

YFF Review



Forests, Communities, and Sustainable Management

A summary of a forum examining
community forestry initiatives in
the tropics

A Yale Forest Forum Event

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Global Institute of
Sustainable Forestry

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YFF Review

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YFFReview

Forests, Communities, and Sustainable Management

A summary of a forum examining community forestry initiatives in the tropics.

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Executive Summary



Community forestry is widely considered a socially and environmentally sustainable alternative to industrial forestry. In many tropical countries, large-scale logging operations by non-local interests have resulted in forest degradation, biodiversity loss and livelihood insecurity for forest dependent groups. Proponents of community forestry, also referred to as "social forestry" or "participatory forest management," claim that community control results in more sustainable forestry operations because locals have a real and concrete interest in maintaining long term forest health and productivity.

Community forestry encompasses a wide range of activities, including low-impact selective logging, harvest of non-timber forest products, and management for particular floral and faunal species. Requirements for the success of community forestry initiatives include social, political, and environmental factors.

To discuss the benefits and challenges of community forestry in the tropics, the Yale Forest Forum and the Program in Tropical Forestry at the Yale School of Forestry and Environmental Studies hosted a forum on December 10, 2002 in New Haven, Connecticut. Entitled "Forests, Communities and Sustainable Management: Can Local Involvement Contribute to Sustainable Forestry in the Tropics?" the forum was moderated by Florencia Montagnini, Professor in the Practice of Tropical Forestry at the Yale School of Forestry and Environmental Studies. The panel consisted of four speakers representing various organizations working to implement community forestry in Latin America.

Bastiaan Louman, of the Tropical Agricultural Research and Higher Education Center (CATIE), based in Costa Rica, discussed the environmental benefits that have resulted from community forestry throughout Latin America. Louman shared experiences from Honduras, Bolivia, and Costa Rica and emphasized that for the benefits of community forestry to continue and grow, such initiatives must be integrated with and made complimentary to other aspects of community life.

Dr. Charles Peters of the New York Botanical Garden, presented two case studies of successful community forestry projects. His first case focused on a non-traditional handicraft made from a local tree species in Mexico. The second example detailed an extractive reserve managed by indigenous communities in Brazil. Peters concluded by addressing the advantages of community forestry over traditional forestry, emphasizing key benefits such as technology transfer, community empowerment, and local economic development.

Professor Glenn Galloway also of CATIE, discussed community forestry as a complex network of varying stakeholders. He spoke about CATIE's work to increase the success of community forestry initiatives through technical training and applied knowledge about social, political, economic and environmental networks. He emphasized the importance of empowering local populations to have control over the forest resources through enabling political-legal framework, something which is lacking in most Central American countries.

Spencer Ortiz of the Fundación Naturaleza para la Vida, Guatemala, presented community forestry within the context of a nation emerging from decades of civil war. At present in Guatemala, a small but growing number of communities are experiencing economic benefits from community forestry projects. Though community forestry faces serious challenges, there is cause for optimism, especially as forest products become increasingly important in the national economy.

The forum concluded with a discussion, from which several suggestions arose. First, in order to improve project success, it was suggested that communities that already have local organizational structures for forest management should be selected for new projects. Second, local capacity building should be a primary focus of new projects in order to ensure sustainability and reduce dependence on external funding sources. Finally, local markets should be targeted before national or international markets in the majority of cases, especially for the sale of lesser-known timber species.

Issue Introduction

**FLORENCIA MONTAGNINI**

Professor in the Practice of Tropical Forestry
Yale School of Forestry and Environmental Studies

The idea that forestry should aim at bringing a bigger share of benefits to local people is embedded in the concept of “social forestry.” At the Food and Agriculture Organization of the United Nations (FAO), this type of forest management is referred to as “forestry for local community development.” Following this model, local people assume responsibilities for forest management, and through these efforts they are ensured direct and equitable benefits.

“Community forestry” is the term generally used in reference to such locally controlled forest management. Put broadly, community forestry has the following general characteristics:

- Involvement of communities in a continuous decision-making process related to forestry activities
- Protection of natural resources
- Involvement of indigenous and farmer communities in resource management
- Adaptation of forestry operations to farmers’ situations and methods, so as not to conflict with prevailing social and economic processes
- Valuation of forest resources according to local cultural heritage

Community forestry can operate at different scales. At a minimum, it may support the subsistence strategies of isolated or marginal communal groups, with minimal market development. At the other end of the scale, community forestry can mean highly structured organizations managing production forests for timber, with access to the latest technology, producing products for foreign certified markets.

