

A CUT FOR THE POOR

**Proceedings of the International Conference on
Managing Forests for Poverty Reduction:
Capturing Opportunities in Forest Harvesting and
Wood Processing for the Benefit of the Poor**

Ho Chi Minh City, Viet Nam
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The **Food and Agriculture Organization of the United Nations (FAO)** leads international efforts to defeat hunger by helping countries improve agriculture, forestry and fisheries practices and ensuring good nutrition for all. FAO is also a leading source of knowledge and information on agriculture, forestry and fisheries, and acts as a neutral forum where all nations meet as equals to negotiate agreements and debate policy. FAO's mission in forestry is to enhance human well-being through support to member countries in the sustainable management of the world's trees and forests.

The **Regional Community Forestry Training Center for Asia and the Pacific (RECOFTC)** is an international not-for-profit organization based in Bangkok, Thailand, that supports community forestry and community-based natural resource management. RECOFTC receives core funding from the Swedish International Development Cooperation Agency (SIDA), the Swiss Agency for Development and Cooperation (SDC) and the Norwegian Ministry of Foreign Affairs. Through strategic partnerships and collaboration with governmental and non-governmental institutions, programs, projects and networks, RECOFTC aims to enhance capacity at all levels and promote constructive multi-stakeholder dialogues and interactions to ensure equitable and sustainable management of forest resources.

SNV (Netherlands Development Organisation) is a Netherlands-based international NGO that delivers capacity building advisory services to over 1,800 clients in 33 countries in Africa, Asia, Latin America and the Balkans. In Asia, SNV provides capacity building services to government, non-government and private sector organizations in Nepal, Viet Nam, Bhutan, Lao People's Democratic Republic, Cambodia and Bangladesh, as well as to a number of regional organizations and networks. SNV aims to achieve development results in two areas: (1) basic services delivery (water & sanitation, energy, health and education); and (2) production, income and job creation. Our niche in specific sub sectors (such as pro-poor tourism, Non-Timber Forest Products, biogas sector development, clean development mechanism, value chain development and participatory planning) is widely recognized and closely linked to National Development Strategies.

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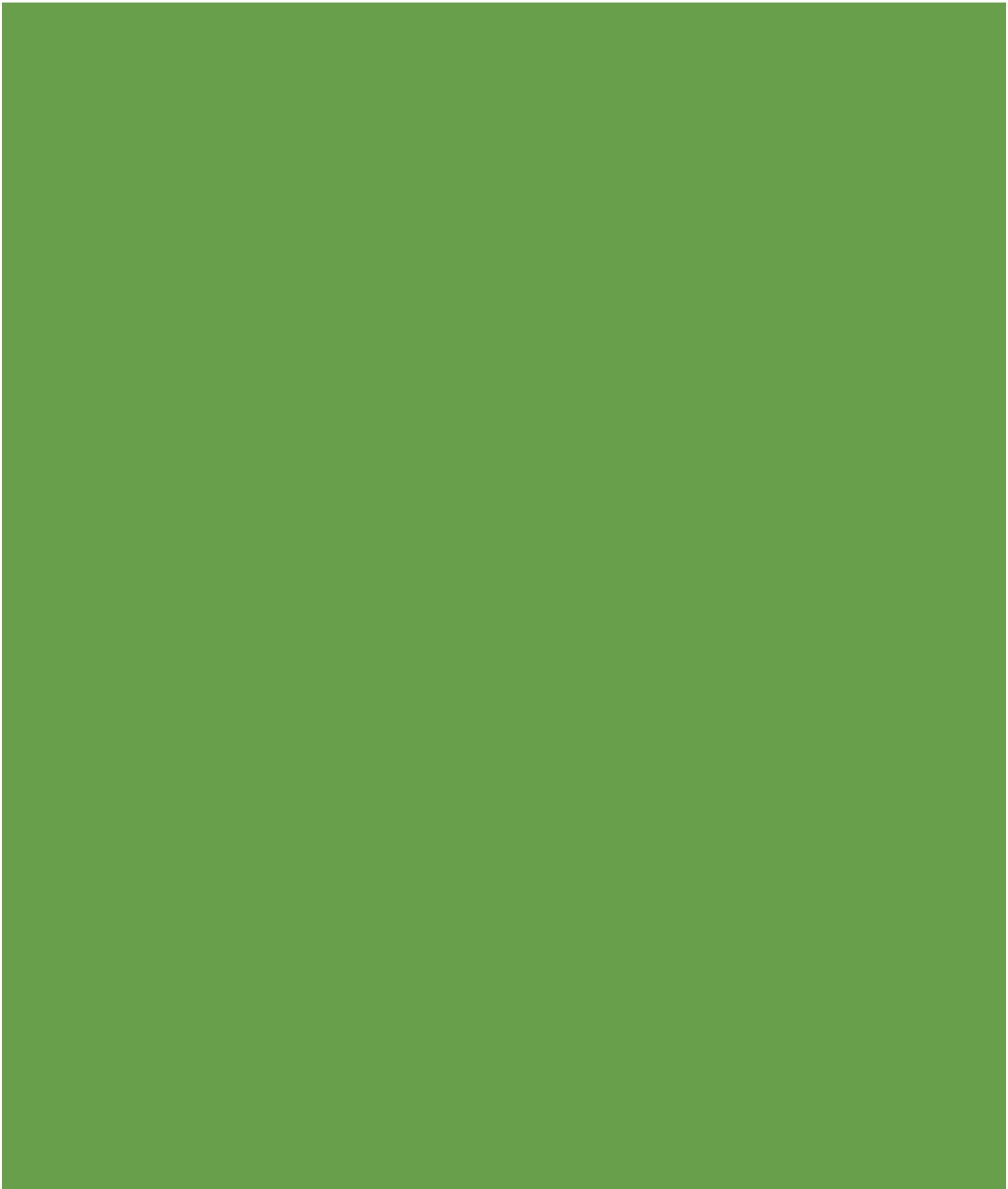
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FOREWORD



Approximately one-third of the world's 4 billion hectares of forests are managed primarily for the production of wood and other forest products (FAO 2005). Timber production often conjures images of capital intensive operations, big machines and large profits for a small handful of people. With poverty rates often being highest in forested areas, we thought it timely to initiate further discussion on how timber production from forests can be better harnessed for poverty reduction, particularly the role of small-scale commercial forestry in opening opportunities for the poor to benefit from forest harvesting and wood processing.

The idea for a conference was discussed initially by the Food and Agriculture Organization of the United Nations (FAO), the Regional Community Forestry and Training Center for Asia and the Pacific (RECOFTC) and the Netherlands Development Organisation (SNV). Many other interested parties joined this discussion, including the Ministry of Agriculture and Rural Development of Viet Nam, who hosted the conference, the Tropical Forest Trust (TFT), the Worldwide Fund for Nature (WWF), and the Asia-Pacific Forestry Commission (APFC). Generous funding was provided by the International Tropical Timber Organisation (ITTO) and the Netherlands Ministry of Foreign Affairs Directorate-General for International Cooperation (DGIS).

The conference aimed to:

1. Review technical, economic, institutional and policy aspects of small-scale and labor-intensive forest management practices and wood processing with regard to their impacts on the poor and their potential for reducing poverty.
2. Identify constraints to, and opportunities for, managing forests and processing activities with poverty alleviation as an explicit objective in Asia and the Pacific.
3. Establish a task force that will develop a strategic plan for promoting forest management for poverty alleviation by encouraging support for small-scale forest and labor-intensive forest management practices and wood processing.

The program was developed to engage a large number of resource persons to elaborate experiences in the field of poverty reduction through small-scale timber production. The conference was centered around five sessions, focusing respectively on policies and legislation, economic issues, institutional issues, and technical aspects of small-scale timber production. The sharing of experiences from Latin America, Africa and Asia made the conference a truly international event.

The conference brought together the emerging themes into a declaration that targets key areas for attention by policy makers, the private sector, practitioners and communities. The challenge now is to take forward the agenda and ideas for further action defined at the Ho Chi Minh City Conference. We look forward to working with our many partners in the region to make this a reality.

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The *International Conference on Managing Forests for Poverty Reduction: Capturing Opportunities in Forest Harvesting and Wood Processing for the Benefit of the Poor*, would not have been possible without the energy and dedication of a core group of people, who jointly conceptualized, developed and organized the conference. These include: Thomas Enters, Patrick Durst and Pernille Lausen Hansen (FAO), Sango Mahanty (RECOFTC), Arthur Ebregt (SNV) Simon Greenaway and Vu Nam (TFT), and Pham Minh Thoa (MARD).

Staff from SNV (Pham Thu Hang), RECOFTC (Wallaya Pinprayoon and Boontida Moungrimuangdee) and FAO (Pernille Lausen Hansen) provided logistical and administrative support to facilitate participants' travel, prepare supporting materials, and coordinate program arrangements.

Viet Nam was an excellent venue for the conference. The support of the Department of Forestry (DoF), Ministry of Agriculture and Rural Development of Viet Nam (MARD) in hosting the event was greatly appreciated, in particular the Director General of DoF, Nguyen Ngoc Binh and his colleagues Pham Minh Thoa, Vo Dinh Tuyen, Do Tien Dzung, Trinh Thi Thanh Ha, Kim Thi Kieu Anh and Bui Tuan Giang of DoF, and the Deputy Director of International Cooperation Department of MARD, Tran Kim Long and his colleagues Pham Trong Hien and Nguyen Thi Luan.

The engagement of our MARD colleagues helped to create a positive atmosphere for discussion and to arrange a good selection of field trips for participants, with the valuable cooperation and support of the Sub-Department of Forestry of Ho Chi Minh City, Can Gio Reserve Zone in Ho Chi Minh City, Tan Mai Paper Company in Dong Nai Province, Nam Trung Joint Stock Company and Long Viet Joint Stock Company in Binh Duong Province. Support for the field trips was also provided by Catherine Mackenzie and Harm Duiker (SNV), and Vu Nam (TFT).

The conference included many stimulating presentations by a wide range of resource persons who generously shared their experiences with the participants. Katherine Warner (IUCN) and Gary Dunning (TFD) did an excellent job in setting the scene for discussion on the days that followed with their keynote addresses. We also thank all of the other presenters: Pascal Cuny (SNV), Patrick C. Dugan (Bagong Pagasa Foundation) and Juan Pulhin (University of Los Banos), Bao Huy (Tay Nguyen University), Steve Gretzinger (WWF), Padam Chand and K.B. Ghimiri (former Nepal-Australia Community Resource Management and Livelihoods Programme), Mark Kelly (URS Forestry), James Bampton (DFID Livelihoods and Forestry Programme), Krishna Acharya (Department of Forest Research and Survey), Hans Beukeboom (Helvetas), Ben Vickers (SNV), Bernhard Mohns (Lao-German Programme on Rural Development), Michelle Pinard (University of Aberdeen), Anda Akivi (PNG Forest Research Institute), Jim Birkemeier (Timbergreen Forestry), Scott Landis (GreenWood), Duncan Macqueen (IIED), Robin Barr (TFT), Christoph Muziol (SPC/GTZ Pacific-German Regional Forestry Project) and John Marsh (Oxfam). Thanks also to Juan Pulhin for facilitating the working group on the Conference Declaration with support from Rowena Soriaga, and Hartmut Holznecht for facilitating the working group to identify follow up actions.

The editorial team for these proceedings included: Robert Oberndorf, Sango Mahanty, Kenneth Burslem and Erica Lee of RECOFTC, and Regan Suzuki and Patrick Durst, FAO.

Last, but certainly not least, the conference would not have been possible without the generous financial support of ITTO and the Netherlands Government (DGIS), for which the organizers express their sincere gratitude.

LIST OF COMMONLY CITED ACRONYMS AND ABBREVIATIONS

<i>AAC</i>	Annual allowable cut
<i>AFR</i>	Annual forest royalties
<i>APFC</i>	Asia-Pacific Forestry Commission
<i>BZ</i>	Buffer-zone
<i>CBFM</i>	Community-Based Forest Management
<i>CF</i>	Community forestry
<i>CFM</i>	Community Forest Management
<i>CFUG</i>	Community Forest User Group
<i>CIAD</i>	Centre Internationale d'Appui an Developpement (Cameroon)
<i>CIFOR</i>	Center for International Forestry Research
<i>CTF</i>	Communal Tree Farming
<i>DARD</i>	Department of Agriculture and Rural Development (Viet Nam)
<i>DENR</i>	Department of Environment and Natural Resources (Philippines)
<i>DFID</i>	Department for International Development (UK)
<i>DGIS</i>	Ministry of Foreign Affairs, Directorate-General for International Cooperation (Netherlands)
<i>DoF</i>	Department of Forests (Viet Nam)
<i>EC</i>	Executive Committee
<i>FAO</i>	Food and Agriculture Organization of the United Nations
<i>FECOFUN</i>	Federation of Community Forest User Groups
<i>FSC</i>	Forest Stewardship Council
<i>GTZ</i>	Deutsche Gesellschaft fur Technische Zusammenarbeit (German Development Agency)
<i>GoN</i>	Government of Nepal
<i>IIED</i>	International Institute of Environment and Development
<i>ITTO</i>	International Tropical Timber Organisation
<i>IUCN</i>	World Conservation Union
<i>MAI</i>	Mean annual increment
<i>MARD</i>	Ministry of Agriculture and Rural Development
<i>MDG</i>	Millennium Development Goals
<i>MFSC</i>	Ministry of Forests and Soil Conservation (Nepal)
<i>MINEF</i>	Ministry of Environment and Forests (Cameroon)
<i>MINFOF</i>	Ministry of the Environment and Forestry (Cameroon)
<i>NACRMLP</i>	Nepal-Australia Community Resource Management and Livelihood Project
<i>NRs</i>	Nepalese Rupees
<i>NTFP</i>	Non-timber forest product
<i>NWFP</i>	Non-wood forest product
<i>PRSP</i>	Poverty Reduction Strategy Paper
<i>RECOFTC</i>	Regional Community Forestry Training Center for Asia and the Pacific
<i>RGoB</i>	Royal Government of Bhutan
<i>SDC</i>	Swiss Agency for Development and Cooperation
<i>SFE</i>	State Forest Enterprise
<i>SFF</i>	Society of Filipino Foresters
<i>SMFE</i>	Small and medium forest enterprise
<i>SNV</i>	Netherlands Development Organisation
<i>TCN</i>	Timber Corporation of Nepal
<i>TFD</i>	The Forests Dialogue
<i>TFT</i>	Tropical Forest Trust
<i>VND</i>	Viet Nam dong
<i>WWF</i>	Worldwide Fund for Nature

CONFERENCE DECLARATION

2006 HO CHI MINH CITY STATEMENT ON MANAGING FORESTS FOR POVERTY REDUCTION 3-6 OCTOBER 2006 HO CHI MINH CITY, VIET NAM

In consideration of the following:

- The Millennium Development Goals aim, among others, to halve poverty by 2015 and promote environmental stability.
- Forests can greatly contribute to poverty reduction while providing environmental services, considering their vast coverage, abundant resources, and the millions of people depending on them for subsistence and survival.
- Demands on forests and trees are increasing, with about 1.6 billion people relying heavily on forest resources for their livelihoods.
- Some 350 million of the world's poorest people are heavily dependent on forests for their survival.
- In most forested areas, the biggest value and income opportunities come from timber harvesting and wood processing.
- Forest resources can generate substantial capital and spur economic growth but forest wealth has generally not been shared equitably, especially with the rural poor and disadvantaged.
- Community management and protection responsibilities already provide services which must be recognized in the form of government compensation or payment for environmental services.
- Policy, institutional, socio-economic, market, and technical barriers exist in many countries, constraining the potential of forest management to reduce poverty.
- Policies, laws and rules are rarely well implemented in a way that reduces poverty, due to the lack of effective and efficient monitoring and control systems.
- Adherence to sustainable forest management principles and practices is fundamental to successful implementation of pro-poor programs and projects.
- Community-based forestry is one of the key strategies in promoting sustainable forest management and in reducing poverty in rural areas.



- Timber is often out of poor people's reach but, where rights and policy framework are favorable, evidence is growing that small and medium forestry enterprises can reduce poverty.
- New trends with respect to markets, technologies and institutions offer ample opportunities for employment and generate income in rural areas.
- There is a pressing need for the different stakeholders, including policy makers/decision-makers, development and donor organizations, development practitioners, the private sector, and local communities, to work collectively to enhance the contribution of forest management and timber harvesting in poverty reduction, thereby contributing to the overall achievement of the Millennium Development Goals.

THEREFORE, WE THE PARTICIPANTS OF THE 2006 INTERNATIONAL CONFERENCE
ON MANAGING FORESTS FOR POVERTY REDUCTION HEREBY CALL FOR:

Policy makers/Decision-makers to

1. Improve access to, and expand opportunities for management of forest resources by the poor, by creating or reviewing policies that will enable local communities and individual households to economically benefit from these resources, taking into account traditional rights, knowledge systems and social values.
2. Simplify forest policies, laws and regulations on forest resource allocation, harvesting, transporting, processing and marketing and benefit sharing and enforce them equitably.
3. Facilitate and promote formation and operation of community-based organizations and ensure their empowerment and capacity building.
4. Institutionalize a comprehensive support system and incentives to promote the development of community-based small and medium scale wood-based enterprises supportive of poverty alleviation.
5. Integrate forest and natural resources into the country's poverty reduction strategic plan.
6. Develop policies on devolution of sustainable forest management practices to include economic partnerships between communities/households and the private sector for achieving poverty reduction objectives.
7. Develop and strengthen partnerships of local communities with civil society organizations.
8. Ensure regular monitoring and evaluation of policy implementation.

Forest-related development organizations and donors to

1. Support and monitor the formulation and implementation of forest policies, programs and projects that will enable poor people to have access, control and benefits over valuable timber resources in addition to other forest resources.
2. Develop and implement initiatives and methodologies that strengthen the rights, capabilities and decision-making power by local communities to sustainably manage forest resources and benefit from the commercial use of these resources.
3. Facilitate effective dialogue and participatory planning and agreement among stakeholders (public sector, private sector, local communities) towards sustainable forest management and poverty reduction.
4. Facilitate design of methodologies and local development processes that will ensure that poor people will benefit most from sustainable forest management utilization and high value forest resources, using a people-centered development approach which promotes inclusion, equity, works in the context of the existing social, institutional framework and builds on indigenous knowledge.
5. Ensure sustainability of development initiatives and benefits to the poor after project completion.
6. Support and develop monitoring and evaluation mechanisms and research that assess socio-economic impacts and document and analyze the contribution of forests in poverty reduction.
7. Improve coordination between development and donor agents, and facilitate linkages between the private sector, the public sector and local communities in order to ensure their access to information and knowledge which promotes a pro-poor focus.
8. Promote pro-poor forest enterprise development which is market driven and pays attention to poor people's capacities and potentials (e.g. quick return silvo-pastoral systems, simple technology).
9. Raise awareness of how to link enterprise/business development with livelihood improvement processes which make sense to and are determined by the poor.



Private sector to

1. Contribute to the development and operation of small and medium forest enterprises that will be of mutual benefit and at the same time support poverty reduction activities.
2. Establish mutually beneficial partnerships (medium to long term) with local communities/ households and associations to harness the social economic potentials of sustainable forest management and utilization.
3. Apply appropriate technology, make investments in forest resource rehabilitation and human resource development, and promote market access for the poor people to benefit from forest harvesting and processing.
4. Improve their social responsibilities towards their own employees.

Local communities to

1. Establish meaningful partnerships with other stakeholders to sustainably manage forest and forest enterprises and maximize benefits from their operations.
2. Institutionalize local mechanisms to ensure more equitable benefit sharing and gender mainstreaming from responsible forest management and utilization.
3. Institute a sense of responsibility, accountability and transparency among local community members to ensure that harvesting privileges and management of group funds will not be misused.
4. Adopt business approaches to the management of their forest resources.
5. Ensure that the voices of women and other disadvantaged groups are represented in the decision making and benefit-sharing.
6. Mobilize their natural and human resources to generate financial and other social capitals.
7. Play a more proactive role in the policy-making processes for forest management such as land allocation, land use rights, forest product trades, etc.

OPENING STATEMENTS



WELCOME SPEECH BY
NGUYEN NGOC BINH
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MINISTRY OF AGRICULTURE AND RURAL
DEVELOPMENT OF VIET NAM



Esteemed Guests, Ladies and Gentlemen,

On behalf of the Ministry of Agriculture and Rural Development of the Socialist Republic of Viet Nam, I would like to welcome all esteemed guests and participants who have converged at this international conference on sustainable forest management for the sake of poverty reduction, an important event held in Ho Chi Minh City, one of the biggest centers that is providing services on processing, marketing and exporting agro-forest products and, thus, contributing to poverty reduction in Viet Nam.

Ladies and gentlemen,

Since the mid-eighties of the last century, Viet Nam started the renewal "Doi Moi". Under this innovative policy, economic transformation has generated vigorous progress in poverty reduction. The renewal has also enabled Viet Nam to integrate into various international initiatives and processes toward sustainable forest management, nature conservation and sustainable development in general. Numerous environment-related legal acts and national environmental programs/plans, such as the Law on Forest Protection and Development 1991 and 2004, the Land Law 1993 and 2003, Environment Law 1994 and 2005, the National Strategy on Comprehensive Growth and Poverty Reduction, the Agenda XXI of Viet Nam, and the National Action Program on Combating Desertification. were launched during 1990-2000. These major efforts to protect the environment in association with poverty reduction have demonstrated Viet Nam's continuous determination to protect land, water and forest as the most valuable natural assets that can contribute to improve peoples' livelihoods, mitigate natural disasters and control land degradation. Further, in 1990-2006, Viet Nam has reconfirmed its commitment to pursue environment protection and poverty reduction by putting its signature to a large number of international conventions and agreements on these crucial issues.

Economic growth, as an important factor, can boost exports. The renewal policy has revitalized private-sector development and fostered economic liberalization. The promotion of a rural credit system has further encouraged the private sector to undertake various initiatives and attracted long-term investments into agriculture and forestry.

According to the statistical data provided by the natural resource and environment sector, at present, the land designated to forestry accounts for 14.7 million ha (the total forestry land is planned to be expanded to 16.2 million ha by 2010), including 12.3 million ha of forested land. The remainder is currently maintained for natural rehabilitation of forest. Vast areas of forestry land are found in the Northern midlands and mountains (36%), and the North-central (21%) and Central Highlands (21%).

In Viet Nam, the number of people who live inside or in the vicinity of forest is estimated at 24-25 million, 3 million of which are customarily shifting cultivators (slash-and-burn cropping). The livelihood of these people is still heavily dependent on forest as they are encroaching on forest land for cropping or collecting non-timber forest products to make a living. Poverty and famine prevailing in extensive forestry-designated areas is, among others, a major cause of deforestation and deterioration of environment. Although several hunger-eradication and poverty-reduction programs have been implemented in the last decades, and famine and poverty has been significantly reduced, the rate of poverty remains rather high, especially amongst ethnic minorities and in remote areas, where the opportunities for income diversification are few and far between. Though economic growth has substantially contributed to poverty reduction, there are still many segments of the population who do not benefit from forestry development programs/policies and farm-based economy. Famine and poverty prevails mainly in mountain and remote rural areas due to the higher natural population growth rate, the lack of infrastructure, as well as the scarcity of employment opportunities. Giving priority to hunger-eradication and poverty-reduction programs along with comprehensive rural development, therefore, proves to be an indispensable policy that has been persistently followed by the Party and the Government of Viet Nam to wipe out poverty, promote sustainable economic growth and, as a result, improve forest management and environmental protection.

Thanks to the great efforts of the enterprises, the forest product processing has achieved very promising results. During the last three years, there is a significant growth in export value, from US\$ 1 million in 2004, to US\$ 1.57 million in 2005, and for this year it is estimated to reach US\$ 2 million. This makes forest owners and local people living in forest areas very happy and contributes to the poverty reduction process.

We are all aware of the tremendous value of forests in terms of the indispensable services they can provide to the entire society and population, including downstream communities. However, the direct benefits that the forest holders expect to earn is far below what they deserve to have.

In the past, our efforts to ensure proper forest management and proper environmental protection relied much on administrative remedies and enforceable countermeasures to eliminate forest devastation, rather than the introduction of efficient and innovative mechanisms to bring about more benefit to the people who are living in or around forest.

Apparently, the income gap between urban and rural people would expand and, consequently, the risk of environmental and natural resource depletion would become more severe if no proper focus of investment is given to agriculture, forestry and integrated rural development. Furthermore, with over 70% of the population living in rural areas, this risk can hamper and threaten the country's sustainable development down the road.

With deep awareness of these social implications of forests, the revised Law on Forest Protection and Development 2004 and the new National Forestry Development Strategy have placed special emphasis on maximizing the benefits that forests can provide to the people involved in forestry, while maintaining optimal forest services for the public. This guiding principle is expected to be achieved through improved investment in forest science and technology to increase the stock and acreage of forest vegetation, the yields of both natural and plantation forests, raise wood and non-wood forest products, speed up forestry land allocation to households and communities in upland areas, intensify agro-forestry practice (for example, the 5 million ha reforestation program and numerous internationally funded reforestation and poverty reduction projects), develop infrastructure in the most remote and poorest upland communes (Program 135) and provide direct assistance to the poorer ethnic minority households (Program 134).

With a package of policy tools, including that of forestry development, we do hope that poverty will be diminished faster and the newly defined goal of the Government on poverty reduction will be achieved.

In brief, in Viet Nam forest management in association with poverty reduction is undertaken under the following socio-economic conditions:

- Viet Nam is a highly populated country with a high population growth rate and acute population pressure on natural resources.
- People's livelihood is amongst the major causes leading to deforestation and degradation of natural resources, extension of marginalized land and, consequently, intensification of natural calamities in many regions of the country.
- Viet Nam is still regarded as a developing country, which was severely affected by warfare. The country is currently facing an under-developed infrastructure, economic stagnation, a high rate of poverty and illiteracy in mountain and remote areas, and limited resources needed for further development.
- The Government of Viet Nam is steadily advocating for diversification of international ties and speeding up international economic integration. This policy requires a positive response and significant support from the donor community, especially in the field of agriculture-forestry and environment protection.

The sustainable forest management program has been approved and piloted in all ecological zones of the country. This program offers a good ground for forest-management and poverty-reduction combined initiatives at the national level and calls for further technical and financial assistance from bilateral and multi-lateral donors to reinforce Viet Nam's efforts in sustainable forest management and, therefore, contribute to regional and global processes toward environmental protection and sustainable development.

On this occasion, I would like to express our sincere gratitude to the bilateral and multilateral organizations and NGOs for their valuable contribution to the promotion of sustainable forest management in Viet Nam. Our thanks also to those who technically and financially sponsored and co-organized this important event.

I wish you all good health and good success with our conference.

Thank you for your attention.

STATEMENT BY EMMANUEL ZE MEKA,
ASSISTANT DIRECTOR, REFORESTATION AND FOREST
MANAGEMENT, INTERNATIONAL TROPICAL TIMBER
ORGANIZATION (ITTO), YOKOHAMA, JAPAN



Mr Nguyen Ngoc Binh, Director General of Department of Forestry,
Ministry of Agriculture and Rural Development of Viet Nam,
Distinguished Guests, Ladies and Gentlemen,

I am most privileged to take the floor at this important conference on Managing Forests for Poverty Reduction. First of all, I would like to extend to you all the warm greetings of Dr Manoel Sobral Filho, Executive Director of ITTO, as well as his best wishes for the success of this Conference. I would also like to express our deep gratitude and appreciation to the Government and the people of Viet Nam for their warm hospitality and the nice facilities made available for this important meeting.

Poverty covers a wide range of considerations and perspectives, from the denial to meeting basic human needs, namely food, clothing, shelter, education and health care to the denial of human rights and opportunities. Despite its limitations, income poverty, which refers to limitations to meet the basic needs, might be appropriate for our discussions during this meeting. It is estimated that about 1.2 billion people, or about 20% of the world population live with less than US\$ 1 per day, which has been defined as the poverty line, although this definition does not reflect the whole significance of poverty, as already mentioned. Poverty reduction/alleviation or eradication has been high on the agenda of the international community for quite sometime now, with a peak in 2002 when the UN Millennium Development Goals were stated and the eradication of extreme poverty and hunger identified as one of the Goals.

The majority of the poor live in the tropics where forest resources are abundant. Discussing this apparent irony of the coexistence of abundant forest resources and rampant poverty is indeed unavoidable. In spite of the recognition of the importance of poverty reduction, the various debates surrounding it, and of some, but very limited, in number and in size, successful examples of forest management contributing to poverty reduction, some of which will be presented and discussed during this conference, the situation has not dramatically changed.

The question might then be raised whether the problem is tackled from an appropriate angle, whether we are on the right track? Poverty is a complex issue which requires many lines of action. However in connection with forest management, some strategic approaches may offer greater opportunities and few can be mentioned here.

Sustainability is the corner stone of addressing poverty reduction, as any unsustainable result will not solve the problem and may exacerbate the situation.

The economic potential of the forest should be maximized by taking into account all forest resources. Forests can offer many goods and services, including timber, NTFP and ecological services. An integrated approach to forest management, taking into consideration all these resources will offer more opportunities and have a greater impact on poverty reduction. The world of today is dominated by the free market approach, marked with an increased displacement of funds, goods and human resources. The key word in this context is competitiveness, which requires innovation, technology and trained personnel. Managing forests for poverty reduction will need to take this context into account in building capacity among local communities in order to allow them to be equipped and play an active role in this new environment. Failing to do so will only restrict them to receive only crumbs of the proceeds of forest management. It is particularly

essential that improved skills be provided in forest management, product development, production of valued added products, marketing and business management.

For example, NTFPs can offer good opportunities for income generation in many countries, but their contribution to poverty reduction is limited because most of them are collected from the wild, their conservation and conditioning for the market is not appropriate and communities involved have limited skills in marketing or in business management. Building local capacity and partnerships in the selection, genetic improvement, and vegetative propagation of NTFPs, introducing appropriate technologies in processing and conditioning, and providing training in business management, including marketing, can greatly enhance the contribution of NTFPs to poverty reduction.

The local, national and international environments are to be supportive in order to allow the opportunities offered by sustainable forest management to be captured for the benefit of the poor. The poor is often the weakest player at the local and national levels: his/her political power is limited or nonexistent and he/she has therefore limited influence on practices, laws, regulations and the different procedures that affect his/her condition; his/her financial capability is also limited as well as access to education and training. Although improved local organizations such as associations and cooperatives can offset some of these shortcomings, it is essential that national and local authorities create a supportive environment through reforms, in particular regarding access to forest and financial resources, as well as to education and training. It is also imperative that local communities be empowered and their organization strengthened, that negative practices such as corruption be eliminated and good governance established.

The international environment has also to be supportive. First and foremost access to markets has to be facilitated. Subsidies practiced by certain countries continue to detract the free market, as well as the introduction of tariff and non-tariff barriers, thus denying access to forest products produced by the poor. The successful marketing of forest products is essential to make effective the contribution of forest management to poverty reduction/alleviation.

Access to appropriate technologies, in the form of technology transfer through cooperation, is also a critical element. International aid agencies can play a critical role in this domain, as well as in strengthening the organization of poor communities. Unprocessed forest resources have limited impact in terms of employment and income generation.

The international community can also contribute to maximize the economic potential of forest and thereby provide increased opportunities to contribute to poverty reduction. This can be achieved, in particular, in facilitating the payment for environmental services through market and non-market mechanisms.

The establishment of these favorable environments, at local, national and international levels, as well as the active involvement of capacitated and strengthened local communities in forest management will certainly offer greater potential for the contribution of forest management to poverty reduction.

Distinguished guests, ladies and gentlemen,

Before I close, I would like, once more, to thank on behalf of ITTO, the Government of Viet Nam for giving us the opportunity to discuss this pressing issue of managing forests for poverty reduction. I also would like to recognize here and value the friendly cooperation that has been established between ITTO, FAO, RECOFTC, SNV and the other partners to assist in the organization of this important conference. I wish you every success in this important conference and sincerely hope that it will make an effective contribution to poverty reduction.

Thank you very much for your kind attention.

STATEMENT BY PATRICK B. DURST, SENIOR FORESTRY OFFICER,
REGIONAL OFFICE FOR ASIA AND THE PACIFIC
FOOD AND AGRICULTURE ORGANIZATION
OF THE UNITED NATIONS



Mr Nguyen Ngoc Binh, Director General of Department of Forestry,
Ministry of Agriculture and Rural Development of Viet Nam,
Mr Chairman, distinguished colleagues, ladies and gentlemen,

It's a great pleasure for me to be here this morning to offer a few remarks on behalf of the international organizers of this important International Conference on Managing Forests for Poverty Reduction. The international organizers include the Food and Agriculture Organization of the United Nations (which I work with), the Asia-Pacific Forestry Commission, the Netherlands Development Organization (SNV), the Regional Community Forestry Training Center, the Tropical Forest Trust, and the World Wide Fund for Nature. In addition, valuable financial support has been provided by the International Tropical Timber Organization and the Netherlands Ministry of Foreign Affairs. I think it should be evident to all of you that this conference represents a truly outstanding example of collaboration and partnership, for which I'm personally very grateful.

The origins of this conference go back to discussions several of us had during an FAO-supported workshop nearly two years ago, involving officials from Laos, Myanmar, and Viet Nam, who are working to improve forest harvesting practices in those three countries. Participants in that workshop, which took place in Vientiane, Laos, decided that it was important and timely to highlight to policy makers, development organizations, and field practitioners that forest harvesting can be far more than just large-scale, capital-intensive operations. We wanted to create a forum for showcasing experiences and exploring opportunities for forest harvesting, timber processing, and marketing of wood products that can meaningfully contribute to reducing poverty.

From that small group's nugget of an idea, we were very pleasantly surprised at the outpouring of support from other organizations for the concept, as well as for this conference in particular.

Ladies and gentlemen,

As you know, for the most of the past 150 years, commercial timber harvesting in Asia (as well as most other parts of the world) has been the domain of governments and private companies—usually big companies, employing gangs of chainsaw-wielding workers, fleets of expensive trucks, and testosterone-charged bulldozers and skidders. When valuable timber was at stake, local people were typically ignored or shut out of the planning and implementing of logging operations. If they were involved at all, it was usually as wage laborers, hired to help harvest the timber wealth, which was quickly hauled or floated away to urban areas—never to be seen again.

In recent years, governments and development organizations have attached great importance to alleviating the plight of the world's poor, as exemplified by the adoption of the Millennium Development Goals. In the forestry sector, this has led to a raft of initiatives and projects, most often focusing on non-timber forest products and payments for environmental services.

But, in most forested areas, the biggest value and income opportunities come from timber harvesting and wood processing. It's not really surprising that foresters and forestry have traditionally focused—many would say excessively—on timber production: that's where the real money from forests lies. So, if we're truly serious about poverty reduction in rural areas, shouldn't we be serious about giving poor people rights and access to valuable timber resources?

Hopefully, you'll have noticed that this conference intends to focus on conscious efforts to manage forests and forest practices explicitly for the benefit of the poor. This implies the need for new ways of looking at forests and forestry compared to the past.

Ladies and gentlemen,

On several occasions recently, I've found myself quoting a well-known remark by the former FAO Director of Forest Products, the late Jack Westoby. But, none of these occasions have been quite as appropriate as at the outset of this conference.

Back in 1967, Jack Westoby addressed conferences in India and Portugal on the purpose of forestry. Summarizing his conversations with innumerable foresters, Westoby noted:

"Had I believed implicitly everything they told me, I would have been driven to the conclusion that forestry is about trees. But this, of course, is quite wrong. Forestry is not about trees, it is about people. And it is about trees only insofar as they serve the needs of people."

Forty years ago, when Westoby made those remarks, he was clearly at the forefront of a revolution in forestry philosophy. This revolution has brought about tremendous advances in forestry—leading the profession toward a broader and holistic systems-based approach—including much more consideration of the needs of people living in and near the forests.

But, we still struggle with putting that "forestry-is-about-people" philosophy into practice—especially when it comes to giving local people direct access to valuable resources. In some cases, foresters and others actively work to protect an outdated status quo; there's fear that people with little formal education or expertise can manage forests sustainably; and, as we all know, there are strong economic incentives for those currently in control to maintain that control. In other cases, even where people have good intentions, a lack of imagination sometimes constrains us from recognizing potential opportunities to alleviate poverty through forestry. In still other instances, existing policies may inadvertently be discriminating against small-scale producers and labor-intensive practices.

Despite all these obstacles, the conventional wisdom that "bigger is always better" in forestry is slowly changing as new technologies (and re-discovered old technologies) for harvesting, transport, and processing are increasingly making small-scale production an economically viable proposition. Combined with these advances in technology, are new trends in marketing and institutional development that offer exciting opportunities for generating income and livelihoods in rural areas.

It's our intention that this conference provides opportunities to showcase "state-of-the-art" knowledge and recent experiences of small-scale forest operations, labor-intensive management practices and job creation through wood processing. We sincerely hope it will open new pathways for integrating forest management with poverty reduction through national forest programmes and other broad-based processes.

Ladies and gentlemen,

The importance of this topic is underscored by the wide range of institutions that have collaborated in organizing this conference. FAO is delighted to join hands with a broad range of national, regional and global organizations in bringing this conference to fruition. I particularly want to acknowledge our local hosts, the Viet Nam Department of Forestry, which has done a fabulous job in organizing the local arrangements.

I also want to highlight the outstanding efforts of the staff of SNV and RECOFTC, who worked very closely with FAO to develop the conference program, identify presenters, and complete the thousands of “behind-the-scenes” tasks required to make the conference a reality.

It’s also been a pleasure to work once again with the International Tropical Timber Organization, the Tropical Forest Trust, WWF, and the Netherlands Ministry of Foreign Affairs in organizing this conference. Their support and inputs have been vital to ensuring the conference’s success.

For all the international participants—especially those of you who have not been to Viet Nam before—I’m sure that by the end of the week you’ll come to understand why Viet Nam is so famous for its hospitality, and also why this country is advancing so rapidly—including in the field of forestry. The innovation, commitment, and dedication of the Vietnamese people provide a source of inspiration and—in many ways—a role model for forestry development in other countries.

I’m personally very much looking forward to the conference discussions. We have an impressive array of presenters and I’m sure that we’ll all find the discussions stimulating and productive.

Thank you very much.



MANAGING FORESTS FOR POVERTY REDUCTION: KEY CONCEPTS AND CONFERENCE OVERVIEW

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Introduction

The Millennium Development Goals agreed by 189 nations at the United Nations Millennium Summit in 2000 call for the eradication of extreme poverty, while simultaneously ensuring environmental sustainability. Since a large proportion of the world's poor remain heavily dependent on forest resources, there is a clear need to explore new prospects for the world's forest-dependent communities. New strategies and approaches are needed to give opportunities for the poor to benefit from forests in ways that complement or substitute for existing livelihood strategies.

In recent years, forest-based poverty reduction strategies have largely focused on enterprises that process and market non-timber forest products (NTFPs). Substantially less emphasis has been given to the more complex and risky, but potentially much more lucrative, aspects of timber harvesting and processing.

In most forests, timber is commercially the most valuable resource. Globally, timber provides raw materials and employment for millions of people. But timber harvesting and processing are seldom considered at the forefront in strategies to alleviate rural poverty. There are several reasons for this. Firstly, modern timber harvesting and processing have evolved to be highly capital-, skill- and technology-intensive operations, effectively precluding those without ready access to capital and technology and those with limited skills. Secondly, the large potential profits to be earned from the timber have led to the sector being dominated by powerful and elite individuals and corporations, characterized in many areas by opaque transactions and shadowy or illegal activities. The poor are also often constrained from the timber sector by policies and regulations that hinder access of the poor to timber resources and their active involvement in managing timber enterprises.

A widespread assumption by policy makers is that allowing the poor to access and use forests will result in forest degradation or destruction (Scherr *et al.* 2004). Consequently, forest-dependent poor have been first in the line of fire for restrictive and punitive government measures on forest use. Given that the use of forest products by rural communities is often a livelihood strategy of "last resort" (Byron 2006), such policies effectively undermine poverty reduction strategies and exacerbate existing conditions of poverty. Not surprisingly, therefore, only limited numbers of poor forest dwellers are currently benefiting substantially from timber harvesting and wood processing. However, examples of sustainable forest management consciously oriented toward achieving poverty reduction objectives are increasingly beginning to emerge.

To help assess experiences and explore new initiatives, the *International Conference on Managing Forests for Poverty Reduction: Capturing Opportunities in Forest Harvesting and Wood Processing for the Benefit of the Poor* was convened 3-6 October 2006, in Ho Chi Minh City, Viet Nam. The conference specifically aimed to draw out recent experiences on pro-poor forest harvesting and processing, and to develop strategies for further enhancing the effective involvement of the poor in these activities.

Key concepts

The poverty reduction objective

Poverty is commonly defined as pronounced deprivation in well being, in terms of material deprivation (in income and consumption), lack of education and health services, vulnerability and exposure to risk, lack of opportunity to be heard, and powerlessness (World Bank 2000).

This definition highlights the multiple dimensions of poverty, the alleviation of which calls for a multi-dimensional approach. Poverty alleviation encompasses two discrete meanings, namely poverty mitigation and poverty reduction. Poverty mitigation implies that people are prevented from becoming poorer whereas poverty reduction describes a situation where people are being lifted out of poverty (Angelsen and Wunder 2003). It is necessary to recognize that these terms articulate different meanings and hence implications for the poor, and that the goals encompassed in the MDGs relate specifically to poverty reduction.

The role of timber in poverty reduction

The contribution of forests to poor people's livelihoods is largely unrecorded in national statistics because the use of forest products for subsistence and local trade is difficult to track and measure. According to FAO (2003) there are three ways in which forests contribute to poverty reduction: i) by providing the forest resources that are important for maintaining well-being (e.g. medicinal plants, food resources, erosion control); ii) through continued access to forest resources and rents (e.g. access rights, income from forest products); and iii) by increasing forest production values (e.g. payment for environmental services, recreational uses).

Timber harvesting, processing and marketing (i.e. the timber value chain) are generally not activities that explicitly target poverty reduction for a range of reasons. Barriers that restrict access to forest resources, such as lack of secure, long-term tenure and gaps in knowledge and technology, make it difficult for the poor to be in the "driving seat" of commercial timber exploitation. More often, the poor provide cheap labor for forest operations managed by the state or large commercial ventures. However, initiatives involving forest-dependent poor are beginning to emerge that can provide important insights into the opportunities and challenges faced by the poor in their attempts to benefit from commercial timber operations.

Commercial forestry offers opportunities to address, in various ways, each of the five aspects of poverty identified by the World Bank. Material deprivation can be addressed directly by increasing income through improved access to timber harvesting and processing activities. This requires increased involvement of forest-dependent poor in the timber-value chain. Increased income at the household or community level can in turn improve access to educational and health services, which enhance economic opportunities and well-being, as well as reducing vulnerability in the face of rapid social change and environmental stresses such as drought or flooding. Additionally, participatory processes that support poor people's involvement in decision-making related to the management and utilization of forests and commercial forestry operations help to foster greater political empowerment and opportunities for marginalized voices to be heard more broadly. However, to date, many of these potential avenues are largely unexplored and more research is needed to understand how and to what extent they might be realized.

While conventional approaches to commercial forestry operations focus on capital- and technology-intensive enterprises, forestry undertaken for, and by, the rural poor presents unique environmental and social benefits.

Conference themes

The *International Conference on Managing Forests for Poverty Reduction* discussed opportunities for, and constraints to, managing forests and processing wood for poverty reduction. Five important aspects of forest harvesting and wood processing were

highlighted in the Conference themes and elaborated by the two keynote speakers (Chapters 2 and 3):

- policies and legislation;
- economic aspects;
- forest management modalities and institutional issues;
- technical aspects; and
- market access.

Policies and legislation

Policies and legislation provide the essential foundation of rules and regulations that guide sound forest harvesting and management practices. The forestry sector in many countries is constrained by weaknesses in the legal framework, including poor enforcement of laws and regulations, for reasons ranging from lack of capacity and resources to outright corruption. Illegal logging undermines opportunities for sustainable, pro-poor forest management by channeling cheap timber into the market that legitimate enterprises (both large and small) are unable to compete with. Policies also sometimes designate preferential subsidies and access rights to large-scale operations, further disadvantaging small-scale forestry operations.

Discriminatory rules and regulations present a fundamental challenge to small-scale commercial forestry. Even though most laws and regulations were not intended to be exclusionary, many were formulated to address large-scale forestry operations and too complex and demanding for small-scale operators. Small-scale forestry operations often involve people with sound forest-related skills, but without the specific expertise needed to negotiate the complex rules and regulations prescribed for harvesting and processing of forest products. Pulhin and Dugan (Chapter 5) describe these constraints in detail, including the need for poor rural communities in the Philippines to hire costly professional foresters to assist in preparing complex forest management plans in order to gain approval to harvest even small volumes of timber under the country's Community-Based Forestry Management Program. Some initiatives are succeeding in breaking through these barriers, however. Cuny *et al.* (Chapter 4), for example, describe how a community forestry approach is contributing to the socio-economic development of a community in Cameroon despite major challenges in implementation.

Given the risks and long timeframes associated with timber production, and the insecurity of access to resources for many rural people, the success rate for small-scale forest-based enterprises is, not surprisingly, low. Sound forest management that shares benefits with the rural poor requires policies and legislation in many countries to be revised to better reflect the realities on the ground. A key area of action emerging from the conference was the need to make policy-development processes more transparent to ensure greater representation of marginalized groups, including the rural poor.

Economic issues

There are substantial revenues to be made from timber, but economies of scale often favor large-scale commercial enterprises. For poverty reduction purposes, it is important to explore the conditions under which small-scale forest enterprises can be truly competitive in forest product markets. For example, products with prospects for growth in demand in local, national or international markets, or niche products with a limited number of producers, may offer the best potential for success for small-scale enterprises (Scherr *et al.* 2004). In all cases, sound analyses and feasibility studies are essential in order to avoid misdirected investment. Kelly and Aryal (Chapter 8) elaborate on the importance of good market

information and feasibility analysis (over the market value chain) in their case study describing the experiences of two sawmills in Nepal that suffered large losses due to an inadequate feasibility assessment before entering the market. The sawn timber they produced exceeded market demand, resulting in far lower financial returns than anticipated.

It is possible, however, for small-scale producers to take advantage of knowledge about local markets and their proximity to local consumers. There are also opportunities for small-scale producers to capture more of the timber value chain through added processing, for example, through on-site wood processing.

At the village level, community forestry user groups have played an important role in collective forest management. Chand and Ghimire (Chapter 7) reveal how community forestry user groups can, with support and mentoring, broaden their mandate to include business management. Their case study describes the experience of a community forest user group in Nepal that has earned more than US\$ 24,000 from their pine plantation to date, with income steadily increasing over the last four years.

Forest management modalities and institutional issues

Local-level rules can play a crucial role in achieving pro-poor development in forestry, as highlighted in the case of Bhutan by Tempfel and Beukeboom (Chapter 11). The impact of policies and regulations at the local level is shaped not only by their implementation and enforcement, but also by the ways in which target groups respond to them (Tyler and Mallee 2006). Hence, outcomes of policy implementation often rest squarely on local conditions and are subject to influence from a range of actors, including local government, communities, NGOs, private enterprises and individuals, who all interpret and implement rules and regulations according to their specific context and interests.

Poor people often face barriers to full participation in decision-making processes, such as community meetings, if they are not specifically targeted and supported. Moreover, benefits that accrue from community activities are often unequally shared, based on factors such as gender, age, social status or ethnicity (Mahanty *et al.* 2006). The paper by Acharya (Chapter 10) highlights the fact that approaches that target and prioritize marginalized groups through appropriate institutional arrangements, such as through preferential membership or access to shares in enterprises, have shown some success in addressing this constraint.

Vickers and Mackenzie (Chapter 12) address the issue of pro-poor benefit sharing and participation in describing a case from Viet Nam. They elaborate how the decisions surrounding institutional arrangements for a community forest timber harvesting scheme are dominated by rich men in the village who also capture most of the benefits. In other cases, institutional mechanisms to protect the interests of the poor have been more successful and there is greater focus on equitable sharing of benefits (see for example Bampton and Cammaert (Chapter 9) and Bao Huy (Chapter 6). Some of the best results for delivering benefits to the poor seem to be through affirmative action that gives preferential support to disadvantaged groups and other similar pro-poor policy mechanisms.

Technical aspects

Large-scale commercial forest enterprises have advantages in accessing financial and technical resources and the ability to establish economies of scale. In contrast, small-scale enterprises often have advantages related to low-cost labor inputs and the potential to react quickly to changing market conditions. However, the influx of harvesting technologies without capacity building, good planning and compliance with sustainable practices can equally threaten the sustainability of both forests and local enterprises. In the case of chainsaw milling in Ghana,

Pinard *et al.* (Chapter 14) find that the poor are easily able to procure chainsaws in spite of a ban on chainsaw milling. Since the benefits from authorized large-scale logging do not accrue to the poor, there is widespread support among poor households for chainsaw milling despite its illegality and high levels of waste. Supplementing the introduction of improved technologies, with improved planning and better compliance with sustainable practices, could increase benefits to the poor, while enhancing the sustainability of operations, a point also supported in the PNG case by Akivi (Chapter 15).

In addition to appropriate equipment for logging and milling, physical access to markets also plays a vital role in delivering benefits to small-scale forestry. Poor people living in remote areas are often impeded in gaining access to markets because the modes of transportation are few and infrastructure is poor. Mohns (Chapter 13) explores methods of transporting bamboo in Laos where access to markets from remote forest areas is constrained by lack of roads or skid trails. Horse skidding and bamboo rafting on rivers both offer good prospects for expanding markets. Such approaches illustrate how traditional technologies can be effectively adapted to address modern challenges.

Appropriate and sustainable technologies and affordable equipment do exist, but they need to be applied in appropriate ways that fit the scale and capacities of small-scale producers. Where production technologies are locally adapted and properly applied, adoption risks are minimized, and maintenance costs are reduced.

Accessing markets

Marsh and Smith (Chapter 20) highlight how good market knowledge and access can help to identify emerging opportunities for small scale producers. This is, however, a key challenge for small-scale enterprises that typically lack the experience and ability in gathering information about market conditions. Despite these obstacles, several successful experiences of small-scale enterprises can be found. Demonstrating that such challenges and solutions are not unique to developing countries, Birkemeier (Chapter 16) highlights how a small-scale, family forestry enterprise in a rural community in the United States achieved success by developing a strong business focus and by controlling the entire value chain from small-scale harvesting all the way to installing custom flooring and cabinets in the homes of the end consumers.

Landis (Chapter 17) complements this vision, by describing the success of a training program for artisans, introducing “old-world” technology in Honduras. From the outset there was a focus on local demand and low-cost technologies. These pragmatic approaches have helped to effectively involve local artisans. Moreover, a thorough assessment of market opportunities before establishing the business was a crucial element of success.

The formation of associations can also help leverage advantages of scale, pool market information and improve bargaining power and operational conditions. By pooling resources and product outputs, such associations are better able to compete with large-scale commercial operations for market access and share. The combined strength of such associations can also help overcome bureaucratic constraints, reduce transaction costs of legal compliance, and enhance the ability to collect market information. Macqueen (Chapter 18) highlights how associations can challenge the power of middlemen and obtain better returns for their products. In a case from Indonesia, Barr (Chapter 19) further illustrates how the formation of a community cooperative helped to reduce the transaction costs in timber certification, and obtain Forest Stewardship Council group certification less than two years after its establishment.

Conference outcomes

It is evident that small-scale, forest-based enterprises can be important players in sustainable forest management, while simultaneously increasing benefits to a wide range of beneficiaries. The conference presentations and discussions underscored that forests can contribute to poverty reduction if:

- forest resources are sustained;
- resources and rents are made accessible and distributed equitably; and
- forest production values can be increased.

Related to the first condition, it is evident that illegal logging and unsustainable management practices are responsible for the loss of forest resources and the deflation of timber prices in many areas. If sound forest management principles are applied and harvesting volumes do not exceed allowable cuts, then forest resources can be sustainably managed. Long-term perspectives and planning on the part of forest enterprises play important roles in sustainable harvesting and maintenance of a healthy forest resource base.

The second condition requires the development of policies and regulations that guarantee and simplify access to forest resources by the rural poor and support their effective involvement in wood-processing enterprises. Instead of making forest resources available only to large, well-connected enterprises, the rural poor should be granted ready access to forests through clearly defined, well-supported and fully protected rights together with the responsibility to plan and effectively manage these forests. With a stronger focus on pro-poor forest policies, both poverty reduction and sustainable forestry are made more likely.

The third condition calls for changes in how we value the products provided by forests. Greater emphasis needs to be placed on value-adding processes that maximize the benefits from timber that is derived from forests. With support in making market linkages, small-scale producers have been successful in efficiently processing wood into higher value products and targeting high-value markets. The rural poor will also likely realize increased benefits when there is greater appreciation and recognition of the full range of benefits from forests, including non-timber forest products, biodiversity, clear water, carbon sequestration, ecotourism and other values.

The potential for local forest management to contribute toward poverty reduction objectives warrants further exploration. Small-scale logging techniques, using appropriate labor-intensive technologies, can result in far less environmental impacts than those of large-scale forest operations. One area that would benefit from further exploration is that of opportunities for small-scale forest enterprises to develop partnerships with large-scale commercial entities, capitalizing on the comparative advantages of both. Small-scale producers often have access to labor and (in some cases) control of the land and resources, whereas larger enterprises usually have greater access to capital, skills, technologies and markets (Angelsen and Wunder 2003). There would appear to be considerable scope for melding the strengths of these two groups.

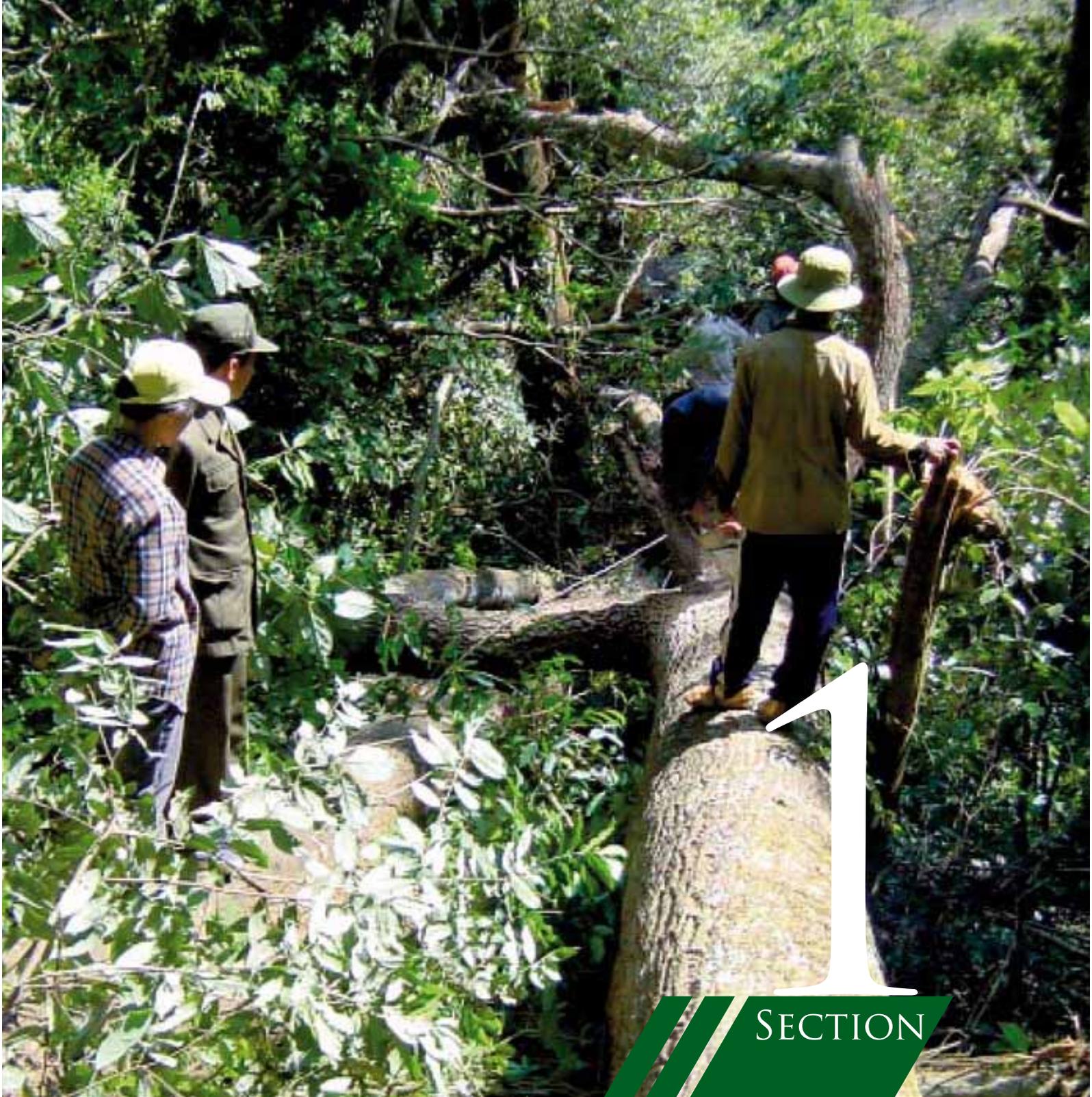
The *International Conference on Managing Forests for Poverty Reduction* concluded that it is timely to build constructive linkages among the various stakeholders involved in forestry and poverty reduction. Mutually beneficial partnerships among local communities, policy makers, the private sector, development organizations and donors are essential to accelerate progress in managing forests for poverty reduction and enhancement of environmental sustainability. The conference declaration (page x), adopted by all participants, emphasizes these opportunities.

