

Community based forest management in Panama

GEA Consultores, S.A.

Panama, April 2000

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1 General Information

1.1 Background description of the Canal Watershed

1.1.1 General description

The Canal Watershed has a 3.300 square kilometers extension, in the thinner part of the Isthmus of Panama (see Map 1: The Panama Canal Watershed). It's located in the most intense place of industrialization and urbanization process of the country and concentrating more than 80% of urban population, between Panama city and Colon. Estimations made by the former Panama Canal Commission shows that the Canal watershed is producing some 4,390 millions of cubic meters of water annually. 54% of the water is produced by the 6 major rivers (Chagres, Pequení, Ciri Grande, Boquerón, Trinidad and Gatún). It needs to produce near than 10 millions of cubic meters of water only for the daily boat transit over the Canal. The rest of the water is used for human or industrial purposes.

Studies linking water flows and forest cover have shown that less forest covered watershed (like Trinidad river watershed, with only 18% of it's area covered by woods) produce less regular flows during the whole year. This has been point up as an explanation to the alteration of water production, producing little water during dry years while having extra production in very rainy years. These dramatic changes undermine proper water management and use in the Canal watershed.

1.1.2 Current resource management government responsibilities

In the Canal watershed, the natural resource management depends, at least, of 5 major government institutions, and of local governments. There are here referred by importance, from the higher Authority to the minor one:

1. in what is called the Canal Operations Zone (everything that is roughly 1 km at each sides of the Canal waters) the resources management depends of the Autoridad del Canal de Panamá (ACP, Panama Canal Authority, former Panama Canal Commission). This institution is in charge of all the navels operations in the Canal, and must ensure, every day and all year long, that the boats can transit from one side of the canal to the other without problems. That implies some cleaning in the rivers' edges (mainly water plants and ground), and some maintenance or improvement to the Canal (like the Corte Gaillard actual enlargement) that can imply large ground removal;
2. in the rest of the Canal Reverted Areas (everything else that is not water but land of the Canal Zone), the resource management depends on the Autoridad de la Región Interoceánica (ARI, Interoceanic Regional Authority). The biggest interest of the ARI is the commercial use of the Canal Watershed. That means selling or renting areas for economic purposes (as ports, industry, urbanization projects, recreation

- projects, etc). It has also an international academic project with the aim of creating the Knowledge City (*Ciudad del Saber*), where should take place some important research programs in a wide variety of fields, such as biology, forestry, wild life, along with electronics, physics and other research non directly related with resource management items. The ARI also has a reforestation program (691 ha reforested up to February 2000, from nearly 7900 ha to be reforested in the reverted areas).
3. a special Commission has been created in the , named Inter institutional Canal Watershed Commission (Comisión Interinstitucional de la Cuenca Hidrográfica del Canal, CICH) with the objectives of integrating all the efforts, initiatives and resources from the government and non government organizations to preserve and manage the Canal Watershed. The Commission is integrated by representatives of the Government and Justice Ministry, the Housing Ministry, the Agriculture and livestock development Ministry, National Environment Authority, the Interoceanic Regional Authority, Caritas Arquidiocesana (Catholic organization), the NATURA Foundation and the Panama Canal Authority which has the Presidency of the Commission. The main function of this commission is to establish the necessary coordination mechanism to ensure that the Canal watershed capacity will not be overpassed, as to offer a coordination forum which allows a long term, sustainable and planned development for the local population and industrial sector that plays an important role in the development of this area.
 4. in the whole watershed, as for the rest of the country, natural resource management depends also on the Autoridad Nacional del Ambiente (ANAM, National Environment Authority), which is in charge of the protected areas, the forest and the environmental problems (such as pollutions for which it has to share responsibilities with the Autoridad Maritima Nacional (National Maritime Authority) and the ACP in pollutions problems that occur in the Canal waters).
 5. and, as for the ANAM, the agricultural land use (including animal breeding) of the whole country, depends on the Ministerio de Desarrollo Agropecuario (MIDA: Agriculture and livestock development Ministry) and it's dependence, such as the IMA (Agriculture and livestock Merchandising Institute) in charge of the commercialization of agriculture products, or Reforma Agraria (Rural Reform) responsible to legalize land tenure.
 6. The local governments have a part of responsibility along with ANAM, in the way that they can authorize some natural resources exploitation, allowing them to collect taxes. It's the case for wood, stones and sand (from rivers or from other sources). As it's one of the few taxes they can receive, it has generated some environmental problems in some places (like in San Carlos, in the Pacific coast near Panama city, where the local council authorized the sand extraction from the beaches, causing damages to the littoral). There are no known problems like these in the Canal area.

1.1.3 Current forest situation

The Canal watershed has a total forest extension of 158 000 ha, representing 47% of the total area. 69% of the forest is under protection, mainly in the Chagres National Park, where are located 55% of the watershed's forest, and 80% of the protected forest (see Map 2: Forest Cover near the Panama Canal, and Map 3: Protected areas near the Panama Canal). Despite the fact that the total area of forest has decreased 43% of what it was in

1974, there are no evidences of intense deforestation nowadays, the slash and burn practices taking place in secondary forest or in existing agricultural areas, with the ANAM official permission.