“There is cause for optimism that this form of management will continue to grow and contribute to forest conservation and sustainable development.”

— Florencia Montagnini

There are many bottlenecks to successful community forestry operations, and it is here that donor-funded projects can provide important inputs. Priorities for community forestry projects often include extension of technical support for sustainable forestry, increased understanding of management for natural regeneration (silvicultural treatments), cultivation of timber plantations for commercial species production, financial feasibility analysis, and business planning.

Many diverse projects have been implemented throughout the world to support community forestry. While results have been mixed in some places, the main accomplishments of community forestry projects include zoning and land management; controlling immigration and agricultural encroachment; control of forest fires; control of illegal extraction of natural and archeological resources; increased local employment; higher incomes and higher minimum salaries; greater social cohesion; infrastructure development; and forest certification.

While such project successes have demonstrated that community forestry can be a viable alternative for forest management in the tropics, a number of important challenges remain. These include the shortage of technical information, the lack of effective organization, and conflicts of interest on the part of institutions and individuals involved with implementing community forestry. Though these challenges are real, the examples presented at the front, and in the additional cases presented on pages 24-27, show that community forestry can work, and that there is cause for optimism that this form of management will continue to grow and contribute to forest conservation and sustainable development.

Presenter Summaries

**BASTIAAN LOUMAN**

Associate Researcher

Tropical Agricultural Research and Higher Education Center (CATIE)

"Forestry goals should be integrated with and complementary to other aspects of community life."

— Bastiaan Louman

Bastiaan Louman shared his thoughts on some of the more important achievements of community forestry. These include advances in conservation, increased stability, and empowerment of rural communities. In terms of conservation, for example, there is reduced burning of forests in Guatemala, decreased forest conversion in Honduras, and attempts by communities to stop illegal logging by outsiders in Bolivia, Honduras, and Costa Rica. In large part, such conservation successes are due to a change in land ownership—people who rely on forest resources now own the forest, thus resulting in better conservation. Nevertheless, community forestry projects often result in increased conflict over forest resources, by territorializing ownership of forest areas previously without tenure. Though this is a negative by-product of many community forestry efforts, in the long run recognized local ownership rights are essential for forest conservation.

Community forestry projects have also increased stability in both rural and urban areas by reducing out-migration by rural communities. Because there is an increase in available local jobs as a result of locally controlled forest management, fewer people are leaving the countryside. Jobs associated with community forestry activities, moreover, commonly pay better and are more secure (even offering insurance) than those offered by outsiders operating in the countryside. Community forestry projects have also helped by solidifying pre-existing local organizations, which in turn have served to aid their communities in times of distress, as occurred in Honduras after hurricane Mitch.

Significantly, such efforts have helped create greater social cohesion by legitimizing local culture. Mr. Louman spoke of his experience in Bolivia, where many local communities were previously reticent to speak their own indigenous language around outsiders. Fearing that

they would be viewed as low-class, most would try to speak Spanish instead. In response, the community forestry project implemented a policy wherein all community meetings under the project would be held in the local language, translating to Spanish for outsiders when their input is needed. Furthermore, community forestry has empowered rural communities by defining their position in society. In Guatemala, Honduras, and Bolivia, for example, forest management initiatives have helped local people acquire legal titles to forests, giving them real and enforceable power as stakeholders in forest management.

Although such achievements are important, they are relatively insignificant when considering the large number of community forest management initiatives that have been piloted. Several internal challenges often crop up as obstacles to success, such as a lack of unity within many communities. There is a common tendency to view communities as monolithic and unified, but in reality there are always competing interests within communities. Such a lack of unity causes problems at every turn. To overcome this, communities need to identify common objectives at the outset. Such objectives must be realistic and based on technical information, and there is a need to communicate and debate these objectives both within the community and without. Ultimately, decisions made by community forestry organizations must balance long-term objectives, forest conservation goals, and community needs for immediate income and economic development. In addition, forestry goals should be integrated with and complementary to other aspects of community life. Further challenges for communities include the constant need to learn new scientific techniques, to increase the efficiency of business administration, and to hone their skills in critical analysis of project progress over time.

