and in the communal reserve's buffer zone. These studies included a pre-project state of the environment and social situation and potential impacts of the project.

There are studies by the Smithsonian Institution's biodiversity monitoring program. Also, Región Inca conducted the Integral Diagnostic of the lower Urubamba basin.

Threats

Threats to the Machiguenga Communal Reserve include:

- Camisea Natural Gas Project
- Roads and migration
- Timber logging

Camisea Natural Gas Project

A serious threat to Machiguenga Communal Reserve is the Camisea Natural Gas Project. Pipeline construction from the treatment plant in Las Malvinas in Urubamba River to the coast of Peru implies a direct impact on the reserve's forest and biodiversity. The pipeline crosses approximately 12 km of the southeastern portion of the protected area. To install the pipeline, the company has plowed down a strip of forest that, in theory, is 25 m wide (5 m are needed for 2 tubes, 10 m for future maintenance, and 15 m for initial construction machinery that will be reforested and "returned to natural state"). The pipeline installation requires opening a corridor and cutting vegetation along the path. After considering secondary impacts from cutting a 25 m wide corridor, such as mudslides and erosion and heavy rains, there are some sectors where the corridor expands to more than 100 m wide.

Deforestation to install gas pipelines, view from the interior of the reserve, Photo © JL

This corridor, or deforestation belt, implies altered draining patterns, affects species movements, interrupts seed dispersal and natural forest regeneration, destroys habitat, and negatively impacts the landscape. The magnitude and span of the environmental effects impose a serious environmental liability for the region and country. Obliterating a strip of mature, natural vegetation and digging large amounts of soil in the watershed to bury natural gas transportation

ducts is like building a barricade for migrations and genetic interchange of small species like tree frogs and underground reptiles. Regenerating vegetation and maintaining the right-of-way will never be enough to remove this barrier along more than 180 km of primary rainforest, including almost 12 km within the Machiguenga Communal Reserve.

The project impacts Machiguenga Communal Reserve and the region in other ways as well. First of all, there is increased boat and air traffic. More boats are traveling along the rivers and the airplane and helicopter traffic is intense, generating noise that affects both people and animals. In the case of the increased river traffic, waves make traditional canoe travel used by most inhabitants difficult. Furthermore, heavy machinery leaks and spills oil and fuel into the soil and creeks. The project employees generate waste and garbage. People scare away fauna. Native people employed as workers have more disposable income, which could potentially allow them to purchase shotguns and fishing nets and increase their hunting and fishing capabilities eventually increasing pressure on wildlife in the communal reserve. Likewise, they may instead purchase chainsaws and dedicate time to extracting timber from the zone.

Tube installation, photo © JL

When the project began, the first notable effect felt by local inhabitants was increased river traffic along the Urubamba, as the project had to transport their construction materials to the zone. This coincided with less fish in the river, and locals began to feel uncomfortable with the whole idea. According to locals interviewed for this park profile, they believed that the large barges scared away the fish. They claim that there were no fish for 3 to 4 months. However, the company began a fish-monitoring program all the way to the Ucayali River. They discovered that in Atalay and Ucayali there were several fisherman with huge nets prohibiting fish from swimming upriver. These fishermen's methods were corrected so that fish could move towards the Urubamba River. In Pucallpa there are a large number of barges and there is still a ton of fish. Once the company investigated they figured out what happened and they fixed it. The problem has not been seen this year.[28]

As the project moved forward, communities perceived a series of effects as a result of the project's activities. Notable effects include negotiation processes, workshops for directors,

coordination visits, outside employees and machinery present in communal territories, deforestation for the pipeline's right-of-way, negotiations of financial compensations, large amounts of money in traditional communities, supposed water quality problems in certain locations due to erosion along the deforested right-of-way, earth removal and lack of preventive measures, increased number of diverse institutions in the region taking advantage of the company's financial resources to mediate between communities, companies, and the State, and increased number of vendors in the communities.

Project impacts were obvious when we visited the communities. In a meeting in Puerto Huallana, locals expressed their discontent with the large number of company airplanes and helicopters. They said that in company materials/agreement distributed in the communities, the company said that flights over the communities would be prohibited, but they are not complying with this promise. The communities have complained and they have asked the company to comply with their end of the deal, but the company does not want to accept. Apparently, the company says that they can fly over the area because it is national territory, but the agreement says otherwise.

Erosion caused by project activities, photo © JL.

Inhabitants of Puerto Huallana also expressed their preoccupation with increased water turbidity in the Picha River due to installation of tubes in the headwaters of its tributaries. Sedimentation in the creeks has increased considerably because of cut vegetation, soil removal, and subsequent rains that wash sediment towards the creeks. When it rains a little bit, the water becomes turbid, the fish disappear, and locals do not catch as much. One duct passes directly by the Patoroti River headwaters and when it pours, locals can feel its effects. According to people in Puerto Huallana, there are neither loggers, nor illegal hunters entering the protected area from their zone.

In a meeting with the Camaná native community, which is next to the communal reserve and through which the project tubes cross before entering the protected area, a pair of locals timidly commented that they had found tubes and other plastic in the river. They said that they were downriver during high water in a place called "ponguito" along the banks of Corintiari River.