It has been noticed a decrease in the global area of secondary forest (“*rastrojos*”) since 1980, but this particular kind of young forest seems to increase in livestock farms, and that change might be attributed to the Panama National Bank and INRENARE’s (now ANAM) policy for conservation and reforestation.

The most part of natural mature forest is located in the Chagres National Park, but some patches remain in some sectors of the Altos de Campana National Park, the Soberania National Park, and in the Barro Colorado Natural Monument. The rest of the forests are secondary wooded areas in different stages of growth. The majority of these forests are found in the canal waters proximity.

1.1.4 Economics considerations

For the Canal activities, the preservation of forest cover is vital because of the need to keep the water flows for the Canal normal operations, and to reduce erosion, responsible of sediment accumulation that can considerably increase the maintenance costs of the Canal. This gives the forest management a very big role, thus there are no known studies about the economical importance of the forest cover. For example, it hasn’t been clearly established how much water (or money) it cost when 1 hectare is deforested.

The distribution of the economically active population (EAP) shows that the primary sector (including agriculture and forest activities) is decreasing rapidly, reaching very low levels (going from ¼ of the total EAP in 1987 to less than 1/5 in 1997). This is due to the particular Panamanian economy, based in the tertiary sector that include the transit of ships and economical activities related to the Canal, added to banking and other services activities.

To keep the water flow for the Canal, the solution has been to enlarge the Canal watershed: since August 1999, new limits have been approved, enlarging the watershed to the West, in the Coclé Province (Law 44 from 31-08-99) adding the Rio Indio and Coclé del Norte rivers. The enlargement adds more than 2,000 squared kilometers. The plans (still confidential) are to build another reservoir, in the Rio Indio river, connecting it to the Gatún Lake, to have more water supply for the normal Canal operations. This will flood more than 10 rural communities.

1.1.5 Demography

In the last 40 years¹, the Canal watershed population has been multiplied by five, growing from 21,000 inhabitants in 1950 to more than 113,000 in the nineties. Between 1980 and 1990, the annual growth rate of the watershed population was 3.8%, 1.2% higher than the annual growth rate of the whole country (2.6%). For 1998, the total population is estimated in 142,250 people. And for the year 2000, the projections show a 153,300 population.

¹ In: “La Cuenca del Canal: deforestación, urbanización y contaminación”; STRI, USAID, ANAM; 1999

There are 432 populated places, but 77% of them have less than 200 inhabitants. Only 15 places have more than 1 500 inhabitants, concentrating 43% of the whole watershed population.

In 1990, there were some 2 712 people living in the Chagres National Park boundaries, but some of the 43 villages were registered there since 1950, 35 years before the Park was created (in 1985). The other National Parks don't have any registered populated places, but it is known that there are paths and trails used for illegal hunting and recollection by nearby residents.

1.2 Donors, Institutions and NGOs working in Natural resource management projects in Panama, and in the Canal Zone

The table below shows a list of Donors working in natural resources management programs or projects in Panama (with the name, the place and the goals or activities of the project):

Institution or Organization	Name of the project or program	Where it takes place	Goals or activities
AECI (Spanish International Cooperation Agency)	Parque Nacional Portobelo	Portobello National Park	Parks strengthening
AECI	Parque Nacional Coiba	Coiba National Park	Parks strengthening
ANAM	Río Hato Reforestation	Río Hato	Reforest more than 7000 ha
ANAM	La Yeguada Forest Reserve Management	La Yeguada	Watershed conservation
Autoridad de la Región Interoceánica (ARI)	Programa de reforestación	Canal Watershed	InterOceanic Region Authority reforestation program
CATIE	Programa de Semillas Forestales	¿?	Trees Seed production Program
CEASPA	Fort Sherman Project	Fort Sherman (Caribbean coast)	Organizing a new conservation area in the Canal Area
European Union	PFA: Agricultural Frontier Program	Darién	Find alternatives to deforestation (Panamanian part of a Central American Program)
FIDA	ProDarién	Darién	In Indigenous communities, mainly for agricultural new practices, with less impact on the forest cover
FIDA	Proyecto Ngobe Bugle	Chiriquí	in Indigenous communities, with the same vision as ProDarién

