

**Community Forest Management in the
Maya Biosphere Reserve of Guatemala**

Protection Through Profits

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Abstract

The fate of northern Guatemala's diverse tropical forest that once hosted Mayan civilization is threatened. During the mid 1990's, the government of Guatemala, with financial support from donors and technical assistance from numerous non-government organizations, launched a bold experiment to pit sustainable forest management by community and industrial concessionaires against spontaneous and uncontrollable colonization, forest fires, and illegal logging. Today, 13 community enterprises manage long-term forest concessions and community forests cover more than half a million hectares of which 472,000 ha are managed as production forests. Almost all these concessions have been certified under the Forest Stewardship Council (FSC) third-party certification scheme, as required by the concession contract. The communities' initial strategy of selling standing timber to local wood industry has evolved to the point where most community enterprises actually own their own sawmills and others contract milling and harvesting equipment, often from neighboring communities.

The communities, however, prove as diverse and complex as the forest itself. Communities formed by descendents of the Mayans, some by refugees from the political strife of the '80s and early 90's and other migrants from the highlands of Guatemala, strive to protect their traditions and guarantee their economic future through the conservation of the forest. With substantial, if not excessive, external assistance, many of the communities generate significant economic returns from sustainable forest management, integrating the harvesting of timber and non-timber forest products and, in some cases, ecotourism. Eleven of the community enterprises overcame their diversity and have recently joined together to form a community owned company that intends to market their combined production of wood products and provides other services to its members and other communities

Initial findings indicate that these communities are increasingly capable of defending and managing these forests. When compared to neighboring national parks and multiple use zones whose conservation is dependent on government institutions and conservation NGOs, the forest concessions have great impact on reducing fires, deforestation and illegal extraction, thereby conserving this valuable ecosystem. Future challenges include the need to separate community politics from community business in order to reduce corruption and increase competence, diversify the mix of species harvested by increasing the capacity of the communities to process them and subsequently identifying new markets for them and wean the communities off of external subsistence. Forest management through a concession arrangement with loosely organized rural communities is a long-term, complex and costly undertaking that should not be attempted unless solid government structure and plenty of outside help to the communities are available. For many of the communities the concessions have represented their first opportunity to undertake meaningful communal activities and are generating empowerment and interest in the development of other communal enterprises. Most importantly, however, for many the most valuable aspect of the concession is the recognition of the communities' rights to manage, conserve, and live from "their" own forest. But they will only continue to do so as long as the forest provides a broad-based profit to them.

Acknowledgements

This document summarizes the accomplishments of numerous professionals, but especially of those individuals in the communities who have discovered the forest as a sustainable means of improving the welfare of their families. To them we express our thanks and admiration. More specifically, we are grateful to the following for reviewing drafts of this document: Carlos Perez and his team, Julie Rice, Augusto Rosales, Claudio Saito, Mauro Salzar and Wolfgang Wachenhausen.

1 Context

In 1963, the jeep trip through part of the Petén of Guatemala took us three days along tracks through pristine forest, from the border town of San Ignacio in Belize south to the village of Modesto Mendez on the Sarstún River. We were impressed by the work on the forest inventory and development plan that the government was carrying out for the Petén with the help of FAO. That plan proposed an orderly utilization of the forest resource as the basis of economic development of the region. Almost none of what was planned came to pass. For the forester and conservationist, retracing roads once traveled tends to be discouraging. We now regularly do that same trip in four hours along a paved highway lined with poor pastures and brush. Forests are now rare in the southern Petén, and so is development.

To save the northern Petén from the same fate, in 1990, Guatemala passed a law establishing the 2.1 million hectare Maya Biosphere Reserve (MBR) (767,000 ha in core protected areas, 848,440 ha in multiple use zone, 497,500 ha in buffer zone), to be administered by the then newly created National Council of Protected Areas (CONAP). This Reserve is one of several adjoining protected areas in southern Mexico, Belize and the Petén of Guatemala intended to conserve what remains of the Maya Forest, the largest block of contiguous forest left in Central America (CONAP 2001; USAID, CONAP, FIPA 2001; FIPA/AID and CONAP 2002). This reserve and others were created in response to pressure from foreign donors, especially the U.S. and German governments. In order to take advantage of the national political constellation favorable to conservation at the time, planning was minimal and the local population was hardly consulted. The aim was to lock up the area before it fell victim to uncontrolled logging and the invasion by disenfranchised peasants from areas of Guatemala suffering from the violence of a guerilla war and overpopulation. The U.S. Agency for International Development (USAID) has been supporting activities in the area for the past 10 years and continues to do so, but several other donors have increased their proportion of the total support.

In those three decades between the 1960's and the creation of the MBR, most of the forests succumbed to the common pattern of exploitation of a few high value species, almost exclusively mahogany (*Swietenia macrophylla*) and Spanish cedar (*Cedrela odorata*), followed by uncontrolled colonization along the logging roads. Similar to many countries in the region (Bolivia, Colombia, Honduras, Nicaragua and others), the forests belonged to the state and were left relatively unprotected. The state gave short-term logging permits to wood industry which overlaid traditional community rights and created conflict between industry and local populace. After a company finished logging in one area, it was assigned another. Under such an arrangement it was not surprising that industry had no interest in managing the forest or in preventing its conversion to corn fields and cattle ranches.

The creation of the MBR was to change this situation. However, logging continued with or without permits, even in several of the core protection areas. Despite valiant efforts and considerable external support, CONAP, the incipient government agency responsible for control, was powerless to stop illegal logging, invasion for agriculture and ranching, forest fires, looting of archeological sites, and traffic in drugs, wildlife and migrants.

More park guards, vehicles and checkpoints turned out to be the wrong answer in this environment of pervasive lawlessness. Something else was needed.

In the Multiple Use Zone the solution was to sign long-term concession contracts (25 years) with communities and industry, giving them the right to utilize the forest following rules laid out in a forest management plan. The results have been very encouraging. Once the communities and industry were given legal responsibility for the forest and understood that no new areas would be made available to them, illegal logging, land invasion and wildfires ceased abruptly, giving way to protection and organized harvesting. But arriving at this point required a decade of struggle, assistance and investment. The process is complex, never perfect and in need of flexible adaptations to changing circumstances and mixes of approaches, as experience in other countries has also shown (Bray et al. 2003). Despite the constant challenges, evidence indicates that forest management in the Petén is working from the point of view of management of resources, income for communities and conservation of biodiversity. The lessons learned from this multifaceted process are the subject of this study.

2 Creation of the concession scheme

The 1993 initiative to establish forest management concessions was born out of frustration with the chaotic situation existing at the time. A small group of foresters drafted a brief proposal that outlined how such a scheme might work and discussed the idea with an ever-widening circle of professionals (Tschinkel, et al 1992). The pressure and promises of assistance from USAID, at a time when the Guatemalan government was especially sensitive to such influence, helped move the process along.

Logging in protected areas, even in the Multiple Use Zone, was anathema to many of the conservationists involved. Given the importance of *chicle*, *xate* (*Chamaedora* palms exported for use in flower bouquets), allspice and other non-timber forest products in the Petén, many argued that utilization be limited to extractive reserves for non-timber products. Others insisted on more guards and harsher punishments. Some made the case for environmental education. The option of allocating some of the concessions to industry, organized in an influential association, as well as to communities was a particularly divisive issue. Past abuses and fear of future ones by loggers in the Petén had created animosity between industry and conservationists. Reaching some agreement and building up support for the forest management concession proposal among government officials and organizations involved was a difficult process that took over a year. An important positive factor was the reconnaissance forest inventory conducted as part of a development plan for the Petén. The 1965 FAO inventory was by then obsolete because large areas of forest had been destroyed or degraded in the interim. The inventory allowed a rational division of the Multiple Use Zone into management units that could be allocated as concessions.