According to several project employees, this happened because they had to improvise some job and they left everything along the edge of the river, but high waters came that same night. The locals also complain of mudslides that have increased turbidity in the creeks when it rains. Shirumbia River and Corintiari Creek have been affected. They say that Parotori River also gets dirty when it rains and affects fishing.

During our field visit, we noted that the community members seem reluctant to speak out against the company's activities. The communities receive financial compensation for allowing the pipeline to cross through their territories, and locals are hired as workers, so they probably fear that they will lose these benefits if they speak out against the company. This was made obvious to us when in one community meeting; an attendee said, "we do not want anyone to say later that the community of Camaná criticized the company and we want you to write your reports as we have spoken, without speculation."

According to Ricardo Risco, the communities are dispersed and they've placed their personal material or economic interest over the communal interest. We estimate that they will be left with expectations and financial dependencies because there is a lot of money circulating in the communities lately that attracts non-pure businesses like alcohol and prostitution. Increased river travel and helicopters causing annoying noise were additional impacts. Lately, because of increased boat traffic, increased sedimentation from erosion along the pipeline right-of-way, and improper wastewater dumping in workers' camps, communities have noted fish scarcities.

Areas along the pipeline's right-of-way have felt the most impacts. There are very large forest openings, and large mounds of dirt along the right-of-way that will be used to refill the holes after the tubes are buried. However, the rain has washed soil away from most of these areas because they have used the inadequate technique of first opening the right-of-way and then waiting until climatic conditions improve to bury the tubes. During this lapse, everything is left uncovered and vulnerable to the rains that have eroded the material.[29]

Pipeline right-of-way, photo © JL

According to Erick Meneses of CI, there is a certain amount of water contamination along the entire 740 km-long pipeline, including the section crossing the communal reserve. In fact, the Supervising Organization of Energy Investment (OSINERG) fined the company for soil erosion and entering a protected area without INRENA's permission. As of this writing, the company has not paid the fine.

The company contracted the NGO Pro Naturaleza (Pro Naturaleza Consortium – Peruvian Environmental Network RAP – and Confederation of Peruvian Amazonian Nacionalities CONAP) to monitor certain activities, which is creating a participatory monitory program. The Peruvian Gas Transportation Company TGP is doing the same in some areas of the lower Urubamba. Monitoring occurs in areas directly affected and within some colonial settlements.

These programs have requested two representatives per community to work as communal monitors.

When the monitoring program began, there were significant delays. In September 2002, training for the monitors began, but the company started working even though the actual monitoring program had not begun. Also, in the meantime, several communal monitors quit and in an effort to meet the monitoring requirement, their replacements were selected without a community assembly and the process continued. Today, the communal monitors work alongside with company managers instead of coordinating or taking complementary actions with his/her corresponding community board of directors.

CEDIA's criticism is that the process is not an independent program. When COMARU was working to establish an entirely independent monitoring system with the communities, the company made a financial offer to hire an independent monitoring organization and they selected Pro Naturaleza, thereby weakening COMARU's process. The monitoring plan sponsored by Pluspetrol lacks clear orientation. In the case of certain types of problems, like for example when a girl drowned in the river because of the company's boat traffic, the communities have had to take it upon themselves to act because the monitors' actions have been very weak. Also, monitors do not share learned knowledge with their communities, so they are not strengthened as a result of the program. CEDIA thinks that once the operation and monitoring program ends, the communities won't have anything, not even the gained experience from which they might capitalize on in the future.

According to Pro Naturaleza, the community Camaná reported a problem during the rainy season in the higher parts of the basin. There, the rains caused increased turbidity in the creeks, which usually occurs during the rainy season, but it was worse than normal. However, even the community monitors classified the problem as temporary, because once the rains stopped, the creeks returned to normal. Even still, the complaint was filed, they talked to the company, they filed the report using the forms and established communication channels, the company went to the scene with consultants to inspect, and they agreed that there was an erosion problem. The forms for these problems do not just go to the company; they are also shared with a state agency, the Technical Group of Interinstitutional Cooperation (GTCI), which can go observe the problems and determine whether or not the company is taking appropriate corrective measures. Basically, this example is trying to say that the company responds when a complaint is filed.

Solid waste management has been one of the primary issues. A resulting achievement is that the monitors do not just think of the company's solid waste management, they think of it and take actions within their own communities.

Erosion and material slides and the pipeline route, photos © Antonio Salas of Grupo de Especialistas de la Sociedad Civil para el Proyecto de Camisea

Communities implementing community monitoring include Nuevo Mundo, Kirigueti, Cashiriari, Segakiato, Shivankoreni, Camisea, Ticumpinía, Camaná, Timpía (these last two border the reserve) and the colonist settlement of Túpac Amaru.

According to Pro Naturaleza, the idea for the community environmental monitoring plan came from the indigenous federations and it is not an initiative of Pluspetrol or the Peruvian Gas Transportation Company TGP. The indigenous federations created pressure and that is why Pluspetrol consulted with the grassroots organizations to meet their demands. The monitoring program needs its own boat, its own office, and an independent communication system that belongs to the communities so that they do not have to depend on the company for logistics and they can increase their range of activities.[30]

Roads and migration

The road originating in Quillabamba going to Ivochote along the upper Urubamba River is the main access road in the region. From Ivochote, travel is via river towards the lower Urubamba. The road actually goes further than Ivochote all the way to Talancato, in front of the mouth of Saniriato Creek, but it is in very bad shape and is basically unusable. The local government of Inca Region of Cusco improved this road in 1988 to 1990. Regional authorities have proposed fixing the road to Talancato, uniting the towns of Pachiri, Pangoa, and Saniriato, which have strong Andean colonist presence. They envision extending the road towards the lower Urubamba to the zone of operation of Camisea Natural Gas Project.