The chapters that follow discuss in detail the opportunities and constraints related to forest harvesting and wood processing purposefully oriented to benefit the poor. Individual papers provide valuable insights into numerous pioneering initiatives from around the world. Collectively, they underscore the daunting challenges of these approaches. At the same time, however, they provide cause for optimism. Experience indicates that if constraints and challenges are addressed effectively, there is good potential for managing forests and forest enterprises in ways that positively contribute toward poverty reduction objectives, while simultaneously safeguarding the environment, empowering the poor, building capacity, and fostering entrepreneurship.

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SECTION

Setting the scene



BIG TREES FOR LITTLE PEOPLE: MANAGING FORESTS FOR POVERTY REDUCTION

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Introduction

Poverty alleviation has been receiving increasing attention as an important objective in forest management. The primary driver for poverty alleviation to become an explicit objective of forest agencies has been the adoption of the Millennium Development Goals by most countries, with a special emphasis placed on the International Development Target of halving global poverty by the year 2015. Poverty alleviation as the primary objective of development has pulled people-centered concerns into the mainstream, even in natural resource management. The policy instrument of particular importance as a means of promoting policies, programs, and projects that help the poor are the national Poverty Reduction Strategy Papers (PRSPs). PRSPs have become the main mechanism for governments in developing countries to define their budget and policy priorities, and engage in dialogue with the international community.

It is therefore to be expected that national forestry agencies are now being asked to identify and expand their contribution to national poverty alleviation efforts and include poverty reduction as a primary



objective in forest sector strategies.¹ This requires a new perspective on forests and their use, in which success is measured not only by the amount of forest products harvested, export figures, or revenue generated, but also by the contribution of forests in alleviating poverty. It also requires more attention to identifying the overall contribution of forests to the livelihoods of the poor and of the goods and services they provide, and developing strategies for maintaining or enhancing this contribution. Unless forests and their potential contribution are incorporated into PRSPs or national forest strategies, forest management is unlikely to get the attention it deserves in national efforts to reduce poverty and vulnerability. The challenge is to have poverty alleviation addressed in forestry – and the contribution of forests to poverty alleviation to be recognized as an important component in national poverty alleviation strategies.

Little trees for little people

A.K. Bannerjee, one of the pioneers of social forestry in South Asia, made the observation that social forestry was primarily concerned with “little trees for little people” (Bannerjee 1996). By this, he meant that social forestry was about providing the poor and marginalized (the “little people”) access to degraded forests (the “little trees”) that, if well managed, could provide fodder, fuel, medicinal plants, and a small amount of income.

Let us remember that social and community forestry was not initiated in the 1970s and 1980s for poverty reduction, but for improving what was perceived as degraded forest areas. Placed under community-based management were those areas classified as “degraded” and not of commercial interest. These degraded areas were to be improved by the community, providing labor and protection that would result in forest regeneration.

These were forestry programs with the objective of “regreening” through afforestation. Social and community forestry programs were developed in which incentives were used to engage “little people” in investing, primarily through their labor and later a portion of the financial benefits they received, in improving degraded forest areas, the “little trees.” These incentives commonly included rights of access for collection of non-wood forest products (NWFPs), and less so for timber, the “big trees.” There were often responsibilities involved as well, such as the provision of forest guards. The result was that the state received a revitalized forest and a large share of the (potential) income from the timber and other resources. As for the communities and their members, they gained access to resources that had previously been (officially) denied for gathering non-wood forest products, and a portion of the potential income generated from the sale of timber.

It was not that there was a lack of concern for the well-being of rural communities, but that the primary focus was on the well-being of the forests. The willingness to experiment with community forestry was the result of a series of changes in forestry in the last 50 years. In forestry of the 1950s and 1960s (and admittedly in many countries even now), the focus was on the harvesting of primary wood or commercial timber, from the forest on a (not always) sustainable basis. Although timber production remained, and still remains, the primary forestry objective in many countries, there was a shift during this period in the policy and management debate from one that focused on products to one that was more concerned with managing the forest as a “complex, valuable natural resource system” (Gilmour 1995). By the end of the 1970s, there was also increasing concern about rural development and the dependency of rural people on forest resources.

¹ *The preparation of the Poverty Reduction Strategy Papers (PRSPs) requires national forestry agencies to identify the current and potential contribution of forest resources to poverty alleviation.*

The current global commitment to poverty reduction has further pushed forest management into having to meet multiple complex objectives, as well as focusing more attention on the dependency on forest resources of the poor - the “little people.”

Contribution of trees and forests to the livelihoods of the poor

Forest-dependent communities represent a significant portion of the world’s poor. Although the nature of the dependence varies, a recent estimate suggests that there are 60 million highly forest-dependent indigenous forest people in Latin America, West Africa and Southeast Asia, with an additional 400-500 million people estimated to be directly dependent (White and Martin 2002).

Within a community, it is common to find that it is the poorest households with less agricultural land, livestock, labor, etc., that are the predominant collectors of forest products. For these poorest of the poor households, while the actual amount of income earned from forest products may be small, it may provide a large portion of household income.

Box 1: What do trees and forests contribute?

- Subsistence goods such as fuel wood, medicine, wood for building, rope, bush meat, fodder, mushrooms, honey, etc.
- Goods for sale such as all of the above goods, as well as arts and crafts, timber, and other forest products.
- Indirect benefits such as land for other uses, social and spiritual sites, environmental services such as watershed protection, and biodiversity conservation.

Forests and trees can also benefit the poor by reducing vulnerability and risk and protecting people from becoming poorer by serving as “safety nets” during lean seasons and years, as well as providing opportunities for making people better off (Kaimowitz 2003). It should also be noted that the forests, even degraded forests, are immediately available for use. But in order to be used, there must be recognized rights of access and use.

Access

It is not surprising that many of the early efforts in social and community forestry were focused on helping communities and their members to obtain recognized rights to forest resources. Globally, these rights have commonly evolved from specific use rights to co-management agreements, recognition of indigenous peoples’ rights, and, in some instances, ownership or tenure rights.

Of the total global forest estate comprising 3.9 billion ha, 77% is owned and administered by governments, with at least 4% reserved for communities, at least 7% owned and operated by local communities, and approximately 12% owned by individuals. However, in the 30 most forested developing countries, community reserves comprise at least 8% of forests, and community ownership makes up at least 14%, with individuals owning only 7% of forests (White and Martin 2002).

The efforts to obtain community rights to forest resources have had considerable success, for about 57% of the legal rights now owned or reserved for communities have been transferred since the mid-1980s (White and Martin 2002). This is a significant change in forest management over a relatively short period of time.

But if the goal now is not only to improve the well-being of the forests, but also the well-being of the people, has access resulted in poverty reduction? Access and recognized rights do not automatically translate into poverty reduction. Recognized rights are “necessary but not sufficient” if the goal is to reduce poverty.

Beyond little trees

Even with community rights and access to forest resources, the access has primarily been to NWFPs since there are continuing constraints in access to, or management of, trees for timber, especially if for commercial rather than for household or community use. NWFPs, as noted above, are now recognized as being of critical importance to the poor, especially to the most vulnerable households in communities (see, for example, Ingles *et al.* 2006).

But what about timber, the “big trees”? For it is timber, especially if income can be generated from value-added processing, that has the greatest potential for poverty alleviation and livelihood development. Timber is the most valuable product in most forests. The potential for forests contributing to poverty alleviation would be far greater if communities and their members received more productive mature high-value forest, rather than degraded forests, to manage. Why do communities continue to be given degraded areas in which there is relatively little to be gained (although admittedly, to the communities it might be far more than they could have gained before)?

Developing countries are exporting timber-based products and earning billions, as well as substantial sales in domestic markets. Yet, poor families receive relatively little from this activity. This is partly due to a lack of access to the “big trees.” But even when there is access, as will be discussed in many of the papers at this conference, timber-based products require skills, capital, technologies, and market access that are commonly unavailable to communities. Of similar importance is the fact that regulations may hinder small community-based enterprises from being able to obtain the capital and access to markets that are needed.

So, while access to forest resources is “necessary but not sufficient” - what is also necessary is access to skills, capital, technologies, and markets.

Challenges and opportunities

It borders on the trite to note that it is a fast-changing world. The rural poor are especially vulnerable to becoming marginalized by the changes that are occurring. However, while the challenges should not be underestimated, there are also new opportunities for improving livelihoods based on the sustainable use of natural resources. The demand for forest products is increasing and projected to continue to do so. Our challenge is to support specific changes that will lead to a greater role for forest and tree resources contributing to the livelihoods of the poor.

The key question that forestry agencies are explicitly and implicitly being asked by their governments and donors is, “*Why invest in forests and forest resources?*” What do forests contribute to alleviating poverty, improving health, and providing additional development options?

The forestry sector is increasingly being called upon to provide answers to these questions. In order to do so, the forest-poverty linkages have to be better understood, captured, documented, and strengthened, and to effectively link the emerging opportunities not only to the poverty-related Millennium Development Goal 1 (MDG 1), but to the other MDGs as well. How can forests and forestry assist in reaching the MDGs concerning not only poverty, but also education, health, and the environment?

Box 2: Linking to the Millennium Development Goals

Millennium Development Goals	Targets
1. Eradicate extreme poverty and hunger	<ul style="list-style-type: none"> • Halve, between 1990 and 2015, proportion of people who are earning less than US\$ 1 a day. • Halve, between 1990 and 2015, proportion of people who suffer from hunger.
2. Achieve universal primary education.	<ul style="list-style-type: none"> • Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary education.
3. Promote gender equality and empower women	<ul style="list-style-type: none"> • Eliminate gender disparity in primary and secondary education, preferably by 2005, and at all levels of education no later than 2015.
4. Reduced Child Mortality	<ul style="list-style-type: none"> • Reduce by two thirds, between 1990 and 2015, the under-five mortality rate.
5. Improve Maternal Health	<ul style="list-style-type: none"> • Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio.
6. Ensure Environmental Sustainability	<ul style="list-style-type: none"> • Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources. • Halve by 2015 the proportion of people without sustainable access to safe drinking water. • By 2020 to have achieved a significant improvement in the lives of at least 100 million slum dwellers.

We do have success stories in which the poor have captured the opportunities provided by forest products to make meaningful changes in their lives. But we need to document and effectively communicate success stories which explicitly link the contribution of forests to poverty reduction and the other MDGs.

Box 3: Opportunities: Trees gave birth to the cows

A woman who participated in the HASHI project in Shinyanga, Tanzania, when asked about her “ngitili” (restored woodlands), responded that the “trees gave birth to the cows.” The income from the trees, sold primarily from thinning for fuel and poles, enabled her to pay school fees as well as invest in other assets, such as cows. Other project participants cited the increase in crops due to on-farm trees and the significant cash value of the trees as timber which serve as a “bank for our family.”

The HASHI project² documented not only its impact on MDG 7, but also MDGs 1 and 2.

We have to identify not only the current and potential opportunities but also the constraints involved. There are constraints and disincentives in existing legal and regulatory frameworks that have to be rectified if poverty alleviation is to be effectively addressed. This gives rise to another critical question to be asked and answered: What local and national factors currently affect the implementation of pro-poor forest policies and practices?

Part of the answer was mentioned earlier - the use of forests is often restricted, with communities given degraded areas, required to invest in planting, with rights over timber and other products of commercial value excluded or narrowly prescribed.

Regulatory burden is also a major factor. Cumbersome administrative and legal processes, such as detailed forest management plans and permitting procedures, create barriers for communities and their members. These regulations often require communities to prepare far more elaborate plans than are required for either large commercial companies or government agencies.

Another major factor is that, after removing the constraints to access and rights to the big trees, there are significant constraints and barriers for small-scale enterprises to effectively link to markets and successfully compete. Low-income small-scale producers face many disadvantages due to poverty itself, as well as lack of education and infrastructure (Scherr *et al.* 2002 and 2004). So the questions now to be asked are: How can we make markets work for small producers? What is needed to capture the emerging opportunities for forest products by the poor?

Capturing emerging opportunities

One of the primary concerns is that the poor will be pushed aside when commercial opportunities appear. In order to create space for the poor, pro-poor forest projects and programs need to proactively focus on identifying “the measures that will enable the poorer to continue to participate” (Arnold 2001). We can provide technical assistance in developing guidelines for forest management plans and certification processes for forests and other products (Scherr *et al.* 2002 and 2004). Beyond laying the technical groundwork, support programs can include measures to support the participation of the poor by providing or

² The HASHI project [Hifadhi Ardhi Shinyanga - the Shinyanga Soil Conservation Project] began in 1986. One of its objectives has been the restoration of the local woodland. There was massive deforestation in Shinyanga between 1920-40 to eradicate tsetse fly. Cash crop production caused further land conversion with increased livestock exacerbating the problem, as did the Villagisation Policy (1975) which resulted in the destruction of local land use and livelihood coping mechanisms, including ngitili. Since 1986, 70% of all farmers within the project area now have ngitili estimated to total at least 350,000 ha. (see Monela *et al.* 2005).

enabling financial incentives, training, micro-credit, and market access. Successful programs have, for example, commonly supported the development of local associations and access to financing for local forest-based businesses. Microfinance that supports small-scale producers is critical, but is often not available in rural areas, especially to small enterprises whose owners or members have few assets. This microfinance gap is now well recognized and creative mechanisms are being successfully piloted to address the gap.

However, one of the problems is that successful pilot programs or projects are not replicated or have only localized impacts. A project's success does not guarantee that it will be adopted on a wider scale or have an influence on policy. We have to become more strategic and work to have a "scaling sideways" of a project's positive impacts and a "scaling up-ways" to have an influence on policy (Ingles *et al.* 2006).

Box 4: Scaling sideways and up-ways

A recent IUCN study in the Lao P.D.R. had the objective of identifying factors that determine how lessons are learned from successful forest-based livelihood interventions and how they are adopted into national policy frameworks or locally replicated at non-project sites in the Lao P.D.R. It found various methods for local replication and improved forest sector policies and programs. For example, for local "side-ways" replication, visits to pilot villages, promotion by local government staff who are aware of the pilot project and training programs were used. Seeing first hand the opportunities created by the social arrangement and the socio-economic progress provided by the interventions stimulates local replication. For "up-ways" scaling, the study found that a project's perceived success at the local level and its visibility of "side-ways" spread is what leads to national recognition. Other examples included the involvement of division and departmental directors to facilitate the flow and exchange of project outcomes during and after the life of the project and the production of convincing scientific project documents such as technical reports, leaflets, seminar papers, workshop proceedings, and case study reports for wide dissemination to lend influence and credibility to the intervention (Ingles *et al.* 2006).

Creating partnerships with the private sector is a key area in which we often do too little, too late. Community forest-based enterprises are often buffered by projects. Products are "made to work" through project support of infrastructure, financing at favorable rates, and uncompetitive pricing. While this may be effective in the short term, it creates unsustainable enterprises. Project personnel often lack marketing experience and are more comfortable with project activities and objectives related to conservation or social concerns. Yet it is effective and informed response to the demands of the market that will ultimately determine the success of small enterprises and the viability of the forest products they produce as a means for poverty reduction. The private sector has to be engaged as a partner in poverty reduction.

How can we encourage the private sector to engage? If we take this conference as an example, there is scant representation of the private sector. All but a few of us here are working in the public sector (government agencies; multilaterals, bilaterals) or in non-government organizations (NGOs). Why is the private sector not here? Is it because we have nothing to offer? In part, it may be because of our lack of experience in working with the private sector. There is also a lingering mistrust of the private sector, a perception that the private sector will exploit the poor and have little interest in sustainable forest management.

The private sector includes a wide range of companies and individuals. Within the private sector are companies that indeed do not share our concerns of poverty and sustainability.

However, also within the private sector there are those that do. Our task is to identify those that share our concerns and objectives and form partnerships.

However, to maintain a successful partnership, we must improve our understanding of the private sector and what it values in business partners, especially in its demand for products to be delivered on time in the quantity and quality contracted, a major challenge to many small-scale enterprises (see also Forest Trends 2003). As reflected in the papers for this conference, we can play a catalytic role in raising awareness of business opportunities, facilitating business partnerships, and establishing business support services targeting small-scale producers.

Conclusions

Forests can and should make a meaningful contribution to poverty alleviation. However, we have to look beyond the forests and the trees to the markets. Timber - the “big trees” - has the potential to be a significant pathway out of poverty for many of the “little people.” To turn this potential into a reality, we have to promote and support technical assistance, microfinance, business development support, and market development that work for the poor and develop policies that are not barriers to local market participation. We have to promote, by scaling projects “sideways and up-ways,” and other measures, the policy and regulatory changes that will enable small producers to successfully participate in markets and move out of poverty.

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THE POTENTIAL OF COMMERCIAL FORESTRY TO REDUCE POVERTY

GARY DUNNING
THE FORESTS DIALOGUE



Introduction

Global poverty is one of the most pernicious and complex challenges of our time. It is also a leading root cause of many other forms of human suffering and conflict. More than ever before, the global struggle to reduce poverty is bringing together leaders from all sectors, which in turn is generating many new ideas and major initiatives. Within this dialogue the forest sector may have much to offer in terms of offering solutions to the problems which need to be addressed.

Forests can, and do, provide vital “safety nets” for those living in and around them. But can forestry truly lift people out of poverty by providing a steady, stabilizing income stream? The answer, of course, is yes, but much needs to happen for this prospect to be fully realized by the poor on a wide scale. The Forests Dialogue’s (TFD) initiative on forests and poverty reduction seeks to maximize forestry’s potential to reduce poverty. Through convening international multi-stakeholder dialogues, TFD facilitates the sharing of strategies and experiences to catalyze the formation of partnerships and motivation to realize forestry’s full potential in reducing poverty.

This paper explores the early work on the potential of commercial forestry to aid in the reduction of poverty. Particular emphasis will be



placed on the enabling environment and drivers for pro-poor forestry, as well as the serious obstacles ahead.

Background

The mission of TFD is to create an ongoing international platform for leaders to discuss key issues related to achieving sustainable forestry. Several years ago, the role of forests in reducing poverty was added to TFD's list of key issues. Since then, TFD has developed an initiative on understanding how to maximize commercial forestry's potential to reduce poverty. While it is obvious that traditional commercial forestry can be very profitable, TFD's initiative explores effective pro-poor strategies and seeks to identify models that facilitate a higher percentage of profits reaching the hands of the poor within forest-dependent communities.

Early on in the development of TFD's forests and poverty reduction initiative, it became apparent that despite strong interest from key stakeholders, little information or case studies were available on this subject. To fill this gap, and assist in focusing subsequent discussions, TFD enlisted the help of a leading scholar on the issue, James Mayers of the International Institute of Environment and Development (IIED) in the United Kingdom. Mr. Mayers surveyed existing literature and IIED's vast experience, and wrote a paper aptly titled "Poverty Reduction through Commercial Forestry: What evidence? What prospects?"

The paper provided a firm foundation for our first dialogue convened in South Africa in June 2006, which brought together nearly 30 experts. It was a great start and yielded passionate discussion among the participants. This paper highlights what TFD has learned so far in this process and how we intend to incorporate this knowledge to catalyze pro-poor forestry in the future through this initiative.

Poverty

Poverty is a very complex and deeply entrenched reality in nearly every society throughout the world. It is clearly one of the primary root causes for much of the human suffering and conflict that we see today. So beyond the simple moral imperative to do something about this pervasive problem, we have many more self-enlightened reasons for working to reduce poverty. For the forest sector to tackle poverty, we must also work to understand it in all its complexity. Poverty is not simply a lack of employment or stable income. It can involve a lack of assets like land or education, or lack of access to infrastructure like roads and sanitation, or basic services like healthcare. Most importantly, poverty can involve a lack of rights or a voice to address these challenges. If we are to reduce poverty through action in the forest sector, we must factor in each of these complex variables and root causes as well.

The forest sector is perhaps better placed than any other sector to help lift people out of poverty. Forests are an amazing and resilient resource. If we look at some of the poorest nations on earth we find that many are forest rich. In these areas, forests have always played a vital role as a "safety net" for those living in and around them. It is therefore no wonder that so much attention and innovative research has gone into better understanding this relationship and how to further increase the benefit of forests as safety nets for poor people.

Income from timber, on the other hand, has been given little attention by the forces working to reduce poverty. This lack of attention needs to be addressed as we move forward to find solutions within the forest sector which lead to poverty reduction and improved livelihoods.

Potential of commercial forestry

Is this lack of attention on the potential of timber to reduce poverty warranted? Can commercial forestry actually reduce poverty? Has it pulled people out of poverty so that they do not slide back in? It has in places where the conditions are right, but the existing evidence is not very strong. We need to do more to fully understand this relationship between timber production and poverty reduction.

Anecdotally, we know that commercial forestry can be pro-poor. It can take people beyond subsistence to sustained income, and it can serve as a vehicle for increasing access to infrastructure and facilitating access to rights. As such, it can provide a route out of poverty. On a macro-level we know that commercial forestry has a significant impact on national economies. The commercial forestry sector contributes between 5 and 10% of GDP in some countries (Steele and Kragt 2006) and comprises an average of 3% of exports (FAO 2005). The big question that needs to be addressed is how much of this income reaches the poor in such a way that it reduces poverty. World Bank figures suggest not much. Income from non-wood forest products (NWFPs) play a larger role for individuals living in or near forests at 22%, compared to just 2% of income derived from timber (Vedeld *et al.* 2004). There is clearly not enough data available on this subject, but it is clear that more income to the poor can and should come from timber.

Well-conceived, pro-poor commercial forestry projects would certainly improve not only family income, but could also address other root aspects of poverty, such as access to markets, land tenure security, workers rights, development of skills, development of infrastructure and good governance. A strong commitment to pro-poor commercial forestry would also lead governments to better address issues like the collection and equitable distribution of revenues and the curbing of illegal logging.

Pro-poor forms of commercial forestry

There are several forms of pro-poor commercial forestry. The first is focused solely on public forests and governments' ability to manage them effectively in order to effectively capture revenues. The emphasis intrinsic to this form of pro-poor forestry is the reinvestment of captured revenue into mechanisms that directly benefit local communities and the forests. Unfortunately, progress here appears to be relatively weak.

Another common form of pro-poor forestry is based on out-grower schemes. This is generally where companies develop contracts with local, small landholders to produce fiber or timber to be processed at the companies' mills. These schemes are important, widespread and appear to be contributing to reduce poverty. In South Africa these schemes provide US\$ 130 per ha per year, or roughly 20% of what is needed to be above the poverty line (Mayers 2006). There are several obstacles to entering such out-grower schemes, such as actually owning or possessing land upon which to grow and harvest forest products, and being able to negotiate fair contracts with large companies on your own. These schemes also have a tendency to favor plantation systems over natural forests.

Small and medium forestry enterprises (SMFEs) are yet another form of pro-poor forestry that has had considerable attention and study of late, including several important publications from IIED (Mendes and Macqueen 2006, for example). SMFEs can represent up to 80% of the forestry in a country (Mayers 2006). They offer great potential to bring people out of poverty. In rural areas they may be one of the few options available to people for meaningful income generation. They can help to disperse wealth and power, particularly in regions that support multiple SMFEs. However, it is a volatile and fragmented sector, where on average 75% of enterprises fail in the first three years (Mayers 2006).

Finally we have larger scale company-community partnerships that may have various elements from all of the above, but are typically driven and designed by the companies, often to meet their corporate social responsibility commitments, which may have as an objective to be pro-poor. There are few examples and even fewer studies of the impact of these projects to pull people out of poverty. Some ready examples include Mondi's and Sappi's initiatives in South Africa, Klabins work in Brazil, and Stora Enso's efforts in China. These projects present the greatest unknown potential and deserve further study. The key drivers in these projects are partners with clearly articulated ideals, direct involvement by the poor and negotiated benefit sharing. This is the form of pro-poor commercial forestry that The Forests Dialogue will invest considerable time and energy on in the future.

Enabling conditions

Policies that favor the poor should also favor pro-poor commercial forestry. With recent attention and action by governments this seems more feasible. Macro-level changes such as forest sector restructuring initiatives or land restitution efforts offer the opportunity to rethink the best means and mechanisms for commercial forestry to favor the poor.

The continued development of strong community structures, as well as the formation of small holder and labor organizations, will help to enable equitable corporate and community partnerships to develop. For instance, the International Labour Organization's core labor standards provide important tools for workers and communities to engage in self organization and promotion. Such initiatives will help to ensure a relative balance of power at the negotiating table.

The formation of strategic partnerships among key stakeholders improves knowledge sharing and understanding, and it builds empowerment and trust. Strong and equitable social partnerships are important for promoting pro-poor policies and for maintaining a corporation's social license to operate in both developed and developing countries. It is certainly in a corporation's long-term interest to ensure win-win relationships which are productive and stable.

Also important is a broad awareness and understanding of the multiple issues which can impact on the success or failure of pro-poor commercial forestry, such as an understanding of the underlying causes of poverty, the potential of pro-poor forestry and models that offer tested solutions.



Key drivers

There are a number of key drivers or motivators that favor the development of pro-poor commercial forestry. Most importantly, it needs champions. Chief among these are leaders with broad networks that can articulate a clear vision and the means to achieve it. It also takes bright and innovative doers, those that will test models, monitor progress and adapt to their findings.

One of the most important motivators is strong market demand for a region's forest products and relatively easy and open access to markets. For non-traditional pro-poor partners such as corporations and private sector investors, there need to be strong motivations for them to enter into these sometimes risky partnerships with the poor. Rural development for community stability or a social license to operate can be powerful motivators, but there are many others that need to be explored and fully understood.

Measurable progress is perhaps the most important motivator. However, this requires clear goals from a forest sector point of view, a strong articulation of social standards as they relate to forestry, measurable indicators, baseline livelihood data and continuous monitoring. Unfortunately, none of this currently exists in any comprehensive form.

Finally, incorporating standards of pro-poor forestry into existing forest certification schemes may be an effective way to incorporate incentives for pro-poor commercial forestry. This will require careful design and study, but there is potential for this to drive pro-poor commercial forestry forward.

Barriers

Unfortunately, there appears to be more barriers than incentives, which currently limits the scale and spread of pro-poor forestry. These barriers need to be fully understood and actively addressed by all concerned stakeholders.

From the communities to companies to governments, there is a need for a better understanding of sustainable forest management and its potential to reduce poverty in rural areas. Misguided policies often act as a disincentive for the poor or companies to enter into pro-poor commercial forestry projects. Building capacity within government can help prioritize pro-poor forestry at the highest levels. Improving capacity in communities will help with organization, empowerment and business skills. And companies will need to build their capacity to work with the poor and improve their understanding of the issues surrounding this topic.

The sheer scale of forestry favors large operators. Costs of basic services, capital investment, access to land, environmental impact assessments, and technical forestry advice all conspire to keep pro-poor commercial forestry out of reach of the communities that are in need of it the most. In addition, limited access to financing is a difficult barrier for many rural poor to overcome. Direct government and donor agency support, enactment of pro-poor policies that remove market access barriers, and the development of creative financing mechanisms could help with these issues.

There are of course many other barriers that need to be further analyzed and explored. For example, the fact that timber-related income tends to be seasonal at best, and that there can long delays from planting to harvest make this an unsteady, erratic and potentially high-risk business for many rural poor. The high cost of market entry is another barrier that poor

individuals must take into account in their decision making. Other disincentives include the threat of illegal operators, unfair markets, irresponsible producers and lack of demand for socially and environmentally responsible products. These and other possible barriers need to be fully identified and understood.

Moving forward

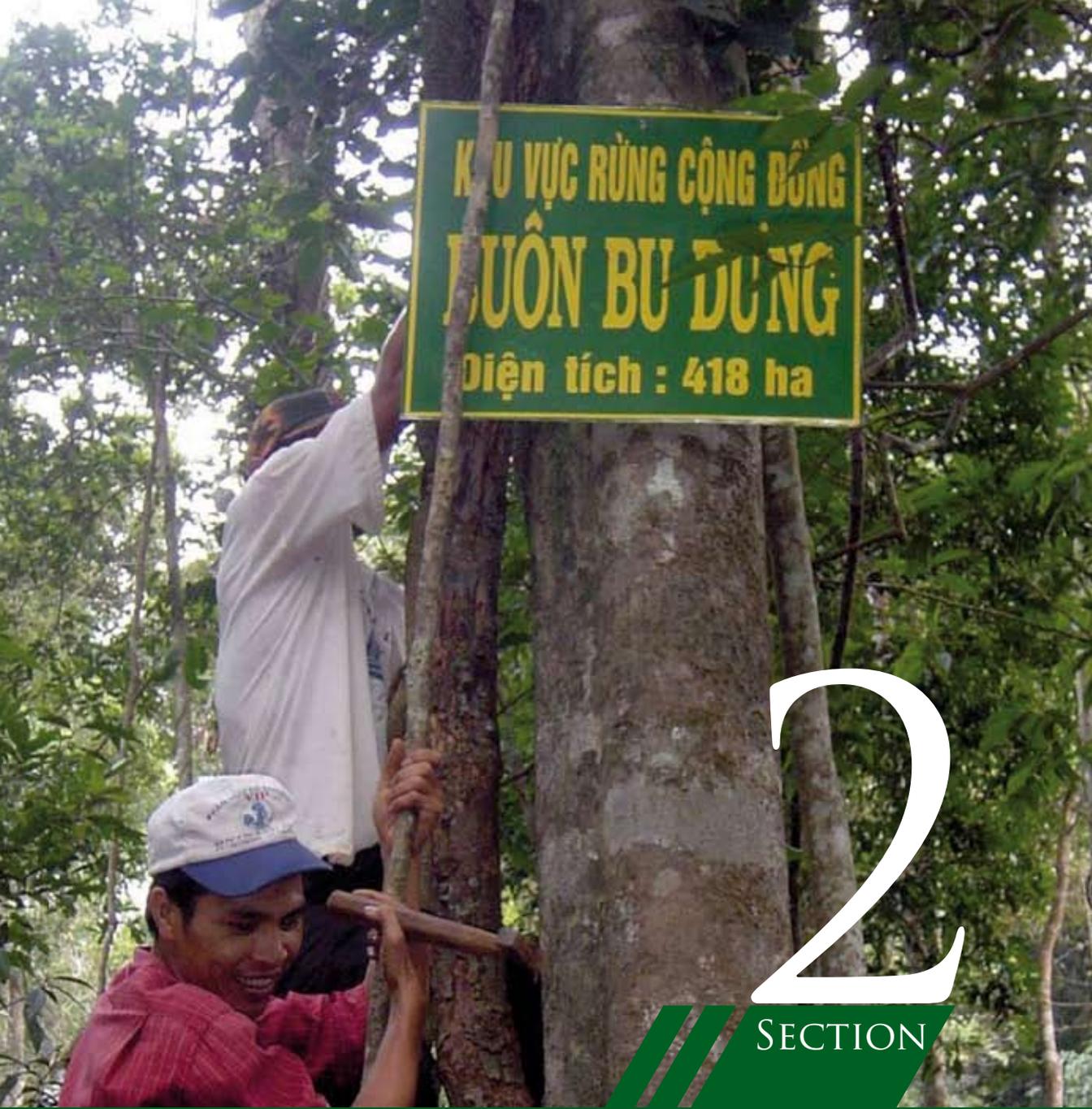
Despite the formidable barriers and the time it will take to understand and overcome them, there are enough positive trends and real potential to convince many that pro-poor commercial forestry warrants a major push to scale up. We must start with comprehensive, collaborative and sustainable strategies to build more pro-poor commercial forestry programs. Among other things, this will take more research and baseline data so as to demonstrate progress over time. In addition, there is a need for good pro-poor business models that can be easily understood, adapted and replicated. And for all of these it will be necessary to build strong, equitable cross-sector partnerships.

There are a variety of means to address these needs. TFD intends to do this through multi-stakeholder dialogue, development of best practices and standards, monitored trials on the ground and the crafting of a charter demonstrating the commitment of individuals and organizations to support pro-poor commercial forestry. If you or your organization would like to join this initiative please contact The Forests Dialogue Secretariat, at info@theforestsdialogue.org.

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2

SECTION

Policies and legislation



LOCAL AND DECENTRALIZED FOREST MANAGEMENT IN CAMEROON: THE CASE OF THE KONGO COMMUNITY FOREST

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Introduction

The Cameroon forestry law of 1994 gives rural communities access rights to forest resources in or around their villages. On the basis of a management agreement signed with the State, which includes a simple management plan (SMP), villagers can manage and exploit, in a participatory manner, their forest resources to enhance livelihood development and reduce poverty.



The implementation of this process involves reserving a community forest area, allocating the forest to the local community after the preparation of SMP, and sustainably exploiting the forest resources for the benefit of the community. The last phase is delicate from both technical (selective and sustainable logging of the forests resource) and organizational (proper and equitable management of relatively large sums of money within the institutional framework) aspects.

Kongo village in East Province of Cameroon embarked on this process in January 1998. A local association, the Bankoho Community of Kongo (COBANKO), was formed with a view to set up a community forest comprising 3,000 ha. The association was assisted by the Netherlands Development Organisation's (SNV) Support to Sustainable Development in the Lomié/Dja region (SDDL) project during the first two phases of the community forestry development process. The community subsequently managed the exploitation without project assistance.

Since COBANKO lacked the capacity to exploit its community forest on its own, it signed contracts with different timber companies which extracted 1,096 m³ of sawn wood from the forest in five years. The total revenue for the village and its inhabitants during this period was roughly US\$ 87,000, of which 27% was spent on community development initiatives and 73% comprised direct revenue to community members in the form of wages.

Despite management difficulties and apparent cases of embezzlement, the exploitation of the Kongo Community Forest contributed to significant socio-economic development within the village and generated substantial income for many families, resulting in substantial poverty reduction.

Box 1: Cameroon forestry law definition of community forestry

A community forest is “a forest forming part of the non-permanent forest estate, which is covered by a management agreement between a village community and the Forestry Administration. Management of such forest - which should not exceed 5,000 ha - is the responsibility of the village community concerned, with the help or technical assistance of the Forestry Administration.”

Source: Article 3(11) of Decree 95/531/PM of 23 August 1995.

Background

In 1997, tropical rainforests covered an area of 19.6 million ha in southern Cameroon, representing 41% of the national territory. A zoning plan envisages 8.9 million ha of permanent forests and 5.1 million ha of non-permanent forests, part of which may become community forests.

The forestry law of 1994 provides for the involvement of new actors in the management of forest and wildlife resources. This is the case with systems of “population-State” co-management of protected areas, the transfer of forest taxes to councils and communities, creation and management of council forests, etc. The setting up of community forests is one part of this relatively new forest governance dynamic aimed at livelihood development and poverty reduction. It guarantees rural communities access rights to the forest resources of their villages (Box 1). On the basis of a management agreement signed with the State, which includes the necessary SMP, villagers have the opportunity to manage and exploit the products of their community forests and realize opportunities for development (Cuny *et al.* 2005).

The publication in 1998 of the *Manual of the Procedures for the Attribution, and Norms for the Management of Community Forests* (MINEF) helped to turn this concept into reality. From 1999 to 2006, 321 applications were submitted to the Ministry of the Environment and Forestry (MINFOF), with over a million ha requested which comprises about 20% of the non-permanent forest estate. These requests ultimately resulted in 107 community forests being allocated, covering 400,000 ha. The Capacity Building Programme (see Box 2) greatly contributed to this momentum. The Kongo Community Forest is presented in this paper as a success story of this important pro-poor initiative, despite numerous general problems that need to be understood and addressed.

Box 2: Capacity Building Programme

The Capacity Building Programme (CBP, 2002-2005, co-financed by DFID and SNV) aimed to involve civil society organizations in the sustainable management of forests in order to fight poverty in Cameroon.

The objectives of the programme were to: (i) strengthen the technical and professional capacities of civil society organizations through the financing of micro projects; (ii) build their organizational capacities and promote institutional links among them; and (iii) make data relating to the forestry sector accessible to these organizations (through an information center specialized in forestry).

Fifty-six NGOs embarked on the process of promoting the “co-management of forests” and operated micro projects worth a total US\$1.6 million. They worked with 221 communities in five provinces of Cameroon. A total of 82 community forests were set up within this framework.

Analysis of the national-level community forestry process

The objectives of community forestry are to: (i) create jobs and generate income in rural areas; (ii) improve the living conditions of the people; and (iii) ensure the sustainable management of the environment while meeting the basic needs of rural communities. The stated aim is to address the basic constraints of: (i) rural communities’ limited access to forest resources; (ii) inadequate handling by communities of their own development; and (iii) almost non-existent incomes at the local level. The analysis of community forest exploitation illustrates that achievements have been made by both the communities that organized and increased their capacities, and the other stakeholders who worked in partnership during the community forestry development (State, private companies, and civil society). Given the innovative nature of this process, the stakeholders, especially the rural poor communities, are learning in a context fraught with constraints and deficits.

Phase 1 of community forestry development

During the first phase involving the allocation of an area of forest, communities often use the approach as a means to appropriate land they desire. This can have opposing consequences: either it accelerates the process when the community wants to secure

“its land,”¹ or it slows it down when some community members or neighboring communities perceive they are being cheated. If neighboring communities do not feel threatened, it may even stimulate them to begin the process of setting up their own community forests.

The allocation phase is seldom without problems, however. To begin with, the initiative to create a community forest seldom comes from communities themselves. It tends to emanate from external actors who have various interests in the process. The consequences are: (i) difficult social mobilization, which demands much time and patience from supporting actors; (ii) inadequate community social organization, resulting in unforeseen conflicts within the community; and (iii) low representation of women and the youth in the ranks of the management entities. Their membership, when it exists, is often a result of pressure by actors outside of the community.

Instances where management entity members are not truly part of the community pose a serious problem, as this often results from the omnipresence and influence of a private sector timber operator in the community, which allows him to take part in executive committee decision making and direct the management process in his favor. The process therefore is often hijacked by a few elite or private sector actors, making meaningful ownership of the community forestry activity by local communities with limited capacities² and resources³ difficult. The pressure put on communities to perform, applied by some supporting actors to respond to donor requirements, intensifies this constraint. Regardless of community capacity, support actors will often carry on with the process in spite of serious shortcomings identified during the initial phase of development.⁴

It should also be noted that modern management structures, such as Common Initiative Groups, are often ill-adapted to the traditional village context. For example, the articles of association of these management entities are “standard models” which do not take traditional institutions or social structures⁵ into proper consideration (see Box 3).

Box 3: What aspects of local communities are considered in the community forestry process?

Traditional village organizations are scarcely considered when setting up the legal management entity. Villagers are not familiar with so-called “modern management structures.” For example, villagers often do not understand that the general assembly is the decision-making organ. Often, this organ is not organized or is poorly managed, and decisions are made by the bureau of the management (although it is only an executive organ). In contrast, villagers often have traditional systems of organization like the “gula” (systems of traditional council meetings) that maintain the balance of power in the village and therefore have strong social legitimacy and high representation (although

¹ The community forestry process seeks to transfer the management of forest resources from the State to the population, but not the land, which remains the property of the State.

² Socio-economic surveys earmarked for the second phase during preparation of the SMP can highlight problems relating to the legal entity, the mainstreaming of gender and minorities issues, the quality of relations in the village, etc., and thus, the feasibility of creating a successful community forest that leads to poverty reduction.

³ Communities are highly dependent on economic operators, some of whom do not comply with the rules of the game, or lack technical capacity.

⁴ Rarely will a support organization (NGO) acknowledge, for example, that a community cannot create a community forest, which in certain cases would however be the appropriate conclusion of objective analysis.

⁵ For example, (i) the Boumkwa community of wise villagers in East Cameroon; or (ii) the peculiar decision-making systems of the Pygmies (the “yé”) involving several groups (including women) who discuss separately then come together in a plenary, etc.

it is difficult to achieve genuine representation in some villages along transport routes, composed of many non-native groups, or in others with Pygmies or migratory herders, who are often excluded). On the basis of these traditional systems of management, the organizational capacities of an association or CIG can be strengthened, noting these organizational forms are designed more for the implementation of agricultural activities than long-term management of a common forest estate.

Lastly, the process is administratively long due to numerous administrative bottlenecks, technically short with little emphasis on awareness raising and education, and costly, which limits the scope for initial consultation meetings due to lack of funds.

Phase 2 of community forestry development

The second phase of the process corresponds with the SMP. Plan preparation and implementation can enable the population to increase its power over the management of community forests. The preparation of these plans has noticeably improved over the last two years. Villagers have acquired necessary skills in forest management, and some SMPs have been well prepared with internal and external boundaries negotiated and clearly defined, known and exploitable natural resources identified, and development objectives clearly stated. This has taken place with the active participation of communities, especially when there has been support project involvement. However, this phase is also sometimes fraught with problems.

First, the quality of SMPs varies according to the individuals and organizations that prepare them. Their preparation is often not done in a participatory manner, which directly hinders the execution of forest exploitation due to a perceived lack of ownership. Second, the SMP approval process in MINFOF presents some problems: (i) the criteria for assessing the quality of SMPs vary according to the NGOs that present them; (ii) the approval deadline is very fast for some NGOs and slow for others; (iii) in most cases, communities bypass the external services of MINFOF and submit SMPs directly to the central services of the Ministry; (iv) SMPs are often rejected for minor details; and (v) some administrative authorities obstruct the signing of the management agreement. In addition, the preparation of the SMPs involves high transaction costs⁶ that communities cannot afford without assistance.

Phase 3 of community forestry development

The third phase, involving the actual exploitation of the community forest, faces numerous challenges and problems. First, at the level of control: (i) about four forests out of 10 undergo industrial-type exploitation (MINEF-DFID, 2004); (ii) external services of MINFOF scarcely monitor the exploitation process; (iii) community forest management procedures are often wrongly applied and SMPs are not always respected; and (iv) ecological sustainability can be endangered by over-exploitation and an exclusive focus on woody species, though numerous other opportunities can be integrated in this process (NTFPs, tourism, wildlife, reforestation, etc.).

⁶ When external support is sizeable, the cost averages between US\$ 10,000 and US\$ 22,000 (MINEF - DFID, 2004).

Second, the investment burden on the community is heavy at the beginning of the phase 3 process: (i) inventory of the forest resources requires considerable skills and funding, which are often only available from outside the community; (ii) the bills of lading (transportation of non-timber forest products) are expensive and often too costly for many communities that consequently put them to other uses (sale of the bills of lading to fraudulent timber operators), which leads to conflicts with the forestry administration; and (iii) the Lucas Mill-type mobile sawing machines are costly and too expensive for communities to purchase.⁷ Lastly, there are many organizational and technical constraints during this phase: (i) communities often do not manage incomes derived from the exploitation of community forests equitably, with misappropriation of funds being common, and this often leads to conflicts; (ii) there is a large communication gap between those directly responsible for managing the forest and the rest of the community, which, in the short-term, can cause conflict; (iii) the manual transportation of products (derived from dense wood) is tedious for communities; (iv) securing input supplies (fuel, lubricants, spare parts, etc.) and maintaining equipment are major difficulties; (v) control of non-authorized community forest exploitation by the rural population is difficult due to limited power; and (vi) communities encounter serious problems in marketing their forest products due to the absence of a marketing culture, lack of skills, and logistics.

In spite of the difficulties indicated above, Box 4 shows that the sound management of community forests can yield valuable revenue for local people. This is illustrated by the case of the Kongo Community Forest whose management, though not perfect, has led to an improvement in the living conditions of the rural population in that village.

Box 4: What incomes can community forests generate?

A theoretical analysis of the costs and benefits of community forestry using an economic model indicates significant variations in benefits derived by rural communities under three different management regimes (per annum, per adult): (i) predominantly timber, where income is estimated at US\$ 32; (ii) mixed timber and NTFP, where income is estimated at US\$ 6; and (iii) predominantly NTFPs where income is estimated at US\$ 5.60.

Another study by SNV and SDDL shows that a community that exploits its forest alone can obtain US\$ 125 per m³ for sawn timber, or US\$ 50 per m³ for rough timber.

Introduction to the Kongo community

Kongo is a village with 500 inhabitants, situated in the East Province of Cameroon. Villagers carry out subsistence farming (bananas, macabo, cassava, etc.) and cash crop farming (cocoa, oil palm, cola nuts). People also secure animal protein from fishing and hunting. NTFPs are used for traditional medicines and for food, such as Moabi oil (*Baillonella toxisperma*) and wild mango fruits (*Irvingia gabonensis*). Before the allocation of the community forest, when it became a marketable resource, wood was harvested primarily for home consumption.

⁷ The Lucas Mill-type mobile sawing machine has the following characteristics: difficult to handle; costly (US\$ 30,000 to US\$ 40,000); relatively high output (2 to 8 m³ per day); good quality products (for the export market); small-width pieces (23 cm maximum); hardwood can be sawn without any difficulty; reduced losses in raw materials.

Community forest allocation and preparation of the SMP

In January 1998, an association known as COBANKO was established by the villagers of Kongo in order to set up a community forest with the assistance of the SNV-SDDL project. The support of this project was necessary in order to reach a management agreement⁸ between the State and this association because, in this part of Cameroon, community spirit is low and the organizational and management capacities of the population are limited. In fact, the local population has no leadership structure and individualism overshadows the collective approach. This makes decision-making on community projects difficult and allows the negative interference of outsiders in the management of natural resources.

The main challenge faced during the preparation of the community forest application was the establishment of a legal entity to manage the community forest.⁹ Such formal associations are needed to meet the requirements for community forestry allocation, but they are very different from traditional social organizations. As a result, the executive bureau of the association, elected in the general assembly, loses some of its power as soon as the forest begins to yield proceeds, due to the emergence of other powers according to local elites, clan and tribal affiliation. The circulation of information, considered to be power, is also difficult in the village. Because of these problems, the community faces serious difficulties in managing forest revenue (Klein *et al.* 2001). In addition to the problems of establishing the legal entity outlined above, the rather prohibitive cost of preparing the community forest application is estimated at US\$ 715, which covers the cost of preliminary information meetings, identification of the forest, creation of the legal entity, consultation meetings, completion of the administrative file, and submission to MINFOF.¹⁰

Once the forest was “reserved” for the community, the next stage concerned the preparation of the SMP. The preparation of the SMP was carried out mainly by the local people themselves, and involved six stages: (i) the information and planning meeting; (ii) the training of villagers for data collection; (iii) data collection (socio-economic surveys, delineation of the forest, forest inventory, etc.); (iv) data processing; (v) training of villagers on how to draw up the SMP; and (vi) finalizing the SMP. The cost of preparing the SMP of Kongo was US\$ 3,025 (excluding technical assistance from the SDDL), which was about US\$ 1 per ha.¹¹ It should be noted that, with assistance from the SDDL, the preparation of the SMP took one year, while the entire process lasted two and a half years (from the setting up of COBANKO to the signing of the management agreement in October 2000), which is a reasonable period of time compared to the average observed in Cameroon.¹²

⁸ The management agreement is “a contract by virtue of which the service in charge of forestry allots to a community, a portion of the national forest estate, which the community manages, preserves and exploits in its own interest.” Source: Article 3(16) of Decree No. 95/531/PM of 23 August 1995.

⁹ To apply for a community forest, the community must have the “status of a corporate body, in the form of a legal entity provided for by the laws in force in Cameroon.” Source: Article 28(3) of Decree No. 95/531/PM of 23 August 1995.

¹⁰ This is the average cost incurred for the creation of five community forests by SDDL (US\$ 363 to US\$ 1,068) excluding technical assistance provided by the project.

¹¹ As compared to the cost per ha of US\$ 2 (with a local consulting firm) and US\$ 4.50 (including the technical assistance of the project with external financing), which are the average costs observed in Cameroon.

¹² It is worth noting that on average this entire process takes a substantial amount of time in Cameroon, running from 1.5 to 5 years (average of 3.5 years).

Exploitation of the community forest

The community managed the exploitation of its forest without project assistance. Since it lacked the necessary capacities to exploit the forest on its own, it initially signed a contract in 2001 with a timber operator that adopted an “industrial” approach to the exploitation (use of heavy equipment, opening up of tracks, hauling of undressed timber in the forest, etc.). This activity was suspended by the Ministry in charge of forests due to impact concerns. Exploitation was halted until early 2002, when the Ministry asked the community to sign another contract with an operator that would adopt an environmentally friendly, small-scale approach.¹³ This approach required the use of mobile sawing machines (Lucas Mill-type) owned by the timber operators, and the manual transportation of sawn wood by villagers, although manual transportation is physically demanding and sometimes causes health problems.

The community forest was exploited by four different timber operators who focused on seven species: *Entandrophragma cylindricum*, *E. utile*, *E. candollei*, *Milicia excelsa*, *Azalia bipindensis*, *Baillonella toxisperma*, and *Tieghemella africana*. Two species (*Entandrophragma cylindricum* and *Baillonella toxisperma*) accounted for 75% of the total volume harvested.¹⁴

Primary constraints generally related to forest exploitation

The primary constraints related to forest exploitation as experienced by communities in Cameroon are identified as follows:

- the transportation of sawn timber on the head by villagers is a tedious, dangerous, and costly exercise, especially when products are far from storage areas;
- the high interest of operators in selected species leads to unsustainable selective felling without respecting the SMP;
- conflicting relations between the population and MINFOF;
- internal conflicts in the community disrupt the exploitation of the forest;
- lack of respect for plot rotation as required in the SMP; and
- low price “swindling” by wood purchasers and involvement of a large number of middlemen, due to the community’s limited understanding of market dynamics and their overall low negotiation capacity.

Communities have few resources (financial, material) and lack technical knowledge to manage their own forest resources and effectively access markets. Thus, creating positive win-win relations between a community and a timber company or wood purchaser (otherwise referred to as an economic operator) present what appears to be considerable advantages, including the opportunity for the community to exploit their forest resources in ways which will benefit them. Moreover, the timber company can contribute to social investment in the villages, which will be beneficial to the community in the long run.

¹³ The transition from industrial to small-scale, low-impact exploitation was mandated by national regulation (Circular No. 0677/LC/MINEF/DF/CFC of 23 February 2001 to suspend the industrial exploitation of community forests).

¹⁴ The selective harvesting of this species leads to the scarcity of its seeds that are used by women to make oil.

Nonetheless, these relations are not free from constraints. Contracts, already oriented towards the economic operator's interests, are often too vague and seldom respected. Firstly, on a technical level, the expected volume per species is often higher than the forest can sustain. This imbalance does not respect the SMP, which can lead to a suspension of the management agreement.

Secondly, the prices paid by purchasers remain low due to the lack of negotiating capacity. For example, relating to *Entndrophragma utile*, communities often receive only US\$ 52 per m³ although its export value is US\$ 285 per m³.¹⁵ Moreover, some economic operators go so far as to not pay for wood delivered. Thirdly, it often occurs that the economic operators will corrupt the forest managers in order to make nominal or non-payment for the timber resources received.

Thus, within this framework where contracts are seldom written, the communities' ignorance of the rights and obligations of the parties involved leads to many abuses which individuals in the community often endure without question. Fortunately, the experience of the Kongo community has not been so dire.

Income management from the Kongo community forest

From 2001 until 2005, there was substantial generation of revenue and income from the Kongo community forestry exploitation activities. Official reports indicate that a total of US\$ 87,063 was generated as income for the community, comprised of direct revenue in the form of wages (73% of the total) and revenue that went into socio-economic development projects within the community (27%). There is no doubt that exploitation of the Kongo community forest led to significant socio-economic development within the village and also to substantial income generation for several families. Unfortunately, there were management problems which led to a loss of potential benefits from the activities. Some of these problems can be attributed to the community's lack of familiarity with the overall management mechanisms and micro-business management realities, but experience should help the community solve such problems over time.

The management entities¹⁶ directly involved with the community forest are characterized by (i) poor governance (limited respect of the articles of association and bylaws); (ii) low levels of representation and recognized social legitimacy of the management leaders; (iii) no transparency in management of accounts; and (iv) misappropriation of funds by the local and external elite (Oyono 2004). As an example of this, there was an unjustified gap of about US\$ 13,000 (US\$ 2,600 per year) between income generated and expenditures. As mentioned above, Kongo village was embarking on the community forest process for the first time, so at the beginning, COBANKO was not familiar with the management of forests and revenues derived from forest exploitation. This partially explains the inaccurate accounting information, weak control of the village community, and the very limited income management capacities.

In addition to the difficulties with internal management, there is also evidence that local governance problems limited the potential benefits from the community forest to the local population. For example, Kongo village is entitled to 10% of the annual forest royalties (AFR) that the Council is supposed to pay to the community to finance investments or social

¹⁵ Experience shows that direct collaboration (without intermediaries) between communities and timber companies yields significantly higher selling prices.

¹⁶ The community forest management association and village development committee.

development processes. From 2001 to 2003, this amount should have been US\$ 6,500.¹⁷ However, given that the Lomié Council never transferred the US\$ 6,500 to the Kongo Village Development Committee, it is assumed that this amount was embezzled. Decentralized taxation, as provided for by the law, has had little positive impact on development at local levels and needs to be addressed, as this limits the pro-poor benefits from community-based commercial forestry activities.

Recommendations

What should be done to eliminate the corruption and loss of revenue related to forest exploitation by economic operators? An obvious answer seems to be a clear consensus from a negotiated and transparent contract process between actors. The contract must specify clearly the object (exploitation or marketing) and it must be directly linked with the SMP in order to avoid unsustainable overexploitation of the forest resources. With regards to extracting the resource, the economic operators must present their actual costs, planned duration of activities, location of activities, employment opportunities for the villagers, etc. On the marketing side, the economic operators must indicate the species to be harvested with accurate information on volumes or quantities, the selling price of the species per m³, the sale location and date, and the signatory of the contract on behalf of the community. In both cases, the choice of which economic operator will be contracted should be made through a transparent tender process in order to maximize community profits. Prior to the economic operator being selected, all potential contractors must be fully informed, based on the inventory exploitation report (at 100%), which specific species and volumes are available in the annual coup for exploitation. This would establish a “warning” to the potential partners before a contract is established and extraction commences.

However, this contract procedure requires a significant reinforcement of the capacities of forest communities, particularly for the managers, on the technical aspects of marketing, negotiation, establishment and management of partnerships and contracts, reporting, and accountability. In addition, this contract procedure could also be supported by grouping community forests to create economies of scale and increase species diversity. Lastly, it requires legal reform to impose standard contract guarantees for the interests of all parties. To help ensure legality and contract compliance in accordance with the SMP, a representative from the MINFOF could also be present during the signing of contracts.

It is necessary to ensure ongoing and meaningful participation of community members, not only at the beginning, but throughout the process. This will enable the whole population to understand the community forest management process so they may be empowered to exercise control over technical activities and the management of revenue. NGOs that support communities involved in capacity building will need substantial resources because the awareness raising needs extend to officials responsible for technical services and administrative authorities who currently may not respect or appreciate the rules of the game.

The SDDL project has shown that a pilot phase is necessary, which requires substantial resources and time. If this is carried out by an international organization, it will help combat problem actors (unscrupulous timber operators, selfish local elites, corrupt officials, etc.). Also, a pilot phase will introduce a methodology that can be used by support actors. Furthermore, in communities lacking stable leadership structures, social development aimed at ensuring the proper application of the concept of community forestry will take time to

¹⁷ The logging operator (UFA 10 039) pays AFR into the Public Treasury, which then shares them as follows: 50% to the State, 40% to councils, and 10% to villages.

bring people with varied interests together for a common cause, including the elite, clans, etc., and encourage them to adopt a true community spirit. Creating ownership of the community forestry concept by relevant actors, especially community members, will take time. This is especially true for women and minorities, who are often excluded.

Careful attention must be paid to the forest allocation phase because it makes it possible to: (i) define the challenges of the process (“development” versus “biodiversity conservation”) at the local level; (ii) assess its impacts on development; (iii) make a diagnosis so as to appraise the existing skills and formulate a capacity building plan; (iv) capitalize on the existing social patterns to lead the group towards adopting a “community spirit” by consensus; and (v) select an appropriate management entity, as often the CIG is “imposed” on the community which does not identify with it. This phase is important because it lays the “groundwork” for the community approach. At the end of this phase, it is necessary to reach consensus on the principles and methods of utilizing revenue derived from the exploitation of the community forest.

The SMP of the Kongo Community Forest has not been used as a sustainable management tool, as communities currently have limited capacities for implementing it (the concept is new) and MINFOF cannot ensure effective follow-up, due to a lack of interest and resources. But community forestry has developed in the Kongo community, where a concern for conservation and sustainable forest management has been translated into reality through community member oversight and a reduction of illegal small-scale sawing.

It is therefore more and more necessary to encourage a separation between management (community approach) and exploitation-marketing (private or cooperative approach). This involves strengthening the community’s capacities as a contracting and decision-making authority, so that the contract can potentially be executed by a third party through an agreement signed with the community during the exploitation of forest products.

Although some community forests like that of Kongo generate meaningful revenue streams, the process can be a source of conflict and a factor in social disorder, with effects on communities that are difficult to control. It is during the distribution, management, and use of forest revenue that the most serious problems emerge. Therefore, at the very start of the process, the community must prepare to manage large proceeds from their forests and seek assistance from other actors, including civil society, private sector, and forest administration. Associations must develop an “entrepreneurial spirit” and unite: ten associations can each offer more than 5,000 m³ per year (including a large volume of high-quality species) to timber exploiters within a contractual framework that protects the interests of each community.

Conclusion

The case study of the Kongo community forest shows that communities need to strengthen their technical and management capacities. This is one of the conditions that will help lead to poverty reduction in rural areas. Success depends on proper implementation of the community forestry process. This entails the improvement of relations between the stakeholders involved, specifically between communities, the forest administration, and timber operators. Civil society, strengthened by SNV and other international organizations operating in Cameroon, can play a vital role in this area. It is in this vein that SNV and DFID have, since May 2006, been supporting a new program known as the Forest Governance Facility (FGF) in Cameroon. The aim of this program is to develop a “discussion forum” and to facilitate the commitment and participation of non-State stakeholders in the development and implementation of Cameroon’s environmental and forestry policy. The objective of this

program is to improve the overall context so as to achieve sustainable practices in the forest and environment sectors in Cameroon, within a framework of good governance and equity.