There are also major external challenges limiting the number of community forestry successes. An important external challenge is the need to control illegal logging by outsiders. Without such activity under control, sustainable forestry by local groups is impossible. There is also

a real difficulty on the part of communities in gaining equal access to markets, information, and alliances with major development institutions; and it is often difficult for community organizations to gain access to facilities, education, and state services. Furthermore, in general, rural communities have limited access to infrastructure, health care, credit, tools, and equipment. Such inequity of access to basic information, partnerships and tools is a major obstacle—local groups managing forests must be considered equal partners and have equal access to resources if they are to be successful.

Sustainable forestry depends on the meaningful involvement of rural communities. Despite the challenges outlined above, it is imperative that community forestry efforts continue to promote local control. Through increased learning and interchange between all actors, community forestry can move forward and achieve more successes in the future.



Processing timber at a community forestry project in El Salvador

CHARLES PETERS

Kate E. Tode Curator of Botany, Institute of Economic Botany
New York Botanical Garden



Dr. Peters began his presentation by critiquing the title of the forum: "Can local involvement contribute to sustainable forestry in the tropics?" He believes that the answer is always a resounding "yes." For the past 20 years, Dr. Peters has been involved in a variety of community forestry projects around the world, and in his experience he has seen many efforts succeed and many fail. His presentation summarized some of the basic ingredients that make for a successful community forestry project.

Social factors are the most important ingredients for success, followed by economic factors, and the long-term ecological sustainability of project activities. First and foremost among the social factors is the need for the target community to have some degree of self-organization. Existing community controls over natural resources, often embedded in local cultural traditions, help to ensure project success. Local leadership and the presence of charismatic community members willing to represent the interests of the project are key to pushing projects forward.

In terms of economic factors, there must be an available market which has the potential for growth so that the operation can sustain itself over the long term. Some projects fail because they are in competition for markets with other community projects in the same locality. For economic success, the licensing and other overhead costs associated with community forestry cannot be prohibitively expensive. Finally, ecological factors must also be taken into consideration. One important preliminary conclusion that Dr. Peters has reached is that low-diversity forests are perhaps more amenable to community forestry operations than highly diverse forests.

"Low-diversity forests are perhaps more amenable to community forestry operations than highly diverse forests"

— Charles Peters

Dr. Peters then presented two projects on which he has worked that he considers relatively successful. The first is an effort in the Mexican state of Oaxaca involving community management for a wood species used to make non-traditional painted crafts. The local handicrafts—small wooden animals—were first painted by parents for their children in the mid-1970s. They are now sold in craft stores throughout the United States, and over the past 25-30 years they have become an enormous export earner for Mexico. The problem is that the vast majority of the crafts are made from a single tree species which occurs only in tropical dry forest, one of the most endangered and least protected plant communities in Mexico. When the project began, craftspeople were buying wood harvested illicitly from a biosphere reserve.

In 1999, Dr. Peters began working with a community near a large area of tropical dry forest. He began by interviewing villagers and asking them if they knew about the importance of the dry forest tree species to the handicraft industry—most did not. After ensuring that the community was interested in managing the forest for that species, Dr. Peters worked together with the community to conduct a forest inventory and develop a detailed management plan in a process that lasted about three years. When submitted to the authorities, this management plan represented the first request to the government for a permit to manage dry forest in the history of Mexico. Almost as a rule, dry forest is not managed—it is cut down and converted to pasture. This case therefore illustrates how community management can sustainably supply the raw materials for an important commodity while conserving an endangered forest type.

The second example is an extractive reserve in Brazil. The reserve was created in 1998 and covers 640,000 hectares. There are 17 indigenous communities living in the reserve, three of which were interested in starting a small furniture-making enterprise. This was possible because some of the newer reserves in Brazil have provisions that allow communities to fell trees if they plan on selling value-added wood

products. As in Mexico, Dr. Peters worked with the communities to develop management plans which were submitted to the local government for permits. Upon approval, the communities were granted a 200-hectare management area, within which there are 55 species useful for furniture making. This management area, while small in comparison to the whole reserve, will produce ample raw materials for their furniture enterprise—even if their market expands to 100 times its current level. At present, the groups participating in the project have completed forest inventories and have begun growth projections, marking fallen dead wood for furniture construction in the meantime. Significantly, both men and women participate in the fieldwork, which is not always the case in community forestry efforts.