Roads attract more colonization and facilitate access for those wanting to extract resources. Road building is directly related to Camisea Natural Gas Project activities, since they have built a main road and secondary roads to construct and maintain their pipeline and introduce heavy machinery to the pipeline's right-of-way. There is a risk that the roads built to install the pipeline will be used to extract and transport wood, that farmers will open up agricultural plots along the right-of-way and that more farmers will migrate to the lower Urubamba in search of land. These roads are made possible by and enlarged by colonists in coordination with local municipalities.

Supposedly the company has promised to reforest and abandon the roads once the pipeline construction activities are complete. However, local municipalities are asking the company not to close the roads and to leave the bridge over Mantalo River in place, even though it goes against what was established in the environmental impact studies.

Deforestation next to an access road, photo © Antonio Salas with Grupo de Especialistas de la Sociedad Civil para el Proyecto de Camisea

As soon as the municipalities receive their gas bonuses, it is entirely likely that they will build roads from Quillabamba to Camisea and from Puerto Ocopa to Atalaya, which will impact biodiversity and native communities. The province of La Convención will also receive enormous kickbacks with similarly strong incentives to build roads. And, it is likely that Camisea's infrastructure, roads, and even the pipeline right-of-way, will facilitate access to the area.

The district mayor of Echarate, where the project is located, indicated that he would like to see the Quillabamba road extend all the way to Seringaveni, which is a settlement along a creek close to Pongo de Mainique. This road currently reaches Ivochote and then the beginnings of a road continue to Mantalo River, which is ½ hour upriver of the pongo (river gorge). Pressure to improve this road to make it functional is tremendous. There is another project to build a road along the right banks of the Urubamba River in Calca, the neighboring province discussing the possibilities of extending the road to Camisea. In the upper Urubamba, there are several large

populated towns (Kiteni, Ivochote, Kepashiato y Pangoa) that are all in some way in favor of road building.

The most recent census in Echarate District showed large population increases from intense immigration from the Andean region. During the 20th century, there were different immigration waves into the region. Between 1909-1914, people migrated to the region because of the rubber and coffee boom. In 1933, there was another wave because of land speculations related to the opening of the Cusco – Quillabamba highway. Between 1940 and 1945, there was another migration wave because of the coffee boom and the need for workers. 1960 saw an increase in coffee crops and thus need for more people. During the sixties, the province of La Convención had 61,901 inhabitants, which represented a 252% increase since 1940-45. In 1980, migration to the area increased because of the political violence in other parts of the country. And, finally, the most recent immigration wave was in 1990 after the road to Ivochote was expanded.[31]

The pipeline's right of way facilitates access to the zone and agricultural plots next to the access route, photos © Antonio Salas with Grupo de Especialistas de la Sociedad Civil para el Proyecto de Camisea

Logging

Currently, there is no logging within the protected area. However, there is intense logging in the communities next to and surrounding the reserve. Forestry concessions border Machiguenga Communal Reserve to the north, which also represents a possible threat to the reserve since these concessions provide access. Also to the north, loggers are working in communal territories of Miaría and Puerto Rico. Puerto Rico Communal Territories and forestry concessions overlap in this area, which causes confusion and conflict.

The person responsible for INRENA's Office of Forestry and Wildlife Control in Sepahua claims that illegal logging is a problem common everywhere. It is difficult to have absolute control, but they are trying to establish optimal control in these places. To do so, they propose working with NGOs to come up with new strategies. There are concessions that have problems with remote communities that are not very well known and require on-site verification. Other concessions are so large that the concessionaires cannot even pay the corresponding fees, so they

need to work with them. Another two concessions have border disputes, so the Special Land Titling Program (PETT) and INRENA are working together to resolve them. According to the INRENA agent, concessions represent an optimal method, but these types of problems are expected for the initial phase when the ground work is carried out. He feels that with time, the system will work for the better.[32]

According to WWF staff in Sepahua, this NGO provides technical, economic, and legal assistance to the forestry extractors. They are consulting nine companies in ten concessions, eight of which are working in an appropriate way. Three of the concessions have territorial overlapping problems. The management proposal in these forestry concessions is rotating cuts. The concession is for 40 years, and covers 40,000 hectares. 1000 hectares are cut per year over that time. Under this management system, in the 41st year, the contract will be renewed for the first 1000 hectares cut. This is a way to manage and conserve the forest at the same time. INRENA has control methods. There are determined volumes in the zone. For example, there is one mahogany tree in every 10 hectares, so if someone is extracting too much mahogany for a small area, something is not right. It is detected when volume per hectare is calculated.[33]

Photo © Miguel Moran, ParksWatch – Peru

Control of wood along the Ucayali River heading towards Pucallpa is located in Atalaya where the Technical Office of INRENA's Forestry and Wildlife Control Agency is based. Control of wood from Pongo de Mainique towards Ucayali is also handled in Atalaya because it cannot be taken to Cusco. From there, they control all the wood coming from Urubamba and Tambo heading towards Pucallpa. Loggers in the region are almost all from Pucallpa.