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FOREST HARVESTING IN COMMUNITY BASED FOREST MANAGEMENT IN THE PHILIPPINES: SIMPLE TOOLS VERSUS COMPLEX PROCEDURES

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Introduction

Forest harvesting by communities offers great potential to reduce poverty in the Philippine uplands. The country has approximately 1.5 million ha of second-growth “production forests” that can be utilized commercially on a sustainable basis by thousands of poor upland communities. While not as economically valuable as natural forests, timber from tree farms also offers viable livelihood opportunities to upland communities. Aside from timber revenue, additional income may also be generated from branches and thinnings sold as firewood or converted to charcoal.



Most rural villagers already possess the necessary skills for manual flitching¹ of timber from natural forests. They also know how to plant and tend tree farms since trees have always been an important component of their farming systems. Furthermore, policies set forth in the Community-based Forest Management (CBFM) Program of the Philippine Government envisage active involvement of the rural poor in the management of both tree plantations and natural forests.

Despite its immense potential to reduce rural poverty, community timber harvesting has not been effectively harnessed by the Philippine Government. While natural timber harvesting only requires “simple tools” to benefit the poor upland communities, “complex procedures” continue to obstruct the realization of this potential. We view “simple tools” to be of two types: (i) simple physical tools such as hand saws, animal skidding², and other simple equipment; and (ii) procedural tools such as simple management guidelines, simple approvals, simple inventory techniques, simple management plans, and the like. On the other hand, existing “complex procedures” relate to a blend of policy/political, institutional, and operational factors whose combined effects hinder the achievement of the poverty reduction objective of CBFM. This paper reviews the opportunities and constraints for poverty reduction through timber harvesting in upland communities, and suggests that realizing this potential will require the reduction of “complex procedures” and adoption of “simple tools”.

Overview of community-based forest management

Until recently, policies on the commercial utilization of the country’s timber resources consistently favored the wealthy and politically more influential concessionaires under the so-called timber license agreements (TLAs). Such policies contributed to the socio-economic and political marginalization of the rural population, and also to the continuous degradation of the country’s forest resources (Broad and Cavanagh 1993; Kummer 1992; Porter and Ganapin 1988; Vitug 1993).

Following Rebugio and Chiong-Javier’s classification (1995), the evolution of community forestry over the last three decades can be loosely divided into three categories. First is the *pioneering* period from 1971 to 1980. This term saw the adoption of three major people-oriented forestry programs, namely the Forest Occupancy Management (FOM), Family Approach to Reforestation (FAR), and Communal Tree Farming (CTF). In general, these programs centered on the involvement of local people in reforestation activities. People were seen more as labor-providers rather than partners in forest conservation and development. Considering the volatile political situation during this time, community forestry was also seen as a counterinsurgency measure to maintain political stability and order in the countryside (Porter and Ganapin 1988). However, it was during this period that the forestry sector started to realize that the problem of unsustainable deforestation is not merely technical, but also socio-political in nature.

The second category is the *integration and consolidation* period from 1981 to 1989. This marked the adoption of two main people-oriented forestry programs, namely, the Integrated Social Forestry Program (ISFP) and the Community Forestry Program (CFP). ISFP consolidated the three earlier programs, while recognizing the vested rights of the forest occupants through the provision of a 25-year tenure security arrangement. Meanwhile, CFP extended the coverage of community forestry to natural forests, allowing participating upland

¹ Flitching refers to the process of cutting logs into strips.

² Skidding refers to the dragging of logs.

communities to commercially utilize forest resources subject to appropriate social and technical preparation. From being merely laborers in reforestation activities, local people were increasingly recognized as the *de facto* resource managers, hence, partners in forest development and conservation.

The third category from 1990 to the present is the *expansion and institutionalization* period. This period is characterized by the growth of community forestry to include various land-use types not originally included in the first two periods. In particular, community forestry coverage included degraded watershed areas and practically all types of forests where there are indigenous cultural communities. Increasing support from international funding agencies such as the Asian Development Bank, World Bank, Japan's Overseas Economic Cooperation fund, United States Agency for International Development, and other multilateral and bilateral donors also defines the period, especially from the late 1980s to early 2000. Efforts to provide tenurial security during this period led to the evolution of various types of tenure instruments. Moreover, attempts to alleviate upland poverty while ensuring the sustainability of the forest resources induced the development of a diverse array of income generation mechanisms and models for the uplands.

Various forms of institutional arrangements also continued to evolve during this period. From purely government-implemented projects in the 1970s, the practice of community forestry has increasingly involved upland communities in forest management. This is made possible through the formation of people's organizations with assistance from other stakeholder organizations such as non-government organizations (NGOs), local government units (LGUs), academia, and others.

Recently, the different programs and projects that emerged during the last two periods were "integrated and unified" into one umbrella program, otherwise known as the *Community-based Forest Management Program* (CBFMP), through Executive Order (E.O.) No. 263 (July 1995) and the Implementing Rules and Regulations, Department of Environment and Natural Resources (DENR) Administrative Order No. 96-29 (October 1996). E.O. 263 adopted CBFM as the national strategy for sustainable forestry and social equity, thereby institutionalizing the practice of community forestry in the country.

The formal adoption of CBFM frames the main government strategy towards the restructuring of the once corporate-controlled timber industry. Timber Licensee Agreements (TLAs) controlled one-third of the country's total land area of 30 million ha from 1971 to 1977. With the shift in the government's forest management approach in favor of CBFM starting in the late 1980s, TLA areas have gradually declined to the present 0.54 million ha due to the cancellation of non-compliant licensees and non-renewal of those that have expired. At the same time, from less than 200,000 ha in 1986, the CBFMP currently covers some 5.97 million ha of forestlands involving 5,503 individual sites and directly benefiting more than 690,000 households. Of these, around 4.9 million ha are under various forms of land tenure arrangements, with 1.57 million ha covered by Community-based Forest Management Agreements (CBFMA) (Figure 1).³

³ CBFMA is an agreement entered into, by and between the government and the local community, which has a term of 25 years and is renewable for an additional 25 years.

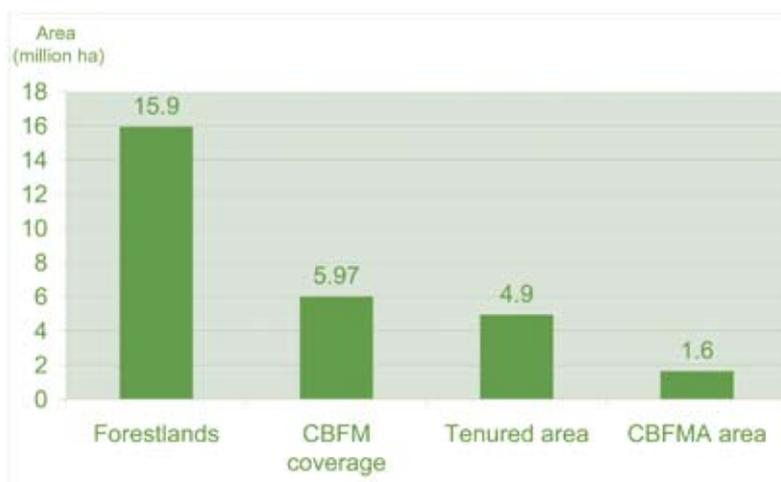


Figure 1. Status of CBFM Implementation

Potential of forest harvesting in CBFM

Without doubt, the harvesting of forest resources by communities has tremendous potential to reduce rural poverty in the Philippines. This potential is illustrated by the following data:

- The Philippines has about 2.56 million ha of second-growth forests, of which approximately 1.5 million ha are production forests.⁴
- Second-growth production forests contain an average timber volume of 145 cubic meters (m³) per ha (FMB-DENR, FAO and UNDP 2003), equivalent to a gross national volume of approximately 217.5 million m³.
- At current market values of not less than US\$ 60 per m³, the production forests comprise a natural resource asset worth more than US\$ 13 billion;⁵
- Drawing on this huge asset, two-person teams using manual flitching saws can produce an average 0.25 m³ per day (Bagong Pagasa Foundation 2006), or a potential daily income of US\$ 7.50 per person day (0.25 m³ x US\$ 60 ÷ 2 persons = US\$ 7.50 per person day).
- The current average income per family in rural upland communities of the Philippines is less than US\$ 2 per day.
- Timber harvesting by communities in these second-growth forests has the potential to bring about a 3.75% increase in rural family income (US\$ 7.50 ÷ US\$ 2 = 3.75%).

On privately-owned lands that cannot be farmed profitably, and on denuded government-owned lands, average annual growth rates in tree-farms devoted to fast-growing timber species⁶ are at least five m³ per ha. While not as valuable as timber from natural forests, the prevailing price for these species is not less than US\$ 40 per m³. This is equivalent to a

⁴ Official statistics of the Department of Environment and Natural Resources (DENR).

⁵ 217.5 million m³ x US\$ 60 per m³ = US\$ 13.05 billion.

⁶ For example: *Gmelina arborea*, *Acacia mangium*, *Eucalyptus deglupta*.

potential annual income of around US\$ 200 per ha⁷, plus additional revenue from branches and thinnings sold as firewood or converted to charcoal.

Rural villagers already have the skills required for manual flitching of timber from natural forests. They also know how to plant and tend tree farms. Furthermore, policies set forth in the Government's CBFM program envision active involvement of the rural poor in the management of both man-made and natural forests. Given this policy framework and the prospects for significantly increasing rural income, one would assume that forestry is already contributing to reduction of rural poverty.

The CBFM program, which in principle supports sustainable timber harvesting by local communities for commercial purposes, was launched in 1995. Its predecessor, the CFP, began as early as 1989. Both of these development interventions were preceded in the mid-1970s onward by similar programs and projects focusing on tenure security, agro-forestry, tree-farm development, community organization, training, and related initiatives. Most of these programs and projects have been supported by international donors, NGOs, and other concerned stakeholders. After all this time and support, have the poverty alleviation and other objectives been realized?

Constraining factors

Unfortunately, the poverty alleviation, community empowerment, and environmental management objectives of the CBFM program have not been realized except in a few rare cases (see for instance Borlagdan *et al.* 2001; and Pulhin 2005). Why not? What are the factors that stand in the way of reducing poverty in rural communities through active participation in forest management?

There are no simple answers to these questions. One could cite the widely-held, but mistaken perception that forest management cannot be implemented effectively without a large-scale investment in machinery and sophisticated technical expertise. Due to this false perception, many government planners, decision makers, and financial managers doubt that community participation in forestry is a viable strategy. Consequently, they withhold support for such initiatives. Additionally, distorted media reports, coupled with strident advocacy work by some NGOs, tend to create the erroneous conclusion that forest harvesting is synonymous with total deforestation. Riding on "sound bytes" that generate negative attitudes towards forestry in general, opportunistic politicians espouse short-sighted policies that seek to ban any and all forms of timber harvesting, whether by communities or corporate entities. Another factor is the generally recognized resistance to change among many professional foresters and forest agencies. While often agreeing with the concept that communities can and should have a major role in forest management, this amounts to little more than "lip service" with very few tangible inputs toward achieving either community-based forestry or poverty alleviation.

All of these factors pose challenges that need to be addressed in the Philippines and in other countries where the opportunities for forestry to reduce rural poverty are beginning to be recognized. However, this paper primarily focuses on another set of constraints: namely, rules and regulations that are unrealistic in a community context, and which serve no useful purpose with respect to sustainable forest management.

⁷ Jurgen Schade (1988), the then Executive Adviser and German Team Leader of the Philippines-German Forest Resource Inventory Project cited an annual growth of 5 to 10m³ per ha for *albizzia*, *eucalyptus* and *pine* plantations.

In the Philippines, and in other countries as well, practitioners of community-based forest management are required to produce sophisticated forest management plans wherein the annual allowable cut (AAC) is computed on the basis of prescribed inventory procedures and formulas. By contrast, villagers in Imazu, Gifu Prefecture in Japan, limit the AAC to one tree per hectare per year, and have followed this practice for more than 100 years (Forestry Agency of Japan 1995). Their forests remain intact and productive while using a very simple procedure for calculating the AAC. Both of these approaches have the same objective - sustainable forest management. But between these two procedures, it does not take much analysis to conclude which is more appropriate and more feasible for communities to implement. In the Philippines, communities are forced to seek assistance from professional foresters who know how to conform with government standards for the preparation of complicated forest management plans. Is it realistic to assume that the residents of impoverished rural villages have the financial resources to pay for the services of professional foresters?

Rules that govern scaling are another impediment in some Asia-Pacific countries. Logs must be scaled after felling and bucking, then scaled once again in log form when loaded on hauling trucks. Scaling of flitches is not allowed. How can a community with no heavy equipment be expected to comply with scaling rules that require movement of a round log from the forest on to a truck? If timber can be accurately scaled in lumber yards, is it not reasonable to conclude that flitches can be scaled accurately in the woods.

Regulations to control the transport of harvested timber create additional problems. Communities are required to obtain permits for moving timber from the woods to roadside, and another permit to transport the timber to buyers. At first glance, compliance with these rules would seem to be a simple matter. However, offices of the agencies authorized to issue permits are many kilometers away from the forest. Each time a community requests issuance of a permit, someone from the village must travel to the office of whoever has authority to sign a permit, hope the individuals he or she needs to see are available, and facilitate their travel to the production site. These individuals will inspect the timber, return to their offices, and submit their inspection report to their head of office for signature. It is only then that the timber can be moved. Bureaucratic delays are inevitable and are compounded by the need to travel back and forth several times. Granting that inspections are necessary to determine compliance with cutting limits, is there any valid reason for multiple permits, which require multiple inspections?

Tree farmers who develop plantations on their own private lands have complained bitterly about the need for transport permits. Regulations originally formulated to monitor and control the removal of timber from natural forests are being enforced on planted timber. This has led to a proliferation of checkpoints along transport routes, ostensibly to prevent the movement of illegally cut logs. In theory, the tree farmer is required to present a transport permit at each checkpoint. In practice, the persons manning the checkpoint waive this requirement after demanding and receiving an unofficial payment. The requirement to obtain and produce transport permits has created an environment conducive to corruption. Indeed, there is a standing joke that checkpoints are actually "cash points" because the people manning these facilities do not accept checks.

Legislation was introduced in the Philippine Congress more than ten years ago to streamline and update forest policies, rules and regulations. But this important piece of legislation has lain dormant. More recently, the Society of Filipino Foresters (SFF) drafted legislation doing away with transport permits for timber grown on private land. This proposal is also languishing in Congress.

An unfortunate result of the above problems is the fact that being issued with a tenure instrument in the Philippines, particularly a CBFMA, does not provide the participating

communities any assurance that they can engage in timber harvesting or benefit economically from the forest. In principle, a CBFMA entitles the community the right to occupy, possess, utilize, and develop the forest lands and resources, and claim ownership of introduced improvements in the area. In reality, the permit for timber utilization may be withheld or cancelled by the government on its own volition at any time. Over the last three years, for instance, three DENR Secretaries issued nationwide cancellations of all CBFM resource utilization permits (RUP) due to alleged violations of some participating People's Organizations (POs). Investigations of these cases revealed that violations were indeed committed by a few POs. The investigations further revealed that the violations were carried out in connivance with DENR field personnel. Unfortunately, all POs nationwide were punished for the transgressions of a few POs and some DENR personnel.

The series of cancellations had adverse socio-economic and environmental impacts, including the reduction in income or loss of livelihoods by the concerned POs, loss of communities' interest to participate in CBFM activities, erosion of people's confidence in the government, and acceleration of forest destruction due to reduction of forest protection activities by the local communities (Pulhin and Arboleda in progress).

The greatest blow to CBFM, however, happened less than a year ago when the former DENR Secretary cancelled about 1,200 of the more than 1,500 CBFMAs nationwide without due process. This was a major violation of the CBFMP provisions. Fortunately, implementation of the cancellation order was stopped by the new Secretary due to pressure from civil society and from legislators during the DENR budget hearing. However, the propensity to order wholesale cancellations remains a big threat to the sustainability of CBFM and its potential to help reduce poverty in the Philippine uplands. Existing policies state that CBFMAs have a duration of 25 years and are renewable for the same period. Unfortunately, recent experience demonstrates that the CBFMP policies can be set aside through a single stroke of a pen by people in power, with complete disregard for due process of law.

Conclusion and recommendations

Community-Based Forest Management has been alluded to as representing a major paradigm shift in Philippines' forest management from a centrally controlled approach benefiting the privileged few towards a more participatory "people-oriented" strategy. The latter envisions improvement of the socio-economic welfare of poor upland communities through the promotion of social equity and justice while advancing sustainable forest management. While much of the original old growth forest of the country which served as the traditional sources of commercial timber have been degraded over the last century, the remaining second-growth forests still represent a rich natural resource that can be utilized commercially on a sustainable basis by thousands of poor upland communities. Forest harvesting by communities in these areas offers a great potential to reduce poverty and improve current forest management.

However, despite the immense potential of community timber harvesting to reduce rural poverty, "complex procedures" continue to obstruct the realization of this potential. For CBFM to be able to contribute to poverty reduction, the following strategies should be pursued with the aim of reducing "complex procedures" and adopting "simple tools."

1. Include subjects on the financial feasibility and use of animal-powered skidding technologies in the curricula of forestry education institutions. This can help legitimize timber extraction procedures that are feasible for communities to implement in their struggle to overcome rural poverty. Many graduates of these institutions will eventually

- be employed by forest agencies and be in a position to influence the crafting of simplified rules and regulations.
2. Adopt rules that combine scaling at the stump, followed by flitching in the woods, such that animal-powered skidding can be applied while concurrently ensuring accurate methods for determining the volume of timber subject to payment of government royalties.
 3. Deregulate the harvesting, extraction, and utilization of plantation species grown on private land. At present, most of these species are exotics. Thus, drawing up a list of deregulated species would not be difficult.
 4. Develop simple area-based criteria for determining the annual allowable cut. For example, one tree per ha per year on marginal forests, two or three trees per ha on medium density forests, and four or five trees per ha on rich forests. Set standards for “marginal,” “medium density,” and “rich” forests that can be determined by simple random sampling of strips.
 5. Provide forest extension agents with the skills needed to disseminate methods for accurate determination of road and skid trail gradients using simple calibrated “A-frames” fabricated on site.
 6. Devolve responsibility for issuance of permits to field offices located within easy travel distance from forests managed by communities. Use only one form for scaling and for extraction, hauling, transporting, and selling. This can be done by simply adding lines to be signed first by the scaler, and next by the officer authorized to issue the permits.
 7. Develop “filling in the blank” forms for preparation of management plans, indicating who will do *what*, *when*, and *how*. Provide “check the appropriate box (es)” on these forms. Specify that approved management plans are valid for at least five years, subject to updating by the community as and when needed, by re-submission of “filling in the blank” forms.
 8. Include the organization of information field trips for media representatives, NGOs, and government decision makers in the work plans or terms of reference (TORs) of forest officers to help demonstrate that forest harvesting is not synonymous with deforestation.
 9. Provide satellite imagery that clearly illustrates forest conditions to the media, NGOs, and government decision makers so they have accurate information on forest cover. This may help dispel the negative perception that “all is lost.”
 10. Conduct studies that provide accurate data on the employment opportunities generated by medium- and small-scale enterprises that are dependent on reliable supplies of timber. Previous studies deal principally with the formal forestry sector but do not include the large number of people working in small furniture shops, carpentry, production of boxes to transport agricultural products, charcoaling, and supplying firewood to bakeries, restaurants, and households, and other wood-based jobs.
 11. Institutionalize a multi-stakeholder participatory policy and decision-making process to ensure that the interests of the communities and other important sectors will be adequately represented.

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COMMUNITY FOREST MANAGEMENT (CFM) IN VIET NAM: SUSTAINABLE FOREST MANAGEMENT AND BENEFIT SHARING

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Introduction

The concept of Community Forest Management (CFM) was officially recognized for the first time in Viet Nam with the implementation of the Law on Forest Protection and Development (2004). Prior to this, however, the Government of Viet Nam had been promoting CFM for some decades, specifically on issues such as (i) the process of forest land allocation to households and household groups (particularly to poor, ethnic minorities whose livelihoods are closely linked to traditional forest management); (ii) the decentralization of forest management; and (iii) the development of pro-poor mechanisms targeting groups involved in innovative forest management solutions. This process of devolving forest management has faced significant challenges. For example, there is a lack of capacity in facilitating participatory approaches to forest allocation, and community



forest assessment and planning. In addition, the policy on benefit sharing for land recipients is not clear and therefore not workable, and the administrative procedures for harvesting, which have historically been applied to State Forest Enterprises, are too complicated for the Community Forest Management context.

This paper looks at these issues through a synthesis and summary of field-based learning with the following main issues:

- *Forestry techniques and approaches*: Guidelines for participatory forest assessment and planning, development of local regulations for forest protection and development, in conjunction with simple silvicultural treatments.
- *Forestry policy*: Mechanisms to identify benefit sharing and rights of communities.
- *Forestry administration*: Procedures for the suitable management and monitoring of Community Forest Management.

The lessons have been derived from the Song Da Social Forestry Development Project (SFDP) in Son La Province, experiences in undertaking consultancies with the Extension and Training Support Project (ETSP) in Hoa Binh, Thua Thien Hue and Dak Nong Provinces, and for the Rural Development Project of Dak Lak (RDDL) in Dak Lak Province (capacity building, initiation and implementation of CFM pilots), and from experience with Government-funded research on establishing a CFM model in Gia Lai Province.

Background

The Land Law (2003) and the Law on Forest Protection and Development (2004) highlight the relevance of community forest management (CFM), in which the roles of local people and their traditional forest practices are considered important components of overall forest management. It is expected that CFM will significantly contribute towards national sustainable forest management, while at the same time contributing to poverty alleviation. CFM is normally introduced after forest land is allocated to the local village community along with the rights to manage and make use of the resources within the current legal framework. The rationale for supporting CFM in Viet Nam is: (i) While natural forests continue to be steadily degraded, local forest-dependent people, who have significant knowledge and skills to contribute to the management and protection of these forests, are not afforded actual rights and responsibilities to meaningfully contribute; (ii) Local forest-dependent people are not receiving fair benefits from current forest management arrangements, which do not acknowledge the linkage between community participation in forest management and poverty alleviation; and (iii) The ethnic minorities, which possess valuable knowledge on traditional forest management and use, are not being utilized as much as they should be. Therefore, the overall rationale is that local forest-dependent people, possessing clear and secure rights and responsibilities, can play an important role in the sustainable management of forests. The CFM process has been piloted in many provinces in Viet Nam, such as Son La, Hoa Binh, Thua Thien Hue, Quang Nam, Binh Dinh, Quang Ngai, Dak Lak, Dak Nong, and Gia Lai provinces through various projects implemented by SFDP/GTZ, ETSP/Helvetas, Viet Nam/SDC, RDDL/GFA Dak Lak, and through some Government-funded research. Since 2000, the methodology for CFM has been developed with the participation of many stakeholders, including forestry department officials from various levels. The methodology covers areas such as the development of participatory methods and approaches for forest land allocation, forest assessment, development of forest management plans, designing forest protection regulations, and the development of simple silvicultural guidelines. However, the effectiveness of almost all of these methodologies depends on the development of the CFM plan, as there are policy

shortfalls on issues such as benefit sharing, rights, and the administrative procedures for harvesting and utilization of resources.

To date, only two villages (Dak Rti, Dak Nong Province and T'Li, Dak Lak Province) have been allowed to pilot CFM implementation, including looking at innovative administrative procedures and benefit-sharing mechanisms for commercial wood harvesting. From these two pilot studies, it was shown that the two communities were able to generate an average annual income of about VND 3-5 million (US\$ 190-310) per household.

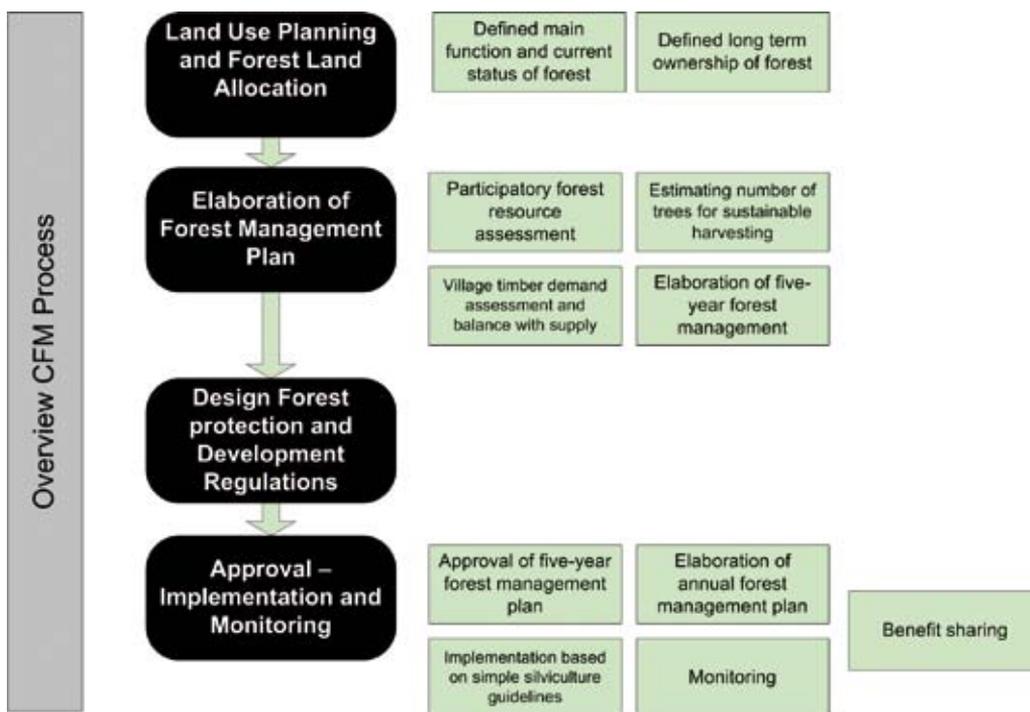


Figure 1: Overview of CFM Process

The development of CFM involves changes that can only be achieved through a strong collaborative effort. This includes change in the policy framework, as well as the introduction of new management procedures and technologies. An important aspect is the development of appropriate financial mechanisms at the community level that will help facilitate transparent and equitable benefit sharing.

The establishment of CFM systems begins with the development of a five-year forest management plan by the community, ultimately calculating community needs, both domestic and commercial, and ability of their forest resource base to meet these needs. Following this step, local forest protection and development regulations are developed in accordance with the existing legal framework. In order to implement the forest management plan, appropriate silvicultural methods are then developed, based on both traditional and customary systems, in conjunction with needed capacity building. Finally, locally appropriate and developed monitoring mechanisms, and a cost effective operating system, form the final framework for the implementation and ongoing management of the CFM arrangement.

Forestry techniques and approaches for CFM

To support the implementation of CFM, guidelines have been established for participatory forest assessment and planning, the formulation of local regulations on forest protection and development, and simple silviculture techniques (SFDP Song Da 2002, ETSP/Helvetas 2005, RDDDL/GFA 2005- 2006). Within these guidelines, participatory approaches have been developed to:

- Enhance community participation in the decision-making process during the development and implementation of forest management plans, forest protection regulations, and development regulations. This will in turn assist the community in improved management of their forest resources.
- Define the role of technical staff in CFM as one of facilitation and support to the community during all steps of the CFM process, such as providing information on changing forestry policies and new and appropriate silvicultural technologies.
- Define the roles and responsibilities of community members in CFM organizational systems.
- Build capacity in using simple methods and tools (communities differ in terms of management capacity, education level, and experience in natural resource management).
- Promote a common learning process. CFM is a new approach in Viet Nam, with the methodology being continually developed and improved, and there is no one model that can be applied to all situations. Approaching CFM as a learning process is therefore more realistic and sensible at this time. Through the development of new methodologies and sharing of experiences, a more effective and flexible approach that is adaptable to all conditions will be encouraged.

In addition to the participatory approaches above, there are several additional forestry techniques that are currently being tested and piloted as listed below.

Participatory forest assessment

The ultimate objective of participatory forest resource assessment is the use of a simple but effective methodology to capture the baseline information needed for the development of a management plan for each forest block. It includes activities such as blocking, labelling, area calculation, block description, and participatory forest inventory.

The sustainable forest management (SFM) model as a tool for forest management

Characteristics of SFM:

- By using tree diameter measurements, growth rates, and distribution, foresters supporting CFM can calculate the incremental growth and sustainable harvest rates of their forest resources.
- Using mainstream systems for forest management is not, for the most part, appropriate, as the reserve and condition of natural forests after years of exploitation remain low. Through SFM, forests are managed for biodiversity and a combination of sustainable domestic and commercial exploitation.

SFM mechanisms support:

- The development of timber harvest strategies: SFM is an effective tool for calculating the sustainable harvest rates for each forest block.
- Forest supervision and management: The SFM model also provides a mechanism for forestry agencies to monitor the management of the allocated community forests.

Community timber supply and demand assessment

One of the primary purposes of CFM is to provide timber to meet the long-term needs of the community through the sustainable harvest of their forest resources. The “timber needs assessment” is therefore an important part of the management planning process. The ability of the available forest resources to supply these needs is then assessed under the SFM mechanisms.

Development of forest management plans

A 5-year forest management plan is developed for each forest block, including for highly degraded or deforested areas that provide few, if any, forest products in the short term. The development of the plan is based on the current forest status, the community needs, and the human and financial resources that the community has at its disposal.

Design of forest protection and development regulations (FPDR)

The development of regulations based on traditional knowledge, while recognizing current government rules on forest protection and development, is a fundamental component in the process. The development of regulations by the community provides the best chance for continued community participation in the implementation of these regulations. Only when regulations are prepared by the community will there be sufficient incentive and motivation to adhere to the “agreed” rules.

Development of appropriate silviculture guidelines

There are important differences to note between conventional silvicultural techniques applied by State Forest Enterprises (SFEs) and forestry companies, and those developed and used in CFM, as outlined in Table 1.



Table 1: Differences between silvicultural techniques applied by SFEs and CFM

Criteria for comparison	Conventional forestry	CFM
Volume of timber per harvest and silvicultural applications	Selected harvesting with large volume (based on the economic efficiency of the harvest; all the timber increment grown over previous 20 years harvested)	Small volume harvested (mainly for household needs and some for trading); selected harvesting of individual trees based on diameter class, according to the sustainable forest model
Harvesting frequency	Not regular (“harvesting” and “waiting”) over 20-30 years	Annually
Techniques applied	Machine harvesting and transportation	Use of local simple tools for harvesting and transportation
Impacts on the environment	High impact on the land and residual trees due to the use of machines and the large volume harvested	Low impact on the land and residual trees due to the use of simple tools and the small volume harvested
Requirement to maintain the forest after harvesting	Very high (due to high impact on forest resources)	Low (depends on the selection of the trees for harvesting and logging techniques)

(Source: Bao Huy 2005)

Silvicultural techniques applied in CFM aim at meeting household needs, including for commercial purposes, on a regular and sustainable basis. Community harvesting is normally conducted with manual tools and is considered to be “low-impact harvesting.” Therefore, community silvicultural techniques need to respond appropriately to local resources and knowledge.

To manage community forests sustainably with available resources, the principles in Table 2 apply in the development of silvicultural techniques for CFM.



Table 2: Principles for the application of silvicultural techniques in CFM

Principles	Results
Participation of local people and communities	Improved capacity in forest management by forest users, enabling them to apply techniques themselves
Multi-purpose use of forests	CFM allows for product diversification, taking into account products such as timber, NTFPs (food, medicinal plants, materials...), etc. Low impact on forests as forest structure and function are maintained: production, protection, genetic conservation, and biodiversity.
Application of local knowledge and experiences	Local knowledge and experiences on the use of forest products (timber, medicinal plants, materials, food, etc.) are incorporated to meet the needs of the communities.
Local silvicultural techniques combined with scientific knowledge	Forest harvesting has low impacts on the environment and is appropriate for the community's resources.
Balance of supply and demand to ensure sustainability	Ensures the sustainability of the forest resources while providing for the needs of the community.
Cost-effectiveness	Optimizes the use of time required and other resources to maximize economic efficiency - appropriate to the community's resources.

(Source: Bao Huy 2005)

The system of silvicultural techniques needs to be further developed based on the practical needs of CFM. In Viet Nam, special use forests are managed by state agencies and only protection and production forests are allocated to communities, household groups, and individual households for long-term management and use. Therefore, appropriate silvicultural techniques should be developed for these two types of forests.

Cleared land is mainly used for forest plantations or agro-forestry, with the option chosen based on the needs and resources of local resource users and on the specific environmental conditions of the locality. Depending on the condition of the forests, and the management capacity and resource use needs of the community, the following basic silvicultural solutions apply:

- For timber and firewood: selected harvesting, forest enrichment, promotion of natural regeneration, and forest fire prevention are recommended.
- For NTFPs: management solutions and propagation are recommended.
- For protection: forest protection, forest maintenance, and fire prevention are recommended.

Through the piloting of appropriate silvicultural techniques, the community itself is able to assess the condition of their forests, calculate their demand for timber and non-timber products, and balance this demand against projected supply in order to develop adaptive

forest management and harvesting plans. This offers an important opportunity for the community to be able to manage their own forests for commercial and non-commercial purposes, and also for forestry officials monitoring the process of forest management to build their capacity.

CFM policy

Setting benefit-sharing mechanisms in CFM

The system of using post-allocation incremental growth to determine equitable harvesting programs appears to be a fair system. The traditional volume-based growth harvesting system is not practical, as there is a lack of data norms for different forest types, soil conditions, climate, and forest condition which are needed to model growth. As a result, using the SFM system to define harvest strategies and benefit sharing is the preferred option.

SFM as a tool for determining forest increment and benefit sharing

The benefit-sharing plan is determined as a result of the harvest limits, which are based on a percentage of the tree diameter growth over five years, regardless of forest condition variations between blocks. Based on this, the community can develop an equitable intra-block sustainable five year harvest plan.

Proposed mechanism for benefit sharing among forest users

In order for community forest management to be undertaken by communes and villages without external financial support, benefit sharing must be both equitable and transparent. Community forest management is considered as a livelihood development or poverty alleviation form of forestry, and the income generated from selling timber and non-timber forest products can be used for common community interests and as a direct form of compensation or income for communities.

Based on the growth data over five years, benefits can be calculated for each stage of the five year CFM plan. Comparing the actual number of trees from each forest plot against the SFM guidelines, the community can calculate which trees can be harvested. SFM is therefore used as a control for determining harvesting rates and benefits to be shared.

Results from benefit-sharing projects trialed in T’Li village, Dak Lak province by the RDDL project

Benefit-sharing mechanisms for household purposes:

The Village Forest Management Board (VFMB) organizes a village meeting to decide on the following issues (see Figure 2):

- The amount that households can harvest annually for their personal consumption.
- The amount households must pay in partial fees to the village fund, agreed on in the Village Forest Protection and Development Regulations (FPDRs), for village forest management.
- The amount of surplus trees (if available) that can be harvested to contribute to the village fund for forest management.

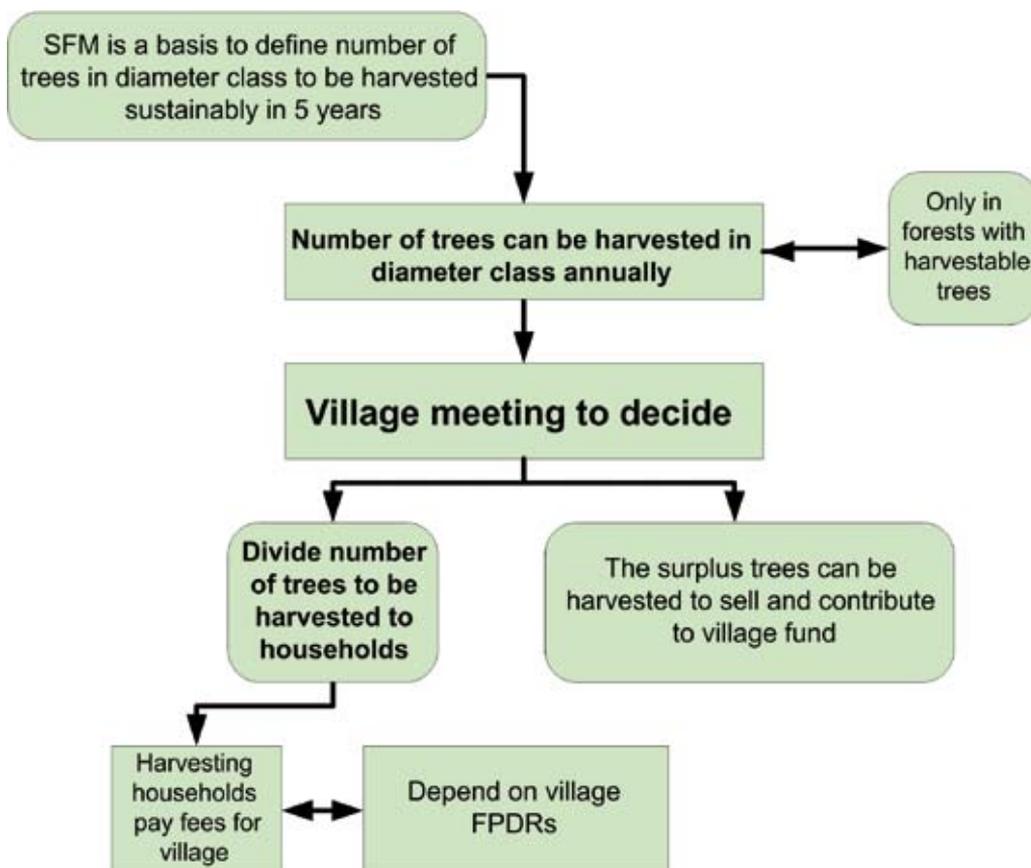


Figure 2: Benefit sharing for household purpose

Benefit-sharing mechanisms for commercial purposes:

The trees harvested annually are sold and benefits are shared as follows (see Figure 3):

- First, a payment of a natural resource tax is made. This is usually between 15% and 40%, depending on timber groups and diameter regulations. The tax paid is transferred to the commune for forest management, or for investment and development of bare land or more degraded plots.
- Second, all harvesting costs such as felling, transportation, and forest cleaning are deducted.
- Third, after deducting payment of the natural resource tax and harvesting costs, 10% of the remaining income is allocated to the Commune People's Committee (CPC) for forest management costs and an allowance for the Commune Forest management Board (CFMB).
- Finally, the remainder is shared among the VFMB, the village fund establishment and the households involved in CFM.

The benefit-sharing regime is based on the village FPDRs, which are agreed on by the entire village and approved by the local authority. This benefit-sharing mechanism aligns with

the forestry techniques and forest land allocation policy, in which the forest owners can generate income through incremental growth. The SFM approach is robust and functional at the community level; however, to fully benefit from CFM, forest users still need to better understand markets and the administrative procedures surrounding harvesting.

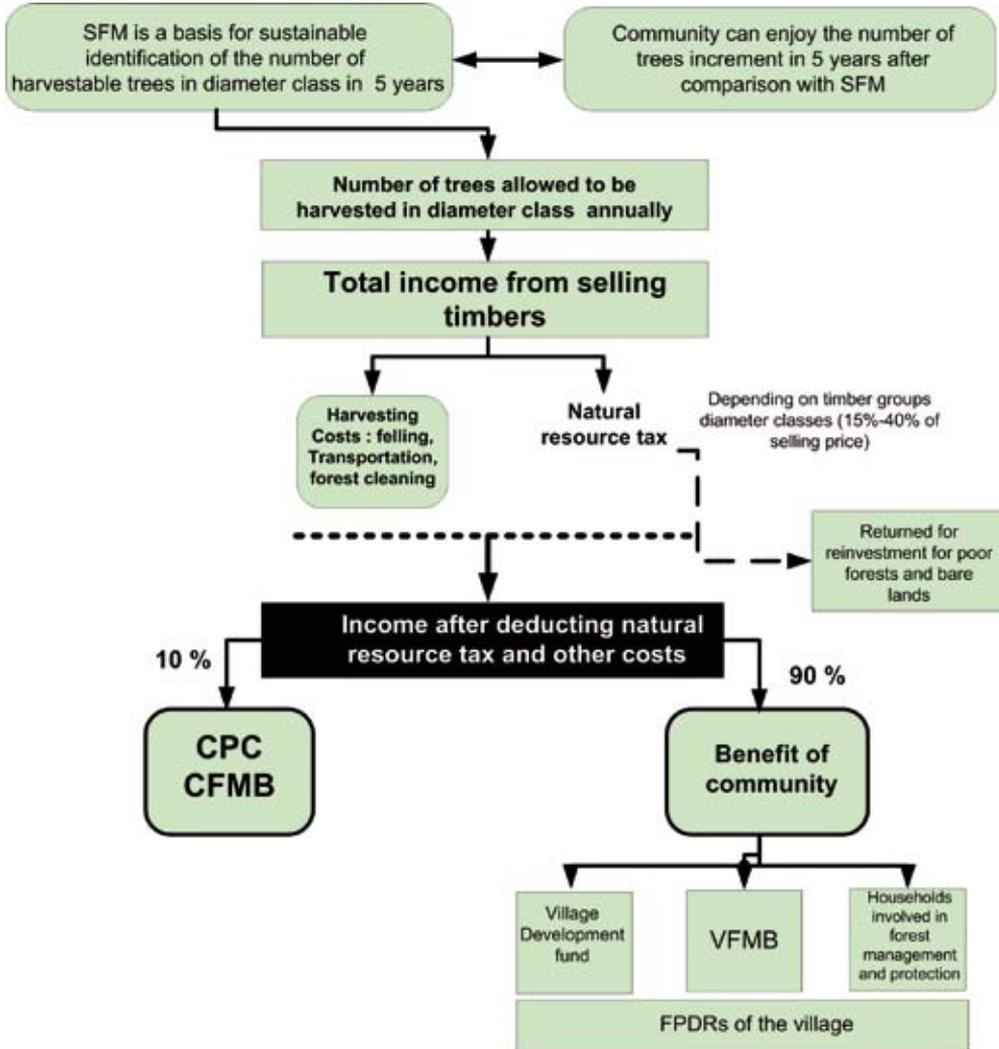


Figure 3: Benefit sharing for commercial purposes

Forestry administration for CFM

The concepts, methods, and tools of CFM are still relatively new to forestry agencies and staff in Viet Nam. It is therefore important to set up a management and monitoring system for the implementation of the CFM plan, particularly for harvesting activities. This management and monitoring system needs to be designed according to community capacity, with a focus on improving self-reliance and monitoring.

In this system, the roles and tasks of local authorities and other stakeholders engaged in the CFM process need to be clearly defined in order to best support the process. To this end, a management system and CFM guidelines are currently being developed by the National Working Group on Community Forestry Management (NWG CFM). In principle, the new management system will encourage a decentralized decision-making process and promote monitoring at the community level. It should facilitate the link between the community and the district level, and reduce complex procedures for communities that impede on their ability to manage and monitor their forest resources efficiently.

The monitoring mechanism should distinguish between two types of timber harvesting:

- Harvesting for domestic consumption
- Harvesting for commercial purposes

The suggested administrative procedures for CFM are presented in Table 3 and Figure 4 below, and have been piloted in T’Li Village through the RDDL Dak Lak Project. The main procedural steps for CFM are quite simple in comparison to traditional methods currently applied to SFE operations.

Table 3: Simplified administrative and technical procedures for plan approval and implementation of CFM

Procedure	Description	Approval	Comparison with traditional SFE approach
Approval of 5-year forest management plan	Approved 5-year forest management plan is developed by community	Commune People’s Committee (CPC); District People’s Committee (DPC)	<i>Established by professional company and approved by DARD and Provincial People’s Committee (PPC)</i>
Annual forest management planning and approval	Annual forest management plan is developed based on the 5-year plan by community		<i>Established by State Forest Enterprise (SFE) and approved by Department of Agriculture and Rural Development (DARD) and PPC</i>
Select and mark trees	Selected trees marked in the forest by painting order numbers in red by farmer		<i>Mark trees to be cut by forest hammer by Provincial Forest Department or a professional company</i>
Issuance of timber harvesting permit	List of marked trees is submitted for harvesting permit by VFMB	DPC	<i>Approved by DARD, PPC</i>

(Source: RDDL 2006)

Procedure	Description	Approval	Comparison with traditional SFE approach
Post-harvest monitoring	Monitor felled trees, location, forest cleaning, forest status post harvest... follow the silvicultural guidelines by VFMB and CFMB		<i>Monitor by Forest protection Unit (FPU), DARD</i>
List of volume of logs in log yard; legalized by hammering in log yard	Farmers make list of timbers; seal with FPU hammer and make a minute	FPU	<i>Villagers must follow the same procedures as SFEs to ensure their timber has legal documentation for sale</i>
Selling timber in delivery log yard	Organize auction or another selling form selected by community		<i>Organized by SFE</i>
Benefit sharing; village fund management	After deducting natural resource tax and actual harvesting costs, 10% share for CPC, the rest is shared in accordance with FPDRs		<i>No benefit for communities</i>

(Source: RDDDL 2006)



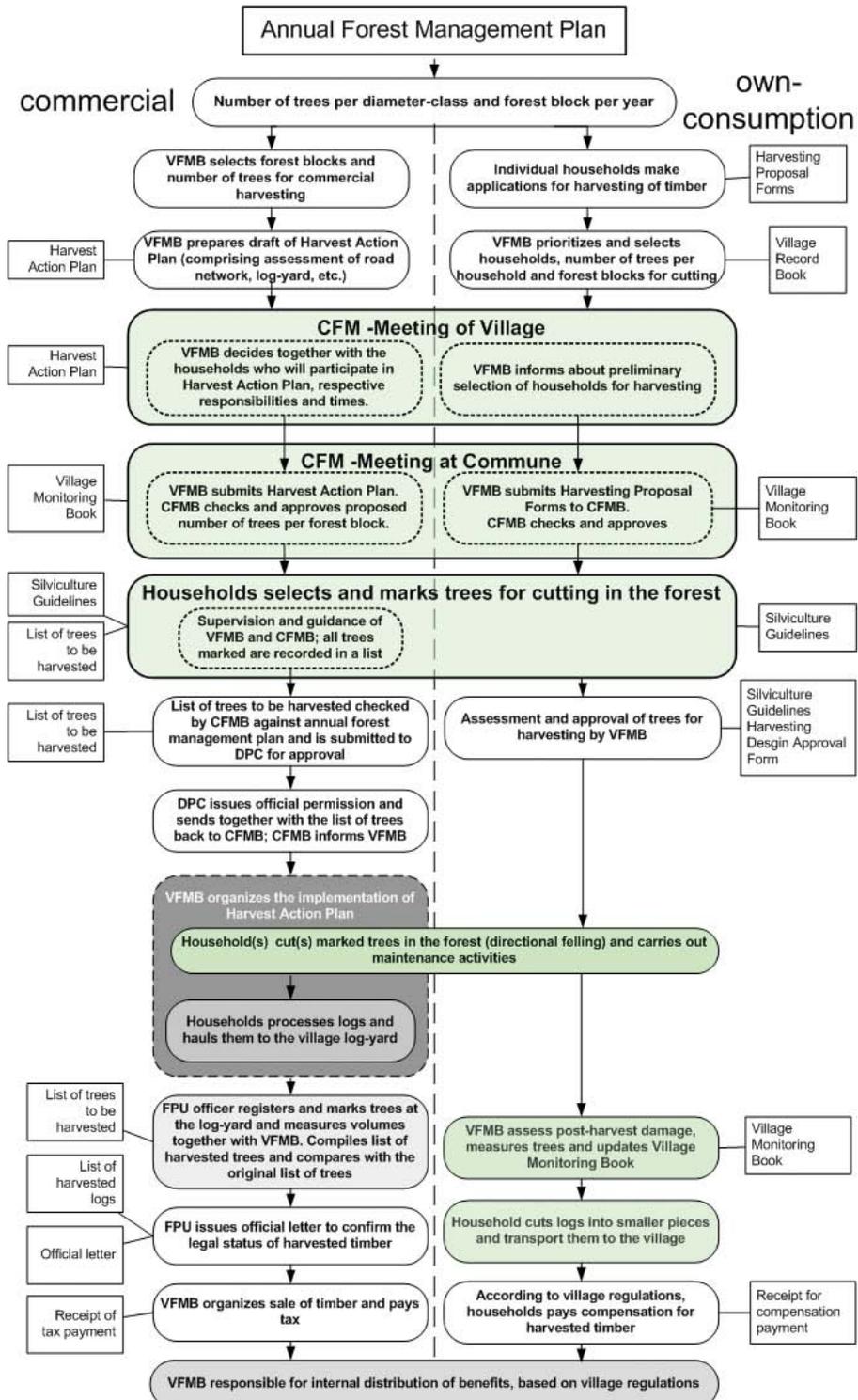


Figure 4: Forestry administrative procedures to harvest timber for own consumption and commercial purposes

Conclusion

The reality of the forest land allocation process in Viet Nam is that there is currently not enough guidance in terms of the mechanisms, policies, organizational systems, and techniques for implementing CFM. The most challenging issues are related to post-allocation sustainable forest management and how poor people can benefit from these allocated forests, which vary considerably among allocated units. With the slow growth of forest and extended periods with no profitable returns, it is easy to understand why people do not benefit significantly from forests immediately after allocation. Forests have not yet become a competitive economic component in the uplands and, because of this, require mechanisms, policies, and ongoing technical support in order to significantly contribute in terms of incentives for farmers to engage in CF and contribute towards SFM. Ultimately, this system of CFM combined with SFM principals can lead to meaningful livelihood development and poverty alleviation for the forest-dependent communities that are allocated forest lands for CFM purposes. Much is dependent on simple management and monitoring rules and regulations that can help to facilitate this process and lead to the success of CFM in Viet Nam.

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3

SECTION

Economic issues



UNLOCKING THE VALUE
OF PINE FORESTS
FOR SUSTAINABLE
LIVELIHOODS: A
CASE STUDY FROM
HILE JALJALE “KA”
COMMUNITY FOREST
IN KABHRE PALANCHOK
DISTRICT OF NEPAL

PADAM B. CHAND
SCHOOL OF NATURAL SCIENCE
KATHMANDU UNIVERSITY
NEPAL



KALPANA GHIMIRE
RESOURCE IDENTIFICATION AND MANAGEMENT SOCIETY
NEPAL



Introduction

Community-based natural resources management has become an important strategy in Nepal since the Government of Nepal (GoN) originally introduced the concept of community forestry (CF). Under this system, the government hands over areas of national forests to local communities known as community forest user groups¹ (CFUGs), who take over the responsibility for forest protection, management, and utilization of the area allocated as community forest. Community Forestry in Nepal is an institutional innovation for empowering local communities in managing forest resources for their own benefit. So far, 1.187 million ha of community forest have been handed over to the 14,260 community forest user groups, benefiting 1.64 million households (Department of Forest 2006).

Although CF has been widely acknowledged as a success, various challenges have emerged over time. Community Forestry is now facing second-generation issues, related to sustainable forest management, livelihood development, and governance (MFSC 2004). These issues could be addressed through provisions made in the community forest Operational Plan² (OP), which would allow poor households to be reached through pro-poor program approaches.

Despite the successes of the community forestry program in the conservation and improvement of forest resources, past reviews show that the forest management approach adopted has largely been protection-oriented and has remained passive in terms of utilization of forest resources. Most community forests have, thus far, been managed for protection and basic needs and not for surplus production or poverty alleviation (Shrestha 2001).

Pine plantations are a potentially valuable asset for the communities that have invested in plantation establishment and protection for over two and half decades. Most of the plantations are overstocked and in need of active management. Communities are currently gaining only a fraction of the benefits that could flow from these forests. The costs of not actively managing the community forests are substantial. According to Hill (1999), the World Bank has estimated the cost to the country of not having active forest management and silvicultural operations to be Nepalese Rupees (NRs.) 560 per household per year (approximately US\$ 7.50³).

The management of these plantations thus far has been very basic: little silviculture or harvesting has been undertaken. A study done by Hunt *et al.* (2001) shows that there is an inverse relationship between stocking density and growth, i.e., as stocking increases, growth decreases. Delaying thinning results in a significant loss in opportunity costs, between NRs.15,000 and 20,000 (US\$ 203-270) per ha every year. Kanel (2004) suggests that there is also a substantial potential for further generating income from the better management of community forests, and the funds generated can be better utilized to benefit the poor and marginalized groups.

¹ CFUG is an autonomous and corporate body with perpetual succession for the conservation, management and utilization of the community forest.

² The operational plan (OP) is a community forest management scheme developed and agreed by the CFUG and approved by the District Forest Officer. It is a legal document which empowers CFUG to manage, conserve and utilize the allocated community forest.

³ Based on conversion rate of NRs 74 to US\$ 1.

Pine plantation management and issues

According to Acharya (2001), active forest management in community forestry involves four essential factors. They are: (i) existence of supportive policy and legal environment; (ii) clear forest management objectives of the users; (iii) the capacity of CFUGs and District Forest Office (DFO) staff; and (iv) the condition of forest resources.

In this regard, initiatives have already begun in Kabhre Palanchok and Sindhupalchok districts for the active management of the pine plantation forests. Through an integrated approach, all the factors mentioned above are present: an empowering legal environment through the pro-community Forest Act and subsidiary regulations and guidelines; thinning guidelines for technical management prescriptions that match with the people's interest; revision of OPs by CFUGs incorporating thinning prescriptions; approval of these OPs by the DFOs; and the availability of pine plantation forests as a potential resource. However, due to lack of established tradition of plantation forest management in Nepal, the following broad issues still prevail and hamper the scaling up process:

- More than 450 CFUGs with pine plantations in Kabhre Palanchok and Sindhupalchok are protection oriented and need substantial technical and marketing guidance for management of their forest assets if the CFUGs are to realize the potential poverty alleviation benefits from these plantations;
- There is a serious lack of knowledge about forest plantation silviculture, harvesting, and sawn timber marketing;
- There is an overall lack of scientific management that leads to potential benefits not being realized and, in many cases the deterioration of plantations;
- Government forestry staff do not have adequate outreach into the communities, nor appropriate working guidelines or training or incentives; and
- The plantations are overstocked due to a lack of thinning, which leads to them not producing high-value saw logs as rapidly as they should.

In Kabhre Palanchok and Sindhupalchok districts, early plantations were established during the 1970s, but the bulk of the planting was undertaken during the 1980s, with the majority of existing plantations between 14 and 27 years old. Three pine species are used in these plantations: *Pinus roxburghii*, *P. patula*, and *P. wallichiana*. Of these, *P. patula* is an exotic species (Gautam and Webb 2001). Initially, pine was favored for plantation development as it is less vulnerable than other species to damage by grazing animals and can grow in degraded areas with poor soils.

According to DFO records, there are more than 22,000 ha of pine plantations in Kabhre Palanchok and Sindhupalchok districts. However, initial assessment of these plantations done by the Nepal-Australia Community Resource Management and Livelihood Project (NACRMLP) show that there are effectively 15,500 ha of pine plantation in these two districts (see Table 1). Out of these, 75% are community forest, with the rest located in government forests. There are also some mixed forests with pine trees. Thus, about 20,000 ha of forest are stocked with pine trees in these two districts.

Table 1: Initial assessment of pine plantations in Sindhupalchok and Kabhre Palanchok Districts

SN	Description	Area in both districts (ha)
a	Pine plantations in community forest	10,138
b	Pine plantations in government forest	3,429
c	Total pine plantations (a+b)	13,567
d	Mixed pine and broadleaf forest	6,131
e	Effective area of pine forest resources within the mixed forest	1,933
f	Total effective pine plantation forest (c+e)	15,500
g	Total area of forest with pine trees (c+d)	19,698

Source: *Pine Profile of Kabhre Palanchok and Sindhupalchok districts, 2005*

Potential productivity and revenue generating capacity of pine plantations

Assuming an 8 m³ per hectare per year mean annual increment (MAI), total potential annual log volume production of these pine forests is approximately 124,000 m³ per year, and the potential annual average harvest of sawn logs during the second half of rotation is 248,000 m³ per year. Assuming a sawmill gate value of NRs 4,590 per m³ (US\$ 62 per m³), the estimated average annual sawmill gate sales value of sawn log production over the next two decades is NRs. 1.15 million (US\$ 15.5 million). Thus, according to these calculations, the potential annual income from pine plantation management for just two districts is nearly double the total allocated development budget of NRs. 640 million (US\$ 8.6 million) for the entire forestry sector in the country for the current fiscal year (GoN 2006).

This scenario indicates that the potential sales value of plantation produce through thinning is substantial, working out to more than NRs. 25,000 (US\$ 340) per household per year. These numbers show that the commercial approach to pine plantation utilization and management, especially for the direct benefit of poor people and for rural development activities, has a significant yet largely untapped potential.

Thinning guidelines: a scientific basis for pine plantation management

As CF now embraces a new paradigm, focusing on forest management rather than protection, new challenges are emerging. More than 450 community forests in these two districts, particularly those with successful pine plantations, are overstocked and in need of technical forestry intervention in scientific forest management. Therefore, thinning⁴ guidelines were developed for implementation by the CFUGs. Orientation was given to CFUGs, DFO staff, local facilitators, and other stakeholders about how to incorporate thinning prescriptions in the revised OPs. They were also given training to apply thinning regimes in the field during forest management training.