In closing, Dr. Peters stressed how community forestry can ensure sustainability in a way that commercial forestry cannot. First, the transfer of technology and forestry skills to local communities and their resulting ability to manage their own resources is one important benefit of community forestry. Second, the resolution of conflicts over resource control through the allocation of rights to communities is an important benefit. By extension, community empowerment as a result of real and enforceable rights is a clear social benefit. Finally, the revenues generated from successful projects bring economic development, which is very important. Ultimately, however, the social aspects are the most important benefits of community forestry. In short, to answer the question posed by the forum title, community management is the only real alternative for achieving sustainability in tropical forests.

**GLENN GALLOWAY**

Leader, Transforma Project and Professor
Tropical Agricultural Research and Higher Education Center (CATIE)

Professor Galloway works together with communities throughout Central America to plan and implement community forestry projects, working with various stakeholders operating within a complex network. First, there are institutions—including groups that use the forest, public and non-governmental institutions, universities, and technical schools. Second, the forest ecosystem itself must be considered in order to design management systems that are ecologically sound and sustainable. Finally, market demands must be met in order to run a financially viable operation that provides for economic development. In an ideal world, this triangular network works well, and the twin goals of poverty alleviation and forest conservation are achieved. In reality, any number of linkages in the working network essential for successful community forestry can fail to connect, hindering the success of such efforts.

"One of the most serious bottlenecks to success in Central America and throughout the tropics is lack of an enabling political-legal framework."

— Glenn Galloway

Many of CATIE's activities are focused on attempts to strengthen linkages amongst the various stakeholders involved. CATIE has an extensive training program—over the past six years, more than 8,000 people have been trained in various aspects of sustainable forest management. CATIE also produces a large number of publications for use by universities and technical schools. A priority has been producing texts and manuals that draw on forest management and silvicultural experiences in Central America, rather than the United States or Europe, where the vast majority of forestry texts are produced.

Another key area of CATIE's work is in teaching locals who then serve as trainers in their own communities. This approach recognizes that much of the training can be performed by community members, once they have received adequate instruction themselves. Community exchanges are also facilitated by CATIE. In these exercises, instead of having technical staff work with locals, different communities working on similar efforts share experiences and advice with each other.

To strengthen the sustainability of forestry operations, CATIE has worked with communities to implement reduced-impact logging techniques. Various measures such as directional felling and harvesting techniques that ensure natural regeneration are helping to ensure ecological sustainability. Furthermore, CATIE works to increase market linkages, promoting the production of value-added products and disseminating information to communities about the market demand for various forest products. In this and other activities, CATIE promotes the diversification of forest products for market sale. In a few areas, CATIE has worked with communities to promote ecotourism, allowing visitors to see participatory forest management in action and learn about forest ecology along the way.

A key element to success in any project is local community organization. In some cases, many of the above linkages can be strong—the technical abilities may be there, the forest ecosystem may be sustainably managed, there may be strong market demand—but the operation does not achieve success because of the inequitable distribution of benefits. CATIE therefore works to improve the administrative side of forestry operations, to ensure that there is adequate sharing of the benefits of community forestry. It is important to encourage wide participation in forestry activities, rather than simply having one group within the community do all the work and collect all the benefits. For example, women are encouraged to play a bigger role in project planning and management.

One of the most serious bottlenecks to success in Central America and throughout the tropics is lack of an enabling political-legal framework. CATIE therefore works with government agencies to streamline management systems to be more efficient and responsive to community led forestry efforts. At the same time, CATIE works at the national and regional levels to create criteria and indicators for sustainable forestry, as well as "best practice" guidelines for forest management.

But how does all this contribute to achieving overall goals of forest conservation? Professor Galloway showed a satellite photo of northern Guatemala in the year 2000. He pointed out that there was much more forest cover in the areas concessioned out to communities than in the adjacent national park. Community control, therefore, seems to be resulting in better control of fire, illegal logging, and agricultural expansion than protected area management. By empowering people and giving them control over the resource, they become allies rather than sources of problems.