GEF, UNDP	BioDarién	Darién	Biodiversity conservation through community sustainable development near the Darien National Park
Global Environment Fund	Corredor Biológico del Atlántico Panameño (Biological Corridor)	Caribbean Coast	Protect biodiversity (it's the Panamanian part of a Central American Program)
GTZ	Desarrollo Agroforestal en Zonas de Amortiguamientos	Cerro Hoya National Park, Azuero	Agroforestry development in buffer zones
GTZ (German Cooperation Agency) and CATIE	Cooperación agroforestal en Bocas del Toro	Bocas del Toro	Research project on sustainable production systems including ecological, socio economics and cultural aspects
IADB	Programa de manejo integral de la Cuenca del Bayano	Bayano watershed	Integral management of the watershed by proper differential zone use
Inter American Development Bank	Programa Ambiental Nacional	Whole Panama	National Environmental Program focuses on the ANAM's new role: institutional strengthening program
Inter American Development Bank (IADB)	Desarrollo Sostenible de Darién	Darién	Sustainable development of the Darien; includes improvement to roads
IOMT	Plan estratégico para la modernización de la infraestructura industrial forestal	Whole Panama	Evaluation of wood production potential to improve industrial processes
ITTO	Manejo de Cativales y productos no maderables con comunidades campesinas e indígenas	Darién	Cativo and non timber products management with peasant and indigenous communities
ITTO	Monitoreo de los Bosques del País	Whole Panama	Country Forest Monitoring will start this year, for 2 years
ITTO	Reserva Forestal Donoso	Azuero	Donoso Forest Reserve strengthening (Finished)
OIMT	Manejo sostenible de los bosques del corregimiento de Narganá	Kuna Yala (San Blas)	Conservation and protection of natural resources.
UICN	Manejo y conservación de los bosques del Este de Panamá	Bayano watershed	Management and conservation of forest, through development and watershed protection
UICN ORMA	Fortalecimiento de los servicios de extensión para manejo de vida silvestre en Panamá	Whole Panama	Extension services strengthening for better wildlife management
UNESCO		Darien and La Amistad National Parks	Parks strengthening
USAID	Monitoreo de la Cuenca	Canal watershed.	Canal watershed monitoring

			project
USAID	Manejo de Recursos Naturales	Canal watershed	Natural Resources Management
USAID	Manejo y desarrollo de áreas protegidas	Whole Panama	Protection of infrastructure and equipment in parks
World Bank	Pobreza rural	Pacific Coast Central Provinces	Reduce rural poverty through agricultural development and natural resource management
WWF	Parque Nacional Marino Islas Bastimentos	Bocas del Toro	Marine Park strengthening

Source: Raúl Pinedo, Forestal Policy and International Cooperation, ANAM, Estrategia Nacional del Ambiente, vol 6/7, and personal research, 2000.

Along with these relatively large projects, there's also a large number of little projects, made by local NGO's that involve local communities, but as they didn't required an approval by any Government Agency or Ministry, it's very difficult to have the updated list. But there's at least one conservation NGO, called ANCON, that worked with ANAM in Bastimentos Marine Park, and that is known to have some little projects (like a model farm) in the Canal Watershed. Others NGOs working in the Canal area, in social or environmental activities are CARITAS (Catholic church), PANAJURU (rural youth national group) and Fundación P.A.N.A.M.A. (national parks foundation).

One of the problems with "big" cooperation agencies is that almost all of them want to have a project in the Canal watershed (or elsewhere in the country), but each one wants to have is "own" area: none of them really accepts to share an area and to work in cooperation with other's agencies projects. That put Panama's government institutions in a very difficult position when it comes to plan the integral development of the Canal area, because they have to deal with each agency's own interests or agenda, that are not the same for the other ones, and that none of them can assume all of the Panamanian Government interests in natural resources management issues. This is certainly due also to a lack of long term planning by Governmental organizations that could order the cooperation's offers in one common way, dictated by Panama's own interests, like the one's that have been recently negotiated while discussing the National Environment Strategy (see below).

2 Government policy and actions in resource management

The new General Environmental Law (Law 41), approved in 1998, creates the "Autoridad Nacional del Ambiente" (ANAM): National Environment Authority, in charge (between other) of the forest management. This new law should help to reach an integral vision of the natural resources management, but for the moment, there are no evidences of an integrated vision. The Forest division of ANAM for example is not aware of the kind and number of projects that the Wildlife and Parks division is currently executing. The forest division does not know neither the kind of project that the MIDA (Agriculture and Livestock Ministry) is executing, and how those projects can affect the forest extension or management.

2.1 Global Natural Environment Policy

There's a new approach to the environmental policy, which can be seen in what has been called the "National Natural Environment Strategy". It's a strategy that has been made with participatory methods, including all major governmental institutions, environmental NGO's, members from the private sector, National Institutions, and local people representatives. It still see the environmental problems in a fragmented way, but it has given the country the opportunity to have a negotiated vision of every sector, including the diagnostic of the sector's problems and recommendations (mainly general ones).

2.2 Natural Forest Policy

Until 1994, usual forest management policy has been made through forest concessions to the logging industry: that means the "rent" for 5 years of large forest extension (for Panama, that is from 5000 ha to 10.000 ha). The type of management implemented in these areas was not at all sustainable. The other way to manage large forest extensions has been to create protected areas. This is not really a management solution, because of the small funding agreed to the protected areas (the Darien National Park had for a very long period of time only 19 park guards, for an extension of nearly half a million hectares, that means that every guard had to "protect" more that 26.000 ha, and only had a good pair of boots to do it).

The Forest Law was reformed in 1994 (Law 1, from February 3, 1994, known as the Forest Law). The regulation of the law has been approved officially on March 6 1998 (Gaceta Oficial n 23.495).