⁴ *Thinning is a forest management practice generally performed at various points in time during the course of the growth and development of both natural and planted stands. It is defined as "a felling made in an immature stand for the purpose of improving the growth and form of the trees that remain without permanently breaking the canopy."*

These thinning guidelines are based on decades of international research as brought together by Evans and Turnbull (2004), local research in Sindhupalchok and Kabhre Palanchok districts undertaken during the last two phases of Australian assistance to the forestry sector in Nepal (Hunt *et al.* 2001), and special studies conducted by NACRMLP (2006) for the purpose of these guidelines.

The guidelines have been endorsed by the Ministry of Forest and Soil Conservation and are being piloted in 20 CFUGs of Sindhupalchok and Kabhre Palanchok districts. For the national-level implementation of these guidelines, the Department of Forest Research and Survey has done field testing with CFUGs and recommended draft guidelines to the MFSC for approval. These guidelines form the basis for prescribing thinning regimes in the OPs by CFUGs during preparation or revision of their plans.

Thinning prescriptions

The thinning prescriptions follow prescribed stocking levels for each stand of a particular species, age, and growth rate. The number of trees to be thinned per hectare at each thinning is stipulated. The prescriptions are remedial in nature, so they are limited in application to the currently overstocked pine plantations as found in the districts.

Age classes

The thinning prescriptions are based on two age categories for both *P. patula* and *P. roxburghii*: 15 to 19 years and 20 to 25 years. The final rotation for *P. patula* is prescribed as 45 years, though it may be as young as 40 years for faster growing stands and as old as 50 years for slower growing stands. For *P. roxburghii* the rotation age is taken as 55 years, though again, there may be a margin of five years either way depending on the quality of the stand and the growth rate.

Stocking

As the initial spacing at planting was 2.5 x 2.5m, or 1,600 plants per ha, three existing stocking scenarios have been chosen for the guidelines, assuming varying degrees of thinning and/or mortality:

- 1,300 to 1,500 stems per ha (no thinning);
- 1,100 to 1,300 stems per ha (higher mortality or maybe one thinning); and
- 800 to 1,100 stems per ha (some thinning and/or heavy mortality).

The final stocking varies from 160 to 240 trees per ha. The low thinning system of selective thinning will be applied where dead, dying, diseased, poorly formed, and suppressed trees will be removed in such a manner as to leave evenly distributed, well-formed vigorous trees that will develop into the final crop with consideration for root and crown competition.

Case study: Hile Jaljale “Ka” community forest gearing towards active pine plantation management

Hile Jaljale “Ka” community forest is located in Tukucha VDC of Kabhre Palanchok district (35 km northeast from Kathmandu, the capital of Nepal). This forest is connected with a fair-weather road linking to Banepa, a nearby town, and Kathmandu City. The total forest area is 118.14 ha, which is divided into seven blocks, 27 sub-blocks and seven

working circles. The forest contains highly valuable pine plantations of *Pinus patula* and *Pinus wallichiana* species. Sale of pine logs has been identified as the highest priority business opportunity for the CFUG.

This CFUG comprises 242 households with a total population of 1,494 persons, and is relatively homogenous in terms of ethnicity, with 90% belonging to the Brahmin caste (an upper caste group under the Hindu system). The remaining 10% are from occupational castes and ethnic minorities like Kami, Damai, Newar, and Bhujel. The CFUG Executive Committee (EC) was recently reformed and is composed of 11 members including four women and one occupational caste representative.

Agriculture and livestock are the main sources of livelihood for most households. Good road access to the cities of Bhaktapur and Kathmandu allows farmers to profit from growing high-value cash crops such as potato, cauliflower, cabbage, beans, and broad-leaved mustard. Potatoes are the predominant commercial cash crop, whereas paddy, maize, wheat, and finger millet are the major food crops. The sale of milk is also a major source of income for most households.

The forest is well protected and some thinning operations were conducted in the past. So far, CFUG has harvested 2,771 pine trees (total volume 596 m³ or 21,088 ft³) and earned more than NRs. 1.72 million (approximately US\$ 24,000), which they have invested in physical infrastructure development, including the construction of forest roads, school buildings, drinking water supply systems, and other community development facilities. The income of the CFUG has increased gradually over the last four years.

Income and employment generation opportunities

During the revision of the OP, timber inventories were conducted within each forested sub-block to assess forest condition, determine the need for silvicultural treatment, predict potential yields and regulate actual harvests. Almost all the pine plantations are overstocked from the perspective of commercial production of saw logs and development of under-canopy forage and fodder supplies. These plantations will now be managed for commercial saw log production, with grass and fodder production where possible, as well as for the exploitation of the existing pine crop for saw logs and gradual conversion to broadleaf forest. Provisions were made to manage overstocked pine plantations by applying thinning regimes according to thinning guidelines. This activity will be the major source of funding for the CFUG investment plan.

According to the business plan of Hile Jaljale “Ka” community forest, the CFUG can harvest more than 2,461 m³ (87,000 ft³) of timber, from which more than NRs. 14 million (approximately US\$ 200,000) can be earned from the sale of pine logs over a five-year period (see Table 2). The CFUG’s annual average income currently ranges from NRs. 1.5 million to 3.9 million (US\$ 20,000 to 52,702). This shows that the CFUG will earn eight times more than they earned during the last four years (NRs. 1.73 million or US\$ 233,783). Likewise, the total yearly income of the CFUG is three to eight times higher than the total budget of the Village Development Committee (VDC).⁵ This is a substantial income for a CFUG, as there are 15 CFUGs in the Tukucha VDC and Hile Jaljale “Ka” community forest is just one of them.

⁵ VDC is an autonomous and corporate body at the local level, which executes development and administrative activities with NRs. 500,000 per year budget allocated by the government.

Similarly, the planned forest operations will result in significant labor market development, which will be of particular benefit to the underemployed. More than 17,800 person-days of employment will be generated, with a total income value of NRs. 3 million (US\$ 40,563). Average annual employment generation is more than 3,500 person-days, with an annual average value of employment generation of NRs. 600,000 (US\$ 8,108, see Table 2). The value of employment generation is in addition to the total income from the sale of pine logs.

Table 2: Anticipated income, expenditure, value of employment (NRs.) and employment generation (in person days)

Year	Income from log sales to external markets	Expenditure for marking, harvesting, transportation	Expenditure for other program activities	Total expenditure	Annual balance	Labour market creation (person days)	Value of employment
2006/07	1,518,000	668,000	819,000	1,487,000	31,000	2,379	360,917
2006/08	2,675,000	1,109,000	1,535,000	2,644,000	31,000	3,781	601,377
2006/09	4,333,000	1,697,000	1,776,000	3,473,000	860,000	5,512	916,650
2006/10	1,668,000	645,000	1,020,000	1,665,000	3,000	2,007	354,680
2006/11	3,953,000	1,416,000	1,275,000	2,691,000	1,262,000	4,186	768,091
Total	14,147,000	5,535,000	6,425,000	11,960,000	2,187,000	17,865	3,001,717
Total in US\$ equiv.	191,176	74,797	86,824	161,621	29,554		40,563

Source: Operational Plan of Hile Jaljale “Ka” Community Forest (2006)

The thinning operations will mostly be undertaken during the agricultural off-season and the associated cash income can guarantee year-round food security for all. Local poor and excluded represent the work force for the harvesting and transportation of the trees in the community forest. This shows that there is substantial potential from active pine plantation management to generate financial capital that can be reinvested for the improvement of local livelihoods, especially for the poor and disadvantaged groups. Moreover, it is projected that there will be a substantial net balance of more than NRs. 2 million (US\$ 27,000 - see Table 2) after only five years.

Investment plan Hile Jaljale “Ka” community forest

The CFUG has recently revised its OP for a five-year period incorporating thinning prescriptions for the sustainable management of the forest resources. The CFUG has prepared a comprehensive plan with active participation from the community. The plan gives a clear indication of how the CFUG can generate financial capital from its natural capital, and how it can be reinvested for the livelihood improvement of the CFUG members.

The CFUG will first focus on forest thinning to generate income. Receipts from the sale of pine logs removed during silvicultural thinning will finance all program activities. Box 1 gives an overview of the major planned activities for a five-year period (2007 to 2011).

Box 1: Program activities of Hile Jaljale “Ka” CFUG

Natural resource management	<ul style="list-style-type: none"> • Pine plantation thinning • Harvesting of mixed forest • Pruning and shrub land management • Nursery establishment and seedling production • Plantation in community and private land • NTFP management (<i>Taxus baccata</i>, <i>Acorus calamus lichens</i>, <i>Lycopodium</i> species, and <i>Daphne</i> species) • Pear grafting to <i>Pyrus</i> species • Forage and fodder development • Broom grass planting along roadsides • Pine plantation management demonstration plot establishment etc.
Social change through CFUG capacity building	<ul style="list-style-type: none"> • Inclusion of women, landless and disadvantaged group in executive committee • Awareness raising on constitution and OP • Public auditing • Women’s empowerment program • Scholarships for children from landless, disadvantaged and poor families • Land allocation for poor and disadvantaged groups (DAGs) • Women health programs • CFUG management • Coordination and linkage with other stakeholders, etc.
Physical infrastructure development	<ul style="list-style-type: none"> • Construction and maintenance of forest roads and fire lines • Construction and maintenance of conservation pond • Community building construction • Picnic spot development • Irrigation canal improvement • Drinking water supply improvement • Toilet construction • Cremation ground construction • Temple maintenance
Income generation	<ul style="list-style-type: none"> • Log sale business and entrepreneurship development • Improved loading and unloading training • Improved log hauling equipment • Marketing exposure visits for finding alternative or better markets for furniture and agricultural tool handles • Book keeping and record keeping training • Revolving fund establishment and management • Wintergreen oil promotion • Bamboo product promotion business

Human resource development

- Community forest management training
- NTFP management training
- CF study tour
- Training for vegetable farming
- Village animal health care center establishment and village animal health workers (VAHW) training
- Women health worker training
- Metal-work training
- Tailoring training
- Bamboo skill development training
- Bio briquette training

Source: Operational Plan of Hile Jaljale “Ka” Community Forest (2006)

The activities mentioned above in the revised OP for a five-year period clearly demonstrate that villagers are investing in all aspects of livelihood improvement of the local people. A major portion of investment is on the natural resource management sector, which covers about half of the total investment (Box 2). Thinning operations (marking, harvesting, and transportation of the logs) utilize most of the expenditure, followed by the investment in forage and fodder development and seedling production. Cattle and buffaloes are kept for dairy production. Since the local supply of grass and fodder is insufficient, every winter villagers have to purchase about 500 metric tons of paddy straw from outside the community, spending NRs. 2 million (approximately US\$ 27,000). Therefore, almost all households want to produce more of their own fodder and forage.

One-third of the investment is allocated to physical infrastructure (see figure 1). A major portion of this is allocated for forest road construction and maintenance. The roads will benefit users considerably as easy access will bring higher prices for forest products and will promote tourism. Water conservation pond construction activity has second priority in relation to budget allocation. Ponds will be used to irrigate vegetable plots during the winter season, benefiting both upstream and downstream farmers. Community buildings will also be a priority, including construction of a multi-purpose community learning center and guest house which will be constructed on the grounds of the school supported by the CFUG.

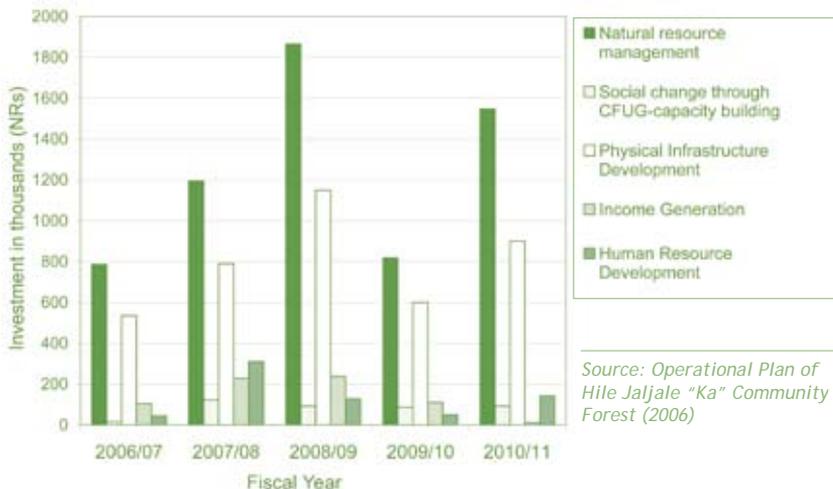


Figure 1: Budget allocation for different activities with CFUG funds

The rest of the investment is allocated for human resource development, income generation, and social development activities. Human resource development activities are focused on development within the CFUG for carrying out different activities. These activities will contribute to the improvement of livelihoods of the poor people, as they will be involved in training on vegetable farming, animal health, women's health, forest management, metal work, and tailoring. Promotion of income-generation activities, like revolving fund establishment and management, bamboo product promotion business, and market linkage for furniture and agricultural tool handles, will also contribute to livelihood improvement and poverty alleviation. Improved log transportation equipment will be used to reduce log transport costs.

Investment in social change through capacity building programs includes activities related to strengthening governance, women empowerment programs, women's health programs, and scholarships for children from landless, disadvantaged, and poor families (each of 25 students will receive NRs. 2,000 - US\$ 27 - per year). It is hoped that enrollment will increase and the dropout rate will decrease through this program. Likewise, women's health programs will minimize the suffering of women from prolapsed uteruses due to heavy workloads, lack of post-natal health care, and shyness about discussing problems. Land allocation programs for grass plantations and other income-generation activities will directly benefit to the poor and disadvantaged group members. For CFUG management, one full-time forest manager will be appointed to manage all CFUG activities under the direction of the executive committee. The manager will be supported by other part-time and full-time staff.

Equity in forest product distribution

The CFUG has a special subsidy policy for poor and disadvantaged people in forest products distribution. For the landless, poor, and disadvantaged groups, up to 100 ft³ (around 3 m³) of timber is given free of cost, while for others, the rate is NRs. 105 or US\$ 1.40 per m³. Dry firewood is free of cost for all the users, provided that they enter the forest without any equipment to collect it. For green firewood, the rate is NRs. 1 for landless, poor, and disadvantaged groups per backload and NRs. 3 for other groups. All users are allowed to collect leaf litter free of cost. Firewood and stumps will be given free to blacksmiths for making charcoal. Victims of natural calamities will receive up to 150 ft³ (4.3 m³) of timber free of cost. These distribution patterns of the CFUG will also contribute to the livelihoods of the poor and disadvantaged groups, as they will get many forest products free of cost.

Implementation of operational plan activities

Hile Jaljale "Ka" CFUG is now implementing the program as mentioned in the OP. So far, they have marked the trees in block 2.1 and 2.2 for thinning and have already auctioned the logs at the price of NRs. 110 per ft³ (NRs. 3,880 or US\$ 52 per m³) at road head to the contractor. Felling, sectioning, and transporting of the trees will be done by CFUGs using local people. In this way, employment will be generated for the local poor. They have already planted improved varieties of grasses in the block marked for thinning and a demonstration plot has been established to study the impact of different thinning operations.

On the basis of the approved OP, the CFUG is making a detailed annual plan for investment in different activities. The Hile Jaljale "Ka" CFUG is also affiliated with a recently formed pine plantation forest network intended to make market linkages and get more benefits from the sale of pine logs.

Implications for sustainable forest management

This case study is an initial step to demonstrate the potential of active management for the improvement of forest health implementation and increased employment opportunities in rural areas. However, there are challenges to be faced because the resource is managed by a CFUG which does not yet have appropriate silviculture, harvesting, marketing, and governance-related skills adequate for the successful management of pine plantation forests. Therefore, the following recommendations should be considered:

- CFUGs should use scientific forest management practices, like thinning, that provide for long-term sustainable use of local forest resources, and they should incorporate silvicultural prescriptions in revised OPs based on thinning guidelines.
- There is an inadequate understanding of plantation forest management beyond establishment and protection. Hence, there is a need to introduce skills and appropriate technologies relating to thinning, pruning, harvesting and marketing that can be practiced by the communities.
- CFUGs should give judicious consideration while setting the management objectives of plantation forests and these should match with the people's needs and interests.
- There should be separate and clear enabling legal procedures for CFUGs to harvest, transport, and sell their timber and other forest products.
- Thinning guidelines should be approved by the GoN for national-level implementation.

Conclusion

The pine plantations of Sindhupalchok and Kabhre Palanchok districts have the potential to generate more than NRs. 1 billion (around US\$ 15 million) every year, which works out to NRs. 25,000 (US\$ 340) per year per household, if scientific management, including thinning regimes, is introduced. In addition, it will also improve the plantation health and improve employment opportunities in rural areas during the agricultural off-season.

Nepal has substantial areas of pine plantation with significant potential that is largely untapped. With basic management interventions, these plantations could be used to improve rural livelihoods, alleviate poverty, and support the development of wood-processing industries. This has been shown by the case study of Hile Jaljale “Ka” Community Forest, where a CFUG is capable of generating more than NRs. 14 million (around US\$ 189,000) in a five-year period and investing in natural resource management, physical infrastructure development, social capital formation, capacity building, and human resource development activities.

The case of Hile Jaljale “Ka” Community Forest demonstrates that there is a great potential for generating financial capital from the active management of overstocked pine plantations which could be reinvested for the improvement of livelihoods of the rural poor and disadvantaged groups. For this to happen, CFUGs have to unlock the productive value of pine plantation forests.

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MANAGING THE RISKS OF COMMUNITY- BASED PROCESSING: LESSONS FROM TWO COMMUNITY-BASED SAWMILLS IN NEPAL

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Introduction

The development of community-owned and operated sawmills is often proposed as a way for local communities to increase their returns from harvesting community forests. However, sawmills represent significant investments that, if they do not succeed, can create a substantial burden for local communities.



This paper examines the experiences of the Chaubas and Shree Chhap sawmills in the Kabhre and Sindhu districts of Nepal. These sawmills were established to process timber originating from community forest plantations. The plantations have been established by community forest user groups with assistance from a series of Nepal-Australia forestry projects since the 1970s.

The experiences of the Chaubas and Shree Chhap sawmills illustrate some key factors that should be considered when planning and implementing such investments. These include financial and economic returns of alternatives, risks associated with the investments, community business skills, market access and the policy environment. The lessons learned from these experiences are presented in the form of a checklist of issues that could be used in the planning of future community sawmill investments.

Background

This paper draws on the experience of two community-owned sawmills in the Kabhre and Sindhu districts of Nepal, east of the Kathmandu valley. The sawmills were established as community-owned operations to add value to logs produced from community owned plantations.

There are currently around 20,000 ha of community-owned plantations in these two districts of Nepal. They were established by local communities with the support of a series of Nepal-Australia forestry projects. Australian support commenced in the 1960s and developed into a number of projects dating from the 1970s that emphasized reforestation of degraded land, forest protection, and establishing community forest user groups (CFUGs). The final project, the Nepal-Australia Community Resource Management and Livelihoods Project (NACRMLP), has recently been completed, bringing an end to more than 35 years of assistance in this area. The experience of Nepal with community forestry, and particularly activities in these two regions, has made a vital contribution to the development of approaches to community forestry around the world.

The establishment of the plantations has delivered both landscape changes leading to environmental benefits, as well as providing a source of income for very poor communities. Local communities have benefited through increased availability of wood and non-wood forest products. However, Collett *et al.* (1996) note that more complicated value-added processing can place a strain on CFUGs.

While utilization of the community forests in the project districts is still in its early stages, a baseline survey conducted by the NACRMLP in 2003 illustrated the importance of logs and timber products in income generation by CFUGs. Over the five years to 2002-03, the sale of logs and sawn timber accounted for 45% of the total income of NRs. 5.8 million (i.e., US\$ 35,900 of a total income of US\$ 79,800) generated by the CFUGs that were included in the survey (Table 1).

Table 1: Sources of CFUG income (proportion of total income)

Year	Fuel wood	Timber	NIFP	Seeding	Grass	Grants	Fines	Interest	Visitor Fees	Annual Levy	Other
1988/99	46.1%	15.2%	2.5%	0.0%	0.7%	12.5%	1.6%	2.3%	0.6%	17.0%	1.4%
1989/00	12.8%	48.8%	6.4%	0.5%	0.4%	6.8%	1.4%	1.9%	1.5%	17.1%	2.3%
2000/01	11.1%	49.0%	2.3%	0.4%	0.6%	4.4%	1.4%	3.4%	0.6%	20.5%	6.3%
2000/02	4.9%	61.6%	4.0%	0.5%	0.7%	10.3%	0.7%	2.7%	0.2%	9.1%	5.2%
2000/03	10.4%	42.0%	10.3%	0.1%	2.7%	6.3%	1.4%	3.2%	0.2%	20.1%	3.3%

Source: NACRMLP (2003a)

Most of the plantations were established between the early 1980s and the early 1990s and are now 15-25 years old. They consist mostly of pine (*Pinus roxburgii* or *P. patula*). The need for thinning of the plantations, together with the desire to produce income after years of investment in plantation establishment, protection and management, led to the idea of community-owned sawmills.

Development of the sawmills

Following feasibility investigations (Jackson *et al.* 1995; Ladley 1995), the Chaubas sawmill was established in 1996 in Kabhre district. It was jointly owned by four CFUGs (Chapani Kuwa, Faga Khola, Dharapani Hile and Rachhama). Another CFUG sold logs to the mill, but was not an owner. Operation of the sawmill was managed by a committee of representatives from the CFUGs that owned the sawmill. The sawmill management committee employed a number of managers over its life, including individuals from outside of the local community and the region.

The establishment of the sawmill was supported by a loan from the Nepal-Australia forestry project, as well as funds from the participating CFUGs. The mill subsequently was upgraded from a 24" (61cm) to a 36" (91cm) band saw with funds raised by the CFUGs themselves through the sale of logs.

The Chaubas sawmill has a capacity to process around 150 ft³ (approximately 4 m³) of round logs per day based on an 8-hour day. Operation of the mill is limited to a maximum of around eight months because of limitations imposed by the wet season, meaning that its annual capacity (based on a single shift) is around 25,000 ft³ (approximately 710 m³) per annum or a sawn timber output of around 10-12,000 ft³ (approximately 285-340 m³) per annum. Logging generally occurs over four months in the dry season.

The Chaubas sawmill was initially established with a view to producing sawn timber for local sale and to create a revolving fund for community development activities. However, it was soon realized that local demand was not sufficient to consume the quantity of timber produced, and that sales to outside markets would be required.

The Shree Chhap sawmill was established in 2002 by a single CFUG (Shree Chhap Deurali CFUG), which utilized its own funds to build the mill. A manager was employed to run the day-to-day operations of the mill.

Production capacity of the Shree Chhap sawmill is similar to that of the Chaubas sawmill. The investment funds for the sawmill were generated from the sale of logs. Some assistance was

also provided from the Nepal Australia forestry project in the form of training and associated capital expenses. The decision to invest in a sawmill followed a tour by CFUG members of sawmilling operations in the western areas of Nepal. However, no detailed feasibility study or business plan was completed prior to investment in the mill. The sawmill processed its own logs as well as logs from nearby CFUGs.

Both sawmills generally produced the largest dimension timber (flitches) as was possible from the small logs they were utilizing. This sawing strategy was consistent with the available markets for the timber produced and the simplicity of the sawmills.

Performance of the sawmills

The major motivation for both sawmills was the desire to generate income for the local communities from direct employment in harvesting, transport and milling of the plantation resources. Another important motivation was the reinvestment of profits from the sawmill operations into community development activities according to the collective wishes of the people. However, as illustrated in Table 2, the financial performance of the sawmills proved to be variable and generally did not live up to expectations

Table 2: Financial performance of the Chaubas and Shree Chhap sawmills ('000 NRs.)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Caubas sawmill									
<u>Income</u>									
Timber	192	1,503	1,788	449	1,207	77	790	856	
Other	42	1	1	1	1	6	0	0	
Total income	234	1,504	1,789	449	1,208	83	791	856	
<u>Costs</u>									
Logs		777	620	520	534	109	477	193	
Other	223	816	883	373	642	254	570	406	
Total costs	223	1,593	1,503	892	1,176	363	1,047	599	
Net profit/loss	11	-88	286	-443	32	-280	-256	257	
Net profit/loss (US\$)	150	-1,196	3,864	-5,989	427	-3,781	-3,458	3,470	
Shree Chhap sawmill									
<u>Income</u>									
Timber							389	15	13
Other							263		2
Total income							652	15	15
<u>Costs</u>									
Logs							185	19	
Other							85	44	39
Total costs							270	63	39
Net profit/loss							382	-48	-24
Net profit/loss (US\$)							-5,159	-650	-320

Source: NACRMLP (2005), exchange rate US\$ 1 = NRs. 74, costs for Shree Chhap include costs of running CFUG.

The Chaubas sawmill made a profit in four of the eight years for which data were available, but over this time made a cumulative loss. The Shree Chhap sawmill made a sizeable profit in the first year, followed by two years of losses as the volume processed dropped, but had a cumulative net profit over three years. A large contribution to the profit in its first year of operation was from sawing logs on behalf of CFUGs other than the sawmill owner. However, the CFUGs supplying logs suffered large losses since there was difficulty in selling much of the sawn timber produced, and thus returns were much lower than expected. Consequently, at least two of the CFUGs decided the sawmill should not process their logs in subsequent years; rather, they would sell logs only.

The longer term viability of either sawmill is unclear. The Chaubas sawmill continues to operate as a community-owned sawmill, but is considering alternatives that might provide better returns. Options being considered by the Chaubas sawmill management committee include potential management by a private sector contractor, as well as future sale of the sawmill. The Shree Chhap sawmill has recently been taken over by a consortium of private owners. As a mill owned by only a single CFUG, it appears that it was easier for it to make the decision to have private operators take over the sawmill, particularly as the sawmill had been largely inactive since its first year of operation.

Factors influencing financial performance of the sawmills

An overriding factor that reduced the ability of both sawmills to operate effectively was the uncertain security environment caused by Maoist rebels operating in each district. In general, this disrupted the ability to buy and sell logs and to sell timber (access markets). Notwithstanding this situation, a number of other factors contributed to the financial performances of both sawmills being lower than expected. These included:

- **Production of low quality timber reduced price and marketability.** The pine timber produced from each sawmill could only be sold as low quality construction material, which attracted relatively low prices. Difficulty in finding markets for some timber after it was produced meant that the quality of timber declined over time, which led to it being sold for prices up to half that planned. In general, timber was only marketed after it was produced. The price received for timber sold was also influenced by it being produced in shorter lengths than market norms. This arose from the need to transport logs by hand, which meant that logs were generally cut to a maximum length of 6 ft (around 2m). In addition, larger girth logs were often split down the middle in order to carry them by hand, which reduced sawmill recovery. There was also only limited adoption of appropriate air drying practices for the timber produced, leading to a lower quality product available for market.
- **Harvesting and transport costs were much higher than planned.** The cost of logs delivered to the sawmills from CFUG forests was much higher than expected, at around NRs. 35-40 per ft³ (approximately NRs. 1,324 or US\$ 18 per m³), almost double the projected cost. A contributing factor to this outcome was the idea that the sawmills would take all logs produced by CFUGs. This was in contrast to commercial log buyers who generally only take the better quality logs. Another factor that contributed to higher costs was disruption to implementing the forest operational plans of some CFUGs. Disputes over benefits from harvesting sometimes disrupted and delayed harvesting, while in other cases delays were caused by matching operational plans to actual operations, and the need for cumbersome regulatory approvals.

- **Sawn timber recovery rates were low.** Actual recovery rates proved to be around 40% compared to an expected 50%. This reflected the smaller logs being sourced from plantation thinning and was exacerbated by the practice noted above of the sawmills taking all logs produced in harvesting operations.
- **There was limited business planning.** Business plans were not developed for either sawmill prior to investment. The Chaubas sawmill later developed business plans as part of trying to improve its performance, but the Shree Chhap sawmill never had a business plan. The promise of financial returns from the sawmills without clear business plans meant that expectations of CFUG members were raised while the complexity of running a sawmill business was not adequately understood. In more recent times, efforts were made to involve experienced sawmill owners from Kathmandu in business planning for the sawmills, which proved to be a valuable learning tool. However, this was frustrated by a deterioration in the security situation, which made it difficult for these businessmen to visit the sawmills.
- **Government policy and processes added costs and increased risks.** Government approval processes for production and movement of logs and sawn timber were cumbersome. The need for multiple approvals often required sawmill managers to visit local officers, which increased costs. In addition, these delays combined with formal and informal charges associated with the approvals increased costs. The need for multiple approvals also delayed operations and the marketing of timber. Uncertainty associated with the approvals increased risks. In addition, at one point the imposition of a 40% tax on log sales (later removed) and local rulings on felling trees adversely affected harvesting, which in turn had a negative impact on sawmill operations.

The management committees responsible for both sawmills appear to have suffered from insufficient focus on financial outcomes, and did not adequately respond to factors that adversely impacted on profitability. However, it appears that other external factors outweighed management capacity as the key reason behind relatively poor financial performance by the sawmills.

Comparisons with log sales

Because the profit performance of the sawmills has not met expectations, the relative value of the next best alternative, the sale of logs, was examined by the NACRMLP. In both districts, private log buyers were active and generally purchased logs at the roadside or on the stump. It should be noted that the security situation in both regions generally curtailed these activities.

The relative attractiveness of log sales versus sawn timber was conducted through analysis of the residual value of each operation. In purely financial terms, that point along the production chain at which the greatest net value can be realized by the forest owner is the point at which the product should be sold. Thus, the CFUG could sell stumpage (i.e., the standing tree), logs at roadside, logs delivered to a sawmill or sawn timber, depending on how much profit they want to make and how much they want to invest and extend their activities (i.e., take on risk). The product value along the production chain increases, but so also do the production costs and related risks.

Table 3 provides the data for such an analysis. The residual value estimated for sawn timber production is based on operational costs of a community sawmill, while that for log sales is based on typical prices received from sales to agents acting on behalf of sawmills from Kathmandu and surrounding areas. The analysis shows that log sales are likely to provide a

greater return to forest growers than sawn timber from a community sawmill, assuming 50% recovery.

Table 3: Indicative residual value analysis for log sales and community sawmilling

Item	Sawn timber NRs. Per ft ³	Sawn timber values converted to NRs. Per ft ³ log volume	Logs NRs. per ft ³	Comments
Price of sawn timber at roadside	200 (US\$ 95 per m ³)	100 (US\$ 48 per m ³)		
Transport cost of sawn timber from sawmill to roadside	25 (US\$ 12 per m ³)	12.5 (US\$ 6 per m ³)		
Ex mill door value per ft ³ sawn	175 (US\$ 84 per m ³)	87.5 (US\$ 42 per m ³)	1,788	449
Sawmill processing cost (NRs. Per ft ³ log vol)	50 (US\$ 24 per m ³)	25 (US\$ 12 per m ³)	1	1
Log value per ft ³ in the mill yard		62.5 (US\$ 30 per m ³)	1,789	449
Transport of logs from roadside to mill yard per ft ³ log vol.		15 (US\$ 7 per m ³)	70 (US\$ 33 per m ³)	Col. 4 gives value of logs for sale at forest roadside to a private buyer
Harvesting costs (logs stacked at forest roadside) per ft ³		30 (US\$ 14 per m ³)	30 (US\$ 14 per m ³)	
Residual log value/ft ³		17.5 (US\$ 8 per m ³)	40 (US\$ 19 per m ³)	Stumpage (value of standing tree)

Source: NACRMLP (2005); dollar per m³ equivalent is shown in brackets.

This residual value analysis suggests that the sawmills from Kathmandu and surrounding areas buying logs at roadside can afford to pay more than community-based sawmills. The former have economies of scale and are also sawing higher quality logs from sal (*Shorea robusta*) and native chir pine (*Pinus roxburghii*). In addition, they have more sawmilling experience and lower marketing costs than the community sawmills.

Whether or not the poor returns to forest owners can be offset by additional local employment and income generated by community sawmills is not easy to determine, but the history of the sawmills suggests not. Residual price analysis suggests that communities would need to value the additional benefits of local employment at NRs. 22.5 per ft³ (NRs. 794 or US\$ 11 per m³) of logs processed to offset stumpage differences. Based on an input of 10,000 ft³, the sawmill would need to employ labour to the value of NRs. 225,000 (US\$ 3,040). For an average rural wage of NRs. 70 per day (US\$ 1), this equates to around 3,200 working days. If the sawmill worked for half the year, it would have to employ around 18 people, which is considerably more than are actually employed. The Chaubas sawmill at full production only employed around 10 people (four laborers, four machine operators, one guard and one manager).

Log harvesting and transport actually employs more, particularly poor people, further reinforcing the attractiveness of selling logs, compared to sawmilling.

Risk associated with alternative activities is another factor to consider. An activity providing lower returns may be more attractive if it is also associated with lower risk. The capital required for a sawmill suggests there is considerably more risk borne by communities making such investments than those involved in log sales only. Furthermore, while there is considerable risk of not being able to sell stocks of sawn timber if there is a market downturn, trees can be left to grow without deteriorating when demand falls off.

Lessons

Despite the financial performance of the sawmills not meeting expectations, the local communities have learnt much from their construction and operation, particularly the importance of marketing and business planning. The sawmills also provide valuable lessons for other community forestry sawmilling operations. The major lessons arising from the experience of the Chaubas and Shree Chhap sawmills are:

- **Thorough feasibility studies should be undertaken prior to investment.** Assessing the feasibility of proposed investments is always important, but particularly so where communities have not had direct experience in managing sawmills or similar commercial businesses. The feasibility assessment should directly involve local communities and not be conducted solely by an external party. The involvement of the community will help build understanding of the multi-faceted nature of running community sawmills and form a solid base for business planning skills development. The feasibility study should include detailed analysis along the production chain from the forest to the end use market, as well as identifying labor and capital needs. Costs of production and marketing need to be directly linked to similar operations if available, and market price estimates need to account for cyclical movements in timber markets. The risk associated with individual cost and return estimates also needs to be quantified. Quantifying risk is particularly important for poor communities, for whom risky investments can have significant adverse impacts. It is also important to understand the level of business skills amongst members of the community and, where required, to incorporate training from experienced business people in business management skills.
- **Examine alternative investments and alternative structures.** Possible alternatives to the sawmill investment should be clearly identified and the relative costs and returns compared. For example, comparing returns from the sale of logs to production and sale of sawn timber using value chain analysis should be done for all potential sawmill investments. Further processing does not always result in higher value returns. The risks associated with alternatives should also be clearly identified. It may be that the added value associated with a sawmill investment comes only with higher risk, and this needs to be part of the investment decision. Potential alternative management structures should also be considered. For example, should an external manager be involved? Is there potential for a joint venture with an experienced sawmill operator? Should management be contracted out?
- **Business planning and business management are vital.** Business planning is an ongoing process, and local communities need to develop these skills throughout the investment appraisal and implementation. Involving communities in a thorough feasibility assessment will help develop business planning and management skills. There are many formulas for the development of business plans, but a risk associated with using such models is that business planning becomes too process-oriented, i.e., business planning focuses

on producing a document rather than a real consideration of factors vital to business development and performance. One good way to promote business planning and management skills is to involve experienced sawmill operators in the project feasibility assessment, as well as in providing business skills training.

- **Development of marketing skills.** Identifying target markets, understanding how prevailing prices are determined in those markets, and making links with buyers (including potential forward contracts) are all vital to successful sawmill operations. These factors must be considered as part of the feasibility assessment and business planning processes, and there needs to be a clear strategy developed to ensure that the sawmill managers develop and apply these skills. Again, involving experienced sawmill operators/managers can be very valuable in this process. A common motivation for community-owned sawmills is the desire to capture margins earned by middlemen. However, it needs to be recognized that middlemen also provide valuable marketing services that have costs and require specific skills.
- **Analyze risks associated with project investments.** The importance of considering risks has already been outlined as part of feasibility assessment and business planning. However, the potential impact of risk on small communities warrants specific mention.
- **The policy environment can have significant impacts on the viability of community sawmill investments.** There are many aspects of government policies and their application that can directly affect the outcomes from community sawmill investments. These can range from market access issues, through approvals required for sawmill development and operations, to the prices paid for logs and taxation arrangements (formal and informal) for sawmills. The potential for governments to change policy that directly impacts on the viability of investments needs to be considered as part of the risk analysis.

Many of these lessons are well known and would not be new to those involved in assisting the development of community-owned enterprises. However, there is a risk that the assessment of such investments is sometimes undertaken on a one dimensional basis, i.e., only a single option is considered based on an already formed view of what the investment should entail. In this case, there is a real danger that the feasibility analysis unconsciously sets out to confirm preconceived ideas and does not adequately examine alternatives or relevant risks. This tends to go hand in hand with unrealistically raising the expectations of communities, which then makes it difficult to make decisions not to proceed. These decisions become even harder once investments have been made.

The costs and difficulties associated with changing investments and the potential adverse impacts of failed projects on poor communities emphasize the importance of a thorough feasibility assessment. Such assessments should involve local communities as well as independent advice from experienced operators in local markets. While this may add to the time and costs of investment, it would appear worthwhile to fully understand the risks and alternatives. The following checklist (Table 3) has been prepared to assist those considering community sawmill investments.

Table 3: Checklist for community sawmill investment analysis

Component	Key issues	Approach
Feasibility analysis	<ul style="list-style-type: none"> • Clarify goals of forest management and sawmill enterprises • Estimate costs for each component of the sawmill operation including log price, harvesting and transport costs, processing cost, and marketing costs • Estimate returns based on identified markets, product specifications, customers and prices 	<ul style="list-style-type: none"> • Where possible, base estimates on actual cost information from other operations • Involve people with direct experience in local markets and sawmill operations • Ensure communities understand the opportunities and constraints of forest-based enterprises, and involve them in preparing and analyzing the estimates
Alternative investment options	<ul style="list-style-type: none"> • Conduct value chain analyses of alternatives to sawmilling - sale of logs (at roadside or stumpage) and other processing options (where applicable) • Use actual market prices in the analysis 	<ul style="list-style-type: none"> • Ensure communities understand the relative risks and returns associated with alternative options
Risk analysis	<ul style="list-style-type: none"> • Quantify risk along the production chain • Detail specific actions to mitigate risks 	<ul style="list-style-type: none"> • Ensure communities understand risk and develop approaches to its management • Quantify risk analysis in feasibility assessment
Business planning	<ul style="list-style-type: none"> • Prepare a business plan prior to making any investment • Continually review the business plan to deal with changing circumstances 	<ul style="list-style-type: none"> • Use local commercial sawmill operators in training and development of community business skills
Management skills	<ul style="list-style-type: none"> • Ensure that management arrangements are clearly articulated and agreed by the community • Examine alternative management and ownership structures for the investment e.g., joint ventures, contract management of sawmill 	<ul style="list-style-type: none"> • Use local commercial sawmill operators to provide management training

Component	Key issues	Approach
Marketing skills	<ul style="list-style-type: none"> Clearly articulate arrangements and responsibilities for marketing of products including quantity, customers and prices Identify costs associated with marketing of sawn timber 	<ul style="list-style-type: none"> Where possible, base estimates on prevailing market values Understand the costs and services provided by middlemen
Policy environment	<ul style="list-style-type: none"> Identify any government requirements for approvals associated with sawn timber production and marketing Assess the impact of approval processes on the cost of operations Identify potential policy changes that could impact on the sawmill business 	<ul style="list-style-type: none"> Include formal and informal costs
Management structures	<ul style="list-style-type: none"> Ensure there are clear lines of responsibility and accountability for financial performance Provide regular monitoring and evaluation of financial outcomes 	<ul style="list-style-type: none"> Ensure consideration of alternative management options such as contracting out management to private sector operators

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CAN TIMBER RENTS BETTER CONTRIBUTE TO POVERTY ALLEVIATION THROUGH COMMUNITY FORESTRY IN THE TERAI REGION OF NEPAL?¹

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Introduction

Only about 10% of the 14,000 officially established community forests in Nepal are found in the 20 districts defined as Terai by the Central Bureau of Statistics.² These forests cover a little over 200,000 ha, which is less

¹ A more detailed version of this paper is available at the author's personal website: www.freewebs.com/jjinnepal

² Almost half the nation's population reside in these districts that comprises only 23% of Nepal's territory (CBS 2005)

than 20% of the forest cover in the Terai outside protected areas.³ Nevertheless, approximately 16% of the Terai population, or 320,000 households⁴ (nearly two million people), benefit from 100% rights to forest products through community forests imparted under the Forest Act (1993), Forest Regulations (1995), and 1st Amendment (1998) (Bampton and Shrestha, in press), though a recent series of Financial Ordinances impose some taxes on Terai Community Forests. The remainder of the forests in the Terai is either in protected areas,⁵ or under Government “management,” with negligible areas under Leasehold or Religious Forestry.

The natural forests of the Terai region are rich in economic terms, due to the abundance of high-value timber species such as sal (*Shorea robusta*), sissoo (*Dalbergia sissoo*) and khair (*Acacia catechu*) (Van Schoubroeck *et al.* 2004; Hill 1999), which have relatively fast sub-tropical growth rates (Pesonen 1994; Rautiainen 1995). The relative easy access of Terai forests and markets also makes the realization of timber rents easier. Despite historically providing revenues to the ruling classes,⁶ it was not until the 1970s that the first attempts at formal forest management planning were made through the Department of Forests (DoF), though these plans were never fully implemented (Adhikari *et al.* in press; Sigdel *et al.* 2005; Baral 2002). During the 1990s, recognizing that the existing passive management was unsustainable (Pesonen 1994; Pesonen and Rautiainen 1995) a new attempt was made with Finnish technical assistance, resulting in technically sound (for timber production) Operational Forest Management Plans (OFMPs) for 19 of the Terai districts. However, as these plans did not involve local people or attempt to reconcile their livelihoods needs, and restricted community forests to degraded areas of forest, the OFMPs were not accepted by the local population. A lack of central government funding for implementing these plans, combined with an ill-advised and unclear ban on green tree felling, further hampered the success of the OFMPs (Baral 2002).

Since then, most Terai forests have remained under Government “management,” which in practice involves little more than the collection of illegally cut forest products, or the periodic removal of dead, dying and fallen trees through annual harvesting quotas assigned to District Forest Offices (DFO), the Timber Corporation of Nepal (TCN)⁷ or District Forest Product Supply Boards (DFPSBs) (Acharya *et al.* 2006). The important point regarding government management is that timber rents from Government-managed forests are not seen

³ Precise figures for forest areas are difficult to come by as most estimates focus on natural forest within the national forest estate. However, large areas designated as national forest do not actually have forest cover, and 7.7% of community forest in the Terai is actually plantations, some of which is outside national forest and therefore not included in overall forest areas.

⁴ This is the total number of households registered as members of CFUGs. However, there is no data on the degree of duplication, as some are members of more than one CFUG - hence the figure is likely to be a slight overestimation

⁵ There are five protected areas in the Terai - two national parks and three wildlife reserves covering 17% of Terai forests (DoF 2005). Around the PAs are Buffer-zones (BZs), in which at least 57 BZCFUGs currently manage around 14,500 ha (Bampton and Shrestha, in press).

⁶ For example, sleepers for India's expanding railway network during the British colonial era (e.g., Adhikari *et al.* in press).

⁷ The TCN is a para-statal enterprise established in 1959 with initial objectives of supplying timber and fuelwood to Kathmandu Valley and exporting the surpluses to India, although it soon developed into an intermediary timber supply agent obtaining trees from DFOs at the Government rate and selling at a higher price to private wood merchants. It has passed from the jurisdiction of the Ministry of Forests and Soil Conservation to the Ministry of Supply and back again, and in 1998 the Government of Nepal made a decision that authorized the TCN as a sole dealer for selling timber and fuelwood in 33 Terai and Inner Terai districts (Shrestha R.B., pers. comm.). In 2000, the decision was changed yet again, whereby TCN would be responsible for 50%, and DFOs the other 50%. The TCN has spent a considerable part of its existence in debt.

to contribute to local poverty reduction,⁸ except perhaps through the employment generated by those contracted locally to undertake the harvesting. Only timber distribution through the DFPSBs aims at meeting local timber needs and targeting poor people. Unfortunately the DFPSBs are not functioning properly in many districts, resulting in inadequate timber distribution. Due to these inadequacies, local users (including the poor) obtain benefits from government forests through the illegal collection of timber and other forest products.

The socio-economic situation and history of the Terai, in relation to forestry, has been summarized in various studies (Adhikari *et al.* in press; Bampton and Shrestha, in press; Bampton *et al.* 2004; Laubmeier and Warth 2004). As many authors have noted (Sigdel *et al.* 2005; Bampton *et al.* 2004; MFSC 2003; Paudel and Pokharel 2001; Pokharel 1999), the most important characteristic influencing forest management and use in the Terai is the pattern of forest resource and population distribution. The Terai forests are mostly confined to the environmentally sensitive Churia Hills in many districts⁹ and the Bhabar zone immediately to the south of these hills in other some other districts, while the Terai plains are largely devoid of large intact forests, with the exception of a few districts located primarily in the central and far western Terai.

The majority of the population live in the plains, with many located quite far from the remaining natural forests. It is also frequently noted that those populations living closest to the remaining forests are relatively recent migrants from the Hills, a demographic pattern that is linked to King Birendra's drive to populate the Terai following the eradication of malaria in the 1950s. Many of these recent migrants are technically illegal encroachers under the law (Acharya and Dulal 2003; Pokharel 1999; Bhatta 1998). Gaurev Integrated Development Associates (2003) estimated that as much as 70,256 ha of forest have been illegally encroached upon in recent years. Though there are celebrated cases of encroachers turning into forest conservationists through Community Forestry (referred to here as CF) (Pokharel 2000), encroachment remains a challenging issue in the region.

It is often argued that CF mechanisms will inevitably favor the few communities living close to the forest resources in the northern Terai districts, as opposed to those communities located in the southern districts that are farther away from the available forest resources (Sigdel *et al.* 2005; Singh 2005; Baral and Subedi 1999).¹⁰ Community forestry will inevitably have less of an impact on overall poverty reduction in these southern districts, unless mechanisms are developed to have them included in, or benefit from, the Community Forestry program. While there is no poverty data to confirm the actual status, it should be noted that personal observations suggest that the southern Terai communities are generally poorer with higher population densities than their northern neighbors.

Complicating this proximity to the forest resource issue is the fact that there is no limit to the forest area that CFUGs can apply for, with situations arising where in some CFUGs, a relatively small number of households have captured an inordinate amount of forest resources, while other CFUGs have inadequate resources to meet even the basic needs of the community,

⁸ Indirectly, through central and local government, forest revenues are reinvested in local poverty alleviation and basic services, although 10% of revenues are deposited with District Development Committees (DDCs).

⁹ 57% of forests in the 20 Terai districts are found in hilly regions - Churia or Mahabarat hills (DoF 2005) Estimates of deforestation in the Terai have reduced from 1.3% for 1978-79, 1990-91 (DFRS 1999) to 0.06% for 1990-91, 2000-01 (DoF 2005).

¹⁰ In practice, CFs are handed over as requested to self-identified groups, and GoN policy has been to hand over small patches along the fringes that can only realistically serve users situated nearby. Unless the size of CFs increases, it is impractical to include distant users in CFUGs. Bampton *et al.* (2004) demonstrated for 3 Terai districts that on average, CFUGs managed areas/household equal or less than the district forest:household ratio, although this is dragged down by some small CF plantations outside the natural forest with high numbers of users.

let alone contribute to poverty reduction (Bampton and Shrestha in press; Iverson *et al.* 2005; Chhetry *et al.* 2004; Bampton *et al.* 2004; NORMS/ODG 2003).

For these reasons and others, the Government of Nepal (GoN) issued a revised forest policy (MFSC 2000) that prevents community forests from being handed over to CFUGs in large, contiguous blocks. The policy also mandates that production forest resources would be managed through a new modality called Collaborative Forest Management (CFM), where the management responsibilities and benefits are shared between the central Government through the District Forest Offices (DFOs) and local governments through District Development Committees (DDCs), Village Development Committees (VDCs), and elected CFM committee members representing both nearby and distant forest users. The Government argues that, as it is responsible for Government-managed national forests, it can develop management plans through collaboration with whomever it chooses. The legal basis for this position remains disputed (Bhattarai 2006).

CFM attempts to: (i) develop sustainable forest management; (ii) fulfill the needs for forest products; (iii) help in poverty reduction by creating employment; (iv) maintain and enhance biodiversity; and, (v) increase national and local income through active management of the Terai and inner Terai forests.¹¹ This paper compares Community Forestry with CFM, but does not analyze the CFM modality in depth for a number of reasons: it remains confined to less than 7,000 ha where it is still being piloted, cost and benefit sharing levels and mechanisms have not yet been clearly established,¹² and some important stakeholders continue to have strong reservations about it.¹³

This paper principally examines the impact of existing CF legislation, forest policies, and internal CF benefit-sharing practices on the realization of timber rents and their targeted redistribution to poor members of the CFUGs. It also briefly explores other pro-poor timber rent distribution systems practiced in the Terai and compares them with redistribution through CF. Finally, the paper provides some suggestions on how timber rents realized through CF could be increased and better contribute to poverty alleviation in the Terai region.

The case of community forestry

Impact of community forestry-related legislation and policies on timber rent realization and redistribution

The Forest Act (HMGN 1993) is supposed to give CFUGs autonomy to decide how to manage their allocated forests, and how to use or dispose of the forest products derived from them. However, in reality, there are a number of constraints on the decision-making freedom of CFUGs imposed by subsidiary regulations and the dominant paradigms of CF in Nepal, as well as the practice of CFUGs not always reflecting the theory. In order to understand how CF works in the Terai, it is essential to understand the fundamentals of

¹¹ For further information on how CFM evolved and where it is now, see Singh KC (2005); MFSC (2003); Sah *et al.* (in press) and Bampton *et al.* (in press).

¹² Benefit sharing in CFM is currently 75% of revenues to central government, with 25% remaining at the district level - originally envisaged as 10% to DDCs, 10% to VDCs and 5% to CFM Groups. Current MFSC thinking makes benefit sharing of the district level 25% at the discretion of District Forest Coordination Committees (DFCCs), a large part of which would have to be reinvested into forest development (MFSC 2005). Suggestions for the revised CFM guidelines include changing the benefit sharing to 50-50 vis centre-district (Ebreget, A., pers. comm.).

¹³ The whole of *Hamro Ban Sampada* Vol. 3(2), published by ForestAction is dedicated to issues of CFM

the legislation and how the various instruments introduced over time affect CFUG decision making, as well as the broader socio-economic context in which they operate.

Under the Forest Act (HMGN 1993) CFUGs may be formed to “develop, conserve, use and manage [the] forest, and sell and distribute the forest products by independently fixing their prices, according to an operational plan” (Section 25), “using the forest products for collective benefit ... in the prescribed manner” (Section 41). The Act also specifies that “A users’ group ... shall be an autonomous and corporate body with perpetual succession”, “... may acquire, use, sell or transfer, or otherwise dispose movable and immovable property like an individual” (Section 43), and “... shall have a separate fund of its own” which “... shall be operated in the prescribed manner” (Section 45).

The main features and spirit of the original legislation were concisely summarized by Joshi (1997):

- All accessible forests can be handed over to users (no area limit);
- The CFUGs have to manage the forests as per the approved constitution and operational plan (OP) of the allocated community forest;
- Any national forests suitable to be converted into community forests will not be given to other uses, such as leasehold forests;
- District Forest Officers (DFOs) can allocate areas of forest to a CFUG (it was previously the responsibility of Regional Directors (RDs), a higher authority);
- CFUGs can use surplus funds for any kind of community development works;
- A CFUG is an autonomous and corporate body with perpetual succession;
- A CFUG can fix the price of the forestry products irrespective of the government royalty;
- A CFUG can plant long-term cash crops (e.g., medicinal herbs) as long as they do not disturb the main forestry crops;
- The DFO can take the forest back from a CFUG if it contravenes the OP (agreement); however, the DFO must return it as soon as possible once the problem is resolved;
- CFUGs can transport any forest products simply by informing the DFO;
- CFUGs will not be beholden to any political boundary while handing over the forests;
- A CFUG can establish forest-based industries;
- CFUGs can amend the OP by simply informing the DFO;
- CFUGs can punish misusers (encroachers and thieves), who contravene the rules of the OP; and
- Any agency can help users to manage the community forest.

This legislation gives CFUGs considerable freedom to determine how they manage their community forest, though “everything” CFUGs want to do should be included in the OPs. The Forest Regulations (HMGN 1995) detail matters that must be included in an OP, but they do not state the duration of these plans. This is important, as section 26, subsection 1 of the Forest Act states that CFUGs “may make timely amendments according to need in the OP relating to the management of community forests, and must *inform* the DFO accordingly.” It does not say “seek approval” of such amendments, which involves considerably higher transaction costs. Furthermore, subsection 2 states that only if such an amendment “is considered likely to adversely affect the environment in a significant manner” may the DFO “direct the users’ group not to implement the concerned amendment in 30 days.” Nevertheless, DFOs impose control over OPs, and 5-year plans are the accepted norm, followed by revisions that do require DFO approval. This does not give CFUGs the flexibility to prepare long-term plans for

the whole forest, and shorter-term plans for more detailed work in specific areas of the forest, and therefore increases unnecessary transaction costs.

More recent legislation, in the form of the First Amendment (HMGN 1998), prohibits forest-related industries from being located in the forest or within a specific set distance from the forest,¹⁴ a further restriction on the prohibition not to locate such industries in a forest area as mandated in the Forest Regulations (HMGN 1995), thus imposing extra costs to transport raw materials to processing sites. The First Amendment (HMGN 1998) also made it necessary to undertake a forest inventory while preparing the OP. The Community Forest Inventory Guidelines (CFIG), first prepared in 2000, were updated in 2004 and remain highly prescriptive.¹⁵ Furthermore, they go beyond just inventory, requiring conservative silvicultural prescriptions based on Annual Allowable Cuts (AACs) as a percentage of estimated Mean Annual Increment (MAI), which is simply not appropriate in many cases.¹⁶ Forestry officials take these guidelines as if they were a mandatory directive, rather than guidance, as no other standards to evaluate OPs exist. The First Amendment also directs Community Forest User Groups to spend 25% of their income on forest development activities, although a clear definition of “forest development activities” remains elusive. Obviously, forest investment and management costs will vary from year to year, and cost effectiveness and sound financial planning should be encouraged in order to maximize profit.

The most recent legislative impact on timber rents from CF in the Terai comes from the imposition of taxes on the sale of timber of two species outside CFUGs. The idea was originally included in the Revised Forest Policy that was adopted in 2000, though it had no basis in law or regulation. Despite this, DFOs began collecting a flat 40% tax from such sales. The move was challenged by the Federation of Community Forest User Groups Nepal (FECOFUN) in the Supreme Court in 2003, which won the case. The tax was then legally authorized through a Finance Ordinance later in 2003, and has since been renewed every six months. During this time, the tax was momentarily applied to the whole country covering all species with a reduced rate of 25%, and finally restricted to a 15% tax rate on only *sal* and *khair* sales outside of the Terai CFUGs. This tax is on gross revenue, but is frequently referred to by forestry officials as a “royalty.” It bears no relation to CFUG investments to realize such revenues, or to the needs of the CFUG for revenues. In addition to this, CFUGs are obliged to pay a 15% VAT on the same sales, though how this is calculated is still a mystery to the authors. The assumption is that the Government will use at least some of these revenues for implementing the 10th Plan, alternatively known as Nepal’s Poverty Reduction Strategy Paper (PRSP), although it is highly unlikely that much of this will filter back to the communities involved in managing community forests in the Terai. Taxes such as these, and the instability of the overall system, encourage some CFUGs to minimize their external sales, which results in a decrease in overall timber revenues. This can translate into a loss of potential income for the CFUGs, and a loss of revenue for the Government of Nepal as well.

In summary, the CF legislation obliges CFUGs to incur management costs, some of which are not necessary, while at the same time restricting production from their forests to lower than potential levels. Furthermore, a share of Terai timber rents is taken by the Government in the form of taxes, irrespective of production costs incurred by CFUGs or their management

¹⁴ Five km is the limit in the case of the Terai region.

¹⁵ e.g., CFUGs are required to measure regeneration throughout their forest, regardless of whether they intend to regenerate particular blocks (such as pole stage stands) or not.

¹⁶ e.g., the permitted allowable annual harvests in Dhuseri community forest in Nawalparasi district are calculated to be only a third of sustainable production potential of the predominately *sal* forest (NORMS 2003) as the growth rates are likely to be significantly higher than those projected in the CFIG.

and community development needs. As a result, the timber rents collected by CFUGs from Community Forestry are never as high as they potentially could be.

There are additional factors that contribute to timber rents collected by CFUGs being lower than they could be. A fundamental limitation on CFUGs is the prevailing paradigm that internal demand should be satisfied before any external sales are allowed, and that individual CFUG members should sell their share of forest products. An illustration of this thinking was the Ministry of Forest and Soil Conservation (MFSC) decision in April 1996 to release a circular stating that the forest product consumption demands of the local community and adjacent districts must be first fulfilled before a CFUG can sell forest products in other places (Kanel and Acharaya 2006). This was in conflict with provisions in the Forest Act and Regulation, but was viewed as a good intervention because it helped to meet local needs (Shrestha, R.B. pers. comm.).¹⁷ Additionally, and in a typically restrictive fashion that is supposedly for environmental reasons, buffer zone (BZ) CFUGs are not allowed to sell any forest products outside their community (MFSC 2002). Other restrictions on CFUG decision making resulting from the prevailing CF paradigm preclude individual members from receiving a share of income from sales, restricting the use of employment generation as a tool to redistribute rents according to inputs by individual members. The impacts of such thinking will be further explored below.