A major advance in the process comprised the simultaneous contracting of two consultants; a forester with experience in tropical forest and concession management, and a Guatemalan lawyer previously providing services to the wood industry. The lawyer translated the technical recommendations of the forester into draft regulations and concession contracts for communities and industry. In addition, they developed legal

documents for what was to become a pilot concession for the community of San Miguel la Palotada (Synnott 1994). This village was chosen partly because it was the beneficiary of the innovative Olafo foreign assistance project aimed at improving natural resource utilization. Because acceptable models of management plans for mixed tropical forests were not available for Guatemala, foreign assistance contracted preparation of a forest management plan for the management unit (4,800 ha of forest) to be allocated to San Miguel. According to the protected areas law, the board of CONAP, at that time made up of representatives from 14 government agencies and NGOs, would have to approve these legal instruments.

The package finally presented to the CONAP board for its approval consisted of:

- a technical consultant report describing and justifying the concepts; a draft of the regulations to govern the allocation, management and control of the concessions;
- a draft of the invitation for bids;
- a prototype draft contract to be signed between CONAP and the community or industrial concessionaires;
- for San Miguel, a draft of the bid, contract and the management plan as an annex to the contract.

All this supporting documentation probably could not have been prepared without the assistance of the USAID-financed MBR Project. Lobbying for this concrete proposal required numerous presentations, meetings, field trips and the input of many professionals over many months. A key to success was the pilot concession of San Miguel that helped lift discussions above the abstract and forced the issue.

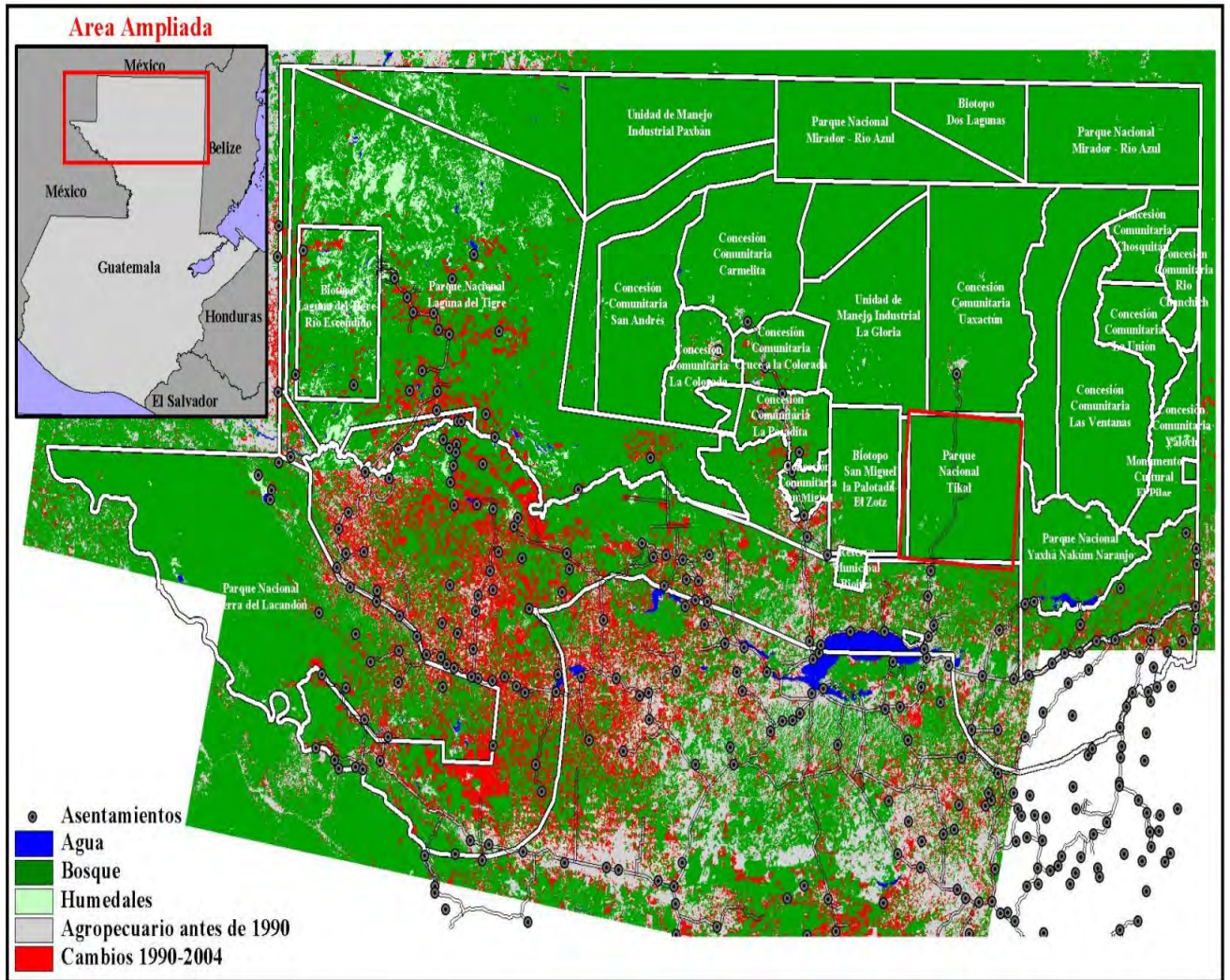
Only six small communities were actually located inside the Multiple Use Zone, several made up of recent immigrants with little group cohesion. These few communities were not sufficient to manage the half million hectares of land in the Multiple Use Zone. Some professionals therefore argued in favor of allocating concessions to groups from those local communities and making the rest of the area available for bidding by industry. Many conservationists however wanted to exclude industry altogether. This political issue was gradually resolved over the years by allocating only two concessions to forest industries already established in the Petén, six concessions to communities located inside the Multiple Use Zone and six to communities or alliances of communities bordering this Zone. In addition, the same forest management norms were applied to eight agricultural cooperatives in the buffer zone along the Uxumacinta River, which owned the land and still had a considerable proportion of it in forest. However, the forest area of these cooperatives was small (ranging from 900 to 5,300ha) in relation to the concessions (from 4,800 to 72,500 ha), diminishing their interest in management of their forest.

Each concession was allocated to a legally constituted group that represented the community or a sub-set of the community. These groups, or concessionaires, refer to themselves as community forest enterprises. The regulations for allocation of the community concessions originally required each be backed by an NGO assuming considerable technical and financial responsibility. Because almost all these NGOs had a conservation rather than a business orientation, the business management and marketing aspects did not receive enough informed attention (Chemonics International, Inc 2000).

The ensuing shortcomings still plague all these community forest enterprises. The process of allocating these concessions followed the pattern established by San Miguel: NGOs would promote the idea within the community, draft the necessary documentation and lobby with CONAP in the name of the community. Initially, it was difficult to get the communities interested in the idea. Only later, as the benefits became more visible, was there a rush to obtain a concession in the area remaining. This rather cloudy social and political process was to have major subsequent implications, in that communities with few links to the forest were expected to manage concessions.

Nor was the Guatemalan government monolithic in its support of the concessions and neighboring protected areas. The government is continuously under severe political pressure to find land for landless peasants, pressure that was heightened by commitments acquired in 1996 upon signature of the peace accords that ended the 30-year guerilla war. Certain factions of the government and of civil society looked upon the “unused” forested lands as an outlet for this pressure, irrespective of whether these soils are suitable for agriculture. On the other end of the land-use spectrum, international conservation organizations continue to press government to limit the area to non-extractive uses such as is the case with the Mirador project which aspires to change the status of a large part of the land covered by concessions to pure protection for conservation of the region’s archeological sites.