It is clear that community forestry is a complex endeavor. It involves many stakeholders and relies on linkages between many different dynamic processes. It is not a simple thing to achieve the cooperation of diverse stakeholders, to ensure ecological sustainability, and to link operations to the market. The challenge is to balance these sometimes competing interests, while ensuring broad participation amongst community members. Community forestry is still new in Central America, and there is ample cause for optimism that it will continue to grow.



Sawmill operations in Peten, Guatemala

SPENCER ORTIZ

President and Representative
Fundación Naturaleza para la Vida



Mr. Ortiz began his talk by re-emphasizing the extent to which community forestry is a complex and difficult task. The complexity of managing such efforts, Ortiz said, comes down to balancing three major elements: community needs, opportunities, and objectives. Community needs and opportunities are often complementary, but what makes community forestry efforts difficult is the need to balance these with differing objectives. The challenge is to find and sustain harmony within groups of individuals associated with the forest resource.

A good example of the processes involved in this balancing act can be found in the experience of implementing community forestry in Guatemala. Understanding community forestry in Guatemala requires a basic understanding of the overall national situation. The population of the country in 2001 was about 12 million, with a projected population of 21 million by 2025. Sixty-six percent of the population is indigenous, speaking 23 different dialects, highlighting the tremendous ethnic diversity of the country.

Though the country is rich in culture, it is relatively poor by other measures. The illiteracy rate is 40%, high for Latin America. Eighty-six percent of the population is living in poverty, 10% of which is considered extreme. Unemployment is 40%, and inflation stands at a rate of 10%. Forest conservation is another challenge the country faces: deforestation is occurring at a rate of 90,000 hectares per year. Protected area legislation did not start until 1989, but now 27.6% (3.2 million hectares) of the national territory is in protected areas. Despite these protections on paper, 73% of the annual deforestation occurs in protected areas.

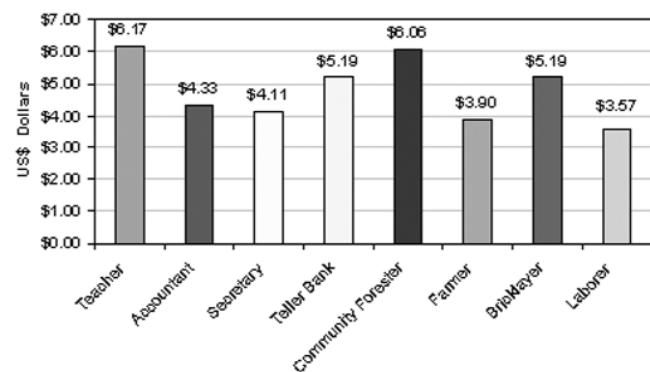
The most important prerequisite to community forestry in Guatemala was the end of the 32-year internal armed conflict. At the end of the

"With the increase of community forestry, deforestation rates in the country have dropped"

— Spencer Ortiz

war, it was found that a considerable area of the country was still in forest because the conflict limited access to remote forest areas, which elsewhere in Central America have been converted largely to pasture. Since the government has prioritized the need for rural development and local control, there is an enabling ecological and political context for community forestry to flourish. Moreover, international aid and the energetic participation of local and international non-governmental organizations have also made community forestry possible.

At present there are around 15 to 20 communities participating in community forestry in Petén. Community forestry is particularly important in the multiple use zone of the Maya Biosphere Reserve. Products sourced from community-managed forests include timber, toys, handicrafts, agricultural products, woodwork, chicle (chewing gum), and other non-timber forest products. Such locally sourced products have resulted in substantial income improvement for local communities. More specifically, the work of managing community forests has proven to be profitable itself: community foresters earn an income that is generally better than other professions in Guatemala (see below).



Comparative incomes for professions in Guatemala

Forest products represent an important and growing sector in the national economy, generating more than three times the income generated from tourism. The income gained by families participating in community forestry gives them purchasing power, thus empowering them in the market and stimulating more local economic growth. Though timber provides an important source of income for many, the work involved with harvesting, processing and marketing (sometimes value-added) non-timber forest products creates more actual workdays per year, resulting in higher incomes and economic activity for communities.