The reformed law allows longer time for concessions (up to 25 years), and indigenous communities to have community permits, but, for non indigenous people, the law only leaves "subsistence logging" possibilities (1 tree/month of precious wood, or 2 trees/month of construction wood to be precise): that means non-indigenous (*latinos*) small farmers don't have incentives to manage the forest. They sometimes find temporal work as employees for logging companies, (in Darien, they have to compete for the jobs with illegal workers from Colombia, less paid and with no opportunities to defend themselves in cases of labor problems), but generally, they practice illegal logging, selling the product to logging companies that can "legalize" the wood by including it as if it was part of their own production.

This regulations had created a large scale illegal logging: the small farmers can earn some benefits from logging activities (even though it's not paid the real monetary value), and logging companies can re-sell wood that didn't cost them too much to produce. Illegal logging has always generated corruption (when the price of a single timber tree can be up to 5 times the forest inspector's salary, it's not difficult to legalize some extra wood...).

In indigenous territories, a community concessions market has emerged, in which logging companies buy the community concession trees at ridiculous prices (100 USD for every tree, when some of them can produce more than 2 000 USD in primary processed wood), and cut them without using low impact techniques or more sustainable practices. The

Indigenous authorities in Darien's autonomous territories (*Comarca Emberá Wounaan*) are now looking for international support, through projects as BioDarien and Frontera Agrícola (see the table above), to show communities and loggers that they can manage their own forest in a sustainable way, generating more profits to the local communities, owners of the forest. They have already established an internal forest use rule, with the approval and help of ANAM, but are still looking for financial support to make a first community based logging exercise. They are also trying to negotiate with logging companies to obtain financial support from them, as potential wood clients.

Small "latino" peasant have tried to organize themselves more than once, without success due to lack of financial support to prove they can manage relatively large areas of forest.

The law defines 3 types of forest: production forest (allowing intense logging activities), protection forest (needed for their regulatory functions, or protecting a particular type of ecosystem) and specials forest (needed to preserve areas with special interest such as scientific, historic, recreation, tourism, and other social or public utility functions). There's no national study to define "special forests", neither the production forest had been cartographically or ground delimited. The total areas of each forest type have been estimated in 1998:

Description	Area (ha)	Percent
Production forest	350 000	11.5
Protection forest	1 584 682	51.9
Mangrove	170 827	5.6
Not classified forest cover	946 795	37.0
TOTAL	3 052 304	100

Source: Estrategia Nacional del Ambiente, Volumen 6/7, 1999

All the forests of the country are property of the State. To extract wood there are 3 kinds of contract that can be made with the State: concessions contracts, special permits, and communitarian permits (for indigenous communities). In 1998, there where some 67 950 ha under these forms of contract, for an authorized wood volume to be extracted of 17 648 cubic meters. Since 1982, a total of 114 175 ha have been used by concessions or special permits, while only 11 900 ha have been used with communitarian permits (starting in 1993, and with no new area since 1996).

To protect the natural environment, the government has created a network of more than 9 types of protected area, including National Park, Forest Reserves, Wild Life Reserves, Hydrological Protected Zones, etc...(see Map 4: Protected areas of Panama).

2.3 Reforestation Policy

Reforestation Law from 1992 gives great advantage to major investors, by reducing taxes on benefits obtained in others activities when using this incomes to plant trees in reforestation programs. That leaves small farmers, who generally don't pay taxes, out of the benefits of the law. A new law, that helps small farmers to gain incentives for reforestation has recently been under negotiations, but has not yet been approved. This new law emerged

from the discussions that meant to reduce incentives from the first reforestation law, but as the opposition to change it was so strong, it has been decided to make a new one, to benefits small reforesting farmers.

There are more than 1000 persons and companies, registered in ANAM's Forestal Register, and dedicated to reforestation in Panama. The total reforested area is estimated in 30 200 ha, mainly with Teck (*Tectona grandis*: 14 400 ha) and Caribbean Pine (*Pinus Caribaea*: 10 500 ha). The others species used include *Khaya senegalensis* which is not a native species, and *Bobacopsis quinata*, *Tabebuia pentaphylla* and *Cordia alliodora*, among others native species.

As the reforestation is generally made to avoid paying taxes, and the law doesn't specify any higher cost limit, the costs of reforestation has been very high.

New approach by the new government for the Canal watershed is supposed to increase community based management, and community based reforestation (interview with Mr. Ariel Barnett, director of the reforestation office in the ARI).

There is only one known example of community based reforestation experience, near the Soberania Park (reported by CEASPA in 1997).

2.4 National programs for sustainable management of natural/forest resources

In the National Natural Environment Strategy, to achieve a 'vision to the future' for forest management, it must include:

- Harmonization of the agricultural and livestock development and new land use policies with forest development policies to control and decrease deforestation;
- Strengthening and improvement of the forest industry efficiency, and the sustainable forest management;
- Promotion the forest investment trough incentives;
- Raising forest and agroforest plantation areas, incorporating degraded land to the national economy.