Figure 1 Map of the Maya Biosphere Reserve with 15 km buffer zone along southern boundary (loss of forest from 1990 to 2004 in red)



3 Community organization and business management

Among development agencies, community collaboration and undertakings are now almost taken for granted as “the way to go”. Upon closer inspection, the assumption that inhabitants of a village would be willing and able to work together on something as complicated as running a business is really quite optimistic. Such optimism certainly did prevail when the community forest management concessions were created. Over the years it has given way to greater realism in face of the numerous problems that have arisen, many of which could have been prevented if more informed attention had been paid to community dynamics. Enormous changes are needed for *campesinos* with little education to work together harmoniously with their neighbors in a complicated productive enterprise, and countless such efforts have failed throughout the developing world.

3.1 Characteristics of the communities

Part of the problem is rooted in the nature of the communities typical of the MBR. The oldest communities actually located in the forest (Carmelita, Uaxactún, La Colorada, 100, 90 and 25 years old, respectively), originated in response to the then-existing market for *chicle*. (*Chicle* is the latex of *Manilkara zapota* tree, originally used as the raw material for the manufacture of chewing gum). *Chicle* tappers tend to be exceptionally self-reliant individuals who work alone or in small groups in the forest for months at a time. Thus their sense of community is not strongly developed. Many of the communities inside the MBR originated in the 1980's, formed by settlers from various parts of Guatemala (Gruenberg and Ramos 2000). They are made up of a very heterogeneous population with different backgrounds, prone to splitting into factions (San Miguel la Palotada, La Pasadita). Some of the concessions were allocated to groups from small towns (San Andrés, Melchor de Mencos) or alliances of recently established communities (*Sociedad Civil Arbol Verde*, *AFISAP*), none of which had strong links to the forest. These groups and alliances formed specifically so that they could qualify for a concession. Finally, a group of eight communities along the Uxumacinta River are cooperatives allocated land by the government beginning in the 1980's as part of a colonization scheme for the Petén. These tend to have the strongest social cohesion even though most no longer operate as cooperatives. However, they have only very small areas of forest. Of these, the best organized is probably the community of indigenous refugees who returned from Mexico in 1995 (Unión Maya Itzá).

The characteristic common to almost all of these communities is their loose social cohesion and paucity of institutions for and experience in joint undertakings. It would have been prudent to be more selective of communities, and to ascertain their organizational capacity. However, political pressure, often backed by international conservation NGOs, was a strong factor in the allocation of the concessions, as was the urgency of making some entity responsible for the forest in view of the incapacity of the government to exercise control. Much greater effort should have been made from the onset of the concession process to strengthen the organization of these communities and

their ability to resolve conflicts. Unfortunately, systematic efforts in this direction began very late and are probably still inadequate even now given the complexity of the task.

The regulations for allocating the concessions require signature of a contract with a legally constituted entity, not just “a community”. Some of the communities already had legally recognized development committees that served this purpose, or had previously been organized as cooperatives, but most had to form and legalize some group specifically for this purpose. Inevitably such a group was a subset of all the members of the community, either because initially many did not want to join, or because they were excluded. As the concessions proved to be more lucrative over the years, this division between those who were “in” and the others who were “out” became a source of conflict. Because the size of the pie is fixed, the concessionaires are reticent to accept new members to their group. For the sake of social equity, the statutes of many community concessions require a proportion of net revenues to be invested in projects to benefit the entire community, but unfortunately these rules are often not followed.

No matter which legal figure the concessionaires chose to adopt (*asociación, sociedad civil, cooperative*) the law required them to submit a set of legal statutes to CONAP for approval. Unfortunately, most of these statutes and internal regulations were drawn up in a hurry to comply with a requirement, often with the help of inexperienced advisers, and subsequently had to be revised through a lengthy process of discussion aimed at reaching consensus. But perhaps the primary problems with the statutes are, first, that they are not known or understood by most of the members and, second, that they are not followed. Overcoming these twin problems will probably require several more years of low-intensity external assistance and the imposition of conditionalities by CONAP, donors and the certifying organizations. Another problem is that some of the legal figures are designed for not-for-profit organizations and are therefore unsuitable for community forest enterprises. Among other constraints, these legal figures frustrate members because they prohibit division of profits. The communities are now taking steps to find more suitable legal arrangements.

All of the statutes require that the assembly of members elect the board of directors of the community forest enterprise. The usual term of office is one year, and the board generally administers the enterprise itself, assisted by an accountant, rather than appointing a manager for day-to-day operations. Most of these enterprises are therefore run by individuals elected politically and rotated frequently and not by a cadre of specialists chosen for their managerial, business or technical skills and free to learn from experience. When asked the reason for this frequent turnover, one manager answered that the attitude is that “we all have to learn”! In many cases, a more cynical response might have been that all want an opportunity to profit. Whatever the motive, this frequent turnover is a guaranteed recipe for perpetual incompetence. To make the situation worse, probably partly for reasons of mistrust, the general assembly of members makes too many minor decisions. Despite several years of urging by advisers and donors, it has been impossible to persuade most of these community enterprises of the demonstrable advantages of an organizational structure adopted by millions of successful enterprises throughout the world. It consists of a qualified, long-term manager and staff responsible for daily

operations, and a board to whom he responds and which sets general policy and guidelines. Many communities argue that managers “cost too much” and have chosen unqualified community members for this role, with disastrous results. The incompetence inherent in such a defective system has resulted in expensive, mistaken decisions such as the purchase of antiquated “cheap” machinery, the proliferation of sawmills, the distribution of benefits and failure to reserve sufficient working capital, and the obsession with obtaining the highest price for wood rather than the development of a long-term client relationship.

Corruption at all levels has had disastrous effects throughout the history of the concession scheme. In several cases, corrupt community leaders have taken advantage of their positions and of lax controls to enrich themselves, with devastating effects on the enterprise and community cohesion. Several attempts at collaboration of community enterprises with one another or with other enterprises or organizations have failed because one party cheated the other. Only recently, at the insistence of external assistance, have serious efforts been made to improve administrative systems and discourage corruption (detailed statutes, trained accountants with computerized modern accounting methods, internal audit committees, external audits, transparent presentation of financial results to the general assembly, etc.). These systems should have been perfected at the outset rather than allowing the establishment of now-entrenched bad habits. Hopefully it is not too late for these changes to gradually resolve some of the problems described in this section. Obviously, those in power resist such changes and community members who dare excessive opposition could put their lives at risks. Unfortunately, until quite recently, almost all parties dealing with the concessions have focused on control in the forest and left control of the business to the communities themselves. This mistake has cost the communities dearly and delayed the development process.

These organizational weaknesses have been known for years but, of course, the communities make their own decisions, often contrary to the advice or pressure they receive. CONAP and outside assistance are now trying to change these attitudes and procedures, partly by improving financial record-keeping and by supporting the creation of internal auditing committees made up of community members, thereby demonstrating the advantages of better business management, transparency and basing decisions on hard data. There is a delicate balance between having CONAP ensure greater transparency and accountability, devising systems to make corruption more difficult, and at the same time avoid government meddling in running the business. This dividing line is especially thin because the concessions are based on a public resource.