But how is community forestry contributing to conservation goals? Ortiz stressed that while it is important to measure success according to community needs or national economic development, there is also a need to measure at the scale of its overall impact on forest conservation. At present, the data look promising: with the increase of community forestry, deforestation rates in the country have dropped from 25,000 hectares per year from 1989-94 to 1,000 hectares per year from 1995 to 2002. In addition, fire events have been found to be fewer in locally managed forest concessions as compared to forested areas not in concessions, even in protected areas. Not surprisingly, non-concession forests also appear to be at a higher risk for agricultural encroachment.

As for the future of community forestry in Guatemala, it seems clear that it should be expanded in order to build on successes achieved thus far for communities, the nation at large, and the country's remaining forests. One important tool that can help to expand the area in concessions and build on community forestry's achievements is forest certification. The government has promoted this tool and is open to further facilitating the certification of community-managed forests. Certification programs, specifically that of the Forest Stewardship Council, have had positive social, economic, and environmental effects thus far, and should be built upon in the future.



Discussion Summary

Following is a summary of the panel's responses to issues raised by the audience.

Reconciliation of economic with social aspects

Charles Peters

Over the years, I have become better at selecting the sites where I choose to try to implement community forestry. The key is to select communities that already have the necessary social structures in place. In this way, the most difficult issues are already taken care of—the social organizational elements. Without this in place, the economic and ecological goals are very difficult to achieve. Clearly, the economic factors are the motivating force for the communities to participate in projects: these constitute the incentive, the benefits the communities can get from undertaking the work. So the importance of the social and economic factors are clear, and I think where we are working things are progressing well. Now we have to wait to see if the communities will take care to achieve the ecological goals.

Glenn Galloway

In the Transforma project, we first look to support communities that are already involved in forest management. This has helped avoid serious organizational problems. In some of the indigenous communities that were not doing forest management, we had to start with developing community organization, and this constituted a major challenge that needed to be tackled before moving into any other activities. Therefore, the social issues have to take primacy in planning such efforts.

Sustainability of funding resources

Glenn Galloway

There has been much outside support to community forestry, but it is very important to reduce costs. One strategy is the strengthening of local capacity. We want people from the regions to take on the roles that were, in the past, taken on by international organizations. Capacity building and training should therefore be included in community

forestry projects. In this way, it is hoped that funding for future initiatives can be garnered in the countries where such work is ongoing, rather than relying on external sources.

Bastiaan Louman

It is also important to identify the services provided by these projects, such as carbon sequestration, the maintenance of biodiversity, and the protection of water quality. Some countries, like Costa Rica, have started to put economic values on such services. With the full sweep of economic benefits of community forestry accounted for, there are more opportunities for finding more financial support for such work.

Contributions of technology to the sustainability of community forestry

Glenn Galloway

There is clearly a great deal of potential for technology to contribute to the success of community forestry efforts, especially in the area of marketing. For example, in one CATIE project, we are developing a web-based marketing tool for products from sustainably-managed forests.

Charles Peters

When thinking about technology transfer, it ultimately depends on the community we are talking about. That is, in some communities we're just working on getting electricity. That is the level of "technology transfer" in such cases. There is a lot to be done, and a lot that can be offered, but going from electricity to literacy to the internet is a huge leap, and it could be a bit bewildering if brought in prematurely.

Adding value to timber by processing

Bastiaan Louman

This can be an important way to create more economic activity, but it really depends on the community and the markets. In some cases, communities would actually lose money by selling their goods as finished products because of the additional work and management

necessary. Perhaps in such cases a good option is for communities to be partners in alliances with companies processing timber. In this way, communities might also be able to develop some of the skills necessary to run things themselves in a way that would be profitable over the long term.

Spencer Ortiz

Bastiaan raises a good point, and we have some industries that will pursue joint ventures with communities. These industries will absorb some of the costs, and the idea is that costs are shared. So, some experience shows that this may work well.

Bastiaan Louman

To add to this point, however, I would emphasize that we have found that the more expensive, valuable timber should be sold unprocessed because it is very costly to process. Some of the less valuable species can be processed, like *Gmelina* for example, because without processing, there is no market for this wood.

Glenn Galloway

On the marketing issue in general, it is important to start with very local markets. Especially when working with lesser-known species, you are limited to local markets.