Impact of internal Community Forestry management on timber rent realization and redistribution

Despite the legal and policy restrictions on CFUG decision making, it is still interesting to examine how CFUGs use their remaining discretionary powers and rents, and how these are influenced by the prevailing paradigm for CF in Nepal. It is noted that in many CFUGs nationally, not only in the Terai, the concept of “equality” is applied in theory, though concepts of “equity” are now being promoted. However, many CFUGs are actually employing a concept of “need” to determine who gets what, and thus the concept of “equality” changes to one of “equality of opportunity” only.

The reality is that these opportunities are not realized by everyone. Take for example the situation of fodder in the Kumarbarti BZCFUG in Nawalparasi district. The users comprise two main social groups, with distinct historical and cultural values and livelihoods systems. One group is composed of higher caste Hindus, many of whom have landholdings and livestock. The other group consists of Bote / Mahji, comparatively landless, fisher folk. The community forest provides fodder for those who need it, i.e., the higher castes with livestock. This has been valued as an annual benefit exceeding NRs. 30,000 (US\$ 405) per household per year. The Bote / Mahji, who do not have livestock, are excluded from these benefits, and receive inadequate compensation in the form of a few extra headloads of far less valuable thatching grass (Ghimire 2004).

A similar situation arises with timber used within CFUGs, as documented by the detailed NORMS/ODG study (2003) covering 14 CFUGs in Nawalparasi and Rupandehi districts. It was commonly found that CFUGs sell timber internally to members at a price significantly lower than the prevailing market price, and the timber is often only sold in set quantities. However, those who avail themselves of this subsidized timber are those who “need” it, and who can still afford the subsidized price for the set quantity. “Need” for timber usually relates to

¹⁷ A recent agreement between FECOFUN and MFSC maintains this paradigm, as it was agreed that CFUGs should first satisfy their own need, then that of neighbouring CFUGs, then the rest of the district, before being allowed to sell to others (MFSC/FECOFUN press statement 01/07/06)

house construction or maintenance, and this “need” is frequently greater for relatively richer households with larger houses. Furthermore, it is only the richer members who can afford to purchase timber, even at the subsidized price. Typical local market prices for sal timber are around NRs. 600-800 (US\$ 8-11) per ft³ (NRs. 21,200-28,250 or US\$ 282-388 per m³). A typical subsidized price for sal sold internally within CFUGs is around NRs. 150-300 (US\$ 2-4) per ft³ (NRs. 5,300-10,600 or US\$ 70-141 per m³). Therefore, many CFUGs as institutions are in effect forgoing at least half of the available timber rents, which in practice go to richer households at the expense of poorer CFUG members who can’t afford to buy even at subsidized rates. The NORMS/ODG study refer to these as “hidden subsidies” whereby the poor in fact subsidize the rich.

This research has been recently summarized by Iverson *et al.* (2005), where they calculate that the potential net benefits for one CFUG, after subtracting administration and harvesting costs, could be NRs. 2.3 million (US\$ 31,000) on an annual harvest of 5,000 ft³ (142 m³) if sold at market rates. These benefits amount to NRs. 3,839 (US\$ 51) per member household, which is equivalent to the earnings from around 55 days of female agriculture wage labor. However, because of the CFUG’s timber quota and pricing policies, 63% of the net benefits, worth NRs. 1.5 million (US\$ 22,500), are usurped by the households awarded timber quotas. Awards of timber quotas in this case show stark distributional bias favoring wealthier households, as quotas are for 50 ft³ (1.4 m³) requiring an upfront payment of NRs. 15,000 (US\$ 200), which poorer households are unable to pay. This policy therefore effectively excludes the poor from availing themselves of the “hidden subsidy.”

Furthermore, the NORMS/ODG study detects a further hidden economy in a number of instances, whereby fund management is far from transparent, and corruption probable. The study reported that the CFUG harvested more than specified in the OP, which was under-reported by the CFUG committee who sold part of the extra volume illegally. There is no legal restriction on individuals selling their shares of CF timber, although the transport permits required and rent-seeking behavior of forest officials means that legal routes are generally avoided. It is known that at least a portion of CF timber is sold in this way (Shrestha, R.B. pers. comm.). Unfortunately it is impossible to get an idea of how prevalent these distribution systems are in the Terai region.

Nevertheless, some CFUGs have developed more equitable timber rent distribution systems. These include:

- Variable timber quotas based on poverty ranking. Member households are divided into rich, medium and poor households, whereby the highest quotas are provided to the poorest families.
- Variable and affordable pricing based on poverty ranking. Prices for timber are adapted to the wealth of member households. This allows affordable pricing for all members and to some extent prevents inequitable hidden subsidies. Prices applied to the richest member households are closer to the real market price, while prices paid by the poorest households are very low and therefore affordable for them. This system is sometimes combined with timber grading, where grade A timber is sold internally at a price slightly below the local market price, and grades B and C are sold at a minimum price, affordable to all households. If supply exceeds demand, timber grading is sometimes applied to optimize rents by selling grade A timber outside the CFUG to the highest bidder. Some CFUGs will distribute for free a predetermined annual quota to their poorest members or victims of natural disasters.
- Timber distribution based on demand and poverty ranking, where a special sub-committee examines individual annual demands made by members, verifies them and allocates timber using variable pricing based on poverty ranking. If demand exceeds

supply, some CFUGs apply a prioritized allocation system where the demands of the poorest households are met first.

Bampton *et al.* (2004) summarized points from CFUG sample data in 12 districts. They noted that Terai CFUGs actually sell less of their forest produce outside their groups than the hill CFUGs do (only 14% of their production against 24% for the hills). Due to the higher value of Terai forests, overall Terai CFUGs make up 35% of forest products sales from all CFUGs.¹⁸ Interestingly, it also appears that forest product sales make up a smaller proportion of Terai CFUGs' overall income. More recent data from Rupandehi district showed that 89% of timber produced was used internally (Bampton and Shrestha in press). Although the national CF database held by the DoF contains no information on such matters and CFUGs are extremely lax in submitting annual reports and audited accounts, despite being compulsory by law,¹⁹ the existing DoF data of CFUG sales outside their groups gives an indication that timber rents contribute substantially to CFUG income - some 890,000 ft³ (25,200 m³) of *sal* timber,²⁰ 470,000 ft³ (13,300 m³) of other species, and 14.2 million kgs of *khair* timber²¹ (from data presented in Bampton and Shrestha in press). A simple calculation suggests that *sal* alone could provide an income in excess of NRs 100 million per year to Terai CFUGs at a market rate of NRs. 600 per ft³ (NRs. 21,200 per m³; and US\$ 1.3 million per year). If Terai CFUGs are indeed using 80% of their production internally, and are selling this to their own members at only NRs. 300 per ft³ (NRs. 10,600 or US\$ 141 per m³), they could actually be forgoing double the amount they currently generate from external sales (NRs. 200 million or US\$ 2.6 million per year), as well as distorting local timber markets.

Regardless of the losses CFUGs experience in relation to the potential timber rents available to them, they still receive significant incomes from the sale of timber in the Terai. However, do Community Forest User's Group use these funds for poverty reduction? The answer to this is "partially." Kanel and Niraula (2004) report that only 0.88% of Terai CFUG funds are spent on pro-poor activities. A more recent study by Bampton and Shrestha (in press) shows that, at least in Nawalparasi and Rupandehi districts, CFUGs spent 5.32% and 3.28%, respectively, on targeted poverty alleviation programs. This is attributed to a raised awareness amongst CFUGs and willingness to contribute towards poverty reduction in line with Government, donor, and FECOFUN policy. Nevertheless, the impact of such programs has not yet been evaluated.

Community forestry does not contribute to poverty alleviation through targeted use of timber rents alone. In many cases, more equitable systems of forest product distribution have been developed, whereby the poorer or needier families receive additional concessions, such as free fuelwood (e.g., Janajagaran, Kalika, Sahara and Gautam Buddha CFUGs of Kapilbastu district) or free timber for welfare support (e.g., Dhuseri CFUG in Nawalparasi reported by NORMS, 2003). A further initiative becoming more widely adopted recently is the allocation of small areas of community forests to poor families for NTFPs and timber production for their exclusive use. Such provisions are extremely important to poor households.

¹⁸ Kanel and Niraula (2004) combine true Terai districts with semi-Terai districts that consist of Churia, inner-Terai valleys and Mahabarat hills. Nevertheless, these districts still only comprise <15% of all CFUGs in Nepal.

¹⁹ Bampton and Shrestha (in press) calculated from data available for seven Terai districts that over the last four financial years less than 40% of CFUGs have submitted annual reports. For the last fiscal year, only one CFUG out of the 100 or so in the three districts supported by the Livelihoods and Forestry Programme's Terai component has submitted its annual report by the stipulated deadline of one month after the end of the year (Paudyal, V. pers. Comm.).

²⁰ This figure for the 20 Terai districts is incomplete (e.g., data for Sarlahi district for 2057/58 and 2058/59 is missing as records have been burnt by the Maoists). Similar data for five Churia and inner-Terai districts (Surkhet, Makwanpur, Sindhuli, Udaypur and Ilam) show that these districts have in fact had far more significant *sal* timber sales outside CFUGs (approx. 1.2 million ft³ over the last five years)

²¹ *Khair* (*Acacia catechu*) heartwood is used to extract *katha* (used for chewing with betel leaves) and *cutch* (used for tanning and dyeing) (Kayastha 2002)

A large part of CFUG spending, although not directly targeted, probably also benefits the poor. However, it is argued by some that many community development activities have less benefit for the poor. For example, expenditures on schools will not benefit those too poor to send their children to school, or temple construction that lower castes are not allowed to enter. In addition, both Kanel and Niraula (2004) and Bampton and Shrestha (2006) find that, in the districts surveyed, between 10% and 30% of fund expenditure is categorized as miscellaneous, i.e., not spent on forest development, CFUG operational costs, or community development (which includes pro-poor programs).

In order to understand how CFUG community expenditures benefit the poor, it is first necessary to know who the poor are, and what community development activities are undertaken. Situations are extremely variable in reality. Allison *et al.* (2004) demonstrate how CFUGs are able to address the livelihoods of their members through supporting a wide variety of activities of interest to users outside forestry *per se*. This reinforces interest in, and commitment to, “good” Community Forestry management. There is clear evidence that CFUGs are ranking wealth to identify their poorer members, and that CFUG funds are being used for income-generating activities (mainly agriculture or livestock related, although bee-keeping, shop-keeping, and trade skills development are also quite common). Other activities that have positive impacts on the poor are emergency funds for health or natural disasters, or for birth control. Finally, expenditures for improving CFUG governance also have positive impacts on the poor by increasing transparency in, and awareness of, CFUG activities and the poor’s participation in CFUG decision making. However, the difficulties in sustainably reducing poverty are not solely financial, and CFUG funds are inadequate on their own.

Other timber rent realization and redistribution systems

Not all Terai forests have been handed over as community forests. A majority of productive Terai forests (block forests, not including protected areas, etc.) remain under direct government management. For government-managed forests, there are two main management systems producing timber rents. The first one is the direct management by the DFO; the second one is the newly established CFM mentioned earlier. For government forest managed by the DFO, an annual plan is created that allocates harvest quotas to the District Forest Office (DFO) itself, the Timber Corporation of Nepal (TCN) and the District Forest Product Supply Board (DFPSB).²² Allocations to TCN only occur in districts with sufficient forest resources. Timber harvested by the DFO is auctioned (to the highest bidder) and rents are sent to the central treasury. The same commercial auctioning system is applied by the TCN. The price of timber sold by the DFO and the TCN are not within reach of the poorest within the district. Timber is bought by middlemen who sell it in urban centers where demand and prices are high. In theory, the DFPSB ensures local (within the district) forest product supply for household fuelwood consumption, agricultural implements and the construction and maintenance of houses. The DFPSB sells timber just above the royalty rate (e.g., NRs. 250 per ft³ - NRs. 8,820 per m³ - for *sal*) which again, is not within reach of the poorest. This system creates the same hidden subsidy as in the case of CF. In exceptional cases, the DFPSB can

²² The DFPSB and the TCN have their own funds to finance harvesting operations. In general DFOs (Terai districts) receive about NRs 200,000 Government funding each year for the harvesting of their quota. Forest products harvested by the DFO are auctioned (to the highest bidder) and all revenues, including the harvesting cost, are sent to the central treasury. The minimum auctioning price is based on a set royalty rate plus harvesting costs. The same commercial auctioning system is applied by the TCN. Revenues go to TCN after the payment of royalty to the treasury. The harvest of the DFPSB quota is done by the DFO on behalf of the DFPSB. The price of forest products sold by the DFPSB includes royalty, harvesting costs and a small profit margin. The DFPSB ensures the local (district) supply of forest products for household fuel wood consumption, agricultural implements and the construction and maintenance of houses. The DFPSB can supply forest products at 10% of the royalty rate to victims of natural disasters, for religious rituals, etc.

supply forest products at 10% of the royalty rate, for example to victims of natural disasters, for cremations and other religious rituals, etc. This type of distribution is in theory supposed to target the poorest, but the functioning of DFPSBs is less than optimal (Acharya *et al.* 2006).

Problems with the above modalities include:

- Forests are sub-optimally managed at well below their sustainable potential;
- real management costs are not accounted for, so profitability and efficiency is not enhanced;
- harvesting costs are arbitrarily fixed;
- sales systems are inflexible, inefficient and open to abuse;²³ and
- 90% of revenues accrue to the central treasury, with only 10% going to district level governments, such as District Development Committees (DDCs), with none going directly to local communities.

At issue is whether the central government, local governments, or local communities are better at using rents from forests for forest management and poverty reduction. Clearly, central governments are able to redistribute funds to poorer regions, which might not necessarily coincide with forest resource wealth. However, the central government is criticized for leakage, unnecessary costs, poor prioritization, and lack of knowledge of local needs, as well as sub-optimal forest management. Local governments have a closer link to the people of their districts and a better idea of needs and priorities relating to poverty reduction. However, local governments have limited capacity and also suffer from non-optimal use of funds through inadequate accountability systems, as well as no role in forest management.

In the case of Collaborative Forest Management, minimum prices for the sale of timber within the CFM User Group (if not sold outside to the highest bidder) have to exceed the government royalty rate, as CFM is expected to pay 75% of the royalty to the central treasury. This price, even far below the market price, would again be too high for the poorest CFM members and poses the same problems of hidden subsidy mentioned earlier. In order to sell timber at an affordable price to its poorest members, the CFM committee would have to use internal revenues to further subsidize timber prices.

Conclusions and recommendations

There are a number of policy and legislative constraints that reduce CFUGs' ability to maximize the benefits from timber rents. This is exacerbated by CFUGs' own policies of subsidizing sales within their groups. Therefore, if we want timber rents from CF to better contribute to poverty alleviation, we should work on improving internal and external regulations, practices, and corresponding monitoring mechanisms. In order for CF to contribute more to poverty reduction in the Terai, CFUGs would have to cover more poor users, including more distant users, through the allocation of more forest as CF.

Taxation of Community Forestry income should or should not be considered, depending on perspectives on whether governments or local people are better at using timber rents to alleviate poverty, whether the majority of the poor are members or not of CFUGs, whether CFUGs should contribute to the services they receive from the forest agency, and whether forest resources should be considered as a national resource. However, care should be taken

²³ E.g., standing sales aren't undertaken, all timber is transported to depots for sale, grading is inadequate, fuelwood is cut into 2-ft lengths precluding alternative uses, large standard lots preclude small buyers, etc.

to ensure that taxation does not introduce adverse effects (e.g., suppression of sales outside CFUGs), is fair and progressive (related to costs incurred, income/household and/or CFUG poverty ranking, etc.) and is realistic (there should be enough revenue left to motivate people to look after their resource).

Timber rents can better contribute to poverty alleviation within CFUGs by developing pro-poor benefit-distribution systems: (i) by giving or selling timber to their poorest members at affordable prices; (ii) by reinvesting timber rents into targeted poverty alleviation activities; and, (iii) by allowing individual CFUG members to share in timber revenues. It is possible that a greater emphasis on maximizing the returns to individual households, and giving them individual freedom to decide how best to use rents from Community Forestry, could go further in alleviating poverty. At the same time, perhaps an emphasis on generating only sufficient group funds to cover management costs and contingencies would enable much more CF income to remain in individual members' pockets.

Therefore, CFUGs should balance internal subsidies and targeted timber sales, while maximizing income from internal and external sales that will enable them to develop a pro-poor livelihood improvement program. The guiding principle or priority (for obtaining a balance) would be to first address "real" local demands for forest products of the poorest to support their livelihoods. Selling surplus on a commercial basis in order to optimize revenues then requires an open and competitive market without restrictions. The use of such revenues must then be prioritized to the poor, either through CFUG-targeted activities, or by redistributing rents amongst individuals. A greater focus on payment to members for participation in CF management activities might raise interest in, and the intensity of, forest management while acting as an improved redistributive mechanism for CF rents and making it easier to determine the true costs of CF management.

The positive aspect of systems such as the DFPSB and CFM is that they allow the targeted distribution of timber outside CFUGs to a larger number of previously excluded people and distant users. However, DFPSB needs reform and boosting, while CFM still needs to be further developed and improved. A common problem with both systems is that it is difficult to avoid the problem of hidden subsidy, as any system that sells below market price to a selected few allows those selected few to capture the difference between the market price and subsidized price. It should also be noted that applying a high and fixed taxation system to CFM is negatively affecting the opportunities to local users and the means to alleviate poverty. It is also unfair as it is much higher than the rate applied to CFUGs. Progressive and conservative taxation should be applied to both CF and CFM, based on productivity and the number of households.

Finally, inadequate attention has been paid to economic issues pertaining to Community Forestry, both in terms of internal CFUG economies, and the broader economy outside CFUGs. It is therefore urged that practitioners and researchers increase their efforts to test some of the ideas presented in this paper.

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4

SECTION

Forest management modalities and institutional issues



SMALL WOOD-BASED ENTERPRISES IN COMMUNITY FORESTRY: CONTRIBUTING TO POVERTY REDUCTION IN NEPAL

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Introduction

The main forest management strategy of Nepal, based on forest dependent peoples' participation, is known as community forestry (CF). This approach was formally introduced in the late 1970s to encourage active participation of local people in forest management as a means to improve livelihoods. Since then, a strong legal and policy framework has been adopted to secure local people's rights and access to forests. By 2006, community forestry had grown to involve one third of all households in the country. Under the community forestry program, local people decide on forest resource



management and utilization and distribution of benefits to community members. Local people are organized into Community Forest User Groups (CFUGs). The Community Forestry Program in Nepal is one of the most recognized success stories for community-based forest management.

The primary motive for promoting community forestry initially was its potential to provide basic forest products such as firewood and forage to rural people, to improve their livelihoods, and to preserve the hills of Nepal from further degradation (Acharya 2002; Malla 2000). The promotion and implementation of CF in Nepal significantly affected the lives of many people in the rural areas of Nepal. The CFUGs that have been established in many communities are concerned with sustainably producing a wide variety of forest products based on local demands (Branney 1996). By 2006, about 14,500 CFUGs were involved in forest management, silvicultural operations, utilization of resources and the marketing of various forest products.

With its advancement, community forestry has been recognized increasingly as a viable means for poverty reduction in Nepal (Kanel 2004; Gentle 2000). The tenth government periodic plan specifically mentions CF as an approach to address rural poverty in Nepal. During the fourth National Workshop on Community Forestry, there was extensive debate on how community forestry can contribute to poverty reduction. Secure access to resources, and the recognized decision-making authority of the poor in the management and utilization of community forestry for equitable benefits sharing, were the major challenges identified (Kanel 2004).

Community Forestry and forest- based enterprises

The community forestry policy of Nepal is regarded as a progressive method for establishing the rights of local people over forest resources; however, the promotion of forest-based enterprises has been limited. Recently, more CFUGs are initiating poverty alleviation activities, helping to establish community forestry as a recognized pro-poor program. The main areas of intervention include the promotion of income-generating activities and establishment of concessions for forest products distribution. The income-generating activities include domestication of non-timber forest products (NTFPs), support to livestock production, and establishment of Forest-Based Small-Scale Enterprises (FBSEs). The recent focus of FBSEs is on the promotion of NTFP domestication, linked to the establishment and management of NTFP-based enterprises (Subedi 2006; Binayee *et al.* 2004). Subedi *et al.* (2002) argued that forest-based enterprises have the potential to contribute to better management of natural resources, along with providing income and employment opportunities to poor and disadvantaged groups. A considerable amount of information has been gathered in the past on NTFP-based enterprises. However, evidence suggests that a large proportion of benefits is captured by outsiders, especially middle men (Sharma 2003), and the poor are not always able to fully exploit the opportunities available from community forestry.

The development of small scale enterprises based on the existence of local resources, local skills and local markets could be a good option for poverty alleviation. Subedi (2006) believes that enterprise-oriented community forest management can generate positive outcomes for both conservation and local livelihood development, while Angelsen and Wunder (2003) identified small-scale wood processing enterprise development as a high priority area for poverty alleviation. This paper brings together information that is currently available from two wood-based FBSEs in Nepal, and examines their impacts on forest management and livelihood development.

Case Studies

The first case study describes a furniture enterprise, located at the Bharkhore CFUG in Parbat district. The second highlights an Agricultural Implements Production Enterprise (AIPE) located at the Ghorlas CFUG in Myagdi district.

Case study 1: Furniture enterprise, Parbat

Establishment

A series of meetings and discussions were convened in the Bharkhore CFUG to initiate activities to improve the livelihoods of the poor, where different households were identified to initiate a range of household-based activities. During this process, five households and the CFUG agreed to establish a furniture enterprise. The criteria for the selection of households were the wealth category of the household, the possession of traditional skills and a willingness to participate. The CFUG formed a furniture sub-committee to implement the establishment of the furniture enterprise. The decision to establish the enterprise was forwarded to the district level network of the CFUGs, known as the Federation of Community Forest Users, Nepal (FECOFUN). FECOFUN helped to identify a bilateral donor, the Livelihoods and Forestry Program (LFP), which agreed to support the enterprise development. The District Forest Office (DFO), Parbat that analyzed the prospects of such an enterprise facilitated the overall process. A business plan was prepared, including analysis for such an enterprise based on current furniture supply and demand.

The furniture enterprise was established in 2004. Out of a total investment of NRs. 57,800 (approximately US\$ 780), LFP supported NRs. 35,800 (US\$ 480) as a grant. The grant was used to purchase equipment such as a small circular saw, planer, electric motor, etc. The CFUG provided NRs. 10,000 (US\$ 135) in the form of a non-interest loan and additional raw wood supplies equivalent to NRs. 6,000 (US\$ 80) to start the enterprise. The remaining NRs. 6,000 (US\$ 80) of the total investment was supplied by the entrepreneur households.

Products and production mechanism

The enterprise mainly uses round logs, saplings and poles as input materials. There are four types of products from the enterprise: two main products and two by-products. The main products are house construction materials and furniture, while firewood and saw dust are the by-products generated during processing: i) the customer brings raw material to the enterprise, which then produces the requested products and charges for the service; ii) the furniture enterprise provides its services by visiting the customer's house and produces the requested products on site; and iii) the customer places an order for the products and the enterprise produces and delivers. In all three instances, the enterprise sets the price for the products or the rate of the services provided.

The average annual maintenance cost of the enterprise for the past two years, including the annual lease for land, electricity charges and workshop maintenance, is about NRs. 20,000 (US\$ 270). The raw material consumption is 6-8 ft³ per day, varying from a minimum of 2 to a maximum of 20 ft³ per day (< 1m³). The past two years of data show that a significant proportion of species processed are from outside the Bharkhore community forest, either originating from adjoining community forests or from private lands. The primary species used during the past two years was as follows: sal (*Shorea robusta*) 30%, sallo (*Pinus roxburghii*) 40-50%, utis (*Alnus nepalensis*) 20% and others (*chilaune-Schima wallichii*, *katus - Castonopsis spp*, and *sisso - Dalbergia sissoo*) 10%. It should be noted *sallo* is not available within the CFUG area and is being imported from other parts of the country.

Employment and income

The enterprise has generated year-round employment for four individuals and one additional skilled employee outside the community. Since the establishment was supported by grant from the donor, income was realized immediately and has since risen sharply. The monthly average income for the past 24 months was NRs. 10,000 (US\$ 135) per household for four households after deducting the monthly payment of NRs. 6,000 (US\$ 81) to the outside employee (one household of the original five dropped out of the enterprise). The total income from the furniture enterprise during the past two years is NRs. 720,000 (US\$ 9,730). The earned income has been used to pay back loans received by the entrepreneur prior to establishing the enterprise.

Forest management and the enterprise

The CFUG has adopted a regulated harvesting system which is defined in the operational plan. The forest is divided into five blocks and each block is harvested annually. The system allows a steady supply of forest products to the community and ultimately to the enterprise. In addition, an increasing availability of plantation trees is also contributing to the supply of raw materials to the enterprise. The harvesting mechanisms, such as sectioning of logs, has been carefully applied so as to reduce waste and maximize recovery during processing. Production from nearby community forests and private farms also supplies significant amounts of raw material to the furniture enterprise.

Record keeping and monitoring

There are provisions in the community regulations that require the enterprise to update its record of inputs and outputs monthly, which the CFUG then has to monitor. The record keeping system is currently very poor, with only a few instances where monthly records have been updated and maintained. The entrepreneurs have not felt that formal record keeping is important, as it was not required in their traditional jobs. The CFUG also has not been able to conduct the required monitoring and enforce the requirement. A contributing factor to the poor record keeping is the low literacy levels of the participating households. However, the households involved generally believe that the enterprise is profitable and doing well.

Reasons for success

The main reasons for the successful operation of the furniture enterprise are as follows:

- The selection of the right enterprise and entrepreneurs: (this can be measured by willingness of participants, pre-existing skills and utilization of traditional practices);
- The location of the enterprise within the district capital has provided a broad and easily accessible market, while the housing construction in the area requires a considerable amount of processed wood of the type produced by the enterprise;
- The ready availability of raw materials from the community forest, other community forests in the area, and local private farms;
- There has been a growing market for furniture due to improved income, combined with changes in the behavior of consumers in relation to home furnishings (e.g. transition from the use of traditional floor mats to the use of chairs and tables);
- Locally available sawmill equipment that produces waste has motivated the use of smaller sized timber for furniture purposes, resulting in an overall increase in furniture volume;
- Strong institutional support from the CFUG, FECOFUN and the bi-lateral donor (LFP); and
- Low investment input from the entrepreneur helped the operation become profitable almost immediately, which boosted the motivation of the households involved.

The furniture enterprise demonstrates a multi-party partnership modality for developing a FBSSE within a CFUG. The enterprise consists of five major stakeholders: individual households organized into a CFUG, a sub-committee, LFP (donor), consumers of forest products, the CFUG and FECOFUN. The main reasons for its success are the employment opportunities, earned income, the fact that repayment of the entrepreneurs' loan can be made after production of the furniture, and an almost immediate realization of earned income and savings. In addition, the furniture business is going well and is perceived by local consumers as providing a needed service, which can be regarded as a positive indicator. The FBSSE is based on local resources, local skills and a local market, all of which are easily accessed.

Case study 2: Agricultural implements, Myagdi

Establishment

A household-based AIPE was established by the Ghorlas CFUG in the year 2004. Four poor farmers having traditional skills were encouraged to engage in the commercial production of agricultural implements. A simple informal business plan was developed that described the households involved, existing supply and demand, operation of the potential market, cost estimates, and the procedure for formation of a sub-committee. The plan recognizes that it is real challenge for farmers to secure traditional agricultural implements, such as ploughs, during the planting, growing and harvest season. The plan indicated that the local forest resources, local market and local skills necessary for the enterprise were available, but there was a lack of motivation to fill the market need. To overcome this inertia, the CFUG provided various types of support, from facilitating the initial establishment to the marketing of the products once they were being produced. The DFO and the LFP supported the creation of the FBSSE by providing financial assistance. A sum of NRs. 3,600 (US\$ 49) was provided to each household to support the purchase of tools necessary for producing the agricultural implements. In general, the cost associated with purchasing tools and subsequent maintenance is lower than the financial assistance provided by the DFO and LFP. The average purchase price for one set of tools required for establishing an AIPE is NRs. 1,500 (US\$ 20). The main equipment in the set includes an axe, saw, sharpener and hammer. One set can prepare hundreds of finished products, while regular servicing and maintenance is provided by the farmers on site with limited or no additional costs other than the time and labor involved.

Products and production mechanism

The CFUG operational plan prescribes provision of deformed or crooked trees and other wood materials to the AIPEs for product production. The AIPEs primarily use logs and saplings, which the CFUG directly provides along with other wood at a rate of 60 ft³ (1.7 m³) per year per entrepreneur, at half the price that other users must pay. In addition to charging the reduced rates, the CFUG has coordinated with two nearby CFUGs for necessary raw materials to support the AIPEs.

There are six different products being produced. The local names of these products are *halo*, *juwa*, *danda*, *mohi*, *lidko* and *anau*. The aggregate of these components make a complete set of traditional agricultural equipment for a family farm. The size of these implements varies from lengths of 75cm to 250cm, so their production does not require long or large-sized raw wood materials. The preparation of these products with their specific size, shape and structure requires a great amount of skill, however. These skills have been handed down from generation to generation. The past two years of production by the entrepreneur households is presented in Table 1. The quantity of the various products produced varies significantly from one farmer to another. The reasons for this discrepancy include the willingness of the individual to produce the products, combined with their ability or skill at marketing their services and products.

Table 1: Quantity of production during the past two years

Name of the entrepreneur	Kinds of products and quantity produced in the past two years (number of implements)					
	<i>halo</i>	<i>juwa</i>	<i>danda</i>	<i>mohi</i>	<i>lidko</i>	<i>anau</i>
Purna	250	25	30	10	2	25
Jeet	150	10	12	2	1	0
Dharma	120	5	10	3	0	0
Nara	100	5	6	7	3	0
Total	620	45	58	22	6	25

Pricing mechanism and marketing

The price for each of the products has been fixed by the CFUG and not by the entrepreneur. The CFUG-regulated pricing system is intended to make the entrepreneurs accountable to other members of the CFUG, while fixed pricing avoids problems related to the development of monopolist pricing, facilitates the selling of products outside the CFUG, and creates a perception among all community members that the benefit from this enterprise development is not limited to only a few households. One complete set of products costs NRs. 1,140 (US\$ 15), the price of which has been constant for the past two years. The prices of the products are generally less expensive than before establishment of AIPes, and CFUG members benefit from easy access to these necessary products so there is no interruption in agricultural production during critical times. There is no problem in finding a market for the products, as they are being sold based on advanced booking directly at the entrepreneurs' homes. The customers are from the CFUG and neighboring villages. As an example of the ready market demand, the average farming household in the region requires 1-3 *halos* each year.

Employment and income

The creation of the AIPes is a major source of additional income and employment to the farmers involved, though agricultural wages are still regarded as the primary source of income. The production of the products takes place within the household during leisure time. The data are encouraging, as they clearly illustrate that these FBSEs are increasing household incomes. As shown in Table 2, the income generated is substantial and illustrates that AIPes can lead to poverty alleviation in other locations.

Table 2: Earned income during the past years (NRs.)

Name of the entrepreneur	<i>halo</i>	<i>juwa</i>	<i>danda</i>	<i>mohi</i>	<i>lidko</i>	<i>anau</i>	Total	Total in US\$
Purna	50,000	3,750	6,000	1,500	600	375	62,225	841
Jeet	30,000	1,500	2,400	300	300	0	34,500	466
Dharma	24,000	750	2,000	450	0	0	27,200	368
Nara	20,000	751	1,200	1,050	900	0	23,900	323
Total	124,000	6,750	11,600	3,300	1,800 (6)	375 (25)	147,825	1,998
Total in US\$	1,675	91	157	45	24	5		

Forest management and the enterprise

The production of raw wood from the CFUG is regulated by the operational plan and excessive removal is restricted. Silvicultural activities are regularly implemented as prescribed in the OP. Beyond the 60 ft³ (just under 2 m³) of subsidized wood provided by the CFUG to the entrepreneurs for production purposes, additional quantities are purchased from the neighboring CFUGs, which have been coordinated by the CFUG. Similarly, the entrepreneurs are free to collect raw materials direct from private tree growers or local markets. The AIPE demonstrates an opportunity to provide employment and generate income in rural areas that contributes to poverty alleviation while sustainably managing forest resources. This illustrates that good forest management and poverty reduction can go hand in hand.

In addition, the establishment of the AIPes has had other positive forest management impacts. While previously there was little thought to what types of saplings were planted or how they were used, now the CFUG members recognize that certain species are in demand based on implement production needs. There is now a preference for planting species which will be used by the AIPes, such as *chilaune* (*Schima wallichii*). This is also true for thinning and coppice management. It is safe to say that the CFUG members have a greater appreciation for these species that are now in demand, and it is being reflected in the OP. For example, *chilaune* is only allowed to be supplied to the AIPes, unless the quality is inadequate for their use.

Processing of logs has become far more efficient, as illustrated by greater recovery rates, which is a direct result of the AIPE establishment and increased demand for specific wood products. While one round log used to produce only one agricultural implement, the introduction of rectangular sawn wood methods means that one log can be used to produce several products. The use of sawn wood also led to an improvement of the quality of products being sold due to reduced warping.

Record keeping and monitoring

The entrepreneurs and the CFUG are maintaining good records on the types of products being produced, the quantity of each product being produced, income generated, and the production times involved for different products. This has created a good database of information from which conclusions can be drawn and lessons learned.

Reasons for success

The main reasons for the successful operation of the AIPE enterprise are as follows:

- The selection of an appropriate enterprise and qualified entrepreneurs;
- The AIPes benefit from their location due to the fact that the surrounding hills are dominated by agricultural practices that require their products;
- The local availability of necessary raw materials, existence of specialized traditional skills and a high level of motivation to succeed by the parties involved;
- Strong institutional support to the enterprise from the CFUG, DFO and the donor;
- Lower prices for the consumers, combined with substantial additional income for the producers; and
- Production times are flexible, so the previous income activities of the participating household can still be pursued.

This case study illustrates that FBSSEs that produce goods from locally available resources, using local skills, where there is the presence of a local market for the products, have a high chance of success with proper support. It clearly demonstrates the potential of community forestry to develop and maintain FBSSEs through linkages with active forest management. The AIPes also demonstrates that very small-scale enterprises can be commercialized. The success of these enterprises has been replicated in several neighboring CFUGs. Additional benefits include increased knowledge and appreciation by CFUG members of specific species in demand, increased efficiency in wood production to better supply the commercial activity, and improved availability of necessary farming implements for those in the immediate region which leads to savings in time and money.

Lessons Learned

The forest-based small-scale enterprise establishment initiatives of local communities may need strong moral, technical, institutional and financial support from the facilitating agencies. In both of the case studies examined, the enterprise-establishment process was initiated by the CFUGs, but the achievements were reached with the support of various other stakeholders. The furniture enterprise establishment was guided by the economic motivation of the entrepreneurs supported by the CFUG and facilitated by the forest users' federation, DFO and LFP. The AIPe was a demand-driven initiative from the CFUG, with support and facilitation by the DFO and LFP. While there can be differences, the FBSSE establishment process and procedures can generally be summarized in the five steps presented in Table 3.

Table 3: Steps and main activities in establishing an FBSSE

Step	Descriptions	Output
Identification of entrepreneurs	Small group meetings to identify those with necessary skills, interest and willingness	Entrepreneur households selected
Identification of enterprises	Forest products or species locally available, local skills available, local market present, resources for startup available	Selection of proper enterprise
Preparation of business plans	Formal or informal, supply-demand market analysis, marketing plan, funding needs, identification of key stakeholders, defining roles and responsibilities	A simple business plan developed and support funds secured
Enterprise establishment	Combine resources and develop an enterprise for processing	Enterprise established
M&E	Continuous support to stakeholders, including monitoring and evaluation based on good record keeping, for an extended period to ensure success of the FSSBE while also ensuring sustainable management of local natural resources.	Continuous improvement, successful FBSSEs, livelihood development, poverty alleviation, and natural resources sustainably maintained.

Investment, employment and income

The investment amount required depends on the nature of the enterprise being established. The furniture enterprise required a higher start up amount (NRs. 57,800 or US\$ 780) compared to the AIPes (NRs. 3,600 or US\$ 49 per entrepreneur). The furniture enterprise created five full-time employment positions, while the AIPes created part-time employment for five households. The total earned income from the furniture enterprises was NRs. 720,000 (US\$ 9,730) during the past two years, while the four AIPe households earned NRs. 147,000 (US\$ 1,990). The AIPes require no full-time work positions, and all the income generated from AIPes during the past two years is additional income to the entrepreneur households. Similarly, out of the income generated by the furniture enterprise, NRs. 288,000 (US\$ 3,890) was additional income to the entrepreneur households (they estimated that they would have earned NRs. 432,000 - US\$ 5,840 - as skilled labor if there was no furniture enterprise). The additional amount earned in both cases illustrates the significant potential of FBSSE promotion as support to poverty alleviation and livelihood development in association with community forestry. The enterprises in the case studies are providing employment and generating income in rural areas, indicating that good forest management and poverty reduction can go hand in hand. The commercialization of the AIPes shows that forest management should not be considered in isolation, but should be linked with existing or traditional livelihood opportunities and farming systems that promote the use of local materials and skills, with a focus on providing employment to poor and vulnerable groups.

Raw materials and production

Both of the case study enterprises use wood as a raw material. Although the major source of raw material is community-managed forests, enterprises are utilizing resources from private lands and national forests. The main products from the furniture enterprise include house construction materials and different kinds of furniture, while firewood and saw dust are by-products generated during the processing. The AIPes produce at least six different kinds of agricultural implements used on local farms.

Market characteristics

Both of these enterprises target their goods and services to local markets. The furniture enterprise has faced competition from five or six similar private enterprises, while the AIPes are selling their products as pre-ordered items sold directly from the household, with only those farmers who still make their own tools representing competition. The prices charged by community-based enterprises, as illustrated by the case studies, may be fixed by the entrepreneurs or by the CFUG in the operational program.

Nature of enterprises

Both enterprises are processing natural materials using low-tech, low-cost production techniques. The furniture enterprise can be classified as a workshop model employing relatively higher numbers, while the AIPes are operating at the household level as defined by Arnold (1994). The AIPe households are operating independently, while the furniture entrepreneurs are working as a unit.

Key stakeholders and roles

The community-based FBSSEs have five key stakeholders in both instances. These include the CFUG, DFO, LFP (donor), local people and the entrepreneurs. The willingness and commitment of the entrepreneurs are fundamental requirements. There should be a strong institutional, financial and material support from the CFUGs. The facilitation and institutional support of the DFOs and the LFP, along with the financial support from the LFP, were instrumental for success. The overall support from general members of the CFUGs, combined with positive

attitudes of all involved, is essential for building a strong foundation. A simple conceptual model for FBSSEs is presented in Figure 1 below.

Links with forest management

The case studies indicate that local people are able to modify their forest management practice in response to raw material demands. The system allows a steady supply of forest raw materials to the CFUGs and ultimately to FBSSEs. In addition, an increasing number of plantations are also supplying raw materials to the enterprises. The CFUGs can support such enterprises through supplying a set quantity of subsidized woody material to them. In this way CFUGs can also create a favorable environment for obtaining wood materials from neighboring CFUGs and private tree growers.



Figure 1: Conceptual framework for FBSSEs

Silviculture and species preferences: In the earlier years of community forestry, users gave little attention to beneficial aspects of various species while selecting seedlings for planting, generally using whatever species was available. However, the utilitarian benefit of the species is now the main criterion in selecting species for planting. During the removal of the plants in silvicultural operations, priority is now given to maintain and promote species such as *chilaune* (in the Myagdi case study), which is regarded as the best species for the production of agricultural tools.

Promoting private tree planting: A large number of plant species are maintained on the farms in the hills of Nepal. The FBSSEs have encouraged the planting or maintenance of selected tree seedlings on private land, while the CFUGs have established forest nurseries to promote private tree planting in order to supply the enterprises in the future.

Wood utilization: Harvesting methods, such as the sectioning of logs, have been carefully applied to reduce waste during processing and increase recovery rates. Modifications have resulted in the use of rectangular sawn wood, which means one log can produce several agricultural products as opposed to one, and one sapling can produce several logs in the future.

Policy and management implications

The development of policies in support of sustaining FBSSE development and related poverty alleviation must ensure that the policies have the intended results. Current policy issues include regulations that discriminate against the harvesting of various tree species on farms, requirements that place unreasonable costs or regulatory burdens for the transportation of products, location requirements for forest-based enterprises and registration processes that impede the development of FBSSEs, and other issues.

A thorough review of existing rules and regulations should be conducted to analyze how they impact on FBSSE development and operation. In this way, any rules and regulations that have a chilling effect on the creation and profitable operation of such enterprises can be addressed in order to ensure the full poverty alleviation potential of community forestry in Nepal.

Conclusion

The case studies illustrate that the promotion and implementation of FBSSEs can affect the livelihoods of many people in the rural areas of Nepal, underscoring the relevance of community forestry in reducing poverty. The initiatives encompass a wide range of activities supporting the production of value-added forest products that range from subsistence-based agricultural implements to furniture enterprises. The case studies indicate that wood-based enterprises have an important place in the ongoing development of community forestry and local people are able to modify their management of forests to sustain the enterprises once established. Local market demand, local skills and local raw materials, combined with strong institutional support, are critical for successful FBSSEs. The selection of the right entrepreneurs and enterprise options, along with continuous follow up and counselling, are basic requirements for success.

Local people primarily benefited from the forest-based enterprises through entrepreneurial development, rather than as employment-wage laborers, which was the tendency in previous practice. Unlike other enterprises that utilize non-timber forest products, there is no room for middlemen to absorb most of the profits, due to direct local marketing and processing. There are easy and direct linkages between the suppliers of raw materials, the producers of the final products and the consumer. This has shortened the marketing chain and increased local benefits.

For the full benefits of these enterprises to be realized, there is a need for policy advocacy in favor of this concept in conjunction with promotion of community forestry, with a focus on disadvantaged and poor communities. In addition, the agencies and stakeholders facilitating FBSSE development process should initiate feasibility studies to properly identify appropriate enterprise development in each community forest. The support staff needs orientation on appropriate attitudes for working with the poor. The scaling up of best practices, based on experience and lessons learned, is equally important.

Finally, the existing primary fund collection mechanism in the community forestry program originates from rather limited earned income from the selling of low-value forest products such as firewood and timber to community users at subsidized prices. The benefit-sharing mechanisms of these funds do not allow income to pass as a direct benefit to individual households, and the majority of funds allocated for purposes that would not generally be classified as pro-poor activities. The provision of immediate and direct household-level benefits to the poor and vulnerable groups, which would lead to the significant reduction of

rural poverty, is possible through the promotion of appropriate FBSEs in community forestry programs.

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COMMUNITY FORESTRY: SUPPORTING BHUTAN'S NATIONAL AND MDG GOALS WHILE PROTECTING FORESTS

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Introduction

Community forestry in Bhutan was introduced in its current form relatively recently, in 2000. There are currently 36 approved community forests covering 2,914 ha, with 1,664 households managing designated CF areas. Approximately 15 additional community forests are currently in various stages of preparation prior to approval (initial application, resource assessment, preparing the management plan, or final approval process).

Forests are very important for the rural communities in Bhutan, as they supply many products like timber, fuelwood, grazing fodder and vegetables. The CF Program in Bhutan seeks to strengthen the link between people and forests and can make a significant contribution to livelihood improvement, environmental conservation and sustainable use of forests. This paper will document the potential impact of the CF Program.

At the time of its initial introduction in 1992, CF was seen as a potential threat to the conservation-oriented National Forest Policy. This skepticism still exists, but as evidence of the positive impacts of CF emerges, policy is changing to further support the CF program. Furthermore, if CF is fully developed, its contribution to the National and Millennium Development Goals will be significant.

Background

About 72% of Bhutan is covered with forests. The total forest area is 2,904,522 ha, of which 26% is classified as protected area, 9% is biological corridors, 8% is designated as forest management units, and the remaining 57% is reserved forest. The long-term goal of the forestry sector is to keep 60% of the country area under forest cover in perpetuity.

Evolution of Community Forestry Programme

The CF Program has evolved since 1979 when His Majesty initiated the Social Forestry Program. In 1985, 2 June was declared Social Forestry Day, coinciding with the Coronation Day of the fourth King of Bhutan. The aim of Social Forestry Day was to promote tree planting and create environmental awareness among the Bhutanese youth. In 1992, some forestry activities were decentralized to the districts from central level, including the CF Program. The CF Program was legalized in the Forest Nature Conservation Rules (FNCR) 2000 and revised in 2003 (see Box 1).

Box 1: Statement of Community Forestry in Forest and Nature Conservation Rules (2003)

Any area of the Government Reserved Forest that is suitable for management by a Community Forest Management Group may be designated as community forest. All individuals and households with traditional claim to forest produce from the proposed community forestry area have the opportunity to join the Community Forestry Management Group.

The CF Program was given further impetus in the ninth five-year plan (2002-2007). The plan defines community forestry as a broad development strategy that can embrace diverse forms of local decision making in all sorts of forestry matters that affect people's lives.

Other relevant policies

The Department of Forests (MoA 2003) states that subsidized timber (so-called rural timber supply) for rural construction will be supplied based on quantities specified in FNCR Volume II, 2003. The royalty imposed on this timber is minimal, ranging from Bhutanese Ngultrum (Nu). 4-40 per tree depending on sizes.¹ The rules stipulated that for new house construction the

¹ US\$ 1 = Nu. 45

Thram holder, or resident, has the right to subsidized timber every 25 years and renovation/ extensions to a house every five years.² The FNCR 2003 states that dry firewood can be collected free of royalty by rural communities.

The National and Millennium Development Goals

The Royal Government of Bhutan (RGoB) states in the Millennium Development Goals Progress Report (2003: 7) that *“poverty in Bhutan remains a predominantly rural phenomenon.”* Poverty reduction in these rural areas is the main national goal outlined in the 10th five year national plan (2007-2012). The RGoB is also fully committed to the United Nations Millennium Development Goals (see Box 2).

Box 2: Bhutan’s commitment to UN Millennium Development Goals

To ensure popular participation and continue delivering tangible benefits from political and economic modernization, the Royal Government of Bhutan has resolved that poverty reduction shall be the main objectives of the 10th Plan and also remains fully committed to meeting all the Millennium Development Goals (RGoB 2003: 3).

The CF Program targets the rural population by improving their livelihoods and environmental resources, thereby contributing to the national and millennium development goals. The eight UN Millennium Development Goals are to be achieved by 2015. Two of the goals (one and seven) are directly relevant for community forestry in Bhutan. The first goal is to eradicate extreme poverty and hunger, while the seventh is to ensure environmental sustainability. While the CF Program can certainly contribute to meeting these goals, it will also contribute indirectly to other MDGs, such as promoting gender equality and empowering women.

Current progress of community forestry

As of August 2006, 36 community forests, covering 2,914 ha, have been approved by the Department of Forests (DoF), involving 1,664 household managing the community forest areas. Currently, the average community forest area is only 1.75 ha per household. The FNCR 2003 allows the size of community forests to be 2.5 ha per household, subject to marginal increase or decrease depending on the local situation. The reason for this difference is that communities initially had their doubts about the policy as community forestry was mainly regarded as a community plantation program, and about 50% of existing degraded forests were to be included in any community forest. The current trend is for communities to apply for the maximum area if the forest is near and around their villages. This is because communities are now convinced that community forests will be allocated and that large areas of degraded forest will not be included.

Admittedly, the CF Program had a slow start. The main reason for this was the initial skepticism of the communities about whether the DoF would actually hand over government forest areas for their management and use. Initially, the DoF was also concerned that CF would have a negative impact on the conservation of the forests and the overall forest cover.

Other reasons for the slow implementation of the Community Forestry Program were the limited capacity within the forestry services and communities, poor communication between the communities and DoF, changes in the Community Forestry rules and initial differing interpretations of the FNCR. With greater awareness of the legal framework by

² *“Thram” is the Bhutanese term for registered land in the owner’s name*

all stakeholders and clear communication between DoF staff and communities, the rate of community forestry implementation will greatly increase.

Due to the limited number and size of existing community forests, the combined community forest area presently covers less than 0.1% of the total forest area. In response to this, the latest (8th) Renewable Natural Resources (RNR) conference in February 2006 clarified and provided strong support for the further development of community forestry (see Box 3). The RNR resolution will be incorporated into the revised FNCR, which is currently in the final drafting stage.

Box 3: 8th RNR resolution on Community Forestry

Resolution 10: Considering the small size of the total area under community forestry and recognizing its potential in the improvement of protective, conservation, and productive functions of forest and forest ecosystems, the Conference resolved that:

- the forest areas around villages and human settlements as well as the interposing agricultural fields be allotted for community forestry;
- capacity of the forestry staff to implement community forest programs be strengthened;
- the NWF development in community forests be stepped up; and
- the community forests development activities be documented.

Source: 8th RNR Conference Resolutions, 2006, MoA

Maximum potential community forest areas

Table 1 shows the maximum potential area of community forests in Bhutan, based on rules stipulating that a maximum of 2.5 ha of forest can be allotted per rural household. While the known total forest area is based on 1996 data, new land-use data are being prepared following the redefinition of national boundaries and the total land area is expected to be lower than it was previously. Calculations indicate that the maximum community forest area is 237,944 ha (8.2%) of the total forest area. The revised data on total forest cover based on the revised land area will not significantly change the outcome of the calculation of the maximum potential community forest area. Considering the revised data on the total land area, the total maximum potential community forest area is expected to a maximum of 8-10% of the total forest area.

Table 1: Quantity of production during the past two years

Dzongkhag	Forest area (Ha) *	Total population	Total rural population**	No. of rural households	Max. potential CF area (No. Rural HH x 2.5 Ha)	Potential CF area (% of total forest area)
Thimphu	108,398	98,676	19,491	4,237	10,592.93	10
Paro	83,787	36,433	33,501	7,128	17,819.68	21
Haa	134,447	11,648	9,153	2,080	5,200.57	4
Chukkha	156,605	74,387	41,461	9,214	23,033.89	15
Samtse	127,910	60,100	49,961	9,992	24,980.50	20
Punakha	87,112	17,715	15,423	3,353	8,382.07	10
Gasa	144,872	3,116	2,714	696	1,739.74	1
Wangdue	298,072	31,135	23,613	5,247	13,118.33	4
Tsirang	48,658	18,667	17,001	3,400	8,500.50	17
Dagana	114,108	18,222	16,264	3,253	8,132.00	7
Bumthang	181,135	16,116	11,913	2,431	6,078.06	3
Trongsa	158,249	13,419	10,724	2,331	5,828.26	4
Zhemgang	184,431	18,636	15,250	3,177	7,942.71	4
Sarpang	190,651	41,549	28,953	6,160	15,400.53	8
Lhuentse	217,350	15,395	13,919	2,961	7,403.72	3
Mongar	172,258	37,069	29,916	6,503	16,258.70	9
Trashigang	180,272	51,134	44,318	10,307	25,766.28	14
Trashiyangtse	110,095	17,740	14,722	3,424	8,559.30	8
Pemagatshel	27,750	13,864	11,577	2,692	6,730.81	24
Samdrup	178,362	39,961	28,997	6,590	16,475.57	9
Jongkhar						
Total	2,904,522	634,982	438,871	95,178	237,944.16	8.2

* Source: Land Cover and Area Statistics of 20 Dzongkhags, 1996, PPD, MOA.

** Source: Results of Population and Housing Census of Bhutan, 2005. The FNC Act and FNRC specify that communities adjoining the forests or those with traditional claims can apply for community forestry. We assume that all rural household fulfill these requirements.

Most of the rural people depend on forests for their livelihood. In some villages in the country, forests are also a main source of cash income from the selling of NTFPs. The Social Forestry Division (2006) stated that during 2003, NTFPs alone contributed US\$ 7.6 million to the Gross Domestic Product. Most of the NTFPs are collected by rural people and sold to agencies. A major portion of the country's population depends on agriculture, and therefore forests play a very important role in sustaining the livelihoods of the people in terms of both materials and environmental services.

If all the potential community forestry areas are developed, 69% of the population would be involved in the CF Program. In principle, all rural communities can have access to community forests. As most of the rural population is poor, there is no doubt that a fully implemented CF Program will lead to poverty alleviation and livelihoods development. These benefits are secured through the legal framework of the FNCR, which states that all forest products from

the community forest shall be the property of the Community Forest Management Group, for their own use and for sale on a sustainable basis.

With more than two-thirds of the population potentially to benefit, Dzongkhag Forestry officials should identify the rural communities in each Geog and discuss the potential of community forestry with these communities. If the community is interested, the process of establishing community forests should start immediately. Of course, the capacity of the communities and DoF staff needs to be strengthened to ensure the success of such an initiative.

It is, however, very unlikely that all of the potential community forest areas will be developed. There will be rural communities which are not interested in community forestry due to abundant forest resources in their areas with no competition or threats from outsiders, or due to the rural wood policy (which guarantees access to subsidized timber and fuelwood for the rural population). For these reasons, communities might not recognize community forestry as a priority. Even with this being the case, it is expected that more rural communities will apply for community forests as the benefits from the program become better understood over time. The expectation is that the number of community forests will increase tenfold over the next 5 years. As the rules and regulations make it clear that excess timber can be sold, CFMGs have the opportunity to generate additional income to directly benefit the communities involved in community forestry.

The contribution of community forestry to environmental conservation

Though the CF Program is not mature enough to clearly illustrate the long term positive impact on environmental conservation, there is evidence that it is contributing already, based on observations from the communities involved in community forestry (see Box 4).

Box 4: Community Forestry can rehabilitate water sources

After establishing the community forest there is a constant flow of drinking water. Community Forestry gives the legal right to our community to protect the water source through plantation and controlling tree felling.

Source: CFMG member of Geyzor Community Forest, Zobel, Pemagatshel, 2006.

In the 36 approved community forest management plans, the objective of environmental conservation is explicitly stated, and activities are planned and carried out towards achieving these objectives. Out of a total community forest area of 2,914 ha, approximately 350 ha are degraded. These degraded lands are used for planting locally preferred tree species, with support from the forest extension service. Plantation development (with mainly native species) is carried out to protect water sources and to rehabilitate degraded or barren land, including stabilizing potential landslide areas. All community forest management plans ensure the sustainable use of the resources to maintain the environmental benefits and improve them over time.

Tempheh *et al.* (2005) state that many foresters have reported an increase in vegetation cover in the community forest area after the introduction of community forestry. CFMG members also report that there have been improvements in forest conditions since they gained the

rights to regulate harvesting of forest resources and grazing in community forest areas. Buffum *et al.* (2005) add that Community Forest Management Groups are harvesting timber conservatively and at levels below the prescriptions in the community forestry management plan, which means that the CFMGs are very careful in harvesting forest products from their community forests.

Besides controlling the harvesting of resources, communities also invest labor in their community forests for the improved development of the forest conditions. Since the establishment of community forestry in 2000, the Dozam, Yakpugang and Masangdaza community forests have invested 7,524 person-days in silvicultural treatments for the improvement of the forest, fire break construction, to protect the resources from wild fires, tree seedling production, and cane planting within the community forests (Wangdi and Tshering, 2006). If this labor was calculated in monetary terms, it would represent approximately US\$ 16,720 of direct investment in the community forests.

As stated by Wangdi and Tshering (2006), the forests of nearby villages that are not involved in community forestry are typically overexploited. Thus, by bringing forest areas under the Community Forestry Program, the overall condition of the forest resources will improve. The Community Forestry Program, if fully implemented, can improve the country's forest resources.

Besides plantation development and other silvicultural activities, the Community Forestry Program also makes the community more responsible for environmental conservation in and around their villages. Tempheh *et al.* (2005) state that the first community forest handed over in 1997 had a significant number of wildfire incidents before the area was allocated to the community. After allocation to the Dozam community and formal establishment of the community forest, there have been no such major incidents. Observations show that, in general, the frequency of forest fires has been reduced in community forest areas. An example of other environmental benefits is presented in Box 5.

Box 5: Benefits of Community Forestry

The community forest has benefited us in fuelwood supply, and it also benefits the Samdrup Jongkhar town community. As our drinking water source is within the community forest, watchful conservation and protection of this water source has sustained a good quality and quantity of drinking water.

Source: CFMG member of Ompuri community forest, Orong, Samdrup Jongkhar, 2006.

With an approved community forestry management plan, the communities have rights of access and use for their forest resources according to the management plan. No longer must they go through a lengthy process to get timber permits through the territorial forestry office, as they have their own hammer stamp and permit system.³ The community only needs to apply for timber through the territorial forestry office if their community forest cannot supply their needs. The process through the territorial forestry system can be time consuming (see Box 6). The fact that they now have “ownership” over their resources is often mentioned as the motivation by a community to establish a community forest (in the strict sense, the legal ownership is still with the Government, as only the access, management, and use rights are handed over).

³ A hammer stamp is a marker that provides information that allows for the tracking of timber resources.

Box 6: Statement on process of obtaining permits

Obtaining permits for timber and fuelwood from the Department of Forests is time consuming. Visits to the Range Office and then to the District Forest Office may take more than two months. Establishment of community forests has reduced this lengthy process; now we can get these products easily from our community forest without delay.

Source: CFMG member of Shambayung Community Forest, Tang, Bumthang, 2006.

As found by Wangdi and Tshering (2006), communities can get the wood they require from the nearby community forest simply by using a local permit issued by CFMG executive committee members. This is in contrast to the lengthy time taken to get a permit from the Territorial Forest Division (TFD) prior to the establishment of a community forest, averaging two to four months.

If the community has more resources than they need for their own consumption, it has the right to sell the surplus outside its group, though a royalty must be paid to the Government according to provisions in the FNCR. To date, only a few community forests (Shambayung and Masangdaza) have the potential to sell their excess timber resources. With improved silvicultural management, the potential of selling timber from community forests will increase and ultimately generate significant monetary returns to the communities involved in the CF Program (E. Oberholzer, pers. comm. 2006).