Not surprisingly, positions of leadership and specialization in the community forest enterprises tend to be dominated by middle-aged males. Unfortunately the level of education of many of these leaders is too low to enable them to carry out their responsibilities effectively. Numerous efforts have been made to train these individuals through short courses and other events. Although an impressive number of women and men have been exposed to this type of training, almost all training events have been *ad hoc* efforts, offered by a bewildering array of organizations, with almost no overall

planning, that have left little institutional capacity behind for continued training. It is especially alarming that no serious efforts have been or are being made to provide school-aged youngsters with an education of sufficient quality and relevance to enable them to grow into the jobs now being filled by many unqualified elders (Castro 2000). Women, with external persistence, have expanded their roles within the community enterprises and tend to be a segment of society less prone to corruption. Unless this neglect of education is reversed, there is a high risk that the community enterprises will continue to be hampered by unqualified, corrupt leaders and personnel.

3.2 Collaboration between communities

Considerable efforts have been expended in helping these communities present a united front and learn from each other's experience. Stimulated by the need to defend their interests in the forest, in 1995 some of the communities banded together. In 1997 this group evolved into ACOFOP, (*Asociación de Comunidades Forestales del Petén*). ACOFOP is now a major player that represents the communities jointly before the government, donors, buyers and the public. However, the association faces a continuous challenge of convincing these communities to look beyond their own concessions and to collaborate. To effectively represent its constituents, ACOFOP's policies must be rooted more deeply in the convictions of its individual members. The association holds numerous training events, facilitates information flow and the exchange of visits, and in general serves as a focus for 22 member community forest enterprises representing 14,000 individuals (13 concessions+ 9 cooperatives) to act in unison. Each enterprise pays dues to ACOFOP, amounting to 2% of net revenues and only some 20% of ACOFOP's costs. The balance is met by external donors. It has been easier for ACOFOP to rally its members when confronted with external threats such as the imposition of the Mirador archeological reserve than to get members to cooperate with each other, especially for joint marketing. Recently ACOFOP split off its incipient marketing department into FORESCOM (*Empresa Comunitaria de servicios del Bosque S.A.*), an independent enterprise created to provide this and other services to its members (Chemonics 2004).

In 2001, CONAP working with donors, ACOFOP and other local organizations developed a community unification strategy designed to resolve a number of entrepreneurial needs and capitalize on economies of scale. The strategy was based on four community-managed "blocks" of forest, determined by geographical proximity and shared infrastructure (primarily roads) within the forest. The strategy was to group communities so as to facilitate and reduce the costs of marketing, certification, forest supervision, and infrastructure development and maintenance. During the process of implementing the strategy, the idea of "blocks" disappeared and the communities joined forces to create FORESCOM (Anzueto and Ventura 2003). FORESCOM, officially established in 2003, is a private company owned by the community forest enterprises which sells its members forestry support services. At present, most services are sold to the 11 member communities. It is projected that the remaining communities will either join FORESCOM or purchase certain services from them.

FORESCOM is in the process of consolidating a number of key services it will provide at reasonable prices. It is becoming certified as a forest operator so it can serve as the “certified” overseer of all community operations. It provides the technical services of foresters to all of its members. FORESCOM has obtained \$300,000 for road maintenance equipment and training from USAID to improve access to and maintain arteries into the concessions in a more environmentally acceptable fashion. It has created a unit to assist communities in their accounting and financial planning needs and a separate unit to assist communities in their marketing (see below) (Chemonics 2004). For USAID, FORESCOM is a welcome, potentially self-financed substitute for the technical assistance it has donated through other mechanisms over the years. At this incipient stage, self-financing is still a critical issue, especially because most of the communities are still in arrears in paying their fees. USAID, and to some extent ACOFOP, consider themselves parents of the fledgling FORESCOM and seem tempted to rescue their offspring, with consequences analogous to those faced by any parent with a child on the verge of gaining independence.

4 The role of the state and donor assistance

4.1 The role of the state

CONAP is the government agency responsible for ensuring concessions are managed according to the terms of the contract. But during its 14 years of existence and despite substantial external assistance, it has suffered from the chronic and typical problems of many similar government agencies in developing countries: a low political profile, frequent staff turnover, poor management, rachitic budgets, excessive bureaucracy, and the like. Acknowledging these weaknesses, which made it difficult for CONAP to assist and maintain sufficient control of the concessions, the regulations stipulated that each community concession have the backing of an NGO. In essence, CONAP delegated to these NGOs much of the technical assistance and quality control it was unable to perform itself.

Because of occasional conflicts arising in these marriages of concessions with NGOs, in 1999, CONAP modified the regulations to allow the concessions and cooperatives to choose a certified professional forest agent (*regente*) to take over this role. At the beginning, these professional foresters or agents were financed through international technical assistance, but this financial burden has gradually been transferred to the community forest enterprises. To reduce costs, one agent usually serves several community enterprises. These joint arrangements have evolved to the point where last year these agents were contracted by FORESCOM.

CONAP oversees the overall system, which has evolved into a four-tier monitoring system. The forest agent provides technical assistance to the concessions in the preparation of their annual operating plan, layout of their harvest areas, and the oversight of their logging activities. CONAP also conducts on-site inspections of logging activities, although less frequently and rigorously than necessary. Because of the stringent environmental regulations governing its assistance, USAID also carries out periodic inspections. And finally the concessions are certified according to Forest

Stewardship Council (FSC) standards for which they are submitted to annual audits. Communities complain about the burden of the multiple inspections. While CONAP has attempted to harmonize standards and monitoring systems, these multiple and uncontrolled visits continue to represent inefficiencies and confusion within the overall system. Part of the problem is that the role of the forest agent is not clearly understood and defined. They are seen as additional regulatory officials and not as part of the internal management system of the concession.

But what happens when the concessionaire does not follow the rules? Ideally in such a situation concession contracts should include an escalating series of penalties and, in extreme cases, cancellation of the contract. However, the regulations and contracts for the Petén concessions have no such penalties, leaving few options other than disapproval of the annual operating plan and cancellation of the concession. This situation has created a dangerous dilemma for the state. If CONAP shuts down operation of a concession during a logging season, or permanently, it risks the wrath of the community. This can lead to arson, illegal logging and clearing forest for agriculture, all extremely difficult for the government to control in the climate of impunity that characterizes Guatemala. CONAP recently intervened in the operations of the La Pasadita concession, thereby creating a test case and maybe a warning for other communities. At the other extreme, if CONAP does nothing other than make empty threats, its control over these national forests will decrease even further.

4.2 The role of external assistance

Millions of dollars in external assistance have been invested in the concession process so far. (USAID/Guatemala alone has contributed US\$8.9 million from inception until June 2003, DFID and other donors have contributed additional substantial amounts). Amounts spent on other facets of the MBR are several times greater. Partly because CONAP was conceived mainly in response to international urging, in the first years after its birth it received considerable external assistance. This was reduced to a trickle as frustration grew over the agency's lack of effectiveness and political instability. Technical expertise in tropical mixed forest management was very scarce in Guatemala and Central America, and so a regional institution, CATIE, filled part of this gap until 2001, introducing forest management planning, low impact harvesting and other modern practices, primarily through three projects¹.

However, throughout the concession process, the preferred delivery mechanism was local NGOs², often backed by international conservation NGOs. Although strongly motivated, most of these NGOs suffered the same weaknesses common to all too many organizations of this genre: low salaries which tended to attract mostly inexperienced personnel, insufficient communication with other actors, short-term and insecure financing, insufficient experience in running a business and more. This last weakness in

¹ CATIE (Centro Agronómico Tropical de Investigación y Enseñanza) provided technical assistance primarily through its Production from Natural Forests, CATIE/CONAP and OLAFO projects, the first two financed by USAID, the third by the Nordic countries.