There is logging pressure in the northern zone, along the Miaría and Sensa rivers. Loggers arrive from Ucayali and Sepahua, make agreements with some communities, and then log the area. Several residents of Miaría native communities said that in the past loggers had agreements with the communities to extract wood from communal territories, but not anymore. However, leaders from the Sensa indigenous community say that there is a problem in Miaría because colonists working with Tuesta logging company enter communal territories. Apparently, this logging company is not present in Sensa territories because they have not authorized it.

Apparently, Tuesta created problems in the past because they tried to furtively enter Sensa territories via Miaría. Sensa denounced it to INRENA who showed up to verify the claim. Not only were loggers trying to enter their territories, they scared away the animals with their logging tractors and machinery.

A leader of the Puerto Rico native community said that logger Humberto Santillán Tuesta, owner of INTEXA ranching, entered communal territory to steal land and he did not respect the borders outlined in the plans. He also said that the loggers wanted to enter the communal reserve…to protect it, the communal territory border needs to be demarcated and then they will know where Puerto Rico territory ends. Last year the land titling process began and hopefully the final borders will be determined soon.[34] Puerto Rico borders a piece of real estate known as "La Soberana," owned originally by Mr. Fidel Tuesta and now by his nephew, Humberto Santillán. They have taken this area. This is a threat to the communal reserve and to community property. They even want to enter the area with tractors. This is dangerous because they could easily enter the communal reserve.

The communities are allowed to solicit INRENA for extraction permits as long as the wood is intended for community use. If it is commercial level extraction, they have to present a management plan. Since the communities do not have the capital to carry out such exploitation directly, they get in contact with loggers who take care of all the procedures and logistics and the communities provide them the space in which to work. Once they are finished in a certain area, and the loggers have removed all valuable wood, they leave without carrying out the promises made to the community. The community is left without forestry resources and with the obligations set forth in the management plans, including reforestation. Because the loggers left the communities high-and-dry, they do not have the resources necessary to implement reforestation and in the end they are fined. That is why communities no longer want to establish agreements with logging companies, although some community leaders do so without consulting community members first.

According to Erick Meneses of CI, "illegal formal logging" occurs via the forestry concessions because loggers use the legal concessions system to access prohibited areas. He notes that loggers also negotiate with native communities, and that the area being negotiated with native communities is approximately as big as the area covered by the concessions. The problem is not with the forestry laws—they are progressive. The problem is the people, politics and corruption. Loggers avoid the law by extracting from native communities where they have seen a chest full of treasures. The loggers also solicit forestry concessions next to the communal reserve or next to a community or an area with high quality wood to log from there as well and then claim that all the wood came from their concession. Loggers obtain documents to extract wood and then they take advantage of their permits to extract from unauthorized zones, mostly from native communities' lands in coordination with corrupt leaders.[35]

Future Threats

The major threat to the protected area in the short term is road building, which would also bring large numbers of immigrants to the lower Urubamba and thereby increase the demand for natural resources and increase the number of illegal loggers in the zone.

Camisea project activities generate impacts that will have future consequences on the protected area. A potential erosion process exists along the pipeline's right-of-way, including the portion that crosses the communal reserve that could generate river and creek sedimentation within and around the protected area. Erosion in the deforested areas for tubing could cause slides and collapses. There is also the possibility that migrants and farmers will use the right-of-way to access the region.

Another possible threat originates from increased amount of money in the communities. Those people working with Camisea are making money, which they may spend to buy tools to extract resources. For example, they may buy boats and motors to access further into the reserved zone, or they may buy shotguns and fishing gear to more efficiently capture animals, or they may buy chainsaws to extract wood. All of these possibilities are dangers for the protected area's integrity.

Another potential threat within the protected area is Repsol – YPF petroleum exploration in Lot 90, between the Urubamba River and the northern part of the communal reserve. This is taking place within the protected area's buffer zone. It will cover 250 km and last 6 months during 2004, and will employ a 2D seismic system.

Recommended Solutions

Camisea Natural Gas Project

The companies involved in the Camisea Natural Gas Project must comply with the stipulations in the environmental impact studies and environmental plans approved by the Ministry of Energy and Mines, INRENA, and civil society during public hearings in order to guarantee implementation of actions protecting the environment and human rights. They also must ensure compliance with Peru's laws protecting the environment and other company agreed upon obligations protecting the environment, natural resources, and nearby indigenous communities.