The first recommendation of the Forest Resource document (in the same Strategy) is to promote a Territory Zoning Plan ("*ordenamiento territorial*"). The second one is to activate the Forest Development and Protection Fund (created by the 1994 law, but not in use yet), and to exclusively target it's execution to activities related with promotion, protection, management, supervision, control, research and extension of forest resources. Another recommendation is to promote communication and experience exchange between the different development actors. It doesn't anywhere mention devolution of power in resources management to regional or local authorities (as local communities or Indigenous people's authorities) to strength sustainable management. But the Strategy emphasizes, in the natural forest recommendation, on the promotion of projects and logging industries for

small and medium sized producers (or organized cooperatives) that aim to reach a better forest use, generating a maximum added value at local level.

There isn't a national program to promote sustainable management of natural or forest resources. Most of the projects (see list above) have 'sustainable management' as a goal, and some of them have community based management programs, added to more technical or scientific purposes, such as knowing the biology and production requirements of a particular specie (like Cativos (*Prioria copaifera*) or Tagua (a small coconut palm tree, which fruit, also known as vegetal ivory, is used by indigenous people to produce high value handcrafts objects in Darien, and by the "haute couture" fashion industry to produce high quality natural buttons)). Because of local people's aim, most of the projects in Darien are now adding community based natural resources management as a topic in their programmed activities.

There are some decentralizations exercises, mainly with indigenous authorities (Comarcas) of indigenous autonomous territories (see Map 5: Indigenous people Autonomous Territories in Panama), which represent more than 20% of the total country area. The Embera-Wounaan Comarca (in Darien) is certainly the one that has most of this kind of experiences with different agencies. The Embera from the Chagres river, in the Canal watershed, are more related with eco-tourism activities than to forest production activities.

Another decentralization program involves local communities in Darien, from 18 small watershed, grouped in one hydrological reserve. In these case, the different responsibilities, rights and duties (for administration, conservation, use, etc...) are still under negotiations between the local group (called COSAFIT) and ANAM. The local group has engaged a process to produce the total area management plan of the entire protected hydrological reserve by the production of each community's own management plan. It has achieved to produce one very detailed plan (contracting a consultant to prepare the draft) that is currently being discussed in the community. They have also produced all the maps of their communities, using a "self-mapping" methods. They even digitalized them all by themselves, with the support of Frontera Agricola and CEASPA (Study and Social Action Panamanian Center).

3 Local Institutions engaged in Natural Resource Management

There are no known local institutions engaged in natural resource management in the Canal area. The only institutions interested in natural resource management are private institutions, dedicated to tourism activities (like the Gamboa Rainforest resort), or large-scale farmers who are leaving some deforested areas of their farms to convert them into secondary forest, by natural re growth or by planting hard commercial woods.

Their involvement in natural resources management is an economic one, mainly conditioned by economics benefits that should be reached by reforestation or tourism.

Since Ecotourism is a newly developed branch of tourism in Panama, the number of projects is still limited: the Gamboa rainforest resort for example, is just finishing the construction of the hotel, but has already developed some guided excursions in the forest. Even though this project is located very closely to an old Canal community (Gamboa), there are no signs of cooperation or involvement of the local community in a particular way with the resort (except some local persons working in the hotel, or in the construction of the hotel).

The only large scale participatory discussion over the Canal resource management was led by CEASPA in 1997. It was developed under the figure of a mobile workshop dialogue on environment and development policies, which included decision makers, INRENARE (now ANAM) and local governments. As it was the first attempt for discussing the future of the Canal natural resources including local governments, the expectation were mainly focused on demonstrating that it was possible to include local decision makers.

One system that can be explore is the one involving local governments (there are 7 districts and 36 “*corregimientos*”, the smallest Panamanian political division structure, where are elected the “*representantes*”), in another way that they seem to be interested now, that is promoting extraction practices to collect taxes. Local governments can play a major role in resource management by generating low scale participatory management methods that can include sustainable exploitation of the forests, along with potable water supply management (like in Darien).