² Primarily PROPETEN, *Asociación Centro Maya*, and *Fundación Naturaleza para la Vida* (NPV), *Asociación para un Mundo Justo*, World Wildlife Fund (WWF), Wildlife Conservation Society (WCS) and FIPA (*Fortalecimiento Institucional en Políticas Ambientales*) have worked on the concessions.

particular caused the business aspects of the incipient forest enterprises to be neglected, and this remains one of the most serious constraints today.

During the last three years, some donors have used for-profit contractors to provide technical assistance³. The solution is probably not to select one type of delivery system over another, but rather to work with a mix, each mechanism best adapted to the problem at hand.

A universal problem plaguing work in the MBR is the difficulty in coordinating the many actors. Nominally CONAP, as the government agency legally accountable for the MBR, should have the power for assigning tasks and coordinating all actors. Although they often vehemently defend this role, in reality their capability in this respect is severely limited by short staffing, inadequate resources and a surfeit of politics. During the years USAID financed a large proportion of the budgets of most of the actors, it insisted on a unified annual work plan for the MBR to be approved by CONAP, a mechanism that had considerable benefits. Efforts are now being made to once again require the various external projects in the MBR to coordinate by integrating them into a joint work plan.

In several instances, lack of cooperation has degenerated into downright conflict between implementers, usually caused by turf wars or differences in approaches (e.g., some implementers vying for exclusivity with a forest community enterprise by being more generous in its support and more lenient in reciprocal requirements). These vehement conflicts have caused a highly unproductive expenditure of time and resources, as well as delays in implementation. Again, ideally CONAP should have the capability of preventing or settling such disputes, perhaps through the formation of coalitions, but for the above reasons has seldom been able to do so. The present threat of future conflict is that in the current design of a major Interamerican Development Bank-financed project for the northern Petén through the Presidency of Guatemala, neither CONAP nor the communities plays a significant role. This is just one more demonstration that a stronger, more competent, more stable CONAP would solve numerous problems. Unfortunately, this has been an elusive goal for more than a decade.

The powerful influence of external donors from inception of the concession process, plus the inherent need of donors and their implementing organizations to show quick, visible results, has fostered the prevalence of paternalism. This has slowed the establishment of community forest enterprises as viable, independent business ventures. Although external projects have supported the concessions for ten years, all individual projects have spanned much shorter periods, some being renewed several times. The resulting pressure to demonstrate quick results to donors has often created achievements that are artificially propped up with outside help, because time spans are too short to allow true assimilation of some of the changes. The process of weaning the communities away from generous subsidies, donations, free technical assistance and training has been going on for several years as donor funding has decreased, but is still far from complete. The more successful community forest enterprises now cover 95% of their costs themselves,

³ BIOFOR Project implemented by Chemonics International Inc.

whereas the smaller and less successful ones around 80%⁴. Some traditional donors are pressuring for greater independence on the part of the enterprises, but the success and high profile of the concession scheme keeps attracting new donor funding, some of which partly counteracts efforts by being channeled into generous offers to these same enterprises. However, most of the donor assistance now goes to develop secondary processing and marketing, especially of lesser known species, areas that will continue to need help. One promising new arrangement is to require the recipient community enterprises to sign formal contracts with the provider of technical assistance, spelling out the responsibilities of both parties and thereby reducing the probability that the enterprises fail to comply with commitments.

5 Technology for conservation and profit

5.1 Natural Forest management

Forest management and planning have evolved in the Petén since establishment of the first concession in 1994. Throughout, however, conservation of the region's tropical forest resource through sustainable management has remained the overarching goal. This is achieved through long-term forest management plans to be revised every five years, annual operational plans, and required third party certification. By now most communities have acquired sufficient local capacity to carry out all field work. This impressive accomplishment has created technical models worthy of emulation. The 25-year forest management plans vary by community but in general they contain:

- *Cartographic Information:* Maps, developed by adapting existing maps, satellite images (and in some cases aerial photography) contain information on boundaries, topography, roads, stratification of vegetative and forest types, areas to be protected due to their fragile nature, high biodiversity or endangered populations, production forests, archeological sites, and camps.
- *General Descriptive Information:* The area is described in detail including information on precipitation, soils, vegetation, fauna and human populations.
- *Inventory Data:* The inventory design is best described as systematic stratified inventories, with fixed plot sizes based on defined allowable sampling errors (<15%) and confidence levels (>90%). The number of tree species inventoried varied by plan but most plans inventoried approximately 40 species of which 15-20 were then classified as "commercial" based on their abundance and physical qualities. Minimum diameters were defined in the plans for each species. The plans established harvest rotation lengths and maximum harvest levels.
- *Harvesting and Protection:* The plans go on to define extraction strategies, post-harvest silvicultural interventions, and protection, including the protection of areas with endangered species, stopping encroachment, and forest fire control. Harvesting operations have evolved and are largely based on the best practices for reduced impact logging including directional felling,

⁴ Personal information from Augusto Rosales, BIOFOR Project.

conservation of future tree crops, and minimizing skidder impact through improved extraction design. Environmentally sound road construction and their subsequent management to limit third party encroachment have been fundamental to the environmental protection of the region.

- *Permanent Plots:* CONAP, with donor support, has established a system of permanent plots to monitor growth, yield, and recovery response to logging operations, although, measurement of the plots is not as regular as it should be.
- *Silvicultural Strategies:* While the forest management plans include silvicultural strategies, silviculture is largely limited to the promotion of natural regeneration, with limited enrichment planting of mahogany in some concessions and overall protection of the area.

The Annual Operational Plans (POAs) serve primarily to define and organize the exact harvest for any particular year. The POA is based on a census of all individual trees that will be extracted. The POAs serve as the operational plan for the forest enterprise as well as a monitoring and control tool for CONAP. Royalties are paid on the basis of POA projected harvest levels. In order to facilitate marketing and cash flow/investment management beyond the annual periods, in 2004 nine communities conducted more intensive inventories to design five-year harvest plans or medium term projections. These plans estimate harvest volumes and vary annual harvest unit size in order to hold the harvest volumes constant.

In general, the forest management and operational plans have evolved to a level of sophistication which, if followed, is almost certain to assure the sustained management and long term conservation of the forest. The challenge now is to reduce costs of the planning process, partly through the elaboration of simple templates, and especially to continue to close the gap between what is planned and what is done. FORESCOM should play a leading role in this process.

One issue related to forest management is the treatment of non-timber forest products. While most of the general forest management plans address the collection of non-timber forest products, they are not addressed in the POAs. This is a result of the legal treatment of non-timber forest products and the fact that they require separate permits for harvest. While the concession contract delegates the right and responsibility of non-timber forest products to the concessionaire, CONAP continues to issue permits to traditional operators who are not necessarily members of the concession. This continues to muddle the rights and responsibilities of the communities.

5.2 Harvesting and processing

The communities have evolved from selling standing trees to local industry to operating their own logging and processing equipment. During the initial harvest seasons, communities sold standing timber to local firms based on the forest management and annual operation plans. Community involvement beyond the provision of manual labor was minimal. While proceeds were substantial, they fell far short of the true potential of the forest resource. Communities quickly realized that they could capture additional value

by maintaining ownership of the wood through the processing phase. The next step was then to contract for services (logging, milling and transport) by local providers and sell the processed lumber to buyers directly. They soon came to realize that they could undercut the cost of these services by equipping their own operations and most have moved in this direction. To a large extent this became possible due to the relative abundance of mahogany⁵ and its large profit margins. Unfortunately rather than sharing some of the equipment, eight communities now have their own sawmills and seven have heavy equipment of one type or another for logging. In general the mills, portable and with band saws, are not proportionate to production. On the one hand the portable mills (Woodmizers) are not designed for the size and density of many of the species and on the other; the band saws are over sized for the quantity of wood harvested in any one community. Two communities have carpentry equipment, one has a planer, and none have dry kilns or chemical treating capacity.