Erosion control devices, and reforestation along the right-of-way, photos © Antonio Salas with Grupo de Especialistas de la Sociedad Civil para el Proyecto de Camisea

In relation to the pipeline construction, the Transportadora de Gas del Peru TGP company establishes that it will provide a maximum stability, security, and trustworthy pipeline system and that it will not place its tubing along steep slopes or pronounced lands that do not offer sufficient stability. The company agreed to minimize social, cultural, and environmental impacts by not crossing through sensitive environments (to the extent possible). They agreed to select routes in non-pristine areas as often as possible instead of in primary forests. They agreed to minimize construction costs and time and the total area impacted as much as possible. They said that they would try to minimize the number of water crossings to avoid potential water contamination. An outside, independent organization should supervise compliance with these measures.[36]

All areas deforested to install the pipeline should be reforested and recuperated. Suitable native tree species should be used in the reforestation. Pasture grasses should not be used; although this is what the company is doing when it plants *Brachiaria* sp. in an effort to stop erosion and as a way to reestablish vegetation. Reforestation using exotic species within the protected area should be prohibited.

TGP's idea to support a park guard force within Machiguenga Communal Reserve is welcomed and we recommend activating this process. TGP has begun coordinating with INRENA to evaluate the possibility of signing a sustainable management cooperative agreement in the Vilcabamba Range and implement a consistent patrol system in two, full-time park guard stations to protect the newly created Machiguenga Communal Reserve. The control posts will be located in strategic, possible access points and they will contract permanent personnel and provide radio communication with the main offices of TGP and INRENA. TGP feels that any patrol system implemented in the communal reserve should be co-managed by the local people. INRENA, the authority of the National System of Natural Protected Areas, will be responsible for providing the office, contracting the staff, and maintaining the control posts. TGP will provide the financial resources to build the control posts, for initial park guard training and salaries (for one year), until the government assigns corresponding funds.[37]

Establishment of control posts does not guarantee control of the right-of-way. The control posts should be located in the protected area's access zones, concentrating on entrance points to the protected area and not on the pipeline. There are no park guard functions stipulating that the guards should protect the pipeline right-of-way in general, they do not even have the authority to stop people from accessing it, except within the protected area. Park guards are not authorized by law to stop and detain invaders. There should have been a program identifying critical areas within the communal reserve to establish control posts that would have the dual function of monitoring the communal reserve and protecting the pipeline right-of-way crossing through it.

Definitive monitoring systems have not yet been established for the project even though it is well underway. We recommend evaluating the existing monitoring systems in order to coordinate a monitoring system accepted by civil society, the State, and the companies. It is extremely important that the civil society groups working to define and establish monitoring systems for the diverse components of the project (which receive financing from the Interamerican Development Bank) are strengthened. Actually, civil society work groups are designing a plan to control immigration into the area, a biological diversity-monitoring plan, and a reforestation plan for affected zones. Once these plans are ready, strict compliance is necessary.

As mentioned previously, Pro Naturaleza leads a participatory monitoring program in which it works with 10 communities affected most by the gas project. Other organizations working in the region want all civil society organizations to be part of the process and participate. They propose to join forces and establishing a joint monitoring plan in which every organization participates. They object to Pro Naturaleza's monitoring plan because it is not independent since it receives financing and other facilities from the company that it is supposed to be monitoring. Another reason they oppose Pro Naturaleza's plan is that it is only executed in 10 communities in the zone, and the other 10 are not part of the participative plan even though they are within the project's influence area.

We recommend strengthening the design process and execution of Pro Naturaleza's participative monitoring plans while at the same time strengthening other civil society group's actions so that they can carry out their own monitoring programs. The results of both monitoring programs, and any future program implemented by OSINERG, the Ministry of Energy and Mines, or INRENA, should be compared and contrasted to further guarantee control of project activities.

District and regional municipalities should participate and get more involved in management and protection of the communal reserve since 100% of the protected area territory is within the municipalities of Echarate and Quillabamba. If these entities are more involved in managing the communal reserve, it will help better conserve the area. The municipalities will receive taxes and user fees from the project and levies from the gas production. Municipal authorities should be informed, trained and persuaded not to invest in highways but rather to concentrate on conserving Machiguenga Communal Reserve and adopting sustainable development in the region. The municipalities should be trained in management, sustainable economic activities, and in territorial planning.

During an interview with the district mayor of Echarate, Mr. Jaime Bustamante Ochoa, he mentioned that his municipality is prepared to preserve and meet their obligations to maintain the reserve. He said, "In this way, we the local government, guarantee that these reserves will remain wild and we will make those trying to inappropriately use or destroy the area respect the reserve. We will involve the central government, environmental organizations, la Defensoría del Proyecto Camisea (Camisea Project Protection Office) in order to meet the obligations detailed in the exploitation contract and we will get these entities involved to help the community and not just work in favor of the company."[38] If the municipal government follows through with this, their support will play a fundamental role in protecting the communal reserve.

Here are three detailed reports of the results and recommendations of the *Grupo de Especialistas de la Sociedad Civil para el Proyecto de Camisea* about the project (in Spanish only): 1) Informe Asociado al Plan de Control de Acceso al Derecho de Vía en el Marco del Megaproyecto Camisea; 2) Informe Asociado al Monitoreo de la Diversidad Biológica en el Marco del Megaproyecto Camisea; 3) Informe Asociado al Plan de Control de Erosion y Revegetación en el Marco del Megaproyecto Camisea.

Roads and migration

Construction and improvement of highways and roads facilitate access for farmers and Andean colonists looking for new lands for their subsistence activities, which is the most serious threat to the reserve in the medium term. In addition, the pipeline crossing through the southeastern part of Machiguenga Communal Reserve is another access route posing a serious, immediate threat to the protected area.