4 Local Community and resource management systems in place

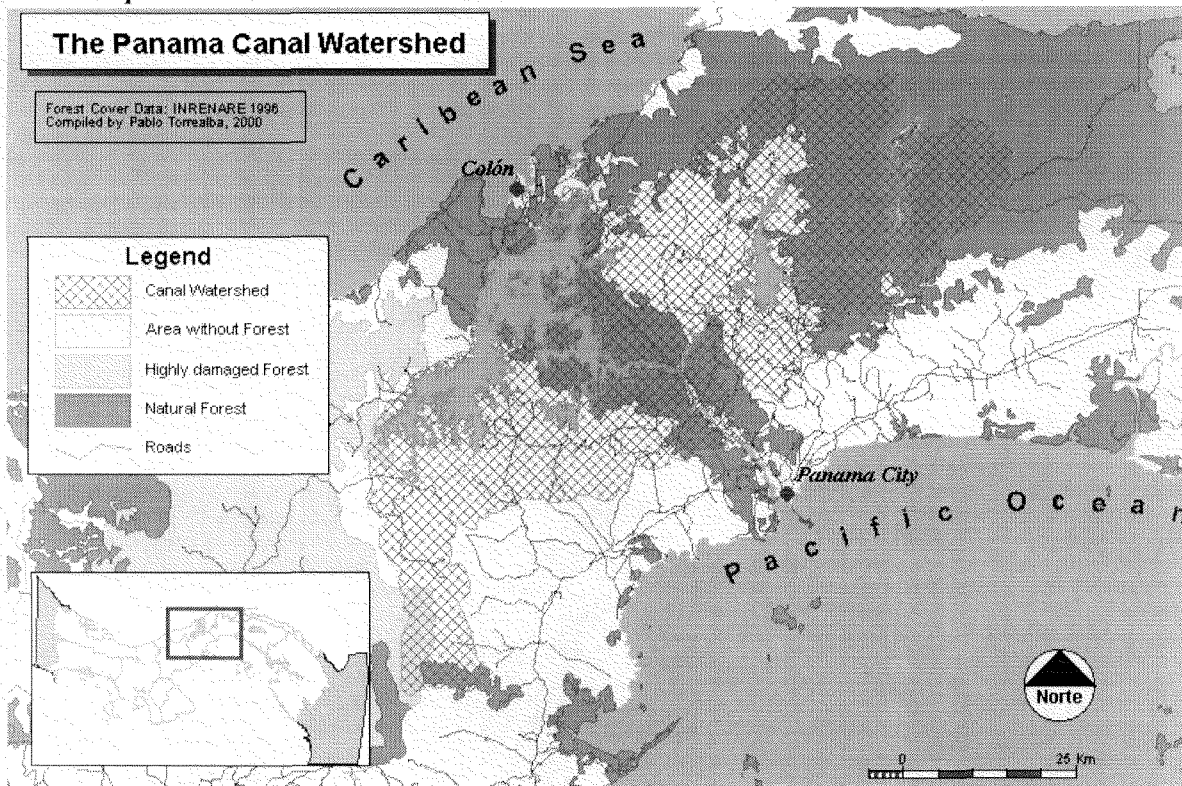
In the Canal area, there are no recognized local community resource management systems. That means that local communities probably do some resource management, but their effort it is not supported, or even recognized by the environmental authorities. And they should remain very fragmented.

In others part of the country (like indigenous areas in Darien an Easter part of the Panama province, see the table above) there are some organizations building local capacities to manage the natural resources. As it has been said, the conflict there are mainly about forest timber products and access to them, but there are also conflict about water supply in Darien (like in the Canal), and the need for forest to preserve the levels of water flood for human or economic purposes (COSAFIT case).

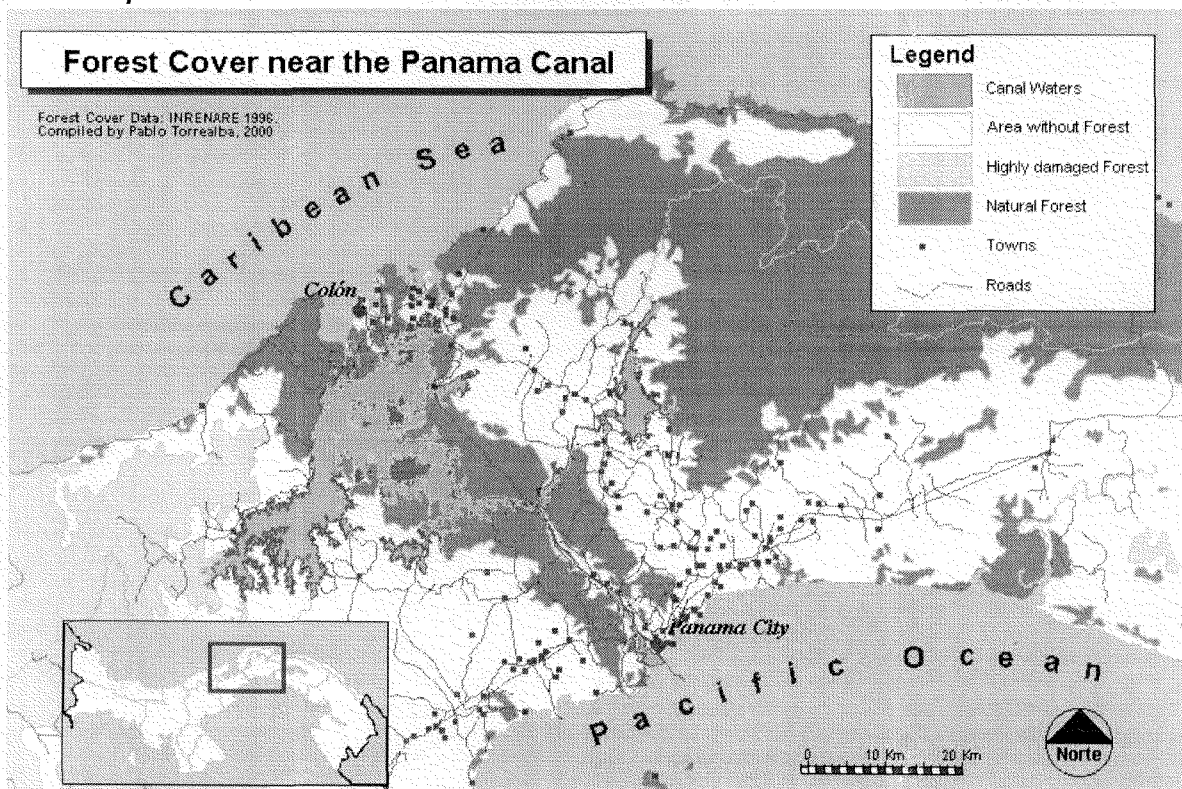
Since the reversion is too recent, the impact of it in relation to increase or reduce the pressure over forest cover is unknown, but will certainly remain the same. Some problems will surely appear with eastern side communities that are located in the area that will be inundated. These communities will have to be relocated, certainly to another wooded area in the Canal watershed where they will start again their agriculture and livestock practices.