Until recently, communities have been very reluctant to work with each other and with the local industry. This stems in part from conflicts and problems during the era when the local industry bought standing timber. It is also a result of the overall socio-political situation in Guatemala stemming from years of civil strife and general mistrust of others, including other community members. This has limited the opportunity to strategize collectively and form joint ventures or investments. The situation is changing slowly and some communities are gaining a common understanding that it is best to unite efforts in sharing equipment and milling capacity. Meanwhile, however, eight installed mills process a mere 20,000 m³ of logs per year.

5.3 Forest certification

Forest Stewardship Council (FSC) certification is a requirement imposed by CONAP to retain the forest concession. As such, it has been a milestone in the communities' efforts to manage their forest (Carrera et al. 2004). At the time of writing 131,327 ha of forest have been certified in two industrial concessions, 339,477 ha in nine community concessions and 10,530 ha in the cooperatives. The cost of certifying the communities has largely been subsidized by donors. Most recently, FORESCOM received assistance to develop its capacity to serve as a "forest operator" and become certified. It is in its final stage of meeting preconditions placed upon it by SmartWood, the FSC accredited certifier. Once certified, the cost of certification will be reduced to roughly 20% of the previous amount and it is expected that most communities will be able to afford both the annual audits and recertification requirements every five years (Nittler 2004). There is some concern about conflict of interests and whether FORESCOM has the internal capacity and required credibility with the communities to fulfill this role in an impartial and corruption-free manner. It will be crucial for SmartWood to foment this capacity through annual, rigorous audits of FORESCOM's oversight capacity CONAP and international donors need to closely monitor this process, which is critical to the overall financial sustainability of the concessionary system.

⁵Summary of Five Year Harvest Plans: 27% of the harvestable volume estimated in the 5 year harvest plans is mahogany (*Swietenia macrophylla*) second only to pucté (*Bucida burseras*) which comprises 35% of the total volume. (BIOFOR Project internal document).

Communities share diverse views on the value of the certification. Some question its value as it has not resolved market access issues for lesser-known species nor has it necessarily attracted higher prices for the higher-value species. Some however, cite certification as positive in terms of incrementing technical capacity and forcing them to stay within legal and "good management" limits. Also some cite the fact that certification has helped the overall system maintain a "green" image and has allowed it to pass the environmental litmus test.

5.4 Environmental impact

In response to environmental regulations governing U.S. foreign assistance, USAID has spent considerable resources on environmental monitoring since the establishment of the MBR (TRD 1994). Perhaps the most dramatic results are the satellite images showing the changes in forest cover over selected intervals (see Fig. 1) and the incidence of fires. The occurrence of fires and the reduction in forest cover in the concessions since their inception are strikingly low compared to the situation in some of the national parks (Laguna del Tigre, Sierra del Lacandon) (WCS et al 2002, 2003). This dramatically superior protection of the concession forests as compared to the parks where no extractive use is permitted is ironic but instructive. Not only has forest management preserved the forest, it has also conserved its biological diversity. The summary of a recent sophisticated effort at biological monitoring concluded: "At current extraction levels (0.8-2.4 trees/ha), the ecological impacts of timber extraction are minimal. Modest changes in the community structures of birds, beetles, diurnal butterflies, and game species suggest that current logging practices do not preclude any species from logged areas, but rather increase species richness by augmenting habitat heterogeneity" (Balas *et al* 2004, Radachowsky 2004). Had this conclusion been known at the time the Maya Biosphere Reserve was established, it would have been an argument for expanding the multiple use zone at expense of some of the parks.

6 Marketing and markets

Most of the wood sold by the communities is mahogany and most of that to US markets as rough sawn green lumber. In 2004, mahogany was the most abundant species harvested and of a projected total harvest volume of 17,898 m³, over half was mahogany. Spanish cedar (*Cedrella odorata*), "jobillo" (*Astronium graveolens*) and "chichipate" (*Sweetia panamensis*), all considered "precious" species along with mahogany, combined comprised roughly 10% of the total production by volume. "Santa maria" (*Callophylum brasiliense*), a semi precious species was the second most abundant species harvested with over 2,600 m³. The remaining volume of roughly 30% was comprised of species considered not valuable. Most communities sold only 3-5 species during 2004. The only exception to this was two communities (Cruce de la Colorada y La Colorada) that sold their inventoried timber to local industry and in these cases they sold 10 species. The industrial concessions harvested 17 species on average.⁶ This

⁶ Summary of harvest volumes submitted to CONAP for community and industrial concessions, compiled by BIOFOR

demonstrates that lesser known species can be marketed, but that communities have yet to reach the point of doing so profitably on an individual basis.

“Pucté” (*Bucida burseras*), the most abundant species according to the five-year operational inventories, was only projected to be harvested in four communities including the two selling their standing timber to local industry. “Pucté” is a dense species naturally resistant to decay and insects. Rainforest Alliance is working with International Specialties, Inc. to test its potential use in product lines such as decking and industrial flooring, and is optimistic concerning its acceptance into the US market. Meanwhile, the marketing of “pucté” remains a challenge, largely due to its grayish tone, that could greatly expand the returns of forest management were an attractive market niche identified.

Keeping in mind that the communities are relatively young in their evolution as enterprises, until now most have not undertaken marketing activities. Rather they have sold wood to buyers coming into their communities, often escorted by intermediaries (Nittler, 2004). Buyers of mahogany’s FAS and Select grades are mostly from the US, and buyers for Spanish cedar, “santa maria” and lower mahogany grades mostly from Mexico (to export to Mexico or Caribbean destinations such as the Dominican Republic), while other secondary species are sold in domestic markets with incipient efforts to break into international markets.

FORESCOM has staffed a small marketing office to initiate marketing efforts and provide these services to the communities in return for a small percentage of the sales price. This office receives German technical assistance and has submitted a proposal to capture additional funding from the International Tropical Timber Organization (ITTO). The theory behind this office is that by providing improved communication, quality control and higher volumes through the collective marketing of their wood, the communities will be able to access new markets especially for lesser known species, and negotiate better prices and conditions.

Considering that FORESCOM only began operations in the initial quarter of 2004, results in marketing are very limited. However, in 2004, they were successful at getting the highest price for FAS mahogany grades, but most communities had already sold their wood to other buyers. They also were successful in identifying buyers for and selling 12 containers of “manchiche” (*Lonchocarpus castilloi*), “pucte” and “santa maria” in Europe. Scant community processing capacity and their current reluctance to enter into joint ventures with local industry or with one another limits their ability to respond to market demands for dry and semi-processed wood (e.g. planed on four sides). FORESCOM is considering how to respond to this need, either by facilitating an overall joint venture or service contracting mechanism with local industry to add value to their product and allow them to enter into new product lines, or by expanding FORESCOM to actually acquire processing capacity. With access to increased operating capital, FORESCOM believes it could access better markets by cutting out middlemen or add value to the wood by purchasing logs from the communities, adding value and then selling it. This latter option will turn FORESCOM into a wood products enterprise,

requiring an entirely different structure, rather than a service provider to the communities and must be seriously analyzed and supported by the communities if it is to be successful.