Community exchange

Glenn Galloway

It's very important for communities to visit other communities where community forestry is working in order to see that it's possible. We have found that such exercises have been very effective in mobilizing support for community forestry, and in sharing experiences that can help new efforts to achieve success. In general, such meetings between communities are less about sharing technological skills than they are about creating a support network. One community can show another that it is possible to have a successful project, and this helps move the whole enterprise of community forestry forward.

Case Examples



Community Forestry at Work in Latin America

Dr. Florencia Montagnini

Below are two examples of community forestry projects operating in the tropics, presented here to provide concrete details on how such projects are working on the ground in Latin America.

Case 1: Community forestry concessions in Petén, Guatemala

Community forestry concessions in Petén, Guatemala provide an excellent example of communal involvement in forestry project planning and execution, demonstrating that sustainable forestry practices can coexist with forest protection and the preservation of cultural values.

The national system of protected areas in Guatemala encompasses 3 million hectares, or 28% of the country. Eighty percent of the protected areas are found in the province of Petén. Archaeological data show that the Maya had settled large towns and were trading long distances in this region as far back as 500 BC.

Forest extraction of chicle (gum) from *Manilkara zapota* started around 1940, and modern settlement of the region was completed by 1960. Since then, the population has grown significantly from about 20,000 people to over a half million in 2000. Along with population growth, forest cover declined from 90% to less than 50% over this time period as forests were replaced by shifting agricultural systems. Contracts for forest exploitation were granted in 1970-1980, focusing on industrial extraction of mahogany (*Swietenia macrophylla*) and cedar (*Cedrela* spp). These contracts were granted without forest management plans.

In response to forest degradation, the National Council of Protected Areas (CONAP) was founded in 1989. A year later, the Maya Biosphere Reserve (MBR) was created, encompassing over 2.1 million hectares, and CONAP was given management authority of MBR. The restrictions posed by CONAP on the use of natural resources provoked social conflict,

and much of the local population of Petén turned against CONAP. The result was illegal extraction of forest resources (including timber, palms, and faunal wildlife), as well as increases in immigration and agricultural encroachment into forest areas.

Recognizing these conflicts, a master plan for MBR was begun in 1992 with the twin objectives of protecting biodiversity and promoting sustainable use of natural resources. A zoning system delineated three zones: a nucleus (the core zone of the park, strictly protected, with no extractive use permitted); a multiple use zone; and a buffer zone. Funding has come from USAID, and technical assistance provided by the Tropical Agricultural Research and Higher Education Center (CATIE), local community groups, and non-governmental organizations.

The first concession was granted in 1994. As of 2002, a total of 16 forestry concessions, dubbed management units (MUs), had been granted (14 community concessions, 2 industrial concessions) in almost 600,000 hectares in the multiple-use zone. Forest cover in the concessions is over 98%, and the beneficiaries include approximately 7000 people in 1300 families. These concessions allowed use of natural resources and thus transformed the communities into allies of CONAP with respect to resource protection. In the community concessions, forest management is allowed as well as extraction of non-timber forest products, agricultural activities and tourism. In the industrial concessions, however, only timber extraction is allowed. In both types of concessions, forest certification must be obtained and maintained for the duration of the contract, 25 years.

"La Carmelita" is one example of a well functioning MU. It covers an area of almost 54,000 hectares of natural broadleaf forest, of which 43,000 are protected, 10,000 are managed, and 630 are used for agriculture. In addition, this MU contains a total of 29 archeological sites. The community of Carmelita was founded around 1900, and its main extractive activity was the latex of the *Manilkara achras* (chico zapote) tree. Later, the community dedicated itself to the extraction of

the xate palm (*Chamaedorea spp.*) and black pepper (*Pimenta dioica*). Traditional agriculture was almost non-existent. Presently, the community is comprised of 76 families.

A community forestry concession was granted to Carmelita in 1997. Their management plan calls for a cutting cycle of 40 years, with an annual operating area of 400 hectares. Minimum diameters for cutting are 55 cm for primary species and 45 cm for less known species. Only about 1.5-2.5 trees of the most valuable species (mahogany) are extracted per hectare, a very low volume for a profitable operation. Most of the production is sawtimber that is exported to the USA.