Because of legally established requirements and civil society's participation, the companies Transportadora de Gas del Peru TGP and Pluspetrol have designed an Access Control Plan for their pipeline right-of-way and areas of operation. This plan is currently being reviewed and revised by involved institutions. Initially, they outlined a Migration Control Plan, but the companies changed it to the Access Control Plan, claiming that migration is an issue for the Peruvian Government not for a private company. The Access Control Plan states that effective control of potential colonization along the right-of-way depends on the measures implemented by the consortiums Transportadora de Gas del Peru TGP and Pluspetrol Peru Corporation S.A., as well as the actions and activities defined and implemented by Peruvian Government.

Within the Right-of-Way Access Control Plan, there is no strategy for interinstitutional or intersectorial coordination to lessen local and regional governments' and loggers' interest to build highways, or to change their plan to increase agriculture and forestry activities within the Vilcabamba Range. It is important to provide strict measures to stop people from entering and forming intrusive settlements once the pipeline construction activities end and most of the project monitors and other types project controls cease.

The Access Control Plan recommends: a) establishing a Special Civil Court in the lower Urubamba zone; b) that the Regional Prosecutor's Office pays more attention to invasions and colonizers; c) providing jurisdiction to community authorities to legally expel intruders with support from the public forces; d) disbanding colonist and invaders societies and organizations; e) modifying article 204 of the Penal Code to increase the fines and sentences for invaders and their supporters (financial or otherwise); f) sanctioning police incompliance with eviction orders; g) elevating the number of years of passive occupation needed to acquire land rights in the jungle to at least five years of permanent occupation; h) implementing a forestry police and guard force to stop unauthorized trespassing.

The conventional hydrocarbon transport system installation requires a road for machinery and vehicles along the right-of-way. Because this road and right-of-way could be used as a migration trail, TGP has decided to deactivate it. This deactivation will be done by physically transforming the right-of-way so that it will be more difficult to access. During cleaning and restoration activities, the roads will be restored to their original forms and will be totally reforested. The temporary bridge over Mantalo River will be dismantled and removed. In this way, the access routes built for the pipeline construction will be eliminated and the right-of-way will be returned to its natural state.

The native communities will continually monitor the right-of-way in their territories in search of signs of migration in agreement with TGP. The agreement will create "Watchdog Groups," which will be made up of selected residents and assigned by the community itself. Members of the groups will receive training and orientation for monitoring work. The groups will communicate their findings using radio or satellite communication to TGP and corresponding authorities.

According to the Access Control Plan, governmental authorities will be the ones to decide if and when to evict immigrants from the project limits, communal reserves, and from the lower Urubamba region, not TGP. TGP will provide logistic support to the authorities to evaluate any situation and develop corresponding eviction actions if they decide to take that course of action.

The pipeline's right-of-way should be closed once work is completed, photo © Antonio Salas with Grupo de Especialistas de la Sociedad Civil para el Proyecto de Camisea

The Peruvian Government should also promise to act quickly and decisively to eradicate any unauthorized incursion along the pipeline right-of-way.

TGP should use high-resolution remote sensing tools to monitor land use changes and regional deforestation. They should generate regional Landsat images on a yearly basis to determine if deforestation rates have changed, which areas have been affected, and as is possible, determine the causes.

Since there are no authorities in the protected areas, it is hard to define control strategies in these areas. Not even the location of the TGP proposed control posts has been determined. Therefore, it is necessary to select the communal reserve's authorities as soon as possible and begin implementing control strategies.[39]

Systematic information campaigns regarding lack of available land for settlement should be promoted. We recommend using radio to reach the masses and the message should be clear: there are no jobs or land available. Additionally, signs and billboards should be posted in different towns and areas throughout the project's influence zone informing people that jobs will not be contracted in the project's operation camps and that there are only a limited number of jobs still available.

Information should be disseminated regarding alternative sustainable development options for the zone and regional and municipal governments should be made aware of the problems related to road building and that they do not contribute to sustainable development. All road building activities or projects affecting the communal reserve should be stopped.

Logging

Long-term protection of Machiguenga's forestry reserves depends on the effectiveness of the Technical Office of INRENA's Forestry and Wildlife Control Agency in the communal reserve's area of influence and on INRENA's Natural Protected Areas Agency's ability to patrol, control and administer the reserve.

A large amount of timber is being extracted in some native communities located next to the communal reserve. Therefore, it is necessary to reinforce INRENA's control and community-based control measures with the support of NGOs and other grassroots organizations to stop any illegal logging activities.

INRENA office in Sepahua, photo © Miguel Moran, ParksWatch – Peru

Communities and grassroots organizations should be in direct contact with the future protected area administration to exchange information and carryout joint operatives. The most effective way to control timber extraction within and surrounding the communities is by working in alliance with the communities themselves. Coordinated work should be promoted with other institutions like the National Police, the Prosecutor's Office, and la Defensoría de Camisea who are involved in control issues. Native communities and loggers should be trained on the importance and application of the forestry management plans required by law to obtain forestry permits. At the same time, loggers should be forced to apply and comply with what is established in the forestry plans they presented to obtain their permits in the first place. INRENA's forestry sector should meticulously and strictly evaluate management plans before approving them and granting permits.