Communities are harvesting timber very conservatively from their community forests. Therefore, as capacity increases and the quality of the resources improve, there is a greater potential for direct economic benefits from community forests by optimizing the harvesting of timber. The danger from over-harvesting is limited, as the management plans are based on sustainable forest management principles and the activities are closely monitored by the Forestry Services.

In addition to the income from the sale of timber, NTFPs can generate income for the community (see Box 7).

Box 7: Example of income generation from NTFP

The Drametse Community Forest has generated Nu. 53,841 (about US\$ 1,200) for the community from lemon grass distillation fees.

Source: Wangdi and Tshering 2006.

The CF Program has not focused much on NTFPs thus far, but it will become increasingly important. Pfund and Robinson (2005) indicate that the potential benefits from NTFPs may be large, particularly through local value-added activities. They also state that NTFP collection is currently based on traditional practices and local markets, but with an additional focus on quality and product development it can generate greater income for communities.

Another income stimulating activity is the establishment of community funds. These funds often start as saving funds, but increasingly the proceeds from fines, sales and gifts contribute to the funds. A total of US\$ 12,150 has been collected by CFMGs since their establishment in 2000. Many CFMGs use their funds for small credit and loan services to their members, and

to pay operational costs to manage the community forest areas. Data indicate that limited investments are being made by the communities for forest activities, which suggests that communities are willing to invest in and increase the value of their community forests.

Microfinance helps rural households to plan and manage consumption and investments, cope with risks, and improve their living conditions. Saving schemes such as the community funds are normally the major source of such finance before other microfinance schemes are explored and implemented (FAO 2005).

Besides income-generating activities from community forestry, the establishment of a CFMG with by-laws enables the community to better organize themselves for the overall benefit of the community. As an organized group, they can better express themselves in the Block Development Committee, defend their rights and better express their priorities. It has been observed that the CFMGs are also now discussing issues other than community forests.

Also, out of the 36 approved community forests, 28 have at least one objective stated in their community forest management plan related to the improvement of their communities' livelihoods. Community forest areas which do not mention this in their objectives were established for the protection of water resources and other surroundings natural resources (this is generally true with the earlier established community forests).

From the sale of timber and NTFPs, and the establishment of CFMG funds, the CF Program has the potential to significantly improve rural life. Given that the CF Program has the potential to reach 69% of the population, it can make a considerable contribution toward achieving the first MDG in Bhutan.

Sustaining wood supply from community forests

Sustaining the supply of rural house-building timber and firewood for the citizens of the country has been a priority concern of the RGoB. The CF Program was primarily developed to secure and augment wood supplies in the rural communities through sustainable utilization and diligent protection of forest resources (DoF 2003). Timber and firewood are the most important forest products within most CFMGs, and DoF forest field staff ensures proper guidance to effectively manage the community forests to ensure these resources are properly managed and available on a sustainable basis.

Research by Phuntsho and Sangay (2006) reveals that the needs for construction timber in the five studied CFMGs often cannot be met by the available resources within their community forest. More than half (53.1%) of the interviewees responded that their community forests can meet the needs of the community, while the rest (46.9%) said their community forests cannot meet needs. This is a common scenario with most of the community forests that have been established. As the timber supply varies from one community forest to another, the requirement for construction timber for many CFMGs needs to be either fully supplied or partially supplemented by the Government Reserved Forests (GRF). Lack of preferred wood species in the community forests is an additional reason for not being able to meet the identified timber requirement of CFMGs.

Other aspects

According to Wangdi and Tshering (2006), communities have more awareness and understanding of forest acts, rules, regulations and the purpose of protecting and managing forests when community forests are established. They are concerned about their ownership rights over community forests, especially the threat of the Government repossessing their allocated forest resources by way of changes in the forest acts, rules, and regulations in the future. However, after empowerment in forest management and protection, the rural communities have benefited socially, economically, and environmentally.

Social impacts

Wangdi and Tshering (2006) found that the establishment of community forests has had a positive impact on community livelihoods through ownership and stronger empowerment, increased community participation, decreased conflict among members and the establishment of local institutions.

Economic impacts

The economic impacts of community forests that have been studied are generally positive, but variable (Wangdi and Tshering 2006). CFMGs have still not derived the maximum economic benefit from their community forests, despite sound management planning and practices. For example, the timber harvested from the Yakpugang and Masangdaza community forests is well below the annual harvesting limits, while no timber has been harvested from the Dozam community forest because of its limited capacity to supply wood for another ten years.

Future trends

The CF Program initially focused on the timber resources in community forest areas and preparation of management plans. A community forestry manual was produced to improve the quality of the management plans (including the maps and annual harvesting limits). Recent attention is being given to the potential value of NTFPs from community forests. At the same time, the importance of building the capacity of CFMGs in record keeping, reporting, and silvicultural and managerial skills has been identified as pressing priorities.

Better use of NTFPs will provide additional economic benefits to communities, especially if the business skills and product development capacity of the communities can be improved. But, as stated in Pfund and Robinson (2005), the social contribution of NTFPs and the potential for poverty alleviation must be better integrated with priority policies at the national level.

Conclusion

The CF Program is increasingly contributing to forest and environmental conservation through the active involvement of rural people. Silvicultural activities are improving forest conditions, degraded or barren land is being planted with a variety of species, and headwaters are being protected. The willingness of CFMGs to invest both cash and labor to improve their community forests show that the CF Program is supporting overall national forestry policy, and will not be a threat to the specific policy directive of maintaining 60% forest cover. In addition to conserving and improving forest conditions and livelihoods of rural communities, the CF Program is also supporting Bhutan's commitment to the MDGs.

Given the above, the DoF should continue to support the CF Program and actively stimulate the up-scaling of its implementation. The DoF should be more flexible in implementing the CF Program, enacting rules that allow communities to benefit economically by streamlining the sale of timber and NTFPs. Community forestry is already contributing to the livelihoods of Bhutan's rural communities through sales of timber and NTFPs, but could contribute substantially more in the future.

The DoF could look at options for CFMGs to supply greater amounts of timber to the domestic market by initiating pilots where CFMGs could sell timber without first having to supply their own demands, based on the justification that the communities can increase their overall net income.

By potentially reaching 69% of the total population, the CF Program has an excellent opportunity to contribute to local economies through saving schemes, the sale of forest products, and the establishment of small businesses, while also contributing socially through improved decentralization and democratization. An added benefit of the Community Forestry Program is improved environmental conservation and the sustainable use of forest resources. These benefits should be further stimulated through up-scaling and refining the policies on community forestry development and building the capacity of the existing CFMGs in various fields.

Recognizing the potential of the CF Program, it is crucial that Divisional Forest Officers (DFOs) identify potential community forest areas in the various Geogs. Continual efforts are needed to create awareness of existing policies and benefits of the program before the 10th five-year plan is prepared, and a clear action plan to promote better resource allocation should be proposed for further implementation. Also, capacity building of CFMGs must be identified in the action plan as important for the sustainable use of forest resources and improvement of community livelihoods.

Meeting the wood requirements of CFMGs from the allocated community forests is a challenge; therefore, it is still premature to phase out the supply of wood under the Kidu system for all community forests. The capacity of existing community forests to meet the construction timber demands of the CFMGs differs from one area to another due to different forest types and conditions. Timber deficits from the community forests are currently being met by the Government Reserved Forest.

The CF Program is in its infancy, with less than a decade of implementation experience in the field. In the early stages of its implementation, there was skepticism among policy makers and key officials in the Government regarding the capability of CFMGs to effectively manage their community forests. As the CFMGs are currently managing their community forests in a sustainable manner according to the existing management plans, this initial skepticism seems unwarranted. The CFMGs harbor a fear that the current system of access to rural timber supply will be restricted once their community forests are fully functional, but so far access to the Government Reserved Forests is continuing in situations where the community forest does not provide sufficient timber.

Community forestry has a positive impact on the social, economic, and environmental aspects of rural life. Community members have strengthened social relationships as they work together to improve forest cover and maintain catchments by planting valuable tree species and protecting them. At this stage, benefit sharing among the CFMG members is minimal due to the fact that CFMG members have harvested only limited amounts of timber from their community forests, most of which has been used to meet domestic needs. However, CFMG members are positively inclined towards future community forest management because of the

clear social and environmental benefits and the potential for increased cash income in the future through the sale of excess products outside the community.

To expand and increase the benefits of community forestry for the purpose of rural livelihood development and poverty alleviation, extension services should be strengthened so that communities and government agents are more aware of the potential of community forestry in rural areas. Further, the Government should provide increased support to rural communities to promote participation in the CF Program, as it has a direct positive impact on rural livelihoods.

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SHARING THE WEALTH? A CASE STUDY OF A PIONEERING COMMUNITY-BASED TIMBER HARVESTING OPERATION IN CENTRAL VIET NAM

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Introduction

This paper presents a case study of a pioneering community forestry initiative in the province of Thua Thien Hue, in the North Central region of Viet Nam. The case was innovative because the model for sustainable management of this forest, developed by the Ministry for Agriculture and Rural Development (MARD) through UNDP's Program for Forests (PROFOR), involved the harvesting of timber for sale and domestic use by the community in return



for protecting the forest. This was the first example of timber harvesting in Viet Nam's Community Forestry Program¹.

Most forest land allocations in Viet Nam have been made to individual households. This case is, therefore, also unusual and bold, because the forest area, part of a highland critical protection forest, was allocated as a single 405 ha block to an entire village before there was a legal basis for doing so.

The case is important because, according to national policy, forest land allocations and subsequent community-based management are supposed to be major tools in sustainable forestry and the alleviation of poverty. This case study provides an opportunity to assess the extent to which a community forestry model is succeeding in achieving these two objectives.

This paper describes the Thuy Yen Thuong community forestry model, including the process of forest land allocation, management planning, timber harvesting and benefit distribution, and a preliminary assessment of these with regard to sustainability, participation, benefit sharing and poverty alleviation.

Community forest allocation justification

The allocation of Thuy Yen Thuong's forest to the local community was facilitated and funded by UNDP's Program for Forests (PROFOR). The main objective of the allocation was to establish a working community forest from which policy recommendations could be drawn.

In Thuy Yen Thuong, poverty was identified as the major incentive behind illegal logging operations. Commune and forestry officials hoped that community tenure over the forest area would provide motivation for local residents to protect the forest in the long term. Three principles were set for the trial:

- Existing natural forests should be managed in a sustainable way.
- The forests should provide benefits to the local people, thus contributing to the national goals of hunger elimination and poverty alleviation.
- The cost to the State should not exceed that of Forest Protection Contracts (VND 50,000 or approximately US\$ 675 per ha per year) (Vu Hoai Minh and Warfvinge 2002).

From the beginning, the Forest Protection Unit (FPU), as the local implementing agency, was committed to including commercial timber production as a central part of the community forest management operations.

The management agreement

A management agreement between the community and the Government for 405 ha of forest was officially signed in December 2000. The process for reaching this agreement began with a socio-economic survey, followed by a village meeting in which the FPU informed villagers of the preliminary plan and asked their opinions. Villagers were given three choices for moving forward:

¹ In the last three years, a few other communities have also harvested timber from their forests.

- Continue with existing forest protection contracts;
- Divide the forest area considered for allocation among individual households; or
- Arrange for collective management by the entire village.

The community opted for the third alternative (Vu and Warfvinge 2002).

The FPU then surveyed and inventoried the forest area and prepared a map and report (Vu 2000). Out of the total 1,966 ha of natural forest in the village territory, a 405 ha block at the top of the watershed was selected by the FPU as suitable for allocation, based on its standing volume. It had an average volume of 76 m³ per ha, consisting mainly of *Desmos*, *Eugenia* and *Parashorea* spp. These species are not high-quality timbers, but are in common use locally for house construction. The inventory did not specify size or class distributions of these species, or give their spatial distribution across the forest. To calculate the allowable cut, it is necessary to know the growth rate of these species. It was impossible to measure this in a one-off inventory as conducted. Instead, the FPU used a national formula for determining harvesting rates (see Table 1) and estimated the overall forest growth rate at 1.5 m³ per ha per year, which was the highest option available for calculating growth rates. The method for obtaining this estimate is unclear, as the inventory does not appear to have been sufficiently detailed to guide subsequent management of the forest, and it appears that the national system for determining harvest rates needs to be re-examined.

The FPU, in consultation with commune and village level officials, then drafted the management agreement that identified the forest, defined the duration of the agreement, and set out the rights and responsibilities of the villagers. A further village meeting was held for approval of this draft agreement.

The management agreement included an outline for a “village convention,” the internal rules and regulations for forest protection, the details of which the community was expected to develop independently. The Village Management Board (VMB) prepared handwritten conventions for approval by the wider community, but it is unclear how widely this document was disseminated. They included provision to create a community fund to manage the forest revenues on behalf of the whole community.

The initial period of the management agreement was three years. However, it stipulated that if the agreement was carried out well during that time, it would be extended into a 50-year lease. The FPU was clear that the agreement needed to be long term in duration to work effectively.

Objectives

The management agreement states that, “Everyone in the village...is entitled to the benefits brought by forest protection and growth.” Essentially, cash-based forest protection contracts would no longer be issued, but the community would be rewarded for protecting the forest by granting access to controlled harvesting of timber, NTFPs and wildlife.

Organization and decision making

Under the management agreement, overall responsibility for the community forest was given to the VMB. Thuy Yen Thuong’s VMB consists of the village head and two deputies, and was appointed when the village was formed in 1999. The village is further divided into 10 sub-units, each of which elected their own representative to report to the VMB. The management agreement also required the formation of a Forest Protection Team (FPT), comprised of the heads and deputy heads from each of the 10 VMB sub-units, plus one staff member of the FPU sub-station based in the village.

Information and issues about the community forest are discussed at meetings of the VMB, which are open to all interested villagers. Village sub-unit leaders represent the views of their constituents at these meetings, but decision-making powers rest solely with the three-member VMB.

Protection

In the management agreement the FPT undertakes to organize monthly forest patrols. PROFOR funded the costs of the patrol team, at the rate of US\$ 1.50 per person-day, until the project phased out in 2002. Since then, the village has covered these expenses out of their group fund. Patrols are recorded in a log book, including the names of all patrol team members and reports of any illegal activities, including details on related evidence. The FPT has no other formal duties and there is no other body at village level which is exclusively concerned with forestry matters.

NTFPs and timber

Under the management agreement, extraction of timber or NTFPs from the community forest would be subject to approval from the relevant authorities on a case-by-case basis. However, as noted above, the village conventions allow households unrestricted access to the community forest area for collection of NTFPs. There are no records of these collection activities, chiefly because the villagers assume that the total amounts collected are small and of little monetary value.

Timber production

The community's entitlement to timber was designed to reward villagers for successful forest protection. The faster the forest grows the greater the proportion of volume increment the villagers can extract (see Table 1). The entitlements are based on the initial volume of 76 m³ per ha, as measured in the community forest inventory of 2000.

Table 1: Timber extraction entitlement for Thuy Yen Thuong community forest

Mean annual increment (m ³ /ha)	≥ 1.5	1-1.5	0.5-1	≤ 0.5	No growth
Village's entitlement (% of total increment)	50	30	20	10	State takes back forest

Timber harvesting operations

The timing of timber harvesting operations, according to the management agreement, depends on the length of time for the forest to reach "maturity." Again, the criteria by which maturity is to be assessed, or by whom the assessment will be made, are not defined in the agreement. The agreement assumes that maturity will not be reached in the first 10 years after forest allocation. During this initial period the agreement allows for 50 m³ to be selectively cut annually to meet the "urgent needs of the local people."

Harvesting application and approval process

It was under this latter provision that the village applied for permission to harvest timber in 2004. PROFOR had supported the initial inventory of the forest in 2000, which was supervised by the Forest Inventory and Planning Institute (FIPI) of Thua Thien Hue province with the participation of villagers. When the villagers submitted their application for felling in 2003, FIPI used the data from the original inventory to identify a suitable location for the felling

operation: a 60ha block at the western edge of the community forest, about 3 hours walk from the village at an altitude of 800-1,000m. Three officials from FIPI were paid VND 2.7 million (US\$ 169) to revisit this location to carry out a more detailed inventory, identify and measure the stems to be felled, and calculate the expected output volume of construction grade timber. A total of 31 suitable trees were identified, with a combined volume of 92 m³. The Provincial People's Committee (PPC) approved the harvesting operation.

Timber harvest

The VMB then invited applications for community members to join the felling team. Members were selected according to their physical fitness and experience in timber harvesting. A total of 31 men were selected and organized into 8 groups for the duration of the work. The team leader was a member of the forest protection team and was responsible, along with the VMB, to monitor the work and ensure compliance with the harvesting plan.

Trees were felled with hand saws and axes, and conversion was performed on-site. Extraction was also manual, down a steep gradient. The prevailing soil in the area is extremely friable and prone to rockslides, further complicating an already difficult harvesting and extraction process. The converted timber was stored at the forest protection station in the village pending sale and distribution.

The harvesting operation took three months to complete, during which 28 trees were harvested with a total round timber volume of 79 m³ (sawn volume of 53 m³). After a final inspection by the VMB, the felling area was closed to the logging team and all villagers. No members of the community were permitted to return to the area to collect firewood or other by-products of the operation.

Benefits and benefit sharing

Total income

The VMB set a price of VND 2.3 million (US\$ 140) per m³ for the timber, generating a total income of about US\$ 7,300 from its sale. Enquiries with local timber traders and carpenters confirm that this price was considerably lower than the prevailing market price for timber of this species and quality. The price for timber with official government stamp (15% district resource tax paid) was about VND 3.5 million (US\$ 220) per m³ in 2004. However, the timber from Thuy Yen Thuong was exempt from duty because it was only approved for sale within the village boundaries. The price for untaxed timber is more variable and difficult to establish, but was about VND 3 million (US\$ 175) at the time. The sale could, therefore, have generated revenues of US\$ 9,000-10,000. The discount was supposed to enable villagers to benefit from cheaper timber but, as discussed below, had a serious negative impact on the profitability of the community scheme.

Direct beneficiaries

As there was a limited timber harvest, due to restrictions within the management plan, benefits experienced by the community were somewhat limited. However, benefits were experienced and distributed within the community among different identified groups as follows.

Forest protection team

Forest protection was included under the VMB's expenditure for the harvesting operation. The patrols were covered by PROFOR, until the project phased out in 2002, at the rate of VND

25,000 (approximately US\$ 2) per person-day. Payment for the patrol teams was later funded directly from harvesting revenue deposited into the Community Forestry Fund.

Harvesting team

The village convention, drawn up by the VMB, established that most of the benefits would go to those who did the logging. The VMB set the labor cost of the felling operation at VND 1.7 million (US\$ 106) per m³, or 74% of the final selling price - a sum significantly above the prevailing rate for timber harvesting. Had the total income been shared equally across the whole community, the average benefit would have been approximately US\$ 20 per household.

Community Forestry Fund

The Community Forestry Fund received proceeds of the timber harvest after deduction of expenses, the full details of which are set out in Table 2 below. The table also provides an overview of other direct beneficiaries from the timber harvest.

Table 2: Harvesting costs and net income

Expense	No of units	Unit cost	Total(US\$)
Felling and extraction	52.9 m ³	US\$ 106 per m ³	5,621
Monitoring and inspection	NA	NA	155
Harvesting design	9 person-days	< US\$ 20/day	169
Forest protection 2003-4	88 person-days	US\$ 1.57	138
Felling Ceremony			50
TOTAL costs			6,133
Total income			7,512
Net income to CFF			1,379

The net income from the harvesting operation, deposited in the CFF, was VND 19.2 million (about US\$ 1,300), or just 17.5% of the gross income. The Community Forestry Fund is administered by the VMB, and is meant to be used for the benefit of the whole community. Its use was discussed in village meetings, led by the VMB. Priority was given to the construction of a village gate, at a cost of VND 9.4 million (about US\$ 600). The contract for this work was given to four artisans from the community. The gate has little practical value, but enables the community to be granted the title of “cultural village,” which conveys honor and status, particularly to the VMB. About US\$ 450 was spent on paying the forest protection team for their work since June 2004, and US\$ 50 covered the cost of a ceremony before the timber harvest began. A balance of US\$ 100 remained in August 2006.

Management of timber benefits

Before the harvesting operation, the VMB devised a system for pricing and prioritizing the sale and distribution of timber that became part of the village conventions. The price was set below the existing market rate, at VND 2.3 million per m³ (US\$ 144, compared with the market price of US\$ 175-220 per m³). A limit of 0.5 m³ per household was set for house repairs and extensions, rising to an available amount of 1 m³ if the buyer required the timber for constructing a new house. A maximum of 40% of the total output was reserved for “social policy privileged” households (households at risk of poverty or with few income-earning

individuals due to sickness, disability or war casualties) and households active in forest protection activities. These households were also entitled to select the best quality timber after harvest, and were offered a reduced rate of VND 2.16 million (US\$ 135) per m³. However, only 12 households from each of these two categories availed themselves of this entitlement, reserving a total volume of 10.5 m³.

According to the village conventions, a further 30% of the total output could be reserved in advance by other villagers who submitted applications that include a full account of their intended use for the timber. The VMB approved requests for timber on a first-come, first-served basis, if satisfied that the buyer would use the timber as intended and not sell it on to a third party. Buyers were required to pay 30% of the price in advance. The full list of households with reserved timber under both these quotas was announced at a village meeting prior to the harvest operation. After the timber harvest was complete and all reserved timber had been distributed, the remaining timber was sold to villagers on a first-come, first-served basis, and finally to carpenters within the village boundaries with no limit on the volume purchased. This system resulted in a pattern of timber distribution and revenue as set out in Table 3.

Table 3: Timber sales and revenue within Thuy Yen Thuong village

Purchaser category	Volume purchased (m ³)	% of total volume	Unit price (US\$ per m ³)	Total revenue (US\$)
Social policy privileged	5.9	11.1	135	797
Protection team	4.6	8.7	135	621
Other villagers	17.2	32.5	144	2,473
Carpenters	25.2	47.6	144	3,623
TOTAL	52.9			7,512

Assessment of the community forestry model

The following is an overarching assessment of the Thuy Yen Thuong CF model. The areas of focus are those which link directly to community empowerment, livelihoods development and poverty alleviation.

Awareness, participation and decision making

Members of the Village Management Board and their close comrades had existing special interests in logging, so this pilot ended up reflecting and promoting these interests by working through them.

In Thuy Yen Thuong, awareness about the forest allocation and harvesting processes differs significantly among individuals. These differences were revealed through questioning of a small sample of villagers about the details of the allocation process described above, the management structure of the community forest, the planning and implementation of the harvesting operation and the distribution of timber and other benefits after the operation.

As expected, members of the VMB, the forest protection team and the felling team provided full and accurate information regarding all of these processes, and were primary sources for much of the information provided in this paper. A village-level representative of the Women's Union was also well-informed.

Households which were not directly involved in forest protection, harvesting or local administration demonstrated very poor awareness of community forest issues. The majority were not aware that the community forest existed, including one widow from the “social policy privileged” list who had bought 0.36 m³ of timber from the harvesting operation. All men interviewed were aware that the felling had been carried out in 2004, but most could not describe the processes. A majority of women were unaware of the felling operation.

There are three causes of the lack of awareness encountered during the interviews. For the relatively well-off, apathy was the paramount cause. They had the opportunity to learn more about the community forest, but did not consider it worthwhile.

Other informants felt that they had no right to be consulted on forestry matters, and some male villagers would not attend a village meeting without a specific invitation. All the women we spoke to, with the exception of the Women’s Union representative, said that forestry was exclusively men’s business.

The poorer individuals, however, were keen to learn about community forest issues and their lack of awareness was chiefly due to inadequate information dissemination. It is the responsibility of village sub-unit representatives to relay information from meetings, which is typically done by word of mouth and largely depends on an individual’s relationship with their leaders.

Apart from those households directly involved in forest protection, community members were not aware of their responsibility to participate in forest protection or of their entitlement to the benefits brought by protection. Many villagers were aware of the payment of VND 50,000 (US\$ 3) per ha per year paid by the government through forest protection contracts for patrolling forest areas planted under the 5 Million Hectares Program (Program 661), but did not realize that this did not apply to the community forest area. Under the management agreement prepared by Phu Loc FPU, villagers have the right to collect NTFPs from the community forest, but these rights are not explicitly reflected in the village conventions prepared by the VMB. The process of timber distribution and the prices involved were only known to those who had purchased timber.

Few people knew about the Community Forest Fund, and few of those who did were aware that they should be consulted on its use. Everyone knew about the village gate, but no one outside the protection team and local administration was aware that it was paid for from the Community Forest Fund. The local Women’s Union representative revealed that the VMB has already decided, with full consultation of villagers, to spend income from the next harvesting operation on construction of a village meeting hall. No other interviewees corroborated this information.

This generalized lack of awareness resulted in low levels of community member participation, with only 30 people involved in the timber harvest and 11 in forest patrols, while the entire community consists of 370 households. The forest inventory and preparation of the felling plan were not participatory. Rather, FIPI did the work, and involved villagers only as laborers. There was no training or empowerment of local people in sustainable forestry. Participation in the timber harvest was wider, but most of the felling team had previously been involved in illegal logging. Size of household, and the availability of fit individuals to provide labor for the operation, also limited the ability of poor households to participate.

The VMB was assigned responsibility by the Commune People’s Committee (CPC) for all decision-making processes concerning community forestry, without requiring wider consultation within the village. Similarly, the forest protection team was composed of individuals with established positions in the local administration, such as sub-unit heads and

deputy heads. The management agreement was drafted by Phu Loc FPU in consultation with the VMB and discussed at village meetings where mass organization representatives and sub-unit heads were present. Most of the decisions benefited the decision makers. By opting for a community forest, the loggers obtained access to a larger area of forest than they would have received under individual household allocations. The decision to award the majority of benefits to the people who did the work obviously favored the loggers. Setting a low purchase price enabled these people to save money on their own wood needs, and make a margin by selling excess wood they did not use.

The system of prioritization, sale and distribution of timber was set by the VMB. Apart from VMB members, only the Women's Union representative asserted that the decision-making process for mobilization of the community forest fund had been carried out with full participation of the villagers, although she had not participated herself.

Evidently, certain community members gained two ways: through direct employment in forest felling and protection patrols, and indirectly as recipients of discounted timber. In a community of 370 households, less than 10% benefited substantially from the forest operations. And it was those people that devised the benefit-sharing scheme who were the main beneficiaries of the community forest harvesting operation. They were, for the most part, the same people who had been responsible for illegal logging in the village in the first place.

Impacts of the timber harvest on the forest

As a pioneering example of community-based timber harvesting in Viet Nam, Thuy Yen Thuong community forest demonstrates that such operations can potentially generate revenue for the community through harvesting of timber. In this instance the operation was low intensity (28 stems over 60 ha), well-implemented and seems to have had a low impact on the forest ecosystem.

The fact that this logging was legal conferred significant advantages. Members of the logging team admitted that during previous illegal operations, their main concern was felling quickly to avoid detection, so there was no planning or effort to limit damage to the forest. The physical evidence of the 2004 operation shows that it was carried out carefully. Stems of commercial value remain in the forest and two years after logging, advance regeneration appears healthy.

However, because of the incomplete inventory and lack of species growth models, it is not possible to assess the frequency at which such operations would be sustainable. No comprehensive long-term management plan exists, which could be assessed against sustainable management criteria. There were no post-harvest or other treatments to encourage regeneration and increase the value of the forest. As yet, no attention has been paid to non-timber products in the forest. Participants are interested only in harvesting the timber resource, and complain that even logging will not return the perceived costs of forest protection.

Impacts of the harvesting operation on poverty alleviation

Poverty alleviation was one of the stated objectives of the management agreement. The impact assessment provided here is preliminary in terms of total income, the equity of its distribution and its use to help the poor of the village.

Income and the discounted timber price

The total and net income to the community fund were significantly less than the potential income due to the discounted price set by the VMB. If all the timber was sold at a rate of US\$ 175 per m³ (more consistent with prevailing market prices), this would have resulted in a 27% increase in gross revenue (US\$ 9,275), and (assuming expenses were constant), more than double the net revenue deposited in the Community Forestry Fund. By this measure, the net benefits to the community were disappointing.

The discounted price of timber was cited by several interviewees as one of the primary benefits of community-managed harvesting. However, aside from resulting in a 60-80% reduction in net communal revenue, the discounts represented a hidden subsidy favoring wealthier members of the community at the expense of the poor.

By the official definition of poverty, the 60 households of the village which are classified as poor earn less than US\$ 11 per month. At the discounted rate of US\$ 130 per m³, even 0.25 m³ (the smallest amount purchased by one household) is clearly unaffordable. Data were not available on the exact circumstances of the 12 “social policy privileged” households which purchased timber, but it seems likely that they were on the list for reasons other than poverty. Most interviewees, regardless of wealth status, acknowledged this as an evident problem in the current benefit-distribution strategy.

Employment

The community forest allocation and harvesting process contributed to the village economy through generation of employment in forest protection and forest felling teams but, since these jobs went to better-off households, it did not contribute substantially to poverty alleviation. The forest protection team carried out patrols only once or twice per month, but this could still have provided a significant increase to a poor household’s income. In addition to a daily remuneration for their protection work, these individuals also received a 5% discount on timber, constituting a further distortion in benefit distribution to the detriment of poorer households.

Selection for work in the felling team was essentially dependent on past involvement in illegal logging operations. Though this resulted in employment for some households not directly involved in village administration, none of these households were among the 60 poorest. The rate of pay, determined by the VMB, was at least 4 times the norm and enabled direct capture by this select group of 74% of the revenue from the harvesting operation. To this was added wages for forest patrols and discounted timber, so overall the local elite must have captured well over 80% of the value of the timber. The jobs created did not contribute to the objective of poverty alleviation in the village, and essentially rewarded those households that were relatively well off for their involvement in past illegal activities.

Community Forestry Fund mobilization

Since poorer households did not benefit from the discounted timber or employment, the only way possible for benefits to accrue to them was through the Community Forestry Fund. The discounts enjoyed by the better-off, therefore, resulted in a 60% reduction in the benefits available to the poor, resulting in an entirely inequitable distribution of revenue.

The Community Forestry Fund was spent without wide consultation to identify the priorities of the poorer members of the community or to discuss other options for use of the money. Nearly 50% of the money was spent on a village gate which serves no practical purpose, except perhaps to confer elevated status on village leaders through the inauguration of Thuy Yen Thuong as a “cultural village.”

Conclusions and recommendations

The Thuy Yen Thuong pilot project has been an innovative and bold step in Viet Nam's community forestry efforts. Through this project, a group of forest users has been assisted to organize, plan and obtain a community forest, and harvest some timber from it in return for protecting it from further degradation. The pilot is well-documented, which has been extremely valuable in providing the opportunity to review the experience and learn lessons. The review reveals two main areas of concern for the Thuy Yen Thuong community forest: sustainability and internal governance.

Sustainability

Management planning

The pilot has not paid sufficient attention to either the ecological or economic sustainability of forest operations. The inventory conducted was not sufficiently extensive or detailed to establish the sustainable rate of harvesting. A management plan was not prepared, and no attention appears to have been paid to assessing and enhancing the economic value of the forest through post-harvest treatments, enrichment planting and management of NTFPs. Without adequate and sustainable economic benefits, the community will have no interest in managing its forest. It is clear, however, that the information on timber species ecology and growth rates needed to manage these forests either does not exist or has not been compiled and made accessible to managers.

Recommendations: The preparation of an integrated and sustainable forest management plan, based on a comprehensive inventory and certified by the FPU or other accredited professional body, should be a pre-condition for forest allocation. This will clarify the benefits available to the community and will also eliminate the need for lengthy approval procedures. Compilation or development of the growth models necessary for management planning in natural forests should be a research priority for the forestry sector.

Internal governance

Local governance structures

The Thuy Yen Thuong forest is a "community forest" in name only, as 90% of the households have not heard of, participated in, or benefited from it, and its poverty alleviation objectives have not been met. The main reason for this has been the over-reliance on existing local governance structures. VMBs, with their system of sub-village units, are set up less as consultative bodies and local democratic fora, and more as channels for top-down communication. This study has shown that even as a communication channel, the VMB does not function effectively, particularly when there is an opportunity for them to capture valuable resources. Broad-based discussion and debate at village level are needed to ensure that community forestry addresses the needs of the whole community, particularly the poor.

Recommendations: Representative village-level community forest committees (CFCs), accountable to the community and to the VMB (but independent from it), shall be established. The members of such a committee, responsible for decisions regarding forest management and benefit distribution, must also be selected by a ballot of community members and subject to regular performance appraisals. Further research on the internal governance of such groups would help promote the interests of the poor and constrain elite capture.

Discounts and premiums

The VMB strategy of paying the loggers at a premium, and then selling the timber at a discount, meant that the total income generated by the timber harvest, and the amount finally reaching the Community Forestry Fund, were disappointing.

Recommendations: Timber should be sold at or near to full market price in order to generate income for poverty-focused interventions. Discounts of high-value products will always favor wealthier households at the expense of the poor. Subsidies should be discouraged, but, if used, should be applicable exclusively to poor households. Labor should be compensated at competitive local rates, and wherever possible, jobs should go preferentially, to poorer households.

Fund management

The Community Forestry Fund was not used for poverty alleviation. Had prior external appraisal been made of the planned use of the fund against poverty-focused criteria, this might not have happened.

Recommendations: Community fund managers should receive training prior to assuming responsibility for the fund, and should receive ongoing support from facilitators in the first years of operation to ensure its wise use. In order to avoid elite capture of communal resources, external monitoring by an independent, neutral body is helpful. However, the need for such assessments would be much reduced if participation of poor households in decision-making procedures was adequately facilitated.

Final word

This brief study represents the first analysis on the subject of community forest harvesting in Viet Nam. There is room, and need, for further study. The pioneering and innovative activity in Thuy Yen Thuong holds many important lessons for the future of Viet Nam's Community Forestry Program. It is essential that these lessons be thoroughly studied and heeded for the national program to achieve its potential in terms of poverty alleviation. This is the recommendation that must be emphasized above all others.

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5

SECTION

Technical aspects



APPROPRIATE FOREST HARVESTING AND TRANSPORT TECHNOLOGIES FOR VILLAGE-BASED PRODUCTION OF BAMBOO CHARCOAL IN MOUNTAINOUS AREAS OF NORTHERN LAO PDR



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Introduction

With a forest cover of over 60%, Northern Lao People's Democratic Republic (Lao PDR) has considerable development potential for forest-based industries. This resource is currently being used primarily for swidden agriculture or exploited as round wood to neighboring countries. This is leading to a situation where forest areas consist of remnant forest largely

depleted of valuable timber, or heavily degraded secondary vegetation that has undergone several cycles of shifting cultivation. These degraded sites are often dominated by bamboo stands. Thus, any future scenario for forest industry development, and forest rehabilitation for commercial purposes, will have to take into account the sustainable use of the present stock of small-sized woody biomass and bamboo.

In contrast to saw logs, which have a high value to volume (weight) ratio, the financial value of wood (and bamboo) for fuel, charcoal, pulp, particle board, bamboo plywood or other applications is entirely dependent on the cost of extraction from the forest stands and subsequent transport by roads or rivers to processing sites. Northern Lao PDR has very limited road infrastructure. This situation is expected to improve considerably with the ongoing construction of a road linking Thailand (Chiang Mai) with China (Kunming). In conjunction with this axis, a network of rural feeder roads is presently underway in the study area, which will eventually create an economic corridor interlinking the three countries.

The removal of bedrock from the Mekong River over the last 10 years allows for year-round navigation along the river from China to Chiang Saen in northern Thailand. Improved harbors and loading facilities are presently under construction at several points in northern Lao PDR. With improved accessibility by road and water, the forest resources of northern Lao PDR will gain interregional importance in the near future.

Industrial-scale forest harvesting in Lao PDR has been carried out under a system of concession logging, mostly by companies from neighboring countries. Harvesting technologies for such operations have been imported and range from converted agricultural tractors, bulldozers and specialized skidders to cable logging systems. Local community involvement has largely been omitted from this process, and in many cases their traditional access and use of forests has been infringed upon considerably by such concessions.

The present policies on land use in Lao PDR over the next decade focus on the elimination of shifting cultivation and creation of permanent settlements. Within this framework, concepts of community forestry have so far focused only on the utilization of forest products such as non-timber forest products (NTFPs), firewood and construction timber for domestic demand. Strategies for involving communities in more broad-based forest harvesting and processing activities (Lawlor *et al.* 2004) have so far not been developed for the secondary forests of northern Lao PDR. Experiences from the Finland/ World Bank funded FORMACOP project (1996-2002) in southern Lao PDR have only limited applicability in the secondary forests of the north, since that project focused on community participation in harvesting higher value round wood only. A recently established study site in southern Lao PDR under the FAO-supported regional project, "Enhancing Sustainable Forest Harvesting in Asia," involved local communities in the harvest of small-sized residual wood from forest concessions. The lack of appropriate technologies for the extraction of such material has already become evident as an issue in this project.

The Lao-German Programme on Rural Development in Mountainous Areas of Northern Lao PDR (RDMA) is presently working on concepts for community-based forest management as a component of both village and regional economic development, covering clusters of villages or complete districts. In this context, the commercial-scale production of bamboo charcoal in several villages along the Namtha river in Pa Oudom District, Bokeo Province, is a first step toward developing sustainable forest utilization as an income generating activity, over and above supplying for local demand. This study focuses on the importance of appropriate forest harvesting technologies for use by local communities.

A recent review by USAID on community forestry projects, oriented towards wood processing and marketing, in six countries, indicates that none of the projects could show conclusive

evidence of community control over all stages of the value chain (Lawlor *et al.* 2004). A major common obstacle is the lack of control over extraction and transport processes. It follows that rural communities can only benefit considerably from woody biomass-based value chains if technologies are available to them which allow their control over the initial stages of tree felling, and transport to the sites of selling, processing or loading for road or river transport (Lux 2005). The lack of appropriate forest harvesting technologies has two additional crucial aspects:

- Commercial-scale harvesting of (low-value) wood biomass components without means for covering greater extraction distances will eventually lead to over-exploitation of resources along access roads or points of processing. It is therefore critical for decision makers to recognize that commercial viability of harvesting needs to be incorporated into sustainable management plans for specific forest areas.
- Due to the lack of appropriate harvesting technologies, reforestation with commercial-scale forest plantations (teak) has so far only been undertaken in areas surrounding roads and navigable rivers, thereby occupying sites that could otherwise be brought under considerably higher value land use due to their accessibility or soil conditions.

Small-scale forest harvesting in the community forestry context

The terms “small-scale forestry” or “small-scale forest harvesting” have been used mainly in European and North American forestry circles. In general, they refer to timber harvesting operations carried out by owners of smaller woodlots in contrast to larger scale government or industrial operations. Harvesting technologies in this context are within the financial reach of individual forest owners or producer groups, and are very often linked to farm machinery such as logging winches mounted on agricultural tractors, these being the standard equipment of most farm forestry operations in Europe.

In recent years, the Forestry Institute of Garpenberg, Sweden, and the UK Forestry Commission have conducted extensive research on the economic and ergonomic performance of a wide range of small-scale forest harvesting equipment. For the special conditions of small-scale harvesting in mountainous areas, the well-documented AUSTROFOMA exhibitions by Austrian manufacturers of forest harvesting equipment is an excellent source of information. Most of the information from these sources is highly applicable to the rural development context of Southeast Asia.

In Southeast Asia, the topic of forest harvesting has in recent years been dominated by the term ‘reduced impact logging,’ which refers to improved methods of pre-harvest tree inventories, directional felling and extraction methods aimed at reducing damage to the “mainly natural” residual forest stands. The harvesting systems promoted under this concept have focused entirely on large-scale forest operations. Involvement of local communities and small-scale forest enterprises has so far been largely left out under the reduced impact logging approaches. This is due largely to the fact that such actors play only a minor role in commercial scale wood-extraction operations. As such, information on the application of appropriate technologies for forest harvesting at levels below state-owned or concession forest enterprises remains very limited in the region.

Project context

During a recent analysis of various value-chain options for non-agricultural income generation, and based on earlier forest resource assessments for Bokeo Province, it became apparent that industrial-scale processing of bamboo was a viable option for the RDMA target areas. Paktha village was selected in 2005 as an initial pilot site for bamboo charcoal manufacturing, storage and loading for transport by both river (Mekong) and road.

Under the RDMA's private-public partnership concept, a tripartite agreement was drafted between:

- A private Lao enterprise engaged in bamboo-charcoal processing and export, whose role was to introduce special technology for high-quality charcoal production, provision of storage, packaging and loading facilities, and export marketing. The entrepreneur would obtain a bamboo concession, for which he would pay a royalty to the government for raw materials.
- The RDMA and its government counterpart organizations, whose roles were the preparation of forest management plans in the production areas, and introduce appropriate technologies to allow bamboo harvesting in an economically viable and ecologically sustainable way.
- Villages along the Namtha river that would engage in bamboo harvesting, transport and charcoal processing.

Under the agreement, the price for fresh bamboo was calculated at about US\$ 17 per ton when delivered to the processing site at Paktha. The price for bamboo charcoal was estimated at US\$ 110 per ton (including any future royalty payments to the government) at the point of road or river transport to northern Thailand. This price compares well with the present price range of US\$ 90-130 per ton for this product in northern Thailand.

Assessment of forest biomass production and terrain conditions

Preliminary assessments were carried out on the extent of bamboo stands within the designated areas of upland agriculture and production forests within village boundaries and along the lower Namtha river. It was estimated that each charcoal kiln with an annual production of 30 tons of charcoal would require about 150 tons of green bamboo, which in turn could be harvested annually on a sustained basis from about 30 ha of bamboo stands (Dransfield and Eijada 1995). Sufficient bamboo resources could be found in most areas within a radius of 2-3 km around potential processing sites, assuming that subsequent transport of the charcoal was via all weather access roads or rivers.

It was realized that the anticipated yearly production of 1,000 tons of charcoal could only be realized by either spreading kilns over a wide area, or by bringing green bamboo over greater distances to central processing sites by way of road or river transport. Cartographic assessments of slope class and direction were carried out in a corridor of 2 km on both sides of the Namtha River and over a distance of 180 km. In order to assess the potential bamboo resources in this corridor, aerial photo interpretation and visual assessments of transects were conducted at regular 5 km intervals during a cruise along the river. Both methods revealed that a total of about 55,000 ha would fall into the slope classes and directions that would allow for downhill skidding of bamboo to the river over maximum distances of 2,000 meters. It was estimated that approximately 20% or 11,000 ha of this area, is covered with exploitable bamboo stands.

Suitable bamboo stands were found along all-weather roads, covering a total distance of 35 km, with a maximum distance to processing sites of 22 km. Within these river and road corridors, an area of about 11,000 ha of bamboo stands are found within an accessible range of the proposed central processing site at Paktha. Following these studies, it was decided to carry out further research on the feasibility of harvesting and transporting bamboo under existing stand and terrain conditions.

Felling and bunching along skidding trails

Due to the difficulties in bringing individual bamboo culms to the ground, felling is done in teams of at least two persons. The culms are carried out with axes or straight-bladed machetes at a height of about 0.8 to 1.2 m above ground, due to the dense growth of culms at the base of the clumps. For the trials, culms were selected with a diameter at breast height of between 10 and 15 cm in order to minimize variation due to diameter and length differences and their effect on weight per piece. This diameter range is also most suitable for the construction of bamboo rafts, as used in the subsequent transport trials.

The distance to the skidding trails was kept to a maximum of 20 m to eliminate further variations. The performance of labor in the felling and bucking process was as follows: the time for cutting, dragging to the ground, cutting off branches and delivering the culms to a point of initial stacking along skidding trails took an average of 4.7 minutes per culm, calculated from a total of 180 culms harvested with a variation of between 3.3 minutes and 9.2 minutes. In cases where a group of culms was entangled and had to be brought down together, the time was calculated as an average of such a group of culms. The average culm harvested had a weight of 14.4 kg with 13.5 cm diameter and a length of 13.4 m.

Harvesting time per ton for a two-person team was 326 minutes, or in other words, one person was able to harvest about 0.5 tons in one day. Assuming an average wage of US\$ 2 per day, the operation of felling and stacking at the skidding trail will cost approximately US\$ 4 per ton. These costs for the felling and bunching operation are surprisingly high. Due to the low weight/volume ratio of bamboo, few options are available to improve the felling operation significantly (Efthymiou 2002). The costs might be slightly lower in situations where whole fields may be harvested in clear-felling operations.

Manual transport to loading sites

Manual transport of bamboo culms is presently the most common form of forwarding. This is mainly done for domestic consumption over distances of up to several kilometres. The optimal range for manual transport is between 50 and 150 m. For commercial-scale operations, the maximum range considered economically viable would be around 500 m for downhill transport. Due to the relatively high friction of long bamboo culms, manual transport is most suitable for this terrain condition. For transport over level or uphill terrain, the acceptable range diminishes considerably. Manual uphill transport on slopes steeper than 35-40 % is limited to distances of less than 50 m.

Horse logging

In spite of the extensive use of buffalo and cattle in agricultural operations and horseback transport by certain ethnic groups (Hmong, Yao), animal traction has so far not been applied to forest harvesting operations in the project area. Buffalo and cattle are mostly

used in pairs, which makes them unsuitable for forestry operations along relatively narrow foot paths and skidding trails. The slow reaction capability makes these animals also very vulnerable to leg injuries during downhill skidding, where easy manoeuvrability is required. Suitable logging harnesses for these types of draught animals could also not be identified immediately (FAO 1986).

It was therefore decided to concentrate further investigations on horse logging operations. Harnesses, self-locking skidding chains and ropes were imported from Europe. Skidding troughs were manufactured locally from 2-mm tin sheets with two different opening widths (80 and 100 cm). Two horses the size of large ponies (shoulder height of 115 cm) were trained by a traditional Hmong horse-keeper in bamboo logging, using the above equipment. Performance of the horse-logging operations were tested on the two felling sites over level and downhill sloping (10-20%) terrain, and over distances of between 200 and 3,000 m with a total of 180 harvested bamboo culms.

Time for loading the skidding trough (shoe) with 10-15 culms for each trip and tying the bundle with a self-locking chain required an average of 4 to 5 minutes. The mean load per trip was 172 kg (with a range of 145 to 195 kg). During the observation of 21 roundtrips, the self-locking chains failed in only one case. The utilization of this kind of equipment was found to be indispensable, since it was not possible to tie bamboo culms with locally available material into bundles and drag them over larger distances without the slippage of individual culms leading to the loosening of the bundle. The economically viable maximum range for horse logging was found to be about 2500 m, keeping logging costs below US\$ 10 per ton.

On steeper downhill sections, a second operator is required to apply tension to the load to prevent it from slipping into the rear legs of the horse or the feet of the front operator. This will increase costs for the operation on these terrain conditions by about 30%. Some preliminary trials to extract bamboo on steeper uphill terrain showed that the performance dropped dramatically. Further tests would be needed to establish accurate performance data, but it is suggested that the economically viable range for uphill skidding with horses on slopes above 20% would be reduced by about 50%. On slopes above 40%, horse logging will not be viable.

Development of a 2-wheel tractor-based mini-skidder

Due to difficulties in introducing horses to ethnic groups without previous experiences in keeping such animals, and the limitations of horse logging in terms of maximum skidding distance and poor performance on steeper slopes, it was decided to explore additional skidding technologies. The conversion of locally available 2-wheel tractors into a pedestrian operated skidding device was identified as the obvious alternative due to the following reasons:

- The basic technology of two-wheel tractors is widely spread in the RDMA target areas. One can easily remove the engine, gear box, and belt-driven device and combine it with other appliances such as water pumps, threshing machines, and small sized 4-wheel trucks.
- Over the last two decades, a variety of wheel- and rubber-tracked pedestrian operated mini-skidders have been developed in Scandinavian countries. They use motors in a power range similar to the 9 to 15 hp 2-wheel tractor. Two models, the Jonsereds Iron Horse (9 and 19 hp) and the Gustafsson Oxen (15 hp, described on www.gosta-gustafsson.se) find widespread application in the forests of northern Europe. An earlier model, the so-called Wheel Horse, was in its design nearly identical to the regionally available 2-wheel tractors, but it is no longer manufactured.

A review of the literature on pedestrian-operated mini-skidders revealed the following data on their performance and operational costs (see also Table 1):

- The maximum loading capacity is in a range of 0.7 to 1.2 tons, whereby part of the load is dragged behind the vehicle.
- Transport speed is determined by the operator's walking speed, typically around 4 km per hour.
- Up and downhill skidding can be done with sufficient safety on slopes of up to 35%.
- Typical performance rates at skidding distances of between 50 and 150 m are approximately 2 to 4 tons per hour. Due to the high labor costs under European conditions, the maximum economically viable skidding distances are below 200 m.
- Machine costs include annual depreciation of the purchase price, operation and maintenance of about 400 hours per year. These costs range from US\$ 3 to 8 per hour.
- The purchase costs for such machines range from US\$ 11,000 to 14,000, which is prohibitively high for the rural community context of Southeast Asia.

A prototype of a mini-skidder is presently under construction at the Faculty of Mechanical Engineering, National University of Laos, Vientiane. Field trials on the machine are expected to commence towards the end of 2006. The prototype uses a 14 hp Yanmar engine and gearbox. The undercarriage consists of six 14-inch-diameter truck wheels and rubber belts with a circumference of 2 m, cut from used excavator or truck tyres of about 1.1 m diameter. The mini-skidder will be designed in a way that the engine is interchangeable with the standard two wheel agricultural tractor and other local agricultural devices. For safety reasons the operator will walk sideways in front of the skidder and control speed, direction and breaks via a handlebar. The skidder will have a clamp bank loading device allowing the dragging of stems or bamboo culms of up to 15 m in length. It is estimated that the undercarriage, control handle bar and loading device can be locally manufactured at a cost of around US\$ 800 to US\$ 1,000, thereby totalling about US\$ 2,200, a price range affordable to cooperative forest user groups.

Table 1: Costs for horse logging and mini-skidder system components (US\$)

System component	Horse	Harness Loggingtrough	Mini-skidder
Purchase price	150	225	2,200
Residual value after 5 years	100	50	125
Depreciation	12	35	400
Interest 15%	22	34	320
Maintenance/repairs	90	75	200
Fuel (per day)			11
Total costs per year for an effective utilization period of 100 days	265		930
Machine costs per day	2.65		9.30
System costs incl. 1 operator	4.65		11.30

Based on the analysis of its Scandinavian counterpart models, the proposed mini-skidder is predicted to have the following performance rates:

- The machine costs are estimated at around US\$ 9 per day, which is slightly higher than the costs of the 2-wheel tractor, especially due to the wear on the undercarriage, wheels and tracks.
- The costs for harvesting and forwarding bamboo (or timber of equivalent dimensions) on slopes below 30% are estimated in relation to distance according to Table 2. The table assumes a harvesting team of two persons for felling and forwarding to the skidding trail and one person for the operation of the mini-skidder. The daily wages are set at US\$ 2 per day per person.

Table 2: Estimated performance of pedestrian operated mini-skidder on slopes below 30% in relation to transport distances

Skidding distance (m)	Estimated travel time for return single trips (min)	Total trips per day	Total weight of transported material (tons)	Transport costs (US\$ per ton)
100	24	15	9.0	1.25
250	30	12	7.2	1.4
500	38	9	5.4	2.1
1000	50	7	4.2	2.6
2000	80	4	2.4	4.7
3000	120	3	1.8	6.2
4000	160	2	1.2	9.4

Road transport of bamboo

Costs for road transport, assuming five 1-ton trucks over typical distances of between 20 and 100 km, range between US\$ 0.2 and US\$ 0.3 per km per ton, the figures being based on data from transport of agricultural commodities in the project area. They are also in line with a preliminary feasibility study involving a truck operated by the proposed central charcoal processing plant, at an estimated cost of US\$ 0.23 per km per ton. For distances below 10 km, costs for transport by 2- or 4- wheel tractors with a load capacity of 1 to 1.5 tons fall within a range of US\$ 0.35 to \$ 0.50 per km per ton. Charges for loading bamboo on trucks or tractors are about US\$ 0.5 per ton.

River transport of bamboo

The use of bamboo rafts for transport on the Mekong river and its tributaries is common. Such rafts are typically constructed for the transport of culms themselves, whereas transport of other commodities on such rafts is rarely found with the exception of transporting tourists, in the north of Thailand. Rafts are normally built in the rivers from 40 to 60 culms, in a crosswise double layer arrangement, with a total bamboo weight of about 600-900 kg.

Field trials on the Namtha River have revealed that bamboo rafts could be constructed easily with a width of about 3-4 m and a length of 15-20 m. These would be made with up to 4-5

layers of bamboo culms which would result in individual raft panels of about 150-200 culms weighing about 2.5 to 3.5 tons. The construction time is approximately 6-8 hours, involving a three-person team. Such raft panels require two people for steering. The average actual travel time of such rafts is around 5-6 km/hour, not accounting for rest periods and other delays. Based on these observations, the costs for river transport of bamboo by raft can be estimated as follows in relation to transport distance.

Table 5: Transport costs for bamboo by river rafting in relation to transport distances

Transport distance (km)	Travel time (days)	Travel costs for personnel incl. return trip by speed boat (US\$)	Cost per ton of transported bamboo (US\$)	Transport cost per ton per km (US\$)
10	1	9	3.0	0.30
40	2	18.5	6.2	0.15
70	3	23	7.7	0.11

Note: Six hours are estimated on the first day of operation for the construction of the rafts by a three-person team. Thereafter, rafting is done by a two-person team for a period of about 2 hours.

There is considerable room for improving the present rafting technology through:

- more standardized raft designs;
- improved tools for building and steering the rafts, including small hand-operated winches to remove rafts stuck on underwater obstacles;
- construction of the rafts with gross bound floor panels and pyramid shaped 3-4 layer side walls on dry ground river banks over bamboo rails, allowing for a later sliding of the raft into the river; and
- linking several raft panels behind each other in order to reduce person power for steering, which seems to be possible at least during higher water levels in the rainy season.

Conclusions

The three methods of skidding operations are compared in Figure 1. The following table presents the cost estimates for current manual practices, horse logging and the proposed mini-skidder. For each of the systems an annual operation time of 100 days is assumed. This relatively low figure is due to two main factors: (1) harvesting operations will be restricted to the dry season of only 8 months and (2) due to employment in subsistence agriculture, availability of labour for forestry operations will be rather limited in the target areas.

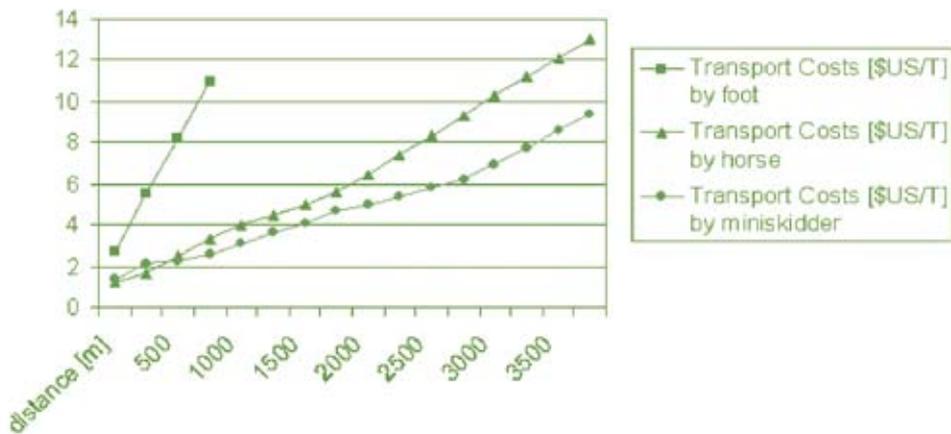


Figure. 1: Transport costs (US\$/ton) of systems in relation to transport distance

In view of the total harvesting and transport chain, an average outlay of about US\$ 8 could be allocated for skidding, taking into account the expected upper limit of \$US 17 per ton for the material delivered at the processing site, US\$ 4 per ton for felling and bunching, and US\$ 5 per ton for road transport (including loading) or river rafting. The table shows that costs for manual transport rises sharply, and would allow this method to be feasible for distances of up to 600 m only, notwithstanding considerations of ergonomic limitations for repeated applications of this method.

Horse logging would be economically feasible up to distances of about 2,500 m, whereas the proposed mini-skidders would have a viable range of about 3,500 m. With uphill skidding situations the performance of horse logging systems drops dramatically to distances of between 1,000 and 1,500 m. In view of this, it is recommended to focus initially on horse logging as a superior option for extracting bamboo on a commercial scale in the project areas. However, due to the limitations of this system to only slightly inclined downhill or level terrain conditions, and due to the presently questionable acceptance of keeping horses by some ethnic groups, the introduction of the proposed conversion of 2-wheel tractors into forest harvesting machinery should be followed further.

The preliminary results of these studies have noteworthy implications for forest management planning at the community and regional levels in Laos. In situations where forest harvesting is being considered on a larger scale (the commercial level as opposed to domestic use only) much more attention needs to be given to both the technical and financial viability of extraction methods. Developing road access and laying out skidding trails to the production forest areas under consideration has to become an essential element of forest planning within such development strategies. If the economics of forest harvesting operations are not taken into account, forest resources are typically over-exploited in the immediate vicinity of roads and rivers, or under-utilized in areas with limited accessibility.