The Carmelita Cooperative was granted Forest Stewardship Council certification through a SmartWood forest management assessment in 1999. Certification, which can be an expensive process for the community, must be periodically renewed for the duration of the concession contract. An alternative to hiring certification professionals would be to train local personnel in the certification process. The community could also consider using less known timber species in addition to mahogany and cedar, and selling environmental services, provided there are markets.

Case 2: Community-managed land use systems at Coope-San Juan, Costa Rica

One example of community forestry from Costa Rica is the Coope-San Juan Agricultural Cooperative, in Aguas Zarcas, north-eastern Costa Rica, a farmers' cooperative which, in addition to conventional agricultural activities, manages their natural forest for eco-tourism and non-timber forest products. This cooperative has 16 members (11 men and 5 women) who, along with their families, form a community of about 56 people. They collectively own 400 hectares of land, half of which is covered with primary forest. They are keeping this forest intact, have marked trails for tourism, and are expecting to obtain payment for environmental services such as carbon sequestration from government programs currently available in Costa Rica. On most of their agricultural

land, the community keeps a dairy farm and sells milk locally. They also grow cocoa and plantains for commercial sale.

The community manages non-timber forest species for sale, including a medicinal plant raicilla or ipecacuana (*Cephaelis ipecacuana*), which they grow in the natural forest understory. There is an export market for ipecacuana in Germany and Belgium. In addition, the community has been reforesting portions of degraded agricultural land since 1987 with native and exotic species, often using mixed-species planting schemes.

Cooperatives such as Coope-San Juan are a promising model for more environmentally-friendly forestry systems at small to medium scales. For these systems to be successful, there may be a need for initial economic incentives and training programs. Training in cooperative management and administration, as well as in the technical aspects of sustainable forest and agricultural management techniques, may also be necessary.



Dr. Florencia Montagnini (third from right) with members of a community forestry project in El Salvador



Resources for More Information

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Resources for More Information

Asia Forest Network

Community Forestry Projects

www.mekonginfo.org

Center for International Forestry Research

www.cifor.cgiar.org

Centro Agronómico Tropical de Investigación y Enseñanza (CATIE)

(Tropical Agricultural Research and Higher Education Center)

www.catie.ac.cr

Community Forestry International

www.communityforestryinternational.org

Food and Agriculture Organization of the United Nations – Forestry

www.fao.org/forestry

Forests, Trees & People Program and Network

www-trees.slu.se

Fundación Naturaleza para la Vida, Petén, Guatemala

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International Network of Forests and Communities

www.forestsandcommunities.org

Overseas Development Institute, Forest Policy and Environment Group

www.odifpeg.org.uk

Regional Community Forestry Training Center for Asia and the Pacific

www.recoftc.org

Sustainable Development Institute

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The Yale Forest Forum (YFF) was established in 1994 by a diverse group of leaders in forestry to focus national attention on forest policy and management in the United States. The group convened the Seventh American Forest Congress (SAFC) to collaboratively develop and articulate a common vision of forest management to diverse stakeholders.

For over 100 years, the Yale School of Forestry and Environmental Studies (FES) has had a rich history in the pursuit of sustainable forestry. From the establishment of the School in 1901 Yale has played an integral role in the development of leaders who are prepared to confront the environmental challenges of the day.



Marsh Hall, home of GISF,
on the Yale University campus

The School's Global Institute of Sustainable Forestry (GISF), housed in historic Marsh Hall, continues this rich tradition. Established by the Dean and a group of FES faculty members in 2000, GISF has launched new, innovative initiatives while coalescing and coordinating the many activities related to sustainable forest management at the School, including the School Forests and the Yale Forest Forum. The Institute was created to address the management and conservation of both domestic and international forestlands in a holistic and comprehensive fashion. In pursuit of these ideals, GISF has developed several formal programs including the Program on Private Forests, the Program on Forest Certification, The Forests Dialogue, the Program on Forest Physiology and Biotechnology, the Program on Landscape Management, and the Program in Tropical Forestry.

The Yale Forest Forum is now the convening body of the Global Institute of Sustainable Forestry. Through YFF, GISF often holds multiple events each week at the Yale School of Forestry and Environmental Studies, and hosts workshops and seminars held outside the School, involving stakeholders from all sectors.

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