Maps

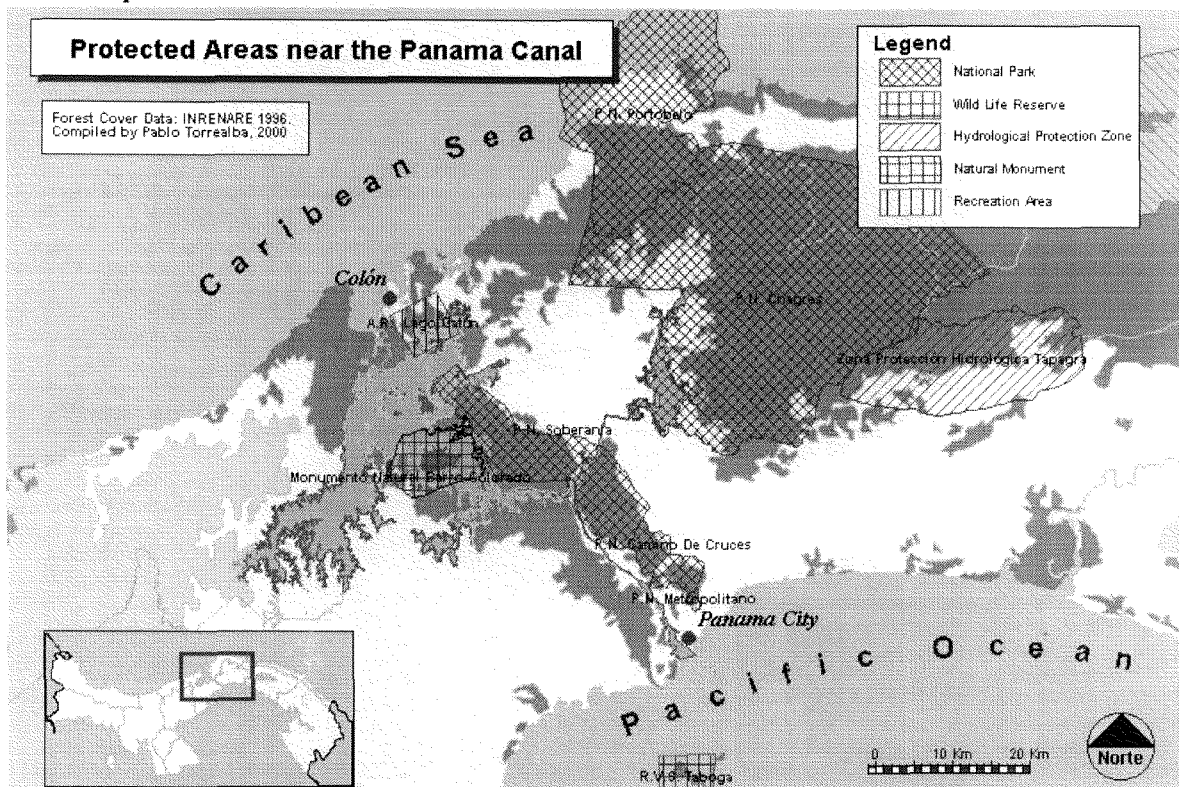
Map 1: The Panama Canal Watershed



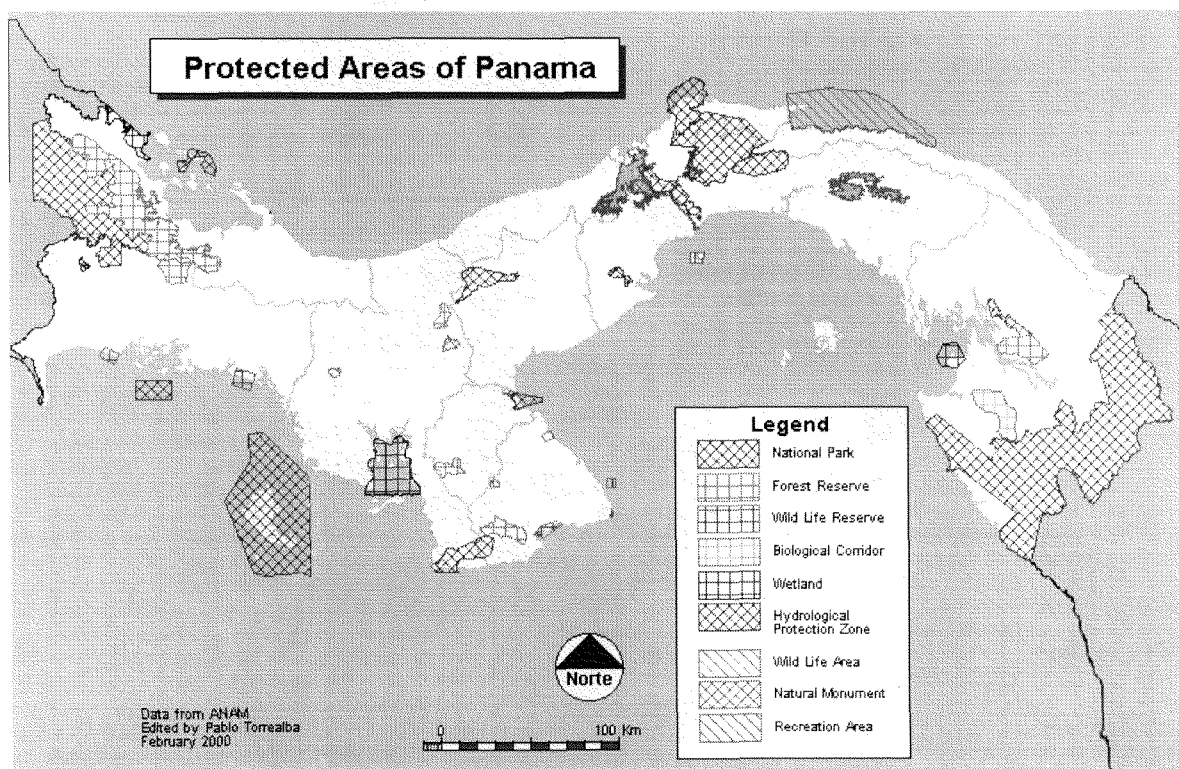
Map 2: Forest Cover near the Panama Canal



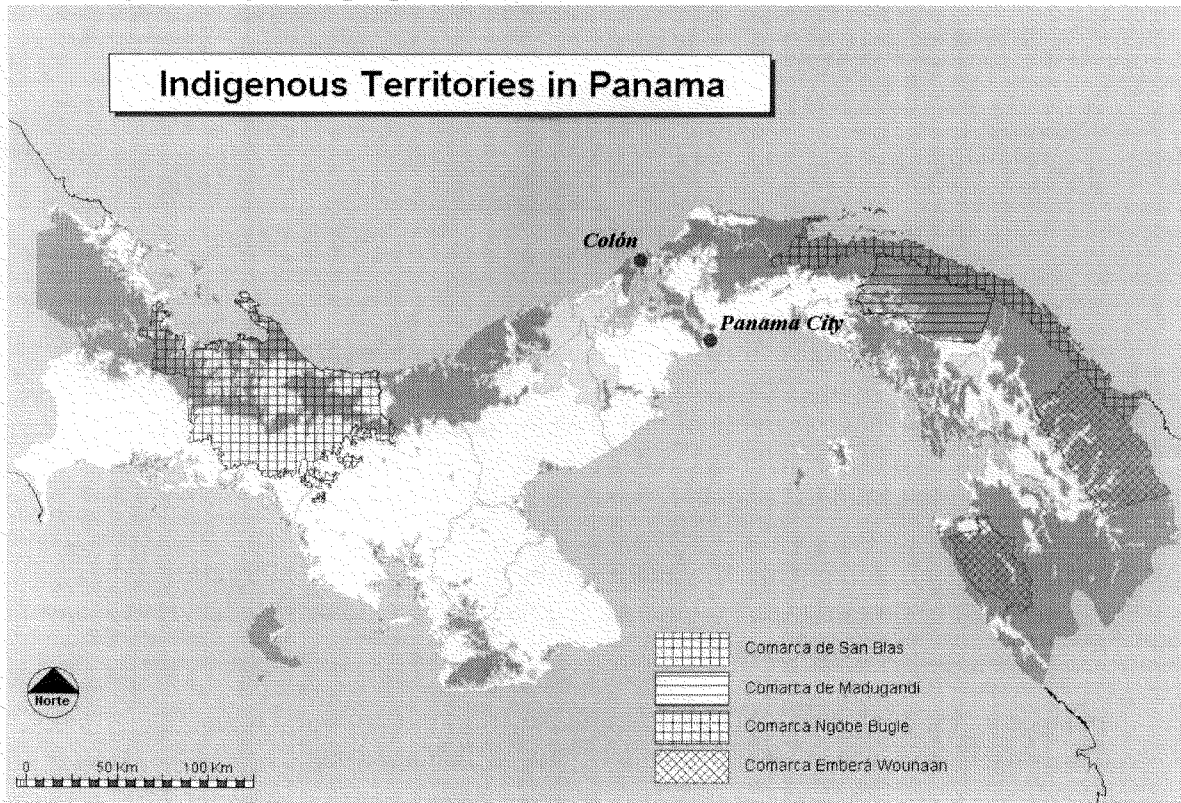
Map 3: Protected areas near the Panama Canal



Map 4: Protected areas of Panama



Map 5: Indigenous people Autonomous Territories in Panama





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