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PROCESSING LUMBER WITH CHAINSAWS: RELEVANCE FOR HOUSEHOLDS IN THE FOREST ZONE OF GHANA

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Introduction

Chainsaw milling, or stump-site production of lumber using a chainsaw, is thought to hold considerable promise as an enterprise among rural communities because of employment opportunities and because it is a way to increase the benefits gained from trees on farms. Chainsaw milling requires a relatively small investment, since the machines are readily available and are inexpensive to buy or rent. A single person and machine can fell, crosscut and mill one or more trees in a day. The machinery is portable and efficient. Chainsaw milling can increase the value of trees on farms by providing a means through which the trees can be readily converted into revenue for the tree owner. Chainsaw milling can also stimulate the local economy through the provision of raw materials (Pasiiecznik 2006). Because small and poorly formed trees can be utilized, chainsaw milling also represents a way to increase the efficiency of conversion of trees into lumber.

However, in Ghana, chainsaw milling activities are currently considered a major threat to the sustainable use of forest resources. There are several reasons for this:

- it is very difficult to regulate this highly localized and widely dispersed industry;
- the government associates chainsaw milling with loss of revenue from the non-payment of tax and royalties;
- chainsaw milling competes with sawmill operations for available resources;
- it is considered to be wasteful due to low recovery and poor quality of produced lumber (i.e., rough, curvy boards, prone to failure, with relatively short lifespan); and
- chainsaw milling is dangerous to the operators (most sawing is done freehand without training or safety equipment).

Chainsaw milling activities became widespread in Ghana in the 1980s when an economic recession caused a decline in lumber production from sawmills. The government attempted to regulate the operations in 1991 by mandating the registration of chainsaws with District Assemblies and by requiring permits for tree felling by District Forestry Officers (Legislative Instrument 1518). But this attempt to regularize chainsaw milling activities failed, with indiscriminate harvesting of prime species, felling of immature trees, and non payment of royalties, rents and other taxes being widespread. In 1997 (Act 547) and 1998 (Legislative Instrument 1649) the government outlawed the production, sale and use of chain-sawn lumber in Ghana. The rationale for this ban was to: 1) allow the Forestry Commission to gain greater control over the marketing of logs and lumber; 2) guarantee a supply of raw materials to local sawmills and the timber industry; 3) protect the wood processing industry; and 4) create jobs within the sector.

The ban on chainsaw milling and its associated lumber trade have been ineffective to date. The majority of the lumber sold in domestic markets continues to be sourced from chainsaw operators. The failure is attributed mainly to corrupt practices within various institutions entrusted with forest management and the control of timber harvesting. However, corruption alone doesn't explain the continuation and expansion of the industry in Ghana. The reality is that there is a deficit of sawmill timber for local markets,¹ the price of chainsaw lumber is low relative to sawmill lumber produced for local markets, there is a lack of employment opportunities in villages in rural areas, and there is a lack of clarity over tenure of trees on farms. (Nketiah *et al.* 2004)

¹ The traditional mills by law (Section 36 of Legislative Instrument 1649a) are obliged to supply not less than 20% of their mill output to the local market. If this law were complied with, the mills would deliver about 120,000 m³ to the local market annually. This represents only 24% of the estimated local consumption of about 500,000 m³ (Coleman 2004).

Illegal logging, including chainsaw milling, is overwhelming the capacity of the forest administration in Ghana. More staff hours are devoted to the control of illegal activities than are available for all other management activities required to sustain the resource base. Chainsaw milling is now associated with much conflict, as various actors perceive the actions of others as impeding their use and control of forest resources. The conflicts are largely between the state (via its implementing agencies), the “recalcitrant” citizens who attempt to access timber illegally, the sawmill industry and the chainsaw millers, all of whom are competing for an ever scarcer resource. It is evident that chainsaw logging and milling is prevalent in West Africa, whether it is legal or not. If we hope to move towards sustainable forest use, we need to better understand the conditions under which chainsaw milling can be made sustainable.

As part of a larger study to determine the governance requirements under which chainsaw logging and milling could be conducted in a socially, environmentally and economically acceptable ways, we conducted a comparative socio-economic study of chainsaw and industrial timber production in Ghana in November and December of 2005. The specific objectives were to:

- identify the costs and benefits to households in rural communities in the forest zone from logging and milling activities and to compare small-scale chainsaw milling operations with large-scale industrial operations;
- characterize the extent of involvement in, and economic reliance on logging and milling by households within various communities in the forest zone; and
- identify the attributes of the households that predispose them to involvement in chainsaw milling for their livelihoods and the attributes of communities that tend to make them reliant on chainsaw milling.

Methods

Semi-structured interviews were conducted with members of households in nine communities in the forest zone. The households were selected from focal communities using a stratified random sampling strategy, where strata were based on household asset holdings (wealthy, middle, poor) using Rapid Appraisal Techniques or interviews with key informants. Sampling was distributed across the three strata, and included respondents representing a mix of ages, gender, and education levels.

Study area

The focal communities were selected to represent the variability amongst communities in the forest zone, particularly in relation to the level of logging and milling activity (both small-scale chainsaw milling and large-scale milling). The following variables were taken into account in the selection of focal communities for the study, as they were thought to influence the prevalence and profitability of chainsaw milling: status of the forest (i.e., protected, managed by the Forestry Commission, managed by communities, farmland); resource endowment or forest quality (i.e., good, moderately degraded and highly degraded); and, presence or absence of a large mill.

Benefits derived from logging and milling activities

When respondents were asked about the benefits they received from timber harvesting and milling, whether large-scale operations or chainsaw operations, the majority replied they

received no benefit. However, the frequency of respondents citing no benefits was greater for large-scale operations (78%) than chainsaw operations (53%). Although large-scale operators enter into a Social Responsibility Agreement with communities, in practice most members of communities are not aware of the benefits it brings (87%). Some community members believe that the Social Responsibility Agreement does not exist (7%), which may result from a lack of direct benefits. Despite this apparent lack of awareness and appreciation of benefits, there is some evidence from the interviews that logging companies have provided facilities such as school buildings, street lighting in communities and market buildings through the Social Responsibility Agreement.

There was regional variability in terms of the perceived benefits to logging and milling operations. Respondents in Ashanti and Brong Ahafo regions were more likely to report benefits associated with large-scale operations than those in other regions. For chainsaw operations, about 70% of respondents in the Brong Ahafo region identified benefits, whereas only 35% and 38% in the Central and Eastern Regions responded positively. The frequency of citing benefits associated with chainsaw operations was independent of the management scheme of the forest area in question (forests managed by the Forestry Commission, referred to as PFC).

When respondents identified benefits, the list of benefits differed for the two forms of logging and milling (Table 1). The principal benefits associated with large-scale operations were sawn timber, wood residues, social amenities, employment and use of logging roads. The principal benefits associated with chainsaw operations were sawn timber, employment and help in land preparation for farming.

Table 1: Percentage of respondents citing specific benefits associated with tree harvesting and milling activities in their local forest

Benefit	Large-scale logging and milling	Chainsaw logging and milling
No benefit	77.7	53.3
Lumber for construction	8.0	29.2
Wood residues	4.6	1.5
Social amenities (roads, schools, toilets)	4.3	0.0
Employment	4	9.8
Use of logging roads	3.4	0.0
Help in land preparation, getting rid of unwanted trees	0.0	6.0

Lumber, in one form or another, was the most frequently cited benefit of both large-scale and chainsaw operations. In addition to identifying lumber as a benefit, respondents were asked where they obtain lumber for building materials, and also were asked to identify any difficulties they faced in sourcing lumber.

The most commonly cited source of lumber for the households interviewed was chainsaw operators (Table 2). Some respondents differentiated chainsawn lumber from lumber acquired from farmlands and seized lumber bought from the Forest Services Division; however, these two sources are ultimately processed by chainsaw operators. Sourcing patterns appear to differ among the regions, with 60% of respondents relying on lumber from sawmills in the Ashanti, compared to 70% relying on chainsaw operations in the Western Regions (Table 3).

The presence of a large mill in the district, however, did not appear to influence sourcing patterns, nor did the management regime in place for the forest (whether managed by the Forest Service Division or the community). Sourcing did depend on the quality of the forest, with respondents from degraded forest regions indicating a greater reliance on sawmill timber (62%), than those from either moderate or high-quality forest regions (38-48%).

Table 2: Sources where households obtained wood for building

Sources	Percent of total respondents
Saw mills	48.5
Chain-sawn lumber	30.6
Farmland	28.0
Seized lumber	2.2
Other	4.4

Table 3: Main sources of lumber for building

Region	Percentage of respondents	
	Saw mills	Chainsaw lumber
Ashanti	64	36
Brong Ahafo	39	61
Central Region	47	53
Eastern Region	46	54
Western Region	30	70

Most respondents said they did not have any difficulty in obtaining wood for construction (Table 4). The main difficulties identified were transportation of wood, fear of arrest and imposition of fines by the forestry service or law enforcement agents, and a cumbersome permit process. The frequency of respondents citing difficulties varied by region (Table 5), and was greatest in Brong Ahafo (61%), where fear of arrest and fines, difficulties with transportation, and a cumbersome permit processes were the main difficulties cited. The Ashanti region had the second highest incidence of difficulties (46%), with transportation constraints being cited most often. Respondents living in districts without a large mill found difficulties in sourcing lumber (52%) more frequently than did those living in districts with a large mill (25%). Only 20% of the respondents from high quality forest areas reported difficulties in sourcing lumber, whereas 58% and 60% from degraded and moderate-quality forests reported difficulties.

Table 4: Difficulties faced in getting wood for construction

Challenges	Percent of total respondents
No difficulty	67.8
Transportation	10.1
Fear of arrest and fines	8.7
Permit process	7.8
High cost of wood	5.0
Scarcity of wood at saw mills	2.0
Permission from land owner to fell and mill for trees on farm	2.0
Scarcity of wood in forest	1.7

Table 5: Percentage of respondents experiencing difficulty when sourcing lumber for building materials in relation to region

Region	Percentage of total respondents experiencing difficulties
Ashanti	46
Brong Ahafo	61
Central Region	10
Eastern Region	39
Western Region	12

Costs associated with large-scale logging and chainsaw milling activities

When respondents were asked about the costs of logging and milling activities to themselves and their communities, a large proportion believed that there were no costs (Table 6). The frequency of respondents citing no costs was similar for large-scale and chainsaw operations, and was comparable across regions. For those households that identified costs, the most frequently cited costs were the same for the two types of logging and milling operations (i.e. damage to their crops, forest degradation and conflicts with operators). Respondents also cited damage to roads through large-scale logging activities as a problem that affected communities. This, however, was not an issue with the chainsaw milling operations.

Table 6: Timber operations imposing costs as reported by households

Costs	Percentage of respondents	
	Large-scale logging and milling	Chainsaw logging and milling
No cost	45.7	48.4
Damage to crops (and livestock)	32.5	40.2
Forest degradation, negative environmental impacts	9.0	12.5
No idea/don't know	7.3	2.0
Litigation	7.0	0.0
Damage to road	5.0	0.0
Accidents with large trucks	4.8	0.0
Conflict, vandalism, breakdown of law and order	0.0	7.6
Accidents with chainsaw operations	0.0	2.3

Extent of involvement and economic reliance on logging and milling operations

About 8% of households interviewed were directly involved in chainsaw milling operations, while about 4% were involved in conventional logging and milling operations. Where chainsaw activity was identified, it was primarily reported as a secondary source of income (only 1 of 15 respondents relied on it as a primary occupation).

For the interviewed individuals who worked in large-scale logging and milling operations, their monthly incomes from logging activities varied with the type of jobs undertaken and ranged between Ghanaian Cedis 100,000 and 1,200,000 (£ 6-70; US\$ 12-140), median 200,000 or £ 11; US\$ 22 per month).

Incomes earned in chainsaw milling activities were comparatively higher than the incomes of the employees from the large-scale logging activities (Table 7). However, income from the large-scale logging operations were on a monthly basis involving relative consistency and security, and therefore may place participating households in a more financially secure position than those whose income originates from chainsaw milling. Average annual income for those interviewees working in chainsaw operations is Ghanaian Cedis 3,645,000 (US\$ 416). This compares to a median annual income of Ghanaian Cedis 2,400,000 (US\$ 275) for those interviewed and working in the large-scale operations.

Table 7: Reported income from survey respondents

Earnings of respondents	Number of respondents	Median Income (Ghana Cedis)	Median income (US\$)
Monthly earnings of respondents from large-scale logging	9	200,000	22
Annual earning of respondents from large-scale logging	9	2,400,000	260
Respondent earnings from chainsaw activity the last year	22	3,645,000	394
Estimated annual income from chainsaw operations as reported	18	2,850,000	308
Reported annual income from primary occupations from those involved in chainsaw operations	18	5,000,000	540
Reported annual income from all households interviewed	293	2,000,000	216

Attributes of individuals working in logging and milling

About 60% of the people involved in chainsaw milling operations were farmers, similar to the percentage of the overall sample. There was no association between livelihood assets and current involvement in chainsaw operations, nor was there a significant association between current involvement and access to credit. Those involved in chainsaw operations were just as likely to participate in formal, traditional or religious associations as those from the overall sample. And they were no more, or less, likely to be involved in local government, to be close to the chief, or close to the assemblyman. When the age distribution of those involved in chainsaw milling operations was examined in relation to the age distribution of the overall sample, it was found to be similar, as was the age distribution of those working in large-scale logging and milling operations. Thus, it can be concluded from the relatively small sample considered here that there is no evidence these two occupations are favoring the young over the old, or any other subset of rural society.

Suggestions for making chainsaw milling more socially sustainable

The majority of households interviewed were broadly supportive of legalizing chainsaw milling operations (Table 8). Their suggestions for making it more socially sustainable included allocation of concessions with associated monitoring established, making employment opportunities more regular, and requiring operators to pay taxes. About 15% were supportive of the ban on chainsaw milling.

Table 8: Suggestions for making chainsaw milling more socially acceptable

Household suggestions	Percentage of respondents
Give concessions and monitor operations	38
Regularize employment opportunities	15
Ban operations but give permits for communities to use	15
Ensure farmers get compensation for crop damage	12
Let operators pay taxes	7
Organize operators into associations	6
Plant trees	5
Provide education to increase livelihood opportunities	5

Conclusions

A large number of rural households in the forest areas surveyed feel that they receive no benefits from large-scale logging and milling operations. Despite heavy reliance on these industries for their supply of local lumber, residents are expecting more. This is particularly true for large-scale operations. Several factors may play a role in influencing rural household views about the industry's failure to meet their expectations. First, it may be a lack of transparency in the procedures for delivering benefits to the communities from forest resources.

Social Responsibility Agreements are negotiated between the timber companies and the local governments, as represented by the District Assembly and the Chief. Where the details of the agreements are not clearly communicated to the members of the community, it is difficult for people to associate benefits with the large-scale logging and milling operations that take place in their forest, even when contributions such as schools, market buildings or street lighting have been funded by the timber companies.

Similarly, revenues that are transferred to local governments through the local Chief from the Forestry Commission as a result of timber sales may not be transparent to the community. The large proportion of people indicating that they receive no benefits from chainsaw operations suggests that if the business were to be regularized, it would be necessary to review the benefit-sharing agreements to ensure that people are aware of the benefits that the community derives from the operations. Lack of transparency in relation to such benefit sharing agreements can result in feelings of frustration over ownership of trees on farms, and may explain farmers' willingness to illegally sell their trees directly to chainsaw operators, allowing them to capture some direct income. Variations recorded in perceptions of benefits from the lumber trade may relate to regional differences in the effectiveness of landowners (i.e., chiefs) in negotiating with the Forestry Commission and industry representatives for benefits.

It is interesting to note that household reliance on chainsaw lumber varied by region. In Ashanti, households were sourcing lumber from sawmills more frequently than in other regions. Although the Ashanti region has a relatively high density of mills, the presence of mills alone doesn't explain the household sourcing patterns. The majority of sawmills produce lumber for the export market and tend to deal with bulk rather than individual or household sales. Most of the saw-mills do not supply the local retail market. Further, the lumber that

is produced by sawmills for local markets can not compete with chainsaw lumber in terms of price (i.e., lumber sawn using a chainsaw is sold at a much lower price than that sawn at a mill). Rather, results suggest that where forest resources have been degraded, households are more reliant on lumber from sawmills than from chainsaw operators. Very few chainsaw firms are operating in degraded forest areas because of the low availability of preferred timber species, and this may explain a heavier reliance on lumber from sawmills.

The transportation of lumber from district or regional markets to villages was frequently cited by respondents as a difficulty faced in obtaining lumber for construction. Although some efforts have been made to encourage the development of local lumber markets, for the most part these efforts have not yet been successful. Difficulties in sourcing lumber appeared to be the most frequent cited problem for households in the Brong Ahafo region, along with transportation difficulties, fear of arrest and fines, and cumbersome permit processes. Variations across regions in relation to the intensity of policing efforts may explain differences in perception. More research is needed to confirm the main factors behind the variation.

The costs of logging and milling operations for rural households appear to be felt more acutely than the benefits. Damage to crops and livestock was cited most frequently, both in the case of large-scale operations and in chainsaw operations. For large-scale operations involving the removal of raw timber “off-reserve,” logs are often skidded over long distances, frequently causing damage to crops. For chainsaw operations, the damage is primarily associated with felling activities.

Negative environmental impacts, including forest degradation, were cited by a large proportion of respondents as a cost of timber operations. Including the felling and skidding damage already mentioned, impacts on the forest resource base are also recognized. Chainsaw operators regularly fell trees that are below the legal size limit, cut and mill tree species from all timber classes (i.e., those with high, medium and low demand), and harvest over-exploited and threatened species. Although more lumber appears to be taken from “off-reserve” sources, the statistics related to Forestry Commission confiscation of lumber suggests that “on-reserve” offences are as frequent as those occurring “off-reserve.”

Conflicts, vandalism and the breakdown of law and order are costs rural households associate with chainsaw milling. This is felt more broadly by the general society in Ghana, and is especially true for people working in law enforcement and forest management. Conflicts are also associated with large-scale operations, though these were identified specifically as being in the form of litigation costs. Many farmers have faced difficulties when taking logging companies to court to get compensation for crop damage. Litigation issues also arise in relation to disputes over the boundaries between different communities’ lands.

Taken together, logging and milling operations employed members of about 12% of the households interviewed. Given that the study was conducted within the forest zone, one might expect higher levels of employment. Those few who are employed by the large companies benefit from job security and a predictable income; however, the numbers of jobs available are few. Large-scale operators have no obligations to employ locally when working in a particular zone. In contrast, survey results suggest that chainsaw operations employed twice as many local people as the large-scale operations. The median income from chainsaw milling was greater, but job security was low and there was high variability in the number of opportunities for earning from this activity. Chainsaw milling is primarily used to supplement income rather than as a primary source of income. Relative to large-scale operations, it appears that opportunities in chainsaw milling are more widely dispersed across forest zones.

From this study it is clear that local communities would welcome policies that ensure a regular supply of legal timber for domestic use. There is also potential for greater commitment from

communities toward sustainably managing existing timber resources, especially if they could experience benefits from effective regulation of the forest resource.

There is desire among some policy makers, politicians, and resource managers to support the legalization and regulation of chainsaw milling, but there is also fear of increased corruption, which has already negatively impacted on the sector. There is a need to understand the nature and dynamics of corruption in chainsaw milling in order to devise appropriate interventions and standardize the industry. Weak forestry institutions currently cannot enforce policies and legislation effectively. Weak social norms lead to forest abuse that goes unpunished by other stakeholders. It is these governance and societal weaknesses that underlie the problems of corruption and illegality in the forest sector, especially with regards to chainsaw milling.

In addition to weak institutions, some policies introduced by the Ministry of Lands, Forestry and Mines may be contributing indirectly to the problem of chainsaw milling and its associated corruption. For example, resource allocations through the timber utilization contract and competitive bidding procedures mean that only registered timber companies have the ability to obtain trees. In both authorized large-scale operations and chainsaw milling there are opportunities for corrupt practices to influence access to the resource.

The current government policy for dealing with the problem of chainsaw milling in Ghana appears to be one of a continuously enforced ban on such operations. This is to be accompanied by the creation of alternative livelihood schemes to absorb illegal chainsaw operators, mobilize chainsaw operators to establish and operate mobile forest mills that are easier to regulate; implement an effective log-tracking system; and strictly enforcing the law banning chainsaw operations. Contrary to this approach, the general public supports lifting the ban, mainstreaming chainsaw operations through re-introduction of limited permits to registered groups of local timber traders and their chainsaw operators, and thus ensuring a consistent and affordable supply for the domestic market.

Logging and milling activities in the forest zone bring a variety of costs and benefits to rural households, which vary regionally. A large number of households are broadly supportive of legalizing and regulating the chainsaw milling industry, with the expectation that controlling the industry would reduce the negative environmental impacts of milling, provide farmers with a mechanism for being compensated for crop damage, and contribute to a consistent supply of quality lumber for local markets. If chainsaw milling is to become socially, environmentally and economically acceptable in Ghana, it will be necessary to address issues related to transparency, corruption, institutional weakness and forest policies related to timber resource allocation.

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CAPTURING OPPORTUNITIES IN FOREST HARVESTING AND PROCESSING TO BENEFIT THE POOR IN PAPUA NEW GUINEA

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Introduction

Papua New Guinea (PNG) comprises the eastern part of New Guinea island, the Bismarck Archipelago, the North Solomons and many smaller islands. Forests cover an estimated 67 % of the land area or 30,601,000 ha (FAO 2005). Much of this forest is inaccessible due to the mountainous nature of the terrain. Papua New Guinea is one of the world's most important reservoirs of biodiversity, containing an estimated 7-8% of world species bio-diversity. There are 15-20,000 species of plants, 700 species of birds and 250 species of mammals within the country, of which many are endemic.

Economic and social indicators

In addition to this wealth of biodiversity, PNG is rich in other natural resources. Apart from the extensive tropical forests and maritime fisheries, there are significant mineral deposits including gold, copper, oil and natural gas. There are



large areas of arable land which could be developed for agriculture and there is scope for an expanding tourism sector. The rugged terrain and high costs of developing infrastructure, however, have hampered natural resource exploitation, while ongoing political instability has undermined investor confidence.

By mid-2006, it is estimated that the population reached 5.85 million, but population density remains low at less than 11 people per square kilometer. Estimates of the adult literacy rate (those over 15 years of age who can read and write) range between 55% and 65%.

From the mid-1990s until the early years of the 21st century, PNG's economic and social development levels were poor. Real GDP remained broadly unchanged from the early 1990s onwards. Activity in the private sector was virtually stagnant and social indicators were deteriorating. In 2003, real GDP per capita was US\$ 650, and had been contracting for a decade. It is estimated that 40% of the population lived on less than US\$ 2 a day, up from 25% in 1996. Formal employment had risen by only 1.5% since 1996. Those living in rural areas were poorer than urban dwellers in monetary terms, but rural people tend to be landowners and ample subsistence opportunities exist for the rural population.

Although most Papua New Guineans are landowners, the focus of international aid in Papua New Guinea has been the alleviation of poverty. The principal development partners are the Australian Government, the Asian Development Bank and the European Union. Within this context, the European Union has taken an interest in natural resource management, particularly in the context of rural development.

With an improvement in global commodity prices, the current outlook is brighter. Inflation is projected to remain at 1-2% annually. The government's Medium Term Development Strategy harmonizes development priorities for 2005-10 with the Millennium Development Goals. The Medium Term Development Strategy seeks to:

- Establish good governance;
- Promote export-driven growth in agriculture, forestry, fisheries and tourism; and
- Accelerate rural development and poverty reduction.

Role of the forest sector

Forest industry plays a key role in the PNG economy, with timber comprising more than 95% of export sales. A majority of forest land is held through customary land tenure by local communities, informally considered to be the landowners. Under traditional management, there has been limited clearing of forested land. Papua New Guineans are diverse in culture with more than 800 separate tribal languages, but their relationship with the land is consistently strong.

The State has negotiated logging permits with customary landowners, allowing large foreign companies to exploit more than three million hectares of the total forest area. Under these agreements, customary land holders expect to receive cash royalty payments, and the communities expect to have roads, aid posts and other amenities built and staffed. In practice, these arrangements have not always worked out well. The gap between expectations and actual delivery has been wide. Logging operations are accused of practicing unsustainable, industrial logging that primarily exports round logs with limited benefits accruing to the communities. Figures are debated and recent numbers are not yet available, but deforestation rates have been estimated at 1.5% (approximately 450,000 ha) per year.

There is an increasing awareness of the damage occurring through unsustainable commercial logging, and communities are seeking alternatives over which they have more control. "Eco-

Forestry”, as community-based forest management is known in PNG, is intended to present local communities with such an alternative. The objectives of Eco-Forestry are:

- long-term conservation of the forest resource and eco-systems by establishing sustainable natural forest management; and
- provision of sustainable income to landowners.

Eco-Forestry management practices allow communities to utilize their forest resources in a modest, sustainable manner to enhance their incomes and living standards, while ensuring that their forest resources continue to be available for future generations. Methods of utilization include cutting, milling and further processing of timber on a selective basis. Eco-Forestry may also include replanting of trees in depleted areas, collection of non-timber products, and development of ecotourism. The essential principles of Eco-Forestry activities are that they depend on local forest resources, they are sustainable, they improve local living standards and they are under the control of the local people.

Islands Region Environment and Community Development Program

The European Commission (EC) provided a significant boost to the practice of Eco-Forestry in PNG by supporting the Islands Region Environment and Community Development Program (IRECDP), from 1995 onwards. When the IRECDP closed in 2001, it had achieved a number of important results. Thirty-two communities had established small-scale saw-milling operations that brought significant benefits, including improved houses, newly constructed schools and other public buildings, and improved income from timber sales. Some communities invested part of the proceeds of their saw-milling enterprises into other productive activities within the communities. The program also promoted the Eco-Forestry movement among a number of non-government organizations within PNG.

However, the IRECDP suffered from a number of weaknesses. First, the program was nominally under the administration of the Department of Environment and Conservation (DEC), which had very limited capacity for implementing or monitoring activities. Thus, there was no government framework within which the principles of Eco-Forestry could be learned, supported and replicated. Second, the program operated primarily in the islands and had little impact on the mainland, though later projects were established in Madang and Morobe. Third, certain aspects of the methodology turned out to be unsustainable.

This lack of sustainability can be attributed to the program, not the communities, retaining responsibility for the logistical arrangements of selling sawn timber, and delivery of fuel and spare parts. When IRECDP support faltered, the communities had not yet developed sufficient capacity to assume management of these aspects of their businesses. As a result, production levels declined rapidly after 2001.

The Eco-Forestry Program

The Eco-Forestry Program was intended to build upon the achievements of IRECDP. According to the financing agreement, the Eco-Forestry Program was expected to facilitate “a systematic introduction of Eco-Forestry in Papua New Guinea” at the national level, and at the local level it was to “improve the Eco-Forestry approach developed by the IRECDP.”

Like IRECDP, the Eco-Forestry Program was originally designed to be managed from Kimbe, West New Britain and to continue for five years. It included three components: the field and marketing components were both based at program headquarters, while a policy component was based in Port Moresby. Unlike IRECDP, the Eco-Forestry Program has been administered by the Forest Authority of PNG, with a total budget of Euro € 7.5 million (approximately US\$ 10 million).

Purpose and overall objective of the Eco-Forestry Program

The stated purpose of the Eco-Forestry Program is to enhance the economic welfare of the people of PNG through community-based sustainable forest management. The program aims to enable landowners to benefit sustainably from their forest resource. The program outlines eleven procedures to ensure that resource management meets certain basic standards for sustainability of the forest resource. The program aims for the community to be able to use the benefits generated through forest management to develop other enterprise options. However, the question arises on the sustainable management of forest resources by succeeding generations, as a 20-year cycle of harvesting is traditionally required.

According to project documentation, the Eco-Forestry Program and its predecessor, the IRECDP, have demonstrated that community-based forest management can enhance the welfare of communities in various ways. These include self sufficiency through the construction of aid posts, class rooms, and meeting halls as a result of income derived from community-owned and milled timber. Income from the sale of timber has even been used to subsidize the health expenses of community members. Funds generated by the program activities have also been used to fund the development of income-generating agricultural enterprises, such as coffee, cocoa, vanilla and oil palm.

Project documents recognize that the sustainability of the above forest management programs remains inconclusive. Traditional forest management and utilization practices are, in theory, low impact. Harvest cycles are forty years or more. What typically happens is that as operations move further from the more accessible routes, the work involved in extracting timber becomes more labor-intensive and eventually ceases. By the time this happens, the communities have often attained most of their immediate objectives of becoming cash-crop producers, thus relying less on timber extraction. Consequently, the community feels less urgency to sell its forest resources, which are then better conserved and protected against exploitation by outsiders.

Results expected compared to actual experience

Below are the six expected results from the Eco-Forestry Program, with narrative on what the actual experience has been.

1. Relevant actors are aware of the ecological and productive potential of the forest resources.

Communities seem to have adopted the ecological standards of Eco-Forestry readily. Expectations of the productive potential of forests are high, but given the size of the resource available, the expectations can usually be met. In the projects undertaken by the Eco-Forestry Program, the sustainable production cycles actually exceeded the capacity of the community to exploit the resource.

It should be noted that the criteria and indicators for sustainable forest management are often not sufficiently monitored in large timber projects in PNG. There has been considerable work done on assessing the sustainable harvest cycles of PNG forests, but this knowledge has yet to be incorporated into large-scale logging management schemes. The evidence suggests that PNG forests are not particularly productive, and that harvesting cycles should be longer, or harvest rates lower, than in the neighboring Indonesian forests of Borneo, for example. This issue has not been adequately addressed by the Eco-Forestry Programme to date, but it is generally perceived that the relatively low volumes removed under the Eco-Forestry Programme are in line with sustainability principles.

2. Development, testing and promotion of economically, environmentally and socially sustainable options for Eco-Forestry.

The program developed six Eco-Forestry options. Two of these, the Walindi and Multifor schemes, relate to the original objective of managing the natural forest. The other four, reforestation (REFOR), ecotourism, downstream processing and non-timber forest products (NTFP), were peripheral options that were addressed, but never developed or tested in a meaningful way.

The Walindi scheme has experienced problems with financial viability due to limited available resources, factors relating to the level of education and literacy of community members and difficulties resulting from cultural differences.

The Multifor scheme was developed to address some of the financial shortcomings of the Walindi scheme by increasing available forest area, thereby increasing the supply of timber which would then allow mechanical harvesting and extraction. The Eco-Forestry Program has implemented two Multifor projects. The first involves the Ruti community in the Baiyer River Valley, Western Highlands Province. In this case, the community secured two semi-portable mills that were placed on site with the assistance of the program. They also acquired a D7 bulldozer, tractor, bench saw and a 250 KVA generator to power downstream processing operations. Training was conducted in both the field and classroom. A forest inventory was completed, and a Forest Management Plan was developed.

The second Multifor-based project is a cluster of Walindi-based projects in West Pomio, a remote area of East New Britain. Most of these projects were originally developed under IRECDP. The clustering strategy is an attempt to consolidate timber output to meet the requirements of export sales orders. In the past there were problems with the transport of timber to sales points. To address this, buffalo were introduced in 2005, which significantly improved transportation arrangements. Buffalo have since been introduced in other Walindi projects, and their use has been successful where the animals are used and cared for properly. This is a significant advance over previous technology, and a major achievement cited by the program.

On paper, the Walindi and Multifor schemes are financially viable, but this viability has not always been demonstrated in practice. However, the wider social and economic benefits experienced (service buildings constructed, clean water supplies built, long-term conservation, capital for alternative agriculture, etc.) are seen to far outweigh the marginal financial viability.

The other four options have not been developed by the program, but outsourced to other stakeholders. The development of ecotourism is a branch of the tourism sector. The forestry sector's contribution is generally the management of natural forests and foresters often are not trained for tourism activity management. This aspect of the program was therefore outsourced to Maniho Na Dari, an NGO involved in the promotion of ecotourism in PNG.

The reforestation project, including establishment of nurseries, developed from trainings conducted on community nursery development in 2004, involving communities from the Highlands and Mamose regions of PNG. The medium- to long-term viability of this activity is still uncertain. There is a need to establish a stream of benefits to the community from this model before the planted trees mature, which is not expected for at least 15 years. Waiting for 15 years before any income can be realized is for the most part unsustainable at the community level. Present models which involve compensating the community to plant trees on their own land also have not been successful in the past. Carbon sequestration payments linked to reforestation provides a possible avenue for income generation and should be explored further by the government as a priority. If this is seen as a viable option, a key task is the establishment of institutional arrangements for benefit sharing.

Downstream processing is a good option for PNG, but not for community-based timber producers who do not possess adequate processing capacity. This should be developed at a medium-scale level (Multifor), where professional wood manufacturers have the capacity to produce high-quality certified timber products for export.

Using NTFPs for income generation is another option. Eagle wood and other forest products provide significant opportunities. These are currently being undertaken in specialized projects. The private sector could assist, especially if the opportunity for profitable returns exists. It should also be understood that there is the potential for over-exploitation of these products if production is not sustainably managed.

3. Standards for Eco-Forestry are further developed.

An Eco-Forestry policy for PNG was produced through a long participatory process. This was necessary, as the PNG Forest Policy and Forest Act developed in the early 1990s do not address the community management of forests. The Eco-Forestry policy has been approved by the National Forests Board, but not yet endorsed by the Minister of Forests for consideration by the National Parliament. Consequently, a code of practice has not yet been drawn up and institutional arrangements still need to be put into place. It is hoped that the Eco-Forestry policy will be enacted by parliament and then actively implemented.

4. Eco-Forestry integrated in the training programs of existing institutions.

The Eco-Forestry Program developed sawmill and chainsaw manuals to support training of project personnel in the field by field trainers. Some 455 people were trained as trainers. These field trainers are a significant resource who will be able to support projects on a commercial basis.

The Small Business Development Corporation (SBDC) has developed two training modules, including training manuals specifically targeting small-scale forest enterprises. A cadre of 17 certified trainers has been trained who can be hired for instruction. So far they have delivered nine courses. The marketing office has worked in conjunction with the Eco-Forestry Program business development officer to achieve this result, and it is cited as a major success of the program.

5. Landowners can market their products from Eco-Forestry.

There have been mixed results on this point. Landowners can now market their own products, but improvements could still be made to market products more efficiently. Due to the mixed objectives of the marketing component, landowners are confused over the costs of marketing and are far from competent in selling timber. Much energy goes into trying to maximize short-term profits, rather than developing sustainable long-term trade for the benefit of all

involved. Trust between landowners is in short supply, and the Eco-Forestry Program's role in this respect has been questionable.

There is a small group of overseas buyers who know the PNG market and will buy any certified timber produced of reasonable quality. Producers could sell as much timber as they produce, but they are currently not meeting even minimum quality standards, nor are they supplying finished products in sufficient quantities to develop a steady trade.

Other aspects of marketing have received more attention, such as promoting lesser-known species or developing newsletters to inform potential buyers. Unfortunately, based on results to date, it does not appear that these efforts are directly helping the producers. It also appears that these activities have been poorly targeted, with many projects initiated but few completed or effectively followed through. This is at least partly due to the slow performance of the field component, which only started to produce timber in late 2004.

6. Community development activities supplementing Eco-Forestry projects are encouraged and supported.

Good progress has been made on supporting community-based forest businesses. Training modules have been developed, and this training could easily be mainstreamed through the use of business schools and certified trainers. The same approach is being developed with sawmill trainers. Trainers are already in the villages and various projects have led to partnerships with trainers who supervise production while taking a percentage of the profit as payment for ongoing training. Sustainable forest management is more difficult to teach and training in this has been less developed to date. This management knowledge needs to be incorporated into training modules and tested. Other areas requiring more training and capacity building are enterprise management and marketing techniques.

The communities themselves have ensured that their immediate needs have been met. Aid posts, classrooms, village halls and churches have been built. The secondary development of agricultural enterprises can also be seen as a positive result. Much remains to be done, but a base has been established from which a new institutional framework could be confidently established.

Summary of observations

- The program has contributed to its objectives in that some communities are receiving benefits from their own forest resources, and in general their well-being has been enhanced by their involvement in Eco-Forestry projects. The major contribution of the program has been to demonstrate the potential success that communities with a sufficient quality of resources and commitment can achieve through the Eco-Forestry approach. There is also no doubt that an indirect benefit not listed in the project documents is also being achieved. Deforestation is simultaneously being mitigated through this approach. Personal communication with those active in the field suggests this, but hard figures comparing vegetation changes in Timber Authority (TA) areas and community-controlled forests are not currently available to confirm this.
- The Eco-Forestry approach is not intended to produce financially significant results at the national level. In this respect, it is not a substitute for industrial logging in terms of contributing to the national treasury. The immediate impact of wholesale adoption of Eco-Forestry by communities would result in a deficit in the national accounts. However, if this analysis accounted for the costs of resource depletion, the balance might weigh

in favor of Eco-Forestry as a long-term strategy over industrial logging as it is currently being practiced in PNG.

- Industrial-scale logging in PNG often does not bring significant benefits to landowners because prices of logs are often manipulated and kept artificially low by deceit and political compromise. While traditional financial analysis might favor industrial logging over Eco-Forestry, the constant and sustainable stream of benefits provided by Eco-Forestry seem a preferable option from the perspective of landowning communities.
- It is difficult to claim that the Eco-Forestry Program is generating impacts at the national level. While real results are emerging at the local level, the widespread adoption of the Eco-Forestry approach is some time away. The impact is currently localized and limited in time, as some benefits appear to exist for a limited period until the community becomes wealthier and takes up other cash crop alternatives to Eco-Forestry. However, forest resources remain intact and in the hands of the community, thereby supplying ongoing benefits to many stakeholders both within the community and beyond its borders.
- There continues to be resistance to the advance of Eco-Forestry as a practical concept. Large-scale logging companies have employed consultants to undermine the value of benefits perceived by the public. So far this misinformation campaign has been successful, in that the establishment of the Eco-Forestry Branch within the PNG Forestry Administration has been delayed - despite board-level approval. Supportive elements within the PNG Forestry Administration are struggling to overcome this resistance.
- The program has coordinated with other stakeholders, notably NGOs, to promote the benefits of Eco-Forestry, but this effort is being undermined by others who do not wish to see Eco-Forestry succeed.

Conclusion

Participation in Eco-Forestry projects engenders self-sufficiency and empowers communities by enabling them to derive benefits and services from their own forests as well as assuming responsibility for forest management. Indirect benefits of Eco-Forestry include aid posts, and classrooms, capital for agricultural investment and cash for supplies.

Eco-Forestry potentially offers rural communities a viable alternative to industrial logging. Eco-Forestry also meets the objectives of the government's Medium Term Development Strategy and is strongly supported by various sections of government. However, there is also strong resistance within the forest industry and their proxies in government.

The Eco-Forestry Program has produced some good examples of activities that provide a stream of economic and social benefits to communities, especially in remote areas. On the other hand, while there is evidence that Eco-Forestry can be financially viable, further evidence and experience is needed to reaffirm this. The evidence from early projects is inconclusive, but suggests that the projects do deliver a stream of benefits to the communities and provide a viable alternative to industrial logging. There is also emerging evidence that Eco-Forestry activities are being used to build capital, to launch agricultural enterprises and to derive income from land clearing.

Challenges do remain, however. The Eco-Forestry Program has led to an Eco-Forestry policy, but not, as yet, a viable institutional framework. Furthermore, despite early successes, including a proliferation of good ideas and awareness-raising around Eco-Forestry products, the Eco-Forestry Program Marketing Component failed to successfully increase the capacity of the community to organize and manage the sale of timber at the community level.

The Eco-Forestry Program has been effective in developing capacity in communities and has probably played a key role in raising awareness of Eco-Forestry and the potential of Eco-Forestry in the country, although this process has not necessarily been efficient. Ongoing capacity building is needed.

The roles of various stakeholders beyond the program will remain important. The private sector will play a key role in the further development of community-based forest management. International buyers are already buying certified sawn timber from Eco-Forestry Program producer groups. They would buy many times what is presently available if supply and quality were more reliable. NGOs are already playing a significant role in Eco-Forestry development. They will continue to do so despite a precarious operating model and limited capacity. The European Union and other donors benefit from carbon sequestration and conservation derived from improved natural forest management and increased forest resource security, which Eco-Forestry provides to community-owned forests.

Community reforestation schemes show promise, but unless a stream of benefits can be generated immediately, they are unlikely to be supported by the communities themselves in the medium term. In particular, reforestation schemes funded under the carbon sequestration component of the Clean Development Mechanism of the Kyoto Protocol may provide a vehicle to mobilize income for reforestation schemes, increasing their viability.

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SECTION

Accessing markets



FOREST TO FINISHED FLOORING FROM THE FAMILY FARM

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Introduction

At Timbergreen Farm near Spring Green Wisconsin, USA, our family business engages in all aspects of future-oriented forest management: timber harvesting, wood manufacturing, and direct marketing of our annual harvest as finished flooring installed in our customers' homes. Installed and finished hardwood flooring is now selling for an average of US\$ 10,000 per 1,000 ft² (US\$ 10,000 per 100 m²). This earns us 1,000 times the commercial stumpage rate for small diameter trees, 100 times the stumpage rate for low-grade sawtimber, and 10 times the stumpage rate for our best trees.

The annual growth of our 200 acre (90 ha) forest is about 400 board feet of sawn timber per acre - 4 times the average for our region. In addition, Timbergreen Farm's harvests yield twice the usable products of a typical commercial logging operation. Our potential annual harvest could produce over 2 acres (1 ha) of installed flooring, earning us an income of over US\$ 4,000 per acre each year (US\$ 10,000 per ha), and we could support one full-time worker for every 40 acres (18 ha) of our forest, if we chose to fully utilize our annual growth. We have found that wood is the perfect fuel for small business.

My passion is to teach other forest owners that: a) their timber is very valuable; b) forests can produce a good annual income; c) there are simple alternatives to industrial practices; and d) forest owners can control their own small forestry business - if they choose to do so. The following ideas may be "seeds" to help change local methods and enhance profit to small businesses in the forestry sector.



“Full Vigor Forestry”

I describe Timbergreen Farm’s forest management program in my book, *“Full Vigor Forestry - Sustainable Forest Management from the Forest Owner’s Point of View.”* We work to encourage fully stocked stands of vigorous, high quality trees that produce an annual harvest. The best ideas from the Dauerwald system of natural forest management (Schabel and Palmer 1999), and the Native American Menominee Tribal Enterprise Forest here in Wisconsin have been used to maximize the many benefits our family gains from the forest. Another guiding principle in developing “Full Vigor Forestry” was to do just the opposite of what I learned was business as usual on private lands in the U.S. timber industry.

In “Full Vigor Forestry”, nearly every tree has high value and increasing species diversity is a key goal. Demand for wood products does not affect decisions relating to the harvesting of timber. We have learned to “watch nature” and harvest just the natural output of the forest. Timbergreen Farm’s most popular product is mixed-species character-grade flooring. Each installed floor is custom blended for the customer, but to be sustainable, we use only a mix of species and the specific pieces of wood. Natural succession and natural regeneration are encouraged. The gentle stirring of the forest through selective harvest encourages regeneration. This natural seeding is so effective that there is even a need to continually thin young trees to prevent over-crowding. The future composition of the forest is somewhat controlled by encouraging the growth of preferred small trees.

We view the forest as a living solar energy collector. A healthy, full-arrayed tree canopy catches available sunlight and converts the sun’s energy into wood. We see also each tree as a living solar energy collector. Hardwood trees are shaped like a funnel. Conifer trees have the cone-shaped funnel upside down, collecting the light on the sides of the crown. A tree with a large “funnel” crown exposed to the sun can grow quickly, whereas a slender tree with a smaller leaf surface will grow more slowly. Our goal is to have trees growing at a rate of ¼ inch to ½ inch (6 mm to 12 mm) in diameter each year. A crown width that is about one-third of the tree’s height is optimum for deciduous species. For conifers, a crown width to tree height ratio of one-to-four seems optimum.

Sunlight is the main requirement for tree growth, followed by water, and soil nutrients. We control the amount of these ingredients each tree gets by controlling tree spacing. We start with a tree spacing guide that is developed from the crown/height ratio. Spacing is then fine-tuned by observing individual tree-diameter growth. Maintaining vigorous diameter growth is a key goal of Full Vigor Forestry. A small annual harvest keeps the forest canopy intact and at maximum production. This produces much more timber than does a heavy harvest every decade or two.

Common sense forestry is understood and controlled by the forest owner

Forest management is simple, similar to growing a vegetable garden or an agricultural crop. Thinning and weeding are common-sense principles most people can relate to. The basics of forest management can be taught in one day. Trees are primarily affected by the other trees surrounding them. We manage a small group of trees by thinning and weeding, move on to another group, soon leading to the effective management of the whole forest. Tree-diameter growth determines the amount of thinning that is needed. We have demonstrated that all species, including our dominant oaks (*Quercus rubra* & *Quercus alba*), respond to release and can be selectively harvested.

When choosing to harvest timber, the Full Vigor Forestry motto for the last 20 years has been simply: “Take the worst first”. My German teachers have a similar phrase: “Harvest the lesser tree”. Every tree has many values: aesthetic, wildlife habitat, stand diversity, resource protection, regeneration potential, wood products, etc. When comparing two trees that are competing, a forest manager assigns value to each tree, taking into account all the different contributions of each. The lesser-value tree is then harvested, allowing the best trees to grow and regenerate for the future.

Timbergreen Farm’s annual harvest potential is roughly about 400 board feet of sawn timber-sized trees plus another 100 board feet from small-diameter trees per acre. This is the volume of one oak tree, 24 inches (60 cm) in diameter and 80 ft (24 m) tall. The farm could produce 500 ft² of flooring per acre each year (100 m² per ha). Normally, we would take several smaller trees of a variety of sizes per acre, always taking inferior trees first. A forest growing under full “Full Vigor Forestry” principles will produce logs of all sizes, from 6 inches (15 cm) diameter inside the bark, to 36 inches (1 m) diameter or larger. We have no maximum size or age for a good tree, they are allowed to grow as long as they maintain their vigor.

In the process of restoring a typically high-grade forest to “Full Vigor”, most of the harvesting will be of low-value species and small-diameter, damaged, and deformed logs that loggers have rejected in the past. Often, 80% of the harvest will be logs of less than the 12 inches (30 cm) diameter. Small logs are relatively easy to handle and small machines are available for each step. We have developed our skills in sawing these small logs into lumber and producing high-value mixed-species character-grade flooring. Small-diameter logs have small knots and produce an interesting character that is very attractive to niche-market consumers. There is high lumber over-run when sawmilling and very little waste when making flooring. We can earn nearly as much from commercially worthless salvaged logs as from our good timber. All trees earn us about US\$ 10,000 per 1,000 board feet or 1,000 ft² of flooring (US\$ 10,750 per 100 m²).

We have built an extensive eight mile (13 km) road and trail system through the forest that allows us to carefully harvest any tree on the property any year. No good tree is wasted if it dies or blows down. The trail system makes the whole property more enjoyable for the many people who hunt, trail ride, hike, train, and work here.

Felling and arthroscopic logging

Timbergreen Farms selectively harvests up to one tree per acre each year using “arthroscopic logging” techniques. When the land is family-owned and the forest directly provides family income, damage to the resource cannot be tolerated. Directional felling methods taught by Soren Erickson from Sweden are used. Safety for the feller, accuracy and control of felling, and minimizing damage to the butt log all are important elements.

There is an incentive to maximize the use of harvested trees. Stumps are cut as low as possible, partially rotten and hollow logs, crooked and bent logs, dead logs (often oak logs that have been dead for 5 years are still sound, and spalted maple is actually more valuable than white wood), and small diameter logs are also processed. Crotches and sound burls are sawn and dried for highest value use.

Trees are pulled to the trails using a fetching arch and a radio-controlled winch mounted on the farm’s 55-horse power 2WD farm tractor. We constantly revive “old technology” while adding modern aspects. The average skid to a trail is less than 100 ft (30 m). A prehauler picks up the logs piled along the trail and carries the logs out of the forest, directly to the sawmill. The average distance from stump to sawmill is ½ mile (1 km). To avoid damage to residual

trees and regeneration, we never drive a machine off the trail network. Also, machines are never driven on the trail if the ground is soft.

On-site manufacturing

The annual harvest from Timbergreen Forest is processed into finished products on-site. An electric WoodMizer LT40 sawmill, a band resaw, and a circular two-saw edger are all housed under one roof. Methods for efficiently milling the high percentage of curved logs and small-diameter logs have been perfected. Straight oak logs are usually quartersawn to get an attractive and stable grain pattern. Timbergreen Farm's goal is to transform each piece of wood into its highest value use.

Sawn lumber is immediately stacked on stickers in one of the pre-drying chambers of our solar cycle kiln buildings. The ends of the boards are protected from over-drying, rain and sun is kept off the wood, and the high roof overhead accelerates the natural air flow to pre-dry the lumber from 90% to 12% moisture content in 3 months.

Once the lumber is fully pre-dried, solar energy is used to heat the air in the kiln chamber to dry the wood to 6% moisture content in one more month. The farm's three solar cycle kilns collect 1.5 million BTUs of free heat on a sunny day, and can operate at 80°F (45°C) over the outside temperature. Only a small amount of electricity is needed to circulate the hot air in the kiln chamber. The daily heating cycle naturally equalizes the moisture content of the lumber each night so steam conditioning is not needed at the end of the drying period. This produces superior-quality lumber and makes the kiln very inexpensive and simple to build and operate. A solar cycle kiln has four main parts: a clear insulated window; a black metal collector surface to heat the air; fans to circulate the hot air; and an insulated wood chamber. Many local building materials can be used to build these kilns: wood; greenhouse materials, concrete blocks, and straw bales. The unique design for the solar cycle kiln developed by Timbergreen Farm is now being used in many countries around the world.

The farm's century old, 100 ft (30 m) long dairy barn has been remodeled to accommodate the business. Upstairs in the hay loft is an insulated and humidity-controlled lumber storage room. Wood is stored at 6% moisture content so that it can be used immediately. Some excess kiln dried lumber is sold to area woodworkers, but the priority is to sell most of the wood as higher value manufactured products.

Downstairs is a workshop where a variety of wood products are manufactured. Basic woodworking tools and a Swedish-made Logosol 4 head molder are used to make high-value merchandise. Flooring is the central source of income, but custom-made glued-up wooden countertops, stairways, millwork, furniture and gifts add to our sales. When making flooring we can use pieces of wood as small as 1 inch x 3 inch x 12 inch (25 mm x 75 mm x 300 mm). When making wooden pens and glued-up cutting boards, even smaller pieces can be used. Scraps are used for fuel. Every aspect of wood manufacturing is controlled, keeping it as simple as possible. Carefully selected tools allow the farm to "turn straw into gold".

We eliminate brokers and middlemen - selling directly to customers

The key to Timbergreen Farm's success is direct marketing to customers. The retail sale produces the highest profit of any of the steps and more than justifies all of the hard work of manufacturing wood products. The retail profit is about US\$ 2,000 per 1,000 ft² (92 m²) of flooring. This is also the easiest and safest step of the entire process.

Every floor that we install becomes another showroom for us and the happy customer becomes voluntary sales staff. Our customers sell the next floor for us! New business is attracted with almost no cost for advertising or retailing. The farm receives a lot of attention in the media, generating additional new business with no advertising costs involved.

Nearly everyone uses wood products everyday. We see every house as a potential project and every person as a potential customer. People prefer to buy from a local producer as compared to the big building supply stores.

One third of the retail cost of wood products in the U.S. is attributable to transportation costs. This is about US\$ 3,000 per 1,000 ft² (100 m²) for flooring. Timbergreen Farm is able to minimize hauling costs and capture this additional revenue. Generally, the wood is trucked once, from the workshop to the customer's home, usually during the daily commute to work. Most of the flooring installation jobs are within an hour's drive of the farm. (50 miles or 80 km) Installation is the most fun and profitable step.

We learned how simple it is to install flooring when we built our own log home eight years ago, and we have been selling installed flooring ever since. When a molding machine was purchased four years ago and the entire process from forest to finished flooring was controlled, our costs went down considerably, our profits went way up, and our enjoyment of the business skyrocketed too.

It is easy to sell the farm's flooring and other wood products directly to customers. We have advantages in this approach over a wholesale market where you are competing with big industry. We guarantee our work and wood, and since we are the producer, the consumer's confidence is high that we will do what we say.

Value-multiplied manufacturing at Timbergreen farm

How we earn US\$ 10,000 per 1,000 ft² (US\$ 10,750 per 100 m²) of flooring:

Activity	Time spent	Value added
Harvesting	2-5 hours	US\$ 250 per mbf ¹
Sawmilling	3-5 hours	US\$ 250 per mbf
Kiln Drying	4 hours	US\$ 250 per mbf
Tongue and Groove Flooring	10 hours	US\$ 1,500 per mbf
Floor installation	80 hours	US\$ 7,000 per mbf

¹ mbf refers to 1,000 board feet

Other benefits from the forest

My father, my partner, and I each work part time in this business, though our forest's growth would support six full-time workers. Our family gains benefits from the forest in addition to timber income. We operate a native wildflower nursery to help other forest owners reintroduce natural plants that have been destroyed by overgrazing. We produce shiitake mushrooms on small-diameter logs coming from logging residues and timber stand improvement thinning. Wild mushrooms are collected from the forest. We lease most of our land for wildlife hunting, earning almost enough to pay the property taxes. We also harvest deer meat for our own consumption. The extensive trail system makes all areas of the property accessible for recreational use by family and friends.

We burn fuelwood to heat two homes and provide firewood to our neighbors. We are currently trying to find a practical method of turning our waste sawdust, planer shavings, slabwood, and harvest scraps into usable and exportable energy. Possible products being considered:

- wood to power a steam engine or steam turbine with a generator to make electricity
- wood gasification to power an internal combustion engine with a generator to make electricity
- bio-digestion of sawdust and chips, followed by distillation of ethanol - within the industry, the leading idea today.

Business summary

- We own our wood until it is installed in the buyer's home.
- We focus on making high-value products, not producing large volumes of wood.
- We market timber according to the natural output of our forest, not industry "demand".
- Our priority is to market locally, but our website lets us sell to the world.
- As forest owners, we are in full control of our forestry business.
- The market is vast for direct sales to customers; most buyers prefer it.

Why I developed "Full Vigor Forestry"

Being the first consulting forester to ever advocate for the small woodlot owners in the region, I was overwhelmed by thousands of sad stories of how timber owners had been "ripped off" by timber buyers. I found a timber market with no competition, no information, and no significant government marketing assistance available to forest owners.

As a forester and forest owner, over the years I participated in government forestry programs and worked within the conventional timber industry. What I learned in college about formal inventories and complicated harvest plans for long-interval harvests just did not work on small woodlots. Every effort failed to produce responsible and profitable forest management on small private forests. Only a small percentage of woodlot owners in the U.S. even try to manage private forests today.

Eight years ago a third generation German forester visited me. After driving 40 miles (65 km) from the airport to Spring Green, Dr. Ingo Grebe noted, "I see that you don't manage your timber here." (Two years ago I visited Germany and instantly understood the difference

between German industrial forestry and U.S. high-grade forestry). Americans don't value their forests as Europeans do. It could be said that U.S. forest owners have low "forest-esteem". The reasons became clear talking with local forest owners: the prevailing timber market is a horrible deterrent to practicing forestry on private lands.

Why forest owners don't manage - the underlying reasons

Timber prices are too low to make forest management profitable. The U.S. timber industry is a US\$ 300 billion per year giant. Everyone in the industry makes good profits, except for the forest owner. Forestry will never be sustainable if the producer is not being adequately rewarded for his or her efforts and investment. Timber prices at mill yards are controlled by supply and demand, and are so low that timber buyers are pressured to minimize what they pay the forest owner just to stay in business.

In rural America, the daily market prices for many agricultural crops are broadly announced, but there is no regular or standardized market information system. Every timber sale is the result of a negotiated price between an experienced buyer and an inexperienced landowner. Every attempt to provide meaningful price information to forest owners has failed and reported prices are too low to be profitable. Variations in grading and scaling standards make it difficult for the forest owner to interpret what price information is available and appropriate.

Logging equipment is becoming larger and more expensive. Heavy harvests are therefore needed to make a profit for the logger, and the expensive machines often must be operated even in bad weather to make the payments. The timber industry accepts damage on private land as normal and necessary to feed the mills with a steady supply of wood.

Theft and fraud are common and usually ignored or covered up. Investing in forests appears excessively risky when the likelihood of theft is great.

Most forest owners in north central U.S.A. do not respect or eagerly deal with foresters. The profession has failed to bring about significant sound forest management in much of the United States. The average forest owner ignores their timber, and then deals directly with a timber buyer when enough mature trees are present for a harvest - where just the good trees are taken.

Professional foresters typically tell forest owners that they are not qualified to manage timber. The message is often conveyed as, "Only a professional can write a management plan or mark timber." Technical language and industrial practices overwhelm most individual landowners.

Foresters cannot act as brokers for landowners while simultaneously serving as "procurement officers" for industrial mills without facing serious conflicts of interest. Feeding the big mill with cheap timber becomes their overriding priority. Consulting foresters who "work for landowners" in reality are often more loyal to the big mill, not the forest owner - as the forester's income is tied to future sales to the mill and a simple forest owner is expendable. Foresters have compromised due to the steady pressure from the big mills to work in ways that increase industry profitability.

There have been limited alternatives to the traditional timber market system which is dominated by large corporations. A few forest owners have learned to make the best of a bad situation, but the market generally discourages sound forest management on small private forest ownerships.

A new marketing alternative

At Timbergreen Farm, we have developed a new and separate timber market that encourages and rewards sound forest management on small forest holdings. One common question is whether the market exists for other forest owners to adopt our successful model. We have never been afraid of competition from other forest owners, or worried that we would saturate the market with our good wood, driving down the price. The opposite is true – forest owners need strength in numbers to control the timber market for their advantage, not the benefit of the big corporations.