There is no clear current commitment by the community enterprises to allow FORESCOM to offer their wood and negotiate prices and terms. This is partly because several years of efforts to help community forest enterprises market individually are now abruptly followed by efforts to convince them to leave this vital task in the hands of an unproven entity, an entity that may likely have to sell to the same buyers and at similar prices as the communities do now. The challenge of FORESCOM is to seek more lucrative markets through adding value (drying, planing, radial cuts, etc.) to the wood as it is unlikely to attract better prices for rough sawn green lumber. Unless FORESCOM can market a substantial share of its members' wood, the organization's ability to cover its costs is in doubt. This may force FORESCOM to be aggressive in the market place to beat out competitors, but it also ties its hands in the absence of a firm community commitments concerning how much wood it can actually offer prospective buyers. This problem is currently the center of attention in FORESCOM and it is hoped an appropriate solution can be reached before the 2005 harvest season.

7 Economics of community forest management

7.1 Availability and reliability of information

Unsurprisingly, the economics of community forest management is not as well understood as it should be. The overall process began with limited economic analysis and less than reliable information. Individual forest management plans developed in the early stages of the process did include a section on financial projections. These were based on annual harvest levels, estimated recovery and cost rates, market values for standing timber, and (perhaps most problematic) the sale of most if not all timber species classified as commercial. Non-timber forest products were also included in the projections for some communities where they play a key role. The projections gave positive returns but since they were based on the sale of most of the commercial species, they often overstated returns.

In 2000, USAID conducted an overall assessment of their support to the MBR in the previous decade (Chemonics and IRG 2000). Part of this report was an analysis of the concessionary system, and was one of the first attempts to compile cost data and analyze the economic situation of forest communities. The analysis built upon very weak cost data generated by NGOs working with community forest management. This demonstrated their general lack of understanding and ability in aspects related to financial projections. One key finding of the assessment was therefore the need to create this capacity in the communities. The assessment also projected positive community returns as well as high residual stumpage values, especially for mahogany and cedar, and especially if the communities sold lumber rather than logs or standing trees.

In the subsequent three years donors invested resources to boost financial and business skills within the community enterprises. Most now have reliable accounting systems which provide accurate cost information and generate quarterly financial statements.

Most enterprises also use a financial planning system to estimate their upcoming operational costs to ensure cash flow and four have developed business and investment plans while five more are in this process. Unfortunately, there still are a few community forest enterprises that do not generate accurate information and are less than transparent with community members, reflecting on the mistrust (if not corruption) found in some communities. In 2004, CONAP initiated a process to audit accounting systems and hopefully this will encourage (if not force) these communities to adopt transparent systems of financial control.

7.2 The financial viability of community forest management

A preliminary analysis of the financial sustainability, based largely on 2003 data of those forest concessions for which data was available, produced Table 1 which shows the positive net present value of the forest enterprises using a 8% discount rate (Chemonics 2003). A discount rate of 6% is more typical for this type of analysis and if used, the analysis would prove the concessions to be even more financially attractive. Ten of the fourteen community enterprises analyzed have very positive values while four are sensitive to less than 10% changes in costs or incomes. The four that scored lowest were among those communities selling standing timber or logs in 2003. Since then two of these communities (AFISAP and Los Laborantes) have purchased sawmills and are now selling lumber. This change has probably caused their net present values to increase.

The financial viability of the concessions is mainly dependent on the overall abundance of mahogany in the RBM. Fixed costs, as well as capital investments have largely been covered by its large margins. The recently developed inventories of the next five-year harvest areas in nine community forests substantiate the assumption that mahogany is the second most abundant species. This will be so over the next five years, at least, and most enterprises should continue to turn high profits. It is not clear that these levels of mahogany will be available in the second harvest rotation. Community enterprises are selecting areas where mahogany is abundant for their initial harvest areas in order to capitalize their operations. The initial inventories developed for long-term forest management plans do indicate a reasonable diameter distribution for mahogany and suggest mahogany will remain an integral part of forest operations for years to come. However, communities should continue to take advantage of the high abundance of mahogany to capitalize their operations and develop processing capacity and markets for secondary species.

Table 1. Results of the financial analyses for 2003.

Community	Annual Cut Ha.	No. of Members	Net Present Value at 8% discount rate (Quetzales)	Net Present Value at 8% discount rate (US\$)	Percent change in costs of operation or income which would make the communities concessions unprofitable	
					Costs (%)	Income (%)
AFISAP	1,120	178	246,334	31,581	9	-8
Arbol Verde	1,100	344	2,056,345	263,634	54	-35
Bethel	100	57	387,609	49,693	>100	-60
Carmelita	709	88	1,518,756	194,712	79	-45
Cruce la Colorada	704	65	46,185	5,921	6	-6
Custodios de la Selva	500	96	2,144,426	274,926	71	-42
El Esfuerzo	550	41	961,056	123,212	29	-23
Laborantes	450	96	142,219	18,233	5	-5
La Colorada	515	40	14,532	1,863	2	-2
La Palotada	80	30	41,178	5,279	17	-15
La Pasadita	482	74	439,353	56,327	38	-28
La Tecnica	100	43	1,083,107	138,860	>100	-63
Uaxactun	703	225	1,052,016	134,874	50	-34
Union Maya Itza	130	172	682,712	87,527	71	-42

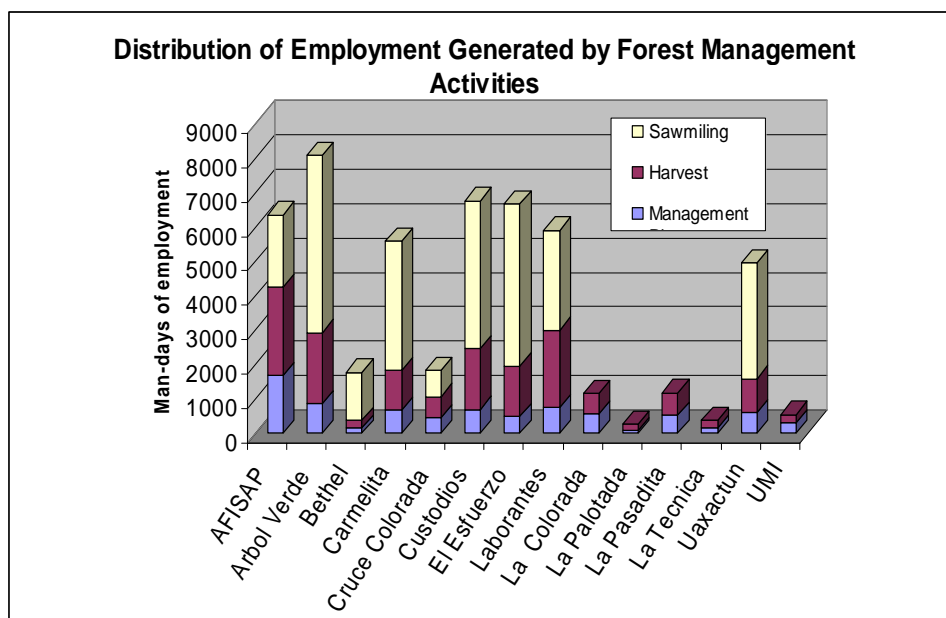
7.3 Socio-economic importance of the community concessions

In 2003, all community forestry operations combined had a positive net present value of over \$13 million using an 8% discount rate (Chemonics 2003). Perhaps more importantly they are expected to generate an approximate yearly \$5 million in sales of wood products and an additional \$2-3 million in sales of non-timber forest products. Some estimates for individual annual incomes generated by non-timber forest products are as high as \$2,300 for *xate* collectors working year round. This overall economic activity is substantial for the zone and flows down to the individual level. The average *potential* income from timber products by forest operations for each member of the community forest enterprises is \$1,140 over roughly a 2-3 month harvesting and processing period. However, these estimates are accompanied by important caveats. They are based on the assumption that the forest enterprises work the way they are supposed to work, i.e. they avoid making poor investments in equipment, they do not let themselves be cheated by their leaders or others and they are free of debts caused by such mistakes. In reality, this assumption is not fulfilled. For many enterprises these kinds of mistakes have drastically reduced the income received by the individual, causing frustration and decreasing interest in forest management. This situation also demonstrates the need for much more work with the communities in order to bring them up to their potential.