Long-term protection of Machiguenga's forestry resources depends on appropriate forestry management in the native territories, on correct implementation of the forestry concessions located north of the protected area, and on efficient monitoring and control by the Technical Office of INRENA's Forestry and Wildlife Control Agency.

Protected area management

A protected area management committee should be activated as soon as possible. An administration contract should be signed with the institution that will carryout the communal reserve's management as well. Even though formal norms detailing communal reserve administration do not exist, it should not inhibit formation of the management committee or further delay contracting administrators. INRENA is currently working to design a special administration regime for communal reserves and to create a document complementing the Natural Protected Areas Law that will regulate management of all the national communal reserves. While this is occurring, Otishi National Park's recently named park director and staff could coordinate some issues within neighboring Machiguenga Communal Reserve that would help facilitate installing a management committee and signing an administrative contract.

The state moved forward to create Machiguenga Communal Reserve. Now, training workshops are needed in the neighboring communities so that the residents will better understand the details

of the protected area. In general, residents are not well informed of the communal reserve's benefits and importance. An education campaign is needed to better prepare the communities to manage and support the protected area and to identify certain sustainable economic activities and pilot projects that could be developed in harmony with the communal reserve.

Conclusions

While Machiguenga Communal Reserve is currently very well conserved, certain activities threaten its state of conservation. First, the Camisea Natural Gas Project poses several risks because its pipeline crosses through the southeastern corner of the reserve. To install the pipeline in this area, the companies have deforested a corridor, which implies altered draining patterns, causes erosion and sedimentation, affects species movements, interrupts seed dispersal and natural forest regeneration, destroys habitat, and negatively impacts the landscape.

Enlarging the road and access routes system attracts more colonization and facilitates access for those wanting to extract resources. Road building is directly related to Camisea Natural Gas Project activities, since they have built a main road and secondary roads to construct and maintain their pipeline and introduce heavy machinery to the pipeline's right-of-way. There is a risk that the roads built to install the pipeline will be used to extract and transport wood, that farmers will open up agricultural plots along the right-of-way and that more farmers will migrate to the lower Urubamba in search of land.

Currently, there is no logging within the protected area. However, there is intense logging in the communities next to and surrounding the reserve. Forestry concessions border Machiguenga Communal Reserve to the north, which represents a possible threat to the reserve since they provide direct access to it.

To minimize Camisea's project effects on the environment, the companies involved comply with the stipulations in the environmental impact studies and environmental plans approved by the authorities. They also must comply with Peru's laws and Interamerican Development Bank's recommendations protecting the environment, natural resources, and nearby indigenous communities.

We recommend strengthening the design process and execution of Pro Naturaleza's participative monitoring plans while at the same time strengthening other civil society group's actions so that they can carry out their own monitoring programs. The results of both monitoring programs, and any future program implemented by national institutions, should be compared and contrasted to further guarantee control of project activities.

District and regional municipalities should participate and get more involved in management and protection of the communal reserve. Municipal authorities should be informed and persuaded not to invest in highways but rather to concentrate on adopting sustainable development in the region. TGP's Access Control Plan should be complied with to stop immigrants from settling in the area.

To stop the advancing logging frontier, appropriate forestry management in the native territories, correct implementation of the forestry concessions located north of the protected area, and efficient monitoring and control by corresponding authorities should be promoted.

The protected area must be implemented as soon as possible. A management committee should be activated and its administration contracted.

Bibliography

ACPC. http://www.otishi.org

CTAR - C, IMA /CTAR - C, SPDP. 1998. Diagnóstico Integral y Programa de Desarrollo Sostenible de la Cuenca del Bajo Urubamba. Cusco.

GAVIRIA, Alfredo.1995. Aproximación al Plan de Manejo de la Reserva Comunal Yanesha. Oxapampa.

INRENA-GTZ-FANPE. 1998. Marco Conceptual y Metodología de Planificación para las Areas Naturales Protegidas.

Instituto Real para los Trópicos Amsterdam, Los países Bajos, et al. 1996. Estudio Básico de Salud de la Zona de Camisea, Bajo Urubamba, Peru. Lima.

INRENA-Ministerio de Agricultura-Direcciòn General de Àreas Naturales Portegidas. Expediente técnico de categorización de la Zona Reservada del Apurímac. Machiguenga Communal Reserve. Octubre 2002.

KOMETTER,Roberto. Plan Maestro Machiguenga Communal Reserve. Documento de trabajo, CI. Peru. Octubre 2001. En: Expedientes Técnicos para la recategorización de la ZRA. Parte 1 Vol 1

ONREN: 1976. Mapa Ecológico del Peru. Guía Explicativa. Lima.

Ministerio de Agricultura - INRENA . 1996. Guía Explicativa de, Mapa Forestal 1995. Lima.

Peru. 1999. Estrategia Nacional para las Áreas Naturales Protegidas. Plan Director. Lima.

Rivera Chavéz, P. Lelis - CEDIA; 1991. Libreta de Campo N 1 , “Área de influencia del Proyecto Gas de Camisea - Territorio Indígena.

Shell Prospecting and Development (Peru) B. V. 1996. Campaña de Perforación Exploratoria de Camisea. Estudio de Impacto Ambiental. Lima.