Employment is a key aspect in the aggregate economic importance of the forestry operations, given the dearth of employment opportunities in these rural communities. Forest operations in the 14 communities analyzed were estimated to generate a total of 51,309 person-days of work in 2003, worth a total of \$359,490 to the communities.

However, the range between the enterprises is tremendous. In the three that generated least employment, members worked less than ten days per year, whereas in the three that generated most they worked between 63 and 162 days per year. The low values are partly explained by small forest areas in relation to the number of members and partly because some enterprises opted to sell the trees on the stump. Figure 1 shows the division of person-days between different forest operations, and underlines the importance community involvement in logging and processing in terms of overall job generation by the forestry operation (Chemonics 2003). Approximately 55% of the employment concerns the primary processing phase, which partially explains community interest in having and expanding their processing capacity.

Figure 2. Distribution of Employment by Forest Management Activity



Income from the forest needs to be related to income that these communities derive from agriculture and ranching, their only other significant source of income. Here also there is a wide range between communities. Mollinedo et al. (2002) compared the traditional forest community of Carmelita with the agricultural cooperative of La Técnica. In the former, forest management for timber plus non-timber forest products accounted for about 70% of family income. In the cooperative the forest provided about 40% of income, partly because the forest area per family is much smaller. Other communities could be expected to fall between these values.

Besides generating income for families, the concessions have also contributed to community development projects and other local development efforts. For example, Árbol Verde has invested proceeds in a hotel and Unión Maya Itzá in the provision of bus services to communities in the southwest Petén.

8 The Future

Forest management through concessions to communities and industry has made dramatic progress in the nine years since its inception. But as with any such complex land management schemes, this process still faces serious threats. Some of these threats are linked to the incomplete consolidation of the concession arrangements while others are inherent in any long-term forest management enterprise.

Among the first group of threats, one of the most serious is that management of community forest enterprises continues to be confounded with community politics. This has allowed the twin scourges of incompetence and corruption to persist. On this issue, outsiders are limited to indirect influence, mostly through persuasion. Hindsight reveals that through the concession contract, CONAP could have demanded management and control systems guaranteeing greater efficiency, equity and transparency. But at the time these contracts were drawn up, other criteria, especially political expediency at the government level, predominated. Under the threat of invasion and degradation of the forest, there was an understandable urgency to allocate the concessions. Under present circumstances, perhaps the best hope is in continued demonstration of the advantages of the principles of good business management such as creation of a permanent cadre of qualified personnel, transparency, accountability at all levels, objective, informed decision making, and financial discipline. Unless they become competitive in a rapidly globalizing market, community forest enterprises have no future. This also implies the need for further reduction of subsidies by external donors. Through improved communication facilitated by ACOFOP and others, some of the more successful forest enterprises are already serving as models for the laggards.

Because of the extreme variability of the communities, it is not easy to generalize about the factors conducive to success as a forest enterprise. However, Box 1 lists some characteristics that do seem to correlate with those community enterprises that tend to be more successful. Only some of these characteristics are amenable to change at this stage and, obviously, that is where efforts should concentrate.

A second risk faced by the enterprises is that so far they have been based primarily on old growth mahogany and, to a

much lesser extent, a handful of other species. Almost certainly, mahogany is not growing back as fast as it is being harvested, nor would forest management based on one or so few species be environmentally, technically or financially viable. Permanent research plots and other monitoring are gradually providing data on growth rates after

Box 1

The more successful community forest enterprises tend to have:

- Strong social cohesion within the group, usually the result of previously having collaborated in communal endeavours,
- Competent, honest and transparent leadership,
- Tradition of deriving a large proportion of their income from the forest,
- Large productive forest area in relation to the number of members,
- Willingness to invest in capital assets,
- Open to advice and technical assistance,
- Good luck!

harvest. This information must be used to adjust the annual cut to sustainable levels, partly through the inclusion of significant amounts of additional species.

But the lack of capacity of the communities in areas such as marketing, product development and quality control is the principal constraint to harvesting additional timber species. Barring even greater and more realistic efforts to develop markets and clients for these other species, the future looks bleak. Local secondary processing to introduce these new species to the market has long been touted as a possible solution. However, the necessary investment has been slow in coming. Developing long-term relationships with clients manufacturing specialized products is another strategy that is gradually producing results. Because many of the less-utilized species represent only a small proportion of standing timber volumes, consolidation of shipments among several forest enterprises is imperative, through whatever mechanism can be made to work.

Even though the harvesting of non-timber forest products (*chicle*, allspice, *xate*) is an old tradition in the Petén and a very important source of income for thousands of local families, their management has been neglected until recently (Heinzman and Reining 1992, Aldrete 1998, FIPA/AID 2002, FIPA/AID 2003, CONAP 2003). Unlike timber, these products have essentially been considered as a free-access resource even in many concessions, resulting in over-exploitation of *xate* and allspice. Only during the last few years have serious steps finally been taken to set enforceable limits on harvesting and break the hold by a few exporters over marketing (FIPA 2002, FIPA 2003). The establishment of plantations of *xate* palm is moving from the experimental to the commercial stage. On some concessions, if done correctly, non-timber forest products could provide income approaching or exceeding that from timber. Some concessions have actually set aside a large proportion of their areas where only harvest of non-timber forest products is allowed, to the exclusion of timber. The small space allocated to non-timber forest products in this study does not reflect their lack of importance, but rather the scarcity of new experiences that go beyond the proposal stage.

Relations with government agencies and the public will continue to have either a positive or negative impact. These relationships now extend beyond CONAP all the way up to the level of the presidency and the national congress, largely because of the Mirador proposal, espoused by an influential foreign lobby, and economic integration with Mexico, which might include large new infrastructure in the Petén. It remains to be seen whether CONAP will be able to shift its focus from the woods to the higher spheres of government and public discourse to ensure that the pressure of these new developments will complement and not destroy MBR's management achievements.

By this time it should be clear that embarking on forest management through a concession arrangement with loosely organized rural communities is a long-term, complex and costly undertaking that should not be attempted unless some solid government structure and plenty of outside help to the communities are available. Certainly, the two industrial concessions have received much less attention and no external assistance, and they seem to be working well. Of course, one fundamental difference is the issue of social equity, the division of the benefits. The question remains

whether the communities might not have profited more had they been able to establish fair joint ventures with industry for processing, and perhaps even for extracting the wood, instead of making bad investments in inefficient machinery. But the concessions mean more to these communities than just a profitable enterprise. For many it has represented their first opportunity to undertake meaningful communal activities and is generating empowerment and interest in the development of other communal enterprises. Most importantly, however, for many of the communities the most valuable aspect of the concession is the recognition of the communities' rights to manage, conserve, and live from "their" own forest. But they will only continue to do so as long as the forest provides a broad-based profit to them.

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For those readers involved in similar forest management ventures, some of the potentially most useful contributions of the Petén experience are the numerous norms and guidelines that came out of the process, many of which have universal application, often with only minor adaptations. The complete texts of almost all are available on the CD of SI-CONFOR (*Sistema de Información de Concesiones Forestales*). This CD also includes the complete texts of almost all references indicated below, plus hundreds of others specific to the MBR, as well as maps and photos. Copies of the CD can be requested from:

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