Shell Prospecting and Development (Peru) B.V. 1995. Proyecto Camisea: Perfil Ambiental. Lima.

Estudio de Impacto Ambiental y Social para los components del proyecto Pozos de extracción, tubos de conducción, planta de gas y exploración sísmica. Environmental Resources Management ERM. Lima 2001.

Smithsonian Institution Monitoring and Assessment of Biodiversity Program. Urubamba: The Biodiversity of a Peruvian Rainforest. Alfonso Alonso, Francisco Dallmeier and Patrick Campbell editors. Charter Printing VA-USA. 2001.

Diagnóstico Integral y Programa de Desarrollo Sostenible de la Cuenca del Bajo Urubamba. Región Inca. Cusco, 1998.

Notes

[1] According to Master Plan presented by Conservation International, it has 238,926.39 ha
[2] http://www.otishi.org/anps_esp_rcm.htm
[3] INRENA.Expediente técnico de categorización de la Zona Reservada del Apurímac. Reserva Comunal Machiguenga. (*Technical file for the categorization of Apurimac Reserved Zone, Machiguenga Communal Reserve*) October 2002. Page 11.
[4] Ibid. Pag. 11.
[5] Ibid. Pag.12.
[6] http://www.otishi.org/anps_esp_rcm.htm
[7] http://www.otishi.org/anps_esp_rcm.htm
[8] KOMETTER, Roberto. Plan Maestro Reserva Comunal Machiguenga. Documento de trabajo, CI. Peru. Octubre 2001. En Expedientes Técnicos para la recategorización de la ZRA. Parte 1 Vol 1. Pag. 8.
[9] Ibid. Pag. 5.
[10] Ibid. Pag. 5.
[11] Ibid. Pag. 15-16.
[12] KOMETTER, R. Op. Cit. Pag. 12
[13] KOMETTER, R. Op. Cit. Pag. 13.
[14] INRENA. Op. Cit. Pag. 27-30.
[15] Interview with Ricardo Risco of the Centro para el Desarrollo del Indígena Amazónico CEDIA (Center for Indigenous Amazonian Development) on January 7, 2004.
[16] Interview with Iván Brehaut, Executive Director of the Asociación para la Conservación del Patrimonio de Cutivireni ACPC (Association for the Conservation of Cutivireni Heritage), on December 19, 2003.
[17] Interview with Richard Smith, Margarita Benavides and Renzo Pianna, directors of the Instituto del Bien Común (Common Good Institute), on January 7, 2004.
[18] Interview with Erick Meneses, Vilcabamba Regional Director with Conservation International, on January 13, 2004.
[19] Informative brochure on conservation of the Vilcabamba Amboró Corridor, Conservation International. Tesoros sin Fronteras, 2004.
[20] http://www.otishi.org/anps_esp_rcm.htm
[21] Natural Protected Areas Law Number 26834 (17/06/97). Corresponding regulations of the Natural Protected Areas Law, Supreme Decree Number 038-2001-AG (22/06/2001).
[22] Interview with Richard Smith, Margarita Benavides and Renzo Pianna, directors of the Instituto del Bien Común (Common Good Institute), on January 7, 2004.
[23] http://www.otishi.org/anps_esp_rcm.htm
[24] INRENA. Op.Cit. Pag. 34.
[25] See: Gagnon, M. Guerreros en el Paraíso. Jaime Campodónico Editor. Primera edición. Lima, agosto del 2000.
[26] INRENA. Op.Cit. Pag. 34.
[27] INRENA. Op. Cit. Pag. 6.
[28] Interview with Gilberto Ponciano, director of CCNN Miaría.
[29] Interview with Ricardo Risco of the Centro para el Desarrollo del Indígena Amazónico CEDIA (Center for Indigenous Amazonian Development) on January 7, 2004.
[30] Interview with Pro Naturaleza: Mr. José Reyes Salinas, coordinator of the monitoring program, and Ing. José Salas Roncagliolo project coordinator with Pro Naturaleza on January 23, 2004.
[31] Plan de control de acceso al derecho de vía y áreas de operación. (*Plan for controlling access to right-of-way and operations*) Proyecto Camisea. TGP-Pluspetrol. Enero 2004. Pag. 10.
[32] Interview with César Aliaga Guerrero, responsible of the Forestry and Wildlife Control Office of INRENA in Sepahua, on December 9, 2003.
[33] Interview with Carlos Inami, WWF staff in Sepahua, on December 9, 2003.

[34] Interview with Samuel Benavides Peña, ex-leader of the Puerto Rico Community, on December 12, 2003.
[35] Interview with Erick Meneses, Vilcabamba Regional Director with Conservation International, on January 13, 2004.
[36] Plan de control de acceso al derecho de vía y áreas de operación. (*Plan for controlling access to right-of-way and operations*) Proyecto Camisea. TGP-Pluspetrol. Enero 2004. Pag. 13.
[37] Ibid. Pag. 23.
[38] Interview with Echarate Mayor, Mr. Jaime Bustamante Ochoa, in the native community of Kirigueti on December 12, 2003.
[39] Plan de control de acceso al derecho de vía y áreas de operación (*Plan for controlling access to right-of-way and operations*). Proyecto Camisea. Pluspetrol – TGP. Enero 2004.