Forest owners must realize that when their timber is harvested, the finished products can be sold in the retail market directly to customers. A choice exists between selling their trees to a timber buyer and letting the industry make 99% of the money, or controlling the marketing of their wood. Most indications are that customers would prefer to buy directly from local producers that they know, rather than some faceless retail outlet in the city.

Cooperative business ventures

To enhance forest management it is proposed to initiate community-based, value-multiplied cooperative businesses. Our goal was to control the marketing of our own timber, capture middlemen's profit, and pay professional loggers and forest owners fairly.

So far in the U.S., efforts to establish “Sustainable Woods Cooperatives” have been blocked. The few sustainable forestry cooperatives that still exist in the Midwest of America have largely been steered by the professional foresters interested in instructing what forest owners are “supposed to do”; holding educational field days featuring “expert” foresters, attending inspirational walks in the woods, and holding meetings to talk about group marketing of trees into the traditional timber market.

Another great idea is co-opted

Timbergreen Farm was the first Forest Stewardship Council (FSC) certified private woodlot in the Midwestern U.S. and Timbergreen Forestry was the first FSC-certified resource manager in the region. Upon receiving certification, we were immediately flooded with calls from all over the world that wanted to buy shipping container-load quantities of “top-quality” FSC-certified wood at “rock-bottom” prices. Based on this experience, we found that FSC certification was too complex, expensive and ineffective, and that it actually discouraged good forest management on private woodlots.

At Timbergreen Farm, we now simply tell our own story in our local community. We show customers how we work with wood and help them become discriminating consumers. We find that this is much more effective for our business than paying for a global eco-label.

Wood - the perfect FUEL for small business

The following are my recommendations for forest owners and loggers to responsibly manage the forest in a profitable and sustainable manner.

Organize a business to meet the needs of the family and community. Create new and separate markets for high-value wood products through direct sales. If no direct marketing opportunities exist in the area, products can be shipped to metropolitan areas. A producer-owned factory outlet store may be one option. Finished products have been traded for thousands of years. Today it is much easier than ever via electronic communications technology. Always sell the local story of the wood to the customer.

A growing number of successful small businesses have been developed following our forest-to-finished-flooring concept. “Timber Techniques Training” is our week-long program at Timbergreen Farm where individuals or groups can see it all for themselves and receive hands-on training to learn the system.

Key characteristics of this new market include:

- Operation of a profitable business that pays good wages for hard work.
- An annual harvest that creates steady income.
- Common sense forest management is understood and controlled by the forest owner.
- Harvesting levels are based on the natural output of the forest, not pressured by industry demand.
- Skilled, well-paid professional loggers who return year after year to harvest timber.
- Minimization of wood hauling to control expenses.
- Use of the simplest possible methods and machines.
- “Turning straw into gold” on your own property.
- Focus on making high-value products, not producing big-volume commodities.
- Elimination of brokers and middlemen - sell directly to customers.
- More good jobs being created for local people.
- New direct marketing opportunities through internet sales.
- Building on existing trade routes that can be modified for local benefits.
- The forest owner maintains ownership of the wood until installation.

Although priority lies with marketing locally, a website enables you to sell to the world since today, wood can be shipped anywhere, anytime. In a global economy, virtually no one is isolated anymore. The only limitation to the enterprise is lack of imagination.

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OLD-WORLD CRAFT PROMOTES THIRD- WORLD DEVELOPMENT: COMMUNITY FORESTRY MEETS APPROPRIATE TECHNOLOGY

SCOTT LANDIS
GREENWOOD
USA



Introduction

One of the first things the Conquistadors shed when they reached the shores of tropical America was their armor. As effective as a tailored suit of Toledo steel may have been against the spears and arrows of the native Aztec and Maya populations, armor was unbearably hot, heavy and hard to maintain in the steamy forests of the New World.

Modern woodworking machinery suits the tropics just about as well. In an environment that receives a foot or more of rainfall during each month of the rainy season, rust blooms on steel almost before your eyes. Saw blades are quickly dulled by dense, resinous hardwoods, and power supplies in many developing countries are erratic, at best. Kiln-dried wood is, in much of Latin America, a lot harder to find than bottled water. And wood's hygroscopic nature causes even dried lumber to reabsorb moisture as it seeks equilibrium with its surroundings.

GreenWood is an innovative training program launched in Honduras in 1993 that applies “old world” technology in the developing world, teaching artisans to build furniture with split and shaved green (wet) wood, worked mainly with hand tools or foot-powered pole lathes. The green-wood revival that has taken place over the last quarter century in North America and Europe may be helping post-industrial enthusiasts reap the intangible rewards of hand craftsmanship, but there is nothing romantic or nostalgic about the introduction of low-tech woodworking in the developing world.

GreenWood’s goals are straightforward and practical, to:

- Promote good forest management by exploring uses and developing markets for a wide range of lesser-known tree species, log residues and non-timber forest products; and,
- Provide rewarding, skilled employment as an alternative to shifting agriculture, cattle ranching, urban migration, and the environmental depredation that results from these practices.

The approach GreenWood employs to achieve these goals is “appropriate technology,” that matches the tools and methods employed in transforming wood products from the full spectrum of available resources in a host community - natural, material and human. These resources include: trees and plants and related forest resources (*natural resources*); access to tools and machinery, hardware and glues, electricity, investment capital, and markets (*material resources*); and the training, experience and craft heritage to be found among local artisans (*human resources*).

Over the last 25 years there has been a significant shift in forest ownership around the world. Indigenous and community land claims have gained recognition at the same time that economic development and environmental interests have begun to converge, causing the ownership and control of global forest lands to be devolved from the state to local communities and indigenous people. In the major forested countries of Latin America, community-owned forests now represent a substantial portion of the total forest area: 13% in Brazil; 36.6% in Bolivia; 34.2% in Peru; and 80% in Mexico. A recent study of forest ownership calculates that the aggregate forest land now subject to community or indigenous control exceeds 168 million hectares in these four countries alone. The study also estimates that “some 60 million highly forest-dependent indigenous people live in the rain forests of Latin America, West Africa and Southeast Asia. An additional 400 million to 500 million people are estimated to be directly dependent on forest resources for their livelihoods.” (White and Martin 2002)

This global rise in community forest ownership marks a historic opportunity for the future of the tropical forest estate and alleviating endemic poverty in the developing world. The people who live closest to the forest have the greatest stake in its preservation. But forest policies and the marketplace for forest products have traditionally favored large producers over small, a tendency exacerbated by the assistance provided by many donors. These political and financial hurdles are compounded for community forest producers by a host of obstacles that inhibit or preclude their successful entry into the marketplace. These include:

- logistical challenges (e.g., poor infrastructure and communications, distance to market, and the like);
- language barriers and a lack of basic business skills and production experience;
- a scarcity of honest brokers, practical market information and transparency; and
- limited access to technical expertise and the capital required for its implementation.

GreenWood aims to address all of these fundamental barriers, but this paper focuses primarily on the last factor - appropriate technology - as a keystone of development. In the process it

also challenges one of the most widely held misconceptions underlying conventional economic development: (i.e., that access to the latest technology is the fast track to progress). A separate case study of export guitar-part production, explains how GreenWood's role as an honest broker helps to mitigate some of the other business and organizational weaknesses that plague forest communities. (see Box 1)

Box 1: Transparency fosters community investment

GreenWood is commonly referred to in Honduras as the “chair project,” but over the years we have trained artisans and sawyers in the manufacture of many other niche forest products. These include ship's knees, lapstrake river boats, wooden pens, bowls, rustic fencing and guitar parts. By just about every quantifiable measure - volume of timber harvested, forest area under management, and 4”X4” income to local residents - GreenWood's most successful export venture is the ongoing production of 4”x4” mahogany guitar parts for the Taylor Guitar Company of California. Collaborating on the manufacture of more than 21,000 board feet of export-quality, kiln-dried mahogany, GreenWood has worked closely with the community of Copén on pre-harvest planning, tree felling and log conversion, transportation by mule and river, sawmilling, kiln drying and shipping.

Underpinning this functional support are GreenWood's transparent business practices and the unprecedented community investment it has engendered. Following the successful export in 2005 of our first container of guitar parts, GreenWood met with members of the Copén sawyer's collective - a community group of 25 timber producers who hold harvest rights to more than 4,000 hectares of primary forest adjacent to the Río Plátano Biosphere Reserve.

At that meeting, two fundamental terms for the ongoing relationship were agreed: First, GreenWood would undertake an active role in helping the group's treasurer and president to manage their accounts, keeping track of all income and expenses. (This was a direct response to the sawyers' consternation when we demonstrated how much money they had earned from the previous year's harvest and sale of guitar parts; members of the group were uniformly convinced that they had lost money the year before!) Secondly, having negotiated the highest price ever paid for this product in the local marketplace, GreenWood offered to share all of the production costs and divide the proceeds from the sale equally with the community producers. This gave the Copeños a stake in the success of the venture, and revealed the complex steps of export production, including the full costs involved. Looking ahead, Greenwood also hoped to motivate the Copeños to assume greater management responsibility for components of the venture.

To ensure the orderly disbursement of funds to the collective, GreenWood's bookkeeper verified the group's previous expenditures before authorizing each advance. Following the collective's delivery of the first load of sawn lumber, GreenWood's bookkeeper and field forester analyzed the costs and benefits of every step of the community's involvement. Initial results indicate a net income of approximately US\$ 1,250 per person for each of the 25 members of the sawyer's group. This income, earned during roughly two months of active timber harvest, production and transport, represents about 95% of the average per capita annual cash wage in the community.

Most rewarding, the Copén sawyers committed themselves to investing US\$ 105 per member, or more than US\$ 2,600 for the entire group - plus an equal amount from the collective's coffers - in another production of guitar wood. In other words, they're

investing roughly US\$ 5,500 without any further advance from GreenWood or the client. This investment confirms that: a) the group has earned enough money to invest in future activities; b) they see real promise in the venture; and c) they are prepared to assume greater responsibility and risk in return for greater potential profits and control. All this adds up to a major milestone on the road to financial stability and sustainable development.

Source: Scott Landis

Appropriate technology in action

GreenWood was inspired by an attempt to jumpstart a stalled furniture industry in the Yucatan Peninsula of Mexico during the early 1990s. Canadian designer Michael Fortune encountered a craftsman's nightmare of decrepit sawmills, workshop machinery in disrepair and a litany of problems common to working wet wood and irregular, small-diameter logs. "Inaccurate joinery accounts for a high failure rate," Fortune wrote, "and glue is not effective when wood exceeds 11% moisture content." The disparity in moisture content between the tropics (16% in southern Mexico) and North America (7% in most of the U.S.) presented a further obstacle to a prospective export trade in furniture. (Fortune 1990)

Pondering this lament, Tennessee chair maker Curtis Buchanan thought Fortune might be barking up the wrong tree. "Why not try green woodworking?" Buchanan wondered. The oak spindles and bent bow of his Windsor chair backs and the turned maple undercarriage are made entirely of wet wood. The parts are split directly from the log with an ax and froe, shaved with a drawknife and selectively dried in his shop using a small, homemade kiln. The technology is ancient, but at prices now approaching US\$ 1,000, Buchanan's bottom-of-the-line, bow-back Windsors are hardly rustic. Green-wood technology, he reasoned, might be ideally suited to the tropics, and it doesn't require a shop full of expensive machinery to get started.

Buchanan joined Kentucky chair maker Brian Boggs in 1993 on GreenWood's first expedition to Honduras, where traditional hand-tool technology appeared well suited to the full range of local resources. Specifically, the pair encountered a large variety of lesser-known tree species that might be incorporated in green-wood furniture production. Few of these species were being harvested or processed, and little was known about their working properties. There were no developed forest management plans for these woods and few established markets. They also noted a lack of local capacity for secondary processing (sawmills) and drying (kilns), which are essential to the production of quality woodworking by conventional, machine-tool methods. Many forest communities in tropical America have no access to electricity and minimal experience in the use of machinery. There is little or no money available to invest in costly generators, fuel or other conventional woodworking equipment.

Buchanan and Boggs hoped to uncover local chair-making designs that they might improve upon or adapt with green-wood technology. But the furniture they found on the North Coast of Honduras was uniformly crude and uncomfortable, or imported from neighboring countries; in isolated forest communities, it was virtually nonexistent. In any event, they judged that regional furniture styles held little promise for local tourist or international markets.

The chair makers decided to import a traditional North American design, incorporating a woven vine or bark seat for local character and to utilize available non-timber forest products. Thus, GreenWood's initial training and marketing initiatives were based on ancient hand-tool

technologies exemplified in the Appalachian-style seating furniture of Kentucky and Tennessee (Post-and-rung ladderback and Windsor chairs are, in turn, derived from earlier European traditions). Although green-wood furniture is highly functional and visually straightforward, successful joinery actually relies on a highly sophisticated understanding of wood properties - specifically, the swelling and shrinking of adjacent parts to create strong interlocking joints. The integrity of green-wood chair construction depends on the traditional mortise-and-tenon joint, in which a super-dry rung (the tenon) is installed in a bored hole (the mortise) in a relatively wet leg. The leg shrinks and the rung swells in cross section as the parts reach equilibrium, creating a strong interlocking joint without the use of glue or mechanical fasteners. Furniture thus constructed can last indefinitely if well maintained.

In terms of efficiency and economy, green woodworking is hard to beat. It is much easier to split and shave green wood than it is to saw and plane dry lumber, and the means of transforming the raw material can be easily and cheaply introduced in forest-based communities. For less than US\$ 100, an individual artisan can purchase a complete kit of hand tools, with which he or she can produce salable furniture. Whereas conventional machine-tool technology tends to encourage debt and the centralization of manufacturing, what might be called the “*maquiladora*” model,¹ simple hand-tool technology encourages independence and flexibility. No electricity is required and minimal additional investment is needed for the establishment of productive workshops.

There are several other assets of this style of furniture making. Its portability enables artisans to conduct at least some of their primary processing in the forest, thus reducing the need to transport heavy logs and returning an abundance of decomposing, wood-residue nutrients to the forest. The relative safety of hand-tool technology reduces the likelihood of serious accidents and debilitating injuries in societies that provide little or no safety net for injured workers; the safer technology also encourages active participation by women, girls and boys of all ages and technical ability. This flexibility is further enhanced by the ease with which green woodworking is adapted to small-scale or cottage-industry production units. Simply put, this craft method suits home workshops and a broad range of family participation.

Whereas conventional machinery typically leads to a reliance on a few heavily exploited commercial species - e.g., bigleaf mahogany (*Swietenia macrophylla*) and Spanish cedar (*Cedrela odorata*) are the timbers of choice on the North Coast of Honduras - green-wood technology lends itself to experimentation with smaller trees and lesser-known species. Moreover, the unique nature of green-wood design and production distinguishes GreenWood products from those of other conventional woodworking manufacturers, and helps to establish an identity for our products in the marketplace. The quality, cost and marketability of the finished product reflect an artisan’s design and construction skills (labor) more strongly than his or her investment in materials or expensive tooling (infrastructure). In combination, these factors result in potentially greater profit margins for rural artisans and a more sustainable long-term relationship with their source of materials.

The early workshops

Invited to Honduras by the Broadleaf Forest Development Project (PDBL), a joint forestry initiative between the government of Canada (CIDA) and the Honduran forestry agency (AFE-COHDEFOR), GreenWood chose to begin work in an indigenous Pech community not far from the North Coast. Resisting the temptation to launch a portfolio of ready-made designs,

¹ *maquiladora*: cross-border assembly plants, originally based in Mexico.

Buchanan and Boggs concentrated on the most basic of all seating furniture: the homely stool. Stools involve the essential technology that artisans eventually employ to build chairs, but their compact form ensures speedy gratification and fosters experimentation with a wide range of materials. This measured approach also encourages students to participate in the design process and take ownership of the project.

Once the location for the first training session and a basic curriculum were established, Mr. Buchanan arrived to teach his first class. Assuming that his students were out gathering wood when the first session was scheduled to begin, he set up a shaving horse in a school workshop and began splitting wood to make a few rungs. Surrounded by a scrum of curious youngsters, Mr. Buchanan sat down at the horse (called a burro in Spanish), picked up a drawknife and demonstrated the process of shaving rough stock to round - the foundation skill upon which all green-wood chair making is built. With swift, rhythmic strokes of the knife, he deftly transformed the stock, first to a square, then an octagon, and ultimately a round, softly faceted and gently tapered rung. After a few minutes, the travel, the heat and the diet began to take their toll, and Mr. Buchanan retired to a second floor dormitory. Throughout that first afternoon, sounds of the boys chirping in barely comprehensible Spanish and slicing away with the drawknife filtered upstairs from the shop.

Like many professional North American craftsmen, Mr. Buchanan teaches adult workshops, so he was initially shocked and crestfallen to discover that the seven 14-year-old boys he had met downstairs were his students. However, it wasn't long before they proved their mettle. In rural forest communities throughout Latin America, there is a brief window of opportunity during which adolescent boys begin to acquire the muscle and dexterity of an adult, but before they are encumbered with the full responsibilities of a family. They typically live with their parents and are obliged to tend crops. Until they marry, these youngsters enjoy a relative respite from the full rigors of subsistence living.

At GreenWood's first training site - Santa María del Carbón, Olancho - workshop participants included all the male students and teachers of the local training school, where GreenWood technology and elements of design were rapidly incorporated into the curriculum. In other communities, eligibility is typically voluntary and open to all interested community members, regardless of age, gender and experience. However, in practice, the majority of participants are usually drawn from the membership of the most active collaborating organizations in the community. Increasingly, new participants gain experience through an informal apprenticeship with more experienced GreenWood artisans.

Brian Boggs traveled to Honduras a few months later to find four *burros* in action and a newly finished barstool awaiting his review. He spent much of the second training session working on tool sharpening, an ongoing challenge, and trying to convey the "concept of square." Noting the local emphasis on functional utility and the scarcity of embellishment among the thatched-roof mud huts and other handmade articles in the village, it occurred to Boggs that his obsession with quality might be out of step with a culture still preoccupied with its own precarious survival. However, it was gratifying to observe the native facility for tool use among our Honduran students, whose early introduction to the machete fosters a familiarity with the use of sharp edge tools that has, by and large, been lost on North American youngsters.

Mr. Boggs employed a method favored by the local schoolteacher to teach sharpening. First, he explained and demonstrated the process. Then, one student copied Mr. Boggs's example while explaining the techniques to the class. Finally, he sharpened the tool again with the same student providing instruction. It was slow and repetitive, but effective. In no time the whole class was sharpening drawknives to a respectable working edge. During another workshop, Mr. Buchanan noted that at least one of his students was sharpening his spokeshave blade to a razor's edge, "better than 99% of the woodworkers I know back home." Students began signing

their furniture almost immediately, taking personal responsibility and a maker's pride in their work.

Mr. Boggs used the rest of his trip to investigate new tree species and fine-tune production. He and the students felled a 12-inch-diameter (30 cm) cola de pava (*Cespedezia macrophylla*) tree that was straight and clear for about 50 ft (15 m) and found that the wood split beautifully. Cola de pava is a lesser-known hardwood species, with roughly the same, moderate density as American cherry. It regenerates easily from cut stumps, but until our arrival the wood had no local or commercial applications. Boggs also harvested bark from a slim log of capulin negro (*Trema nithranta*), a very common but similarly underutilized tree species throughout the North Coast. GreenWood has since tested and used numerous other woods and barks, but cola de pava and capulin remain at the top of the list of preferred materials for structural members and woven seats in our furniture.

The forest connection

It wasn't long before GreenWood realized that the forestry project that had drawn us to Honduras was providing virtually no assurance that the woods used by our artisans were actually derived from well-managed forests. Among other things, the management focus was limited to primary forests, and there were no plans developed for noncommercial tree species. In fact, the management of secondary forests attracts little interest among the forestry establishment of Honduras (or in many other developing countries). This is largely a result of the common perception that secondary forests represent underutilized agricultural lands, which ought instead to be intensively cultivated for their short-term return on investment.

To address this deficiency, GreenWood launched its secondary-forest management program in 1999. The initiative was the first organized attempt in Honduras to provide a sustainable, quantifiable supply of pioneer timber species (and non-timber products) from secondary forests - known locally as *guamiles* - which provide the primary source of materials used in the construction of furniture made by GreenWood artisans.

Under the supervision of GreenWood foresters, *guamil* owners met with artisans, the tribal council and other local stakeholders to design and implement management plans for their *guamiles*. Two objectives emerged in the process of elaborating an agreement governing their use and harvest. The first goal was to achieve a sustainable supply for artisan production through the implementation of a management plan for lesser-known species and non-timber forest products. The second was to establish reliable mechanisms for ensuring that a meaningful share of the benefits generated by the harvest and sale of these resources would accrue to the community as a whole, and not merely to isolated groups or individuals.

In order to realize the second objective, GreenWood developed a multi-stakeholder agreement that established the following roles and responsibilities:

- *Guamileros* direct the forest management plan.
- GreenWood artisans purchase wood, bark and other products from *guamileros*.
- The tribal council administers the financial exchange.
- Other local authorities, including the communal assembly, ensure that the tribal council invests financial proceeds from this system in direct services for the community, such as materials for the school, the health center and other projects.

From a silvicultural perspective, GreenWood's *guamil* management approach is considered a mono-cyclical system with a 25-year rotation, after which a parcel could be cleared and another lengthy fallow period would ensue. This system is attractive to *guamileros* because their income from agricultural production can be augmented by the sale of wood products. For GreenWood and its artisans, the *guamil* system represents a means of establishing practical links between sustainable forest management, the production of high-quality furniture using simple technology and the sale of innovative products for niche markets. For the forestry authority of Honduras, GreenWood's *guamil* management plan constitutes the country's first systematic organization of a timber harvest in secondary forests, in a manner that will facilitate its replication in other communities.

The marketing conundrum

Ironically, the connection between furniture and well-managed forests relies on a transaction that is foreign to many NGOs, ecologists and donor organizations: sales. No amount of appropriate technology or responsible forestry can be maintained for long without the sales and marketing that comprise the third, indispensable leg of the GreenWood program. As one of GreenWood's clients likes to say, "Nothing happens until somebody sells something."

In a country like Honduras, where village carpenters grind the carbon rods from spent D-cell batteries and mix them with kerosene to ink their chalk lines, everything has a value. Even as GreenWood instructors began to think about how to break into the marketplace, our artisans were selling chairs. Artisans typically begin by making furniture for their own homes and quickly move on to serve the needs of their extended family, friends and neighbors. With little or no coaching, local sales continued to grow. The more serious and aggressive artisans cultivate their own clients, and GreenWood helps develop broader market opportunities through sales to restaurants, bars and hotels in the developing tourist sector.

The international market is usually the first, and too often, the only outlet contemplated when consultants from the North design marketing programs for the South. The underlying assumption is that only the higher dollars and volumes generated by export sales are worth the investment of time and money. If anything, this perception has only been reinforced by the introduction of certified wood products, which have begun to attract interest in North America and Europe but have generated no discernable market in Latin America. It's hard to ignore the allure of the U.S. dollar and the vast retail market in the developed world, but successful, long-term relationships between community forest producers and export clients are rare.

The reasons for this fact are not hard to find. In the first place, the full cost of export is rarely factored into the business model and is often difficult for community producers to grasp. Few communities are equipped to identify, much less perform, the brokerage functions required to complete a successful export transaction. These include complex documentation, shipping protocols and extensive client communications, usually conducted in English. So the communities remain at the mercy of costly and sometimes dishonest brokers or inexperienced NGOs, who are forced to reinvent the wheel. Community producers rarely sell direct to end-users, and wholesale products may have to support a seven-fold price increase, or more. Container-load volumes, accompanied by hefty discounts, are the norm. It can be difficult, if not impossible, for community producers to meet the most basic requirements of export clients in terms of volume, deadlines, consistency and quality control. One serious misstep on the part of the producer is likely to terminate this fragile and unbalanced relationship.

Local markets, by contrast, represent a far more accessible and manageable outlet for community forest producers. Volumes are typically much smaller and clients more willing to tolerate idiosyncrasies in quality and consistency. If problems do occur, they can usually be resolved speedily and directly with local clients in a manner that is more likely to result in improved production in the future. Local transactions require little paperwork and shipping logistics are simple, making them much easier for local middlemen or artisans to maintain. Many of these advantages are predictable, but there are two other crucial and often overlooked factors that weigh heavily in favor of local markets for artisan furniture. The first is purely functional: Tropical woodwork that remains in the tropics is far less likely to suffer the splitting, warping and other structural defects that often result from the drastic dimensional changes that take place when tropical wood products arrive in a temperate climate (where most homes have central heating and/or air conditioning). The second is less tangible: local clients tend to validate the newfound social status achieved by recently trained GreenWood artisans, some of whom have been appointed to positions of responsibility in their local community. It's hard to measure pride, but a trained artisan is no longer a peasant or a subsistence farmer. The fact that he is respected in his own community and pursued by local clients makes him upwardly mobile in a way that may even exceed the boost he receives from sales and income.

Market access is crucial to the support of any forest product enterprise. GreenWood manages this complex environment by seeking a flexible balance between local, regional and export opportunities. Although community producers can almost always access and service local markets more successfully than international or even regional markets, they will likewise benefit by having multiple market opportunities and an adaptable marketing strategy.

Lessons from the field

The introduction of GreenWood technology in Honduras has been far from smooth. Over the years we have encountered just about every obstacle imaginable, many that we never saw coming! These range from inflexible and corrupt institutions to competition from illegal loggers and the potent lure of “*el Norte*,” which continues to drain Central American communities of some of their most talented sons and daughters. We’ve struggled, too, with our share of technical and logistical hurdles, including the limited financial resources of our own small non-profit organization. Only last year, as we were celebrating the culmination of more than two years of guitar-part production, a rogue hurricane descended on Honduras just after our sealed container left the kiln yard. We were lucky, and the container was merely waylaid for two weeks, but the unscheduled detour was not for the faint-of-heart. Some hurdles, like this one, we have been able to overcome by dint of good fortune or careful planning. Others we have come to accept as a cost of doing business in a challenging environment.

We also discovered that most obstacles present a corresponding opportunity. For example, GreenWood’s decentralized, cottage-industry production system is inherently difficult to coordinate and manage. But it is also highly flexible, fosters broad participation in terms of age and gender, and adjusts to the competing demands of household obligations. Our own limited financial resources often result in lengthy gaps between workshops. But this encourages greater self-reliance and initiative among our artisans, and promotes cooperation with other local institutions. An example is our fortuitous alliance with a local trade school, whose instructors embraced GreenWood technology with enthusiasm and incorporated it in their regular woodworking curriculum, providing continuity between workshops and greater opportunities for students to practice their skills.

There is no recipe for sustainable development, but there remain several core principles that have guided the GreenWood program from the outset. The first is reflected by our focus on self-sufficiency and value. Handouts perpetuate a culture of dependency, so we give nothing away except information and technical assistance. Students buy their own tools; usually with the money they earn selling furniture.

The second core principle has to do with rigorous planning and follow-through. One-time training workshops are like seeds cast in the wind: they will not take root without the careful husbandry that follows.

Our third core principle is embedded in our commitment to “train the trainers” and to promote transparent business practices. When artisans and forest owners understand the real costs of management and production, and are capable of teaching themselves, they are well on their way to independence, and we are on our way to leaving.

As with sustainable development itself, there is no recipe or timetable for GreenWood’s departure from a client community. The needs and capacity of our participants are highly variable, and the resources that GreenWood can bring to bear in support of any particular client often depend on temporary grant funding or the participation of other collaborating organizations. Even within a single community group, one or two participants may begin selling products on their own after the first or second training session, whereas other students require much greater support. It is not uncommon for GreenWood-trained artisans to earn a significant portion of their production income (30 % or more) through direct sales that are solicited and managed entirely by the artisans, thus placing them firmly on the path to independence. In the community of Copén, Colón (see box above), two months of GreenWood enterprise generates income for the 25 members of the participating sawyer’s collective that is roughly equivalent to 95 % of the average annual per capita cash income from all other sources.

Technology and progress

From time to time questions are raised about GreenWood’s objectives and about our principles of appropriate technology. Skeptics ask whether in our adherence to traditional (some might say “old-fashioned”) practices, we are holding our artisans back, preventing them from pursuing their own interests or realizing their natural growth and potential. Some observers suggest that access to more sophisticated technology (the “march of progress”) is inevitable and that it offers an incentive for struggling artisans, who will otherwise lose interest, drift away or resume less productive activities.

In response, we are obliged to note that GreenWood does not (and could not) restrain artisans from moving on to other methods of production. Indeed, we assume that only a portion of the people we train will continue as professional furniture makers and that many of these artisans might eventually find work in other shops or related trades. GreenWood principles can be effectively applied to the manufacture of many different wood products and can be readily adapted to different kinds of technology. To that end, our instructors have taught bowl turning on bicycle-driven and electric lathes and have worked on the chainsaw milling of ship’s knees and the installation of a portable sawmill to be used in boat manufacture and the production of guitar parts. These activities are not only consistent with our original principles, but also excellent examples of how appropriate technology might be applied to a wide range of materials and products.

Technology does not follow a linear progression – from primitive hand tools to sophisticated machinery. In fact, much handwork is exceedingly sophisticated, whereas machine production

can be quite crude. We need only consider Curtis Buchanan's Windsor chairs, which are produced essentially by hand, using no mechanical fastenings. The demand for his furniture reflects the excellence of his design and construction, not the fact that he happens to use an electric lathe to turn legs or a light bulb to heat his kiln. The source of power is, in both cases, incidental. So much of modern woodworking consists of employing bigger, more powerful and more expensive machinery in an attempt - frequently unsuccessful - to force the material to perform an unnatural act. By comparison, the understanding, or "deep knowledge," of wood properties that an artisan acquires by working green wood with hand tools will inform and enhance whatever method of woodworking design or production he or she eventually pursues.

GreenWood cannot prevent artisans it has trained from joining the culture of mediocrity that commonly pervades the manufacture of wood products, but it is not our role - or in anybody's interest - to perpetuate this culture. If GreenWood artisans abandon hand-tool technology for machinery without having first mastered basic skills and an appreciation for good workmanship, they are likely to succumb to the widespread delusion that the quality of production (and the size of their income) hinges on the acquisition of newer and more expensive equipment.

An evolutionary approach to the introduction of new tools is more consistent with an understanding of appropriate technology. One might begin, for example, by modifying the motive force for a traditional piece of equipment such as the lathe with the addition of a small motor. Such an incremental measure would enable a skilled artisan to accomplish the same work more quickly and more effectively. But it would not fundamentally change the nature of an artisan's working method or the outcome, as would the introduction of a table saw, power planer and other conventional machinery.

These distinctions between craft process and manufacturing were succinctly characterized by British master craftsman David Pye as the "workmanship of risk" versus the "workmanship of certainty." The latter describes the predictability of automated production, whereas the former reflects the variability inherent in any manufacturing method that relies on the judgment and dexterity of the tool operator. As Pye pithily observes, "People are beginning to believe you cannot make even toothpicks without ten thousand pounds of capital. We forget the prodigies one man and a kit of tools can do if he likes the work enough." (Pye 1968)

If the irregular development of technology is, in part, responsible for the cultural inequities we have inherited, appropriate technology may play an important role in helping to address them. Sustainable economic development is, after all, about providing access to the tools that control human lives. But it will only succeed where those tools are well matched to the people who will use them and the resources that will be consumed in their application. "Give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime" - so goes the ancient Chinese proverb. If we are serious about teaching artisans in the developing world to fish, we ought to begin with a hook and a line.

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THE ROLE OF SMALL AND MEDIUM FOREST ENTERPRISE ASSOCIATIONS IN REDUCING POVERTY

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Introduction

It is not easy for the poor to capture opportunities in forest harvesting and wood processing. It should be readily apparent, however, that small and medium forest enterprises (SMFEs) currently offer a significant proportion of those opportunities. They constitute 80-90% of all forestry enterprises and over 50% of forest sector employment in many countries (Macqueen and Mayers, 2006). But SMFEs face many obstacles, including insecure natural resource ownership and access rights, weak social stability and cohesion, little access to capital, poor market information, weak bargaining power, lack of technological know-how, geographical isolation and poor infrastructure, and limited knowledge of administrative and business standards and procedures.

External support for SMFEs is often absent, weak or poorly directed. Local collective action is therefore often the only option. Interventions that take local institutions seriously can enhance the already substantial benefits of collective action.



This paper draws heavily on lessons from field surveys of forest enterprise associations. IIED country research partners conducted surveys in Brazil (Campos *et al.* 2005; Figueiredo *et al.* 2006), China (Weyerhaeuser *et al.* 2006), Guyana (Ousman *et al.* 2006), India (Bose *et al.* 2006), South Africa (Bekula and Memani 2006) and Uganda (Kazoora *et al.* 2006). Macqueen *et al.* (2006) provide a summary of these. We define associations as: “user groups that band together about a common purpose and create organized institutions for collective decision-making.” This paper particularly targets external supporters wishing to enhance the contribution of such associations.

Forest-based associations take on different institutional forms (i.e., informal groups, associations, cooperatives, and companies). They also produce different types of forest products and services. Some manage private or common-pool resources, while others deal with processing activities far from the forest. Some involve local groups of individuals (often community-based) in which the association is the forest enterprise. Others are large umbrella groups that represent multiple enterprises. Local forest enterprise associations are recognised to be particularly important for poverty reduction.

Many recent studies have already examined how and why groups are successful (Futemma *et al.* 2002; Ostrom 1999). Generic lessons about what makes groups successful include (Macqueen *et al.* 2006):

- successful past experience;
- some disposable income (not impoverished);
- independence from political groups with the right to self organization;
- centrality to the total economy in which they operate;
- focusing on one manageable activity, potentially diversifying over time but retaining focus;
- either individual or participative leadership, provided it is home grown and fair;
- a homogenous composition, but they can do without it if they have good leadership;
- a mix of skills to achieve collective interests;
- origins without external support to prove competitive advantage;
- broader objectives than merely financial ones;
- clear boundaries defined by collective interests;
- initial flexibility followed by the evolution of simple rules and procedures based on local norms;
- regular and frequent meetings between members and leaders; and
- clear records, transparent decision-making and conflict-resolution processes and graduated sanctions for non-compliance.

This paper complements previous analyses in two ways. First, it adds information specific to forest-based associations, and second, it focuses on how to provide such associations with effective support.

Elements of poverty that forest-based associations address

Poverty is multifaceted, comprising:

- lack of access to basic needs (Mitlin and Satterthwaite 2004);
- insecurity and violence (ETFRN 2005);

- social isolation and powerlessness (Narayan *et al.* 2000);
- inhumane working conditions (ILO 2001);
- environmental degradation (Reid *et al.* 2005; and
- identity crisis linked to cultural disintegration (UNESCO 2005).

Working together through an association is one way to tackle each of these elements of poverty. Sometimes members join forces reactively in response to outside requirements or threats. Sometime they join proactively to pursue perceived opportunities.

Increasing access to basic needs

In many cases, the aims of associations extend beyond economic success to explicit social and environmental ends (Macqueen *et al.* 2005). In India, the Harda District Timber Merchant Association collects money and makes loans to particularly needy members who have suffered losses beyond their control (Bose *et al.* 2006). But these wider aims are not always present. For example, many associations in Brazil formed solely to take advantage of a government credit program, and they soon collapsed once this aim was achieved (Campos *et al.* 2005).

Associations can help reduce input prices and share transaction costs. They can also use collective bargaining to improve returns from sales. These options make member enterprises more profitable, which in turn helps members to get access to basic needs. For example, in South Africa, the Kwangwanase Association of small timber growers hires a truck at harvest time to reduce members' transport costs. The Sakhokuhle Association, an umbrella body with 1,400 small-grower members, has successfully negotiated better transport rates for association members wishing to sell their timber products. The Swayimane Small Growers Association in Warburg shares the costs of joint training workshops for its members on small-grower forestry (Bukula and Memani 2006).

Eliminating unnecessary intermediaries increases the benefits for poor producers. While some brokers play important roles in matching supplies from diverse producers with demand, this position of power can result in a poor deals for producers. To combat such problems, the Cooperativa dos Agricultores de Medicilândia in Brazil was formed with the express intention of restructuring the cocoa market chain. The aim was for producers in the State of Para to challenge the power of middlemen and large traders and so obtain prices comparable with other areas in Brazil (Campos *et al.* 2005).

Enhancing security and resolving conflicts

Associations have often proven effective in securing access to forest and financial resources. For example, the Guyanese Upper Berbice Forest Producers Association enabled members to gain access to a forest concession (Ousman *et al.* 2006). In Uganda, members of the Kamusiime Memorial Rural Development Association combined their land, allowing them to meet the required size required of 25 ha to be eligible for grants under the European Union-funded Sawlog Production Grant Scheme (Kazoora *et al.* 2006).

Conflicts often arise when authorities do not consult local people or recognize their rights. For example, Indian authorities introduced a new sales tax procedure (Form 38), which made tax collection much more cumbersome for local enterprises and led to unrest. The District Yamunanagar Plywood Manufacturers' Association took up the case in 2002. They called a general strike until the government withdrew the offending Form 38 (Bose *et al.* 2006). In central Africa, the Uganda Investment Authority created an industrial park encompassing areas with trees planted and managed by local farmers. The Uganda Wood Farmer's Association was formed specifically to sue the Uganda Investment Authority. The presiding judge in the

case ruled in favor of the farmers. He granted compensation equivalent to four tree rotations (Kazoora *et al.* 2006).

Inevitably, there are many examples where conflict emerges from the management of associations. In India, the Saharanpur Wood Carving Association in Uttar Pradesh, formed in 1960, initially succeeded in campaigns seeking favorable tax incentives and export policies. But disputes broke out among office staff in 2004, ultimately resulting in the resignation of the president. He then established the Saharanpur Wood Carving Manufacturers and Exporters Association, a direct competitor to the original association (Bose *et al.* 2006).

Overcoming social isolation and powerlessness

Individual SMFE's are often unaware of various support opportunities available to them, but associations can pool the knowledge and contacts of their members. They can also provide resources for dedicated people to undertake networking responsibilities. For example, representatives of the Kabakaburi Handicraft Association in Guyana secured funding from the Inter-American Institute for Cooperation for Agriculture, which enabled joint enterprise training in pottery, joinery/carpentry, sewing and craft making (Ousman *et al.* 2006).

Larger associations can create extensive networking opportunities for their members. For example, the Federation of Rajasthan Handicraft Producers in India has instituted awards for outstanding handicraft producers, organizes an annual symposium to share designs and runs seminars on trends in home furnishing. Visual merchandising and procedures for setting up export-orientated units are also a focus of the association. The association organizes workshops to promote exports of novel handicrafts, and leading members are provided with the opportunity to participate in European trade fairs (Bose *et al.* 2006).

In many instances, forming an association helps to secure training opportunities. For example, the Uganda Community Tourism Association used membership fees to provide training for members in tourism marketing, organizational strengthening and craft making (Kazoora *et al.* 2006).

On a cautionary note, associations can suffer from “elite capture” or corruption. Representatives of associations do, in some cases, abuse their positions to negotiate personal deals that can sometime leave associations in debt to outside interests. For example, the third board of directors of the Association of Rural Workers in the Boa Esperança/ Entre Rio settlement in Brazil became involved in the illegal sale of land plots and timber – taking a cut from each sale (Figueiredo *et al.* 2006).

Providing good employment opportunities

Joint investment through associations can create new jobs. For example, the Brazilian Cooperativa de Produção Agropecuária e Extrativista dos Municípios de Epitaciolândia e Brasília has already established a Brazil nut processing plant and has begun to expand operations to cover a wide range of ventures. It is now investing in salting, flaking, filling, and other processing equipment, and has plans to develop animal feed from Brazil nut shells. It also plans to launch a new range of rubber products, and to establish a pulp processing project for local palm fruit (Campos *et al.* 2005).

Associations are also more successful at attracting donor support for improved working facilities. Individual enterprises would, in most instances, find it very difficult to attract such funding. The Kamuni Women's Handicraft and Sewing Development Association in Santa Mission Village, Guyana, successfully applied to the Canadian International Agency for a new craft center fitted out with water tanks, five sewing machines and new furniture (Ousman *et al.* 2006).

In many instances, associations have facilitated group certification or fair trade initiatives, which are generally too costly for individual members. Certification support schemes provide detailed guidance on workers' rights, health and safety standards, and record keeping requirements. In the case of fair trade, they also sometimes provide a price premium for producers. In Papua New Guinea, community representatives established a company called FORCERT in 2003. The company links separate producers with Central Marketing Units that facilitate sales of products to overseas buyers. It has achieved certifications from both the Forest Stewardship Council (FSC) and the International Federation for Alternative Trade (IFAT) as a Fair Trade Organization (Dam 2006). The benefits have included increased employment opportunities, better working conditions, and the realization of a 20% price premium on the sale of the certified products.

Associations and unions have been at the forefront of the fight to help SMFEs remain viable and improve working conditions. For example, the Gujarat Timber Merchants' association in India has fought the closure of small sawmills due to strong conservation legislation (Bose *et al.* 2006). It should be noted that salary levels, worker's health and safety are often worse in SMFEs than within larger enterprises (May *et al.* 2003; ILO 2001). In addressing these shortcomings, associations face the challenge of overcoming scale inefficiencies, poor access to capital and a disabling policy environment.

Preventing environmental degradation

Local SMFEs are generally more accountable to local people than large external companies. There are many examples of good environmental management as a result. For example, indigenous peoples in the southern states of Mexico resented the degradation of their forests by outsiders. A group fought a successful campaign against imposed concessions. They won rights to operate their own micro-enterprises adhering to their own environmental values (PROCYMAF 2000).

In Guatemala, a company called FORSCOM was established by 11 member communities. The company manages community concessions and is FSC-certified, a prerequisite of the concession agreement (Leon 2006). While this can be considered a success, community level certification is relatively rare due to multiple complicating factors including:

- the disproportionate costs of certification for smaller scales of enterprise;
- the lack of capacity support for SMFEs within the forest certification movement; and,
- the dearth of mechanisms to distinguish and financially reward small or community-based forest enterprises that have been certified.

Additionally, issues of scale and power often favor larger enterprises in resource allocation, policy formulation and enforcement. The result is that SMFEs and their associations frequently cut environmental corners in order to compete. Associations can counter this tendency by using their collective voice to lobby for a fairer policy environment for SMFEs. For example, a member of the Guyana Manufacturers and Services Association lobbied for a new land-use strategy based around SMFEs that would increase forest revenues and employment without compromising sustainability (Mendes and Macqueen 2006).

Strengthening cultural identity

Cultural identity is extremely important to the many forest peoples of the world. It can be defined as: *"a set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions and beliefs"* (UNESCO 2002).

Various methods have been developed to determine cultural and sacred values in landscapes and in forest decision making (Rowcroft *et al.* 2006).

Cultures of forest peoples are not only a rich source of human diversity. They are also often deeply linked to the sustainable use of forests. For example, the indigenous peoples of the Upper Caura river basin in Peru formed an indigenous association, registered their cultural knowledge, mapped their customary land-use system and have developed sustainable management plans for the area - including co-management of existing protected areas (Colchester 2006).

Makushi communities in Guyana formed an association known as the North Rupununi District Development Board. The association developed small tourism enterprises that promote local language, dance and weaving. When self-assessing the most important assets within their communities, the Makushi identified culture as a key resource (Ousman *et al.* 2006).

Internal procedures that maximize association benefits

The benefits of forest enterprise associations in poverty reduction only come if associations are resilient and distribute costs and benefits fairly. A number of observations from country fieldwork show how this has been achieved in some cases.

Autonomous origins

There are considerable benefits associated with independent organizational beginnings, free from external interference. In Yunnan, China, political interference is strong, which leads to associations being weak. For example, the narrowly construed Yunnan Forest Products Industry Association currently does little more than hold an annual meeting. Another example exists in Uganda, where USAID supported COVOL in 1995 to improve shea nut butter production across 400 community-based organizations. This amalgamated into the Northern Uganda Shea Producers' Association. The combination of USAID's withdrawal in 2000 and subsequent disruption by the Lord's Resistance Army rebels led to the collapse of the association (Kazoora *et al.* 2006).

Many of the associations surveyed that had their origins in external support were in a state of crisis. In Brazil, the state agricultural extension agency founded the Associação dos Produtores Rurais em Manejo Florestal e Agricultura as a timber management project. Interviewees described little ownership by members, little trust in the leadership and little unity among members (Campos *et al.* 2005).

Accountable leadership with a history of social commitment

Members who have served well in a voluntary capacity are likely to make good leaders. For example, Ugandan informants regarded previous experience as the most important leadership quality after the ability to read and write. Many of the financially poorest associations have benefited from leaders who initially subsidized association activities, demonstrating deep personal commitment to the collective interest (Kazoora *et al.* 2006).

It also makes sense to invest in future leaders. For example in the association of the Settlement Project California in Mato Grosso, Brazil, young people make up 12% of the association members. The association has worked in partnership with the municipality and jointly they have developed programs at local high schools and built sports facilities in the settlement (Figueiredo *et al.* 2006).

Evolving procedures

Dynamic leaders can carry an association at the beginning, but long-term survival depends on well understood rules and procedures. For example, in Nova California in Brazil, two small rural producer associations joined in 1988 to form the cooperative called Reflorestamento Econômico Consorciado e Adensado. Founding members defined the initial objectives, but the cooperative has now evolved a unique organizational structure. Regional coordinators manage each area (male and female). A one-year membership trial period helps to build membership quality. Clear rules governing decision-making and the partitioning of costs and benefits are a major strength (Campos *et al.* 2005).

Associations that do not develop robust financial procedures quickly unravel. For example, doubt surfaced over financial mismanagement in the Amerindian Handicraft Association in Guyana due to a lack of clear procedures and accountability. Members quickly became reluctant to pay the 10% fee to the association required on the sale of craft products, with many opting instead to sell direct to buyers (Ousman *et al.* 2006).

Restricting focus to a few long-term issues

Keeping things simple at the start allows time for core expertise to develop. Most successful associations do a few things sustainably and well. Associations therefore need to balance immediate goals, such as markets for products, against longer-term interests, such as sustainable resource management. The Chico Mendes association in Acre, Brazil, originally started through Brazil nut collection alone. But it is now developing tree nurseries based on superior genotypes to reforest particular areas (Campos *et al.* 2005).

In Guyana, the Upper Berbice Forest Producers Association formed to achieve more secure jobs. Secure access to forests improved the viability and sustainability of timber production, while recognition of the low allowable timber harvest led them to diversify. New options include replanting manicole (heart of palm), fish farming and processing of non-timber forest products, but all these planned activities maintain a strict focus on strengthening working conditions for association members (Ousman *et al.* 2006).

Ensuring democracy and representation

Investing in democracy is one of the best guarantees of equity. For example, the Guyana Forest Products Association has monthly meetings of the 12-member elected executive committee requiring a quorum of six members, plus less frequent general membership meetings (Ousman *et al.* 2006).

Men and women often have very different livelihood concerns, yet the predominant trend is for there to be fewer women in leadership positions. For example, Ugandan women made up 53% of the members of the 62 associations surveyed, but only 44% of its leaders (Kazoora *et al.* 2006). A strategy in many countries is for women to create their own associations in order to have their interests represented. In the Caetés Settlement in Brazil, women producers formed the Association of Caetés Women because the two existing producers' associations failed to represent their interests (Figueiredo *et al.* 2006). In exceptional cases, associations develop strict gender equity requirements.

Larger associations frequently under represent smaller members. A large industrial association in South Africa, Forestry South Africa, has an executive committee dominated by large timber growers (five members), which carry more weight than medium growers (three members) and small growers (two members). The flourishing of many alternative small producer associations is one outcome (Bukula and Memani, 2006). In some instances, very large associations can benefit from sub-groups that deal with specific issues. For example, a papermaking sub-

group may develop within the Yunnan Provincial Forest Products Industry Association in China (Weyerhaeuser *et al.* 2006).

Making costs and benefits transparent

Trust grows when members know what their rights and obligations are. Developing clear procedures for costs and benefits and sticking to them can avoid corruption and abuse by powerful elites. One of the main contributors to the success of the Kamuni Women's Handicraft and Sewing Development Association is the meticulous financial record keeping of the stock held in the newly built craft sales centre (Ousman *et al.* 2006).

It is also vital that members perceive some advantage over non-members. Graded membership can build loyalty for continuing membership and can improve inclusion of the poor. In India, the FORHEX association has three types of members; founder, chartered and associate members. The latter pay reduced fees and receive partial benefits in comparison with the former two categories. The Madhya Pradesh Minor Forest Produce Cooperative Federation Limited has a set membership fee, but it distributes profits in line with particular activities: 50% to primary collectors, 20% for forest regeneration and 30% for infrastructure development (Bose *et al.* 2006).

Building in additional social benefits for marginalized groups can strengthen association unity. In Brazil, association barbecues and games proved to be an often-cited reason for belonging to the Association of the Settlement Project California (Figueiredo *et al.* 2006).

Developing clear conflict resolution procedures and effective sanctions

Personality differences and poor representation can lead to a fragmentation of associations, which negatively impact on their bargaining power. One useful strategy is to ensure space for "non-standard" meetings. Such meetings deal with contentious issues, new developments, the hosting of important visitors or discussing new government policies. In Uganda, 95% of the associations that remain have procedures in place to call such meetings (Kazooru *et al.* 2006).

Rewarding members and penalizing free riders helps to ensure the satisfaction of those who sacrifice the most. The credibility of the association (and the willingness to pay membership fees) often hinges upon how people who fail to pay are treated. For example, the Guyanese Orealla Fruit Cheese Women's Association, which makes forest fruit jams, stipulates an annual membership fee, commitment to waged work in the "fruit cheese" production facility and regular participation in meetings. The association expels members if they fail to pay the annual membership fee or if there is a two-thirds majority vote for expulsion (Ousman *et al.* 2006).

Effective support

With a recognized emphasis on the importance of autonomous and democratic decision-making in associations, what role should external agencies play in order to effectively support them? The following are suggestions for such support.

Make it easy and fair for SMFE associations to operate

Kaimowitz (2006) highlighted several major constraints for SMFEs; overregulation, trade liberalization with subsidies for the rich, and weak support services (credit, information and training). Overviews of SMFEs in six countries highlight the need for governments to level the playing field, with inequities in business registration, resource access and taxation being seen as endemic (Auren and Krassowska, 2003; May *et al.* 2003; Saigal and Bose, 2003; Sun and Xiaoqian, 2003; Thomas *et al.* 2003).

One general rule for support is to foster what already exists rather than impose or create what does not. In many cases, successful support emerges through genuine partnerships or response to demand from the association itself. In Mexico, the Union of Zapotec and Chinantec Forestry Communities (Uzachi) was established autonomously in 1989 following decades of private exploitation of their natural mixed pine oak forests. The Union then approached FSC and obtained certification in 1996. It has subsequently been able to attract greater financial and technical support and has increased status in the eyes of the environment ministry (Markoupoulos 2003).

Before rushing to push external loans or technical support programs, it is worth exploring what internal credit unions or revolving loan funds already exist. For example, the North Rupununi District Development Board in Guyana runs a women's revolving loan scheme, providing small loans at 5% interest rate. It also finances a larger North Rupununi Credit and Development Trust geared towards business start-up. This is initially repayable in 6-9 months, at which time borrowers can access a second larger loan (Ousman *et al.* 2006).

Likewise, forcing particular models of association can cause lasting damage. In Uganda there is a highly negative reaction to the "cooperative" form of association because of the high failure rates among government sponsored cooperatives in the 1980s (Kazooru *et al.* 2006). Years after the fact, this negative perception still persists.

Underwrite communication networks that link forest enterprise associations, markets and service providers

In very poor countries, the infrastructure to connect SMFEs and their associations to registration authorities, consumers and service providers is often absent. This may give the perception of poorly organized, informal enterprises, dispersed economic activity and excessively high risk. This in turn discourages government authorities, financial institutions and technical support services from attempting to assist these entities.

One of the most productive forms of support connects forest enterprise associations to the outside world and vice versa. For example, some of the success of the North Rupununi District Development Board in Guyana came from the tireless engagement and promotion of its activities by the Iwokrama International Centre for Rain Forest Conservation, which helped to link the association with various other donors (Ousman *et al.* 2006). In China, the Zhajaiwa Village's Persimmon Association posted information about its products in the Baoshan Forestry Bureau's publications and secured buyers from as far away as Shanghai (Weyerhaeuser *et al.* 2006). Umbrella associations such as the Budongo Forest Conservation and Development Organization or the Uganda Honey Association in Uganda act as support hubs for the development of better communication networks (Kazooru *et al.* 2006)

Many associations would also benefit from exposure to similar groups that can facilitate connections with those outside the association. Support through printed or radio bulletins, or by financing visits to trade fairs can be very useful. The Essential Oil Association of India publishes a journal entitled "Indian Perfumer," which presents the latest research and market information. It also sponsors workshops and seminars for member entrepreneurs (Bose *et al.* 2006). In Guyana, the Ministry of Amerindian affairs usefully sponsored a craftswoman from Kabakaburi community to train the Orealla Women's Group in the making of *tibisiri*¹ craft (Ousman *et al.* 2006).

¹ *Tibisiri* straw comes from the young shoots of native Guyanese palms and craftswomen then weave it into items that are very popular with tourists and local tradesmen.

Provide ways of distinguishing, and increasing the returns to, local forest enterprise associations in the market

Consumers are often willing to pay a premium for the social benefits linked to local forest enterprise associations, which are often community-based. The fair-trade movement already offers price premiums for many crafts made from timber and non-timber forest products. Such products are marketed and sold by Fair Trade Organizations when certified by the International Federation for Alternative Trade (Macqueen *et al.* 2006). Major timber buyers have expressed an interest in developing fair-trade timber in order to secure such premium prices (Roby 2005). Unfortunately, there is currently no product-specific label for timber available from the Fair Trade Labeling Organization that might allow mainstream traders to engage in the market for fair-trade products.

Despite well-publicized social concerns, the three major timber certification schemes (FSC, the Programme for the Encouragement of Forest Certification and SFI) fall short. They do not distinguish between small community-based products and products originating from large multinationals, a factor that disadvantages small local forest enterprise associations. They continue to face disproportionate costs for certification without seeing many economic benefits (Bass *et al.* 2001). A new alliance is calling for market mechanisms to address this deficiency, but such mechanisms will need to address the major gaps in mainstream trade, certified trade and fair-trade systems.

Conclusions

Small and medium forest enterprise (SMFE) associations can and do work where there is little else available to improve livelihoods and alleviate poverty, and therefore warrant support. Three priority areas require attention:

- **Make associations easy and fair:** In many countries the formal registration of different forms of association is still overly bureaucratic or centralized, and existing policies often marginalize SMFEs. Policy makers should find ways to reduce administrative hurdles and channel support through small and medium forest enterprise associations.
- **Subsidize information, training and association networks:** Communication networks and support programs can provide information and training on registration procedures, available finance, market trends, technological innovations, etc. Finding ways to support networking through trade fairs, workshops and seminars could also be very useful.
- **Develop market mechanisms that distinguish and reward local forest enterprise associations in the market:** Market access is a perennial problem for local forest enterprise associations. Creating mechanisms that allow SMFEs to distinguish their products and get better prices for them is a central issue.

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THE ROLE OF SMALL AND MEDIUM FOREST ENTERPRISE ASSOCIATIONS IN REDUCING POVERTY

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Introduction

When discussing community forestry, the forests often referred to are large, contiguous, natural forest areas with communities surrounding or living within the forest. However, small-scale agro-forests are a prominent type of community-owned forest in many developing nations and millions of people throughout the tropics rely on agro-forests to provide the majority of their income and subsistence. Such agro-forests usually consist of a wide diversity of trees, providing an impressive array of timber and non-timber forest products. Slow-growing, high-quality timber trees are often included in small-scale agro-forestry systems as a form of low-labor, long-term savings for farm families.

In Indonesia, small-scale farmers are already providing teak wood to local, regional, national and even international wood markets (via national factories). However, farmers selling such high-grade wood receive only a small portion of its value due to the long and complex supply chains involved in bringing the wood from the farmer to the end purchaser, and prohibitive licensing laws preventing farmers from having more direct market access. They are similarly



often overlooked for certification due to the complexity of organizing and sourcing from hundreds to thousands of small-scale agro-forests, despite the fact that many farmers' forest management practices already meet many of the certification criteria for sustainably-managed forests and that such community-produced wood could have a strong appeal to niche markets that focus on 'green' or 'socially responsible' products.

Another challenge when dealing with the management of agro-forests is how to ensure consistency and sustainability of supply. Most of the resources regarding sustainable forest management are focused on large-scale, contiguous forests. Even 'small-scale' forest literature often deals with forests of 50-500 ha in size. Articles on silviculture and sustainable management techniques for agro-forests on the scale of 0.5-5 ha are lacking. Creative twists on traditional forestry techniques must be applied when managing small-scale agro-forests which together comprise large areas of the landscape, but are being individually managed by many stakeholders with diverse goals. A successful example of such a creative twist is the Cooperative for Sustainable and Successful Forests, or KHJL, an organization which is the focus of this paper.

Historical background

In the early 1970s the national government decided to convert 38,959 ha of natural forest in Konawe Selatan (KonSel) District, Southeast Sulawesi, to teak plantations. People from local communities were hired to do the forest clearing and teak planting, and many simultaneously planted teak trees on their own allocated village lands at this time. The agro-forests that have since developed in the region contain a mixture of cash crops, including pepper, cocoa and cashew nut, as well as traditional crops. Trees also include fruit, firewood and timber trees (primarily teak - *Tectona grandis*).

Around 1999/2000 the KonSel teak plantations that were planted in the 1970s became mature for harvesting, but due to the lack of clear legislation, it was not apparent who was responsible for managing the area. In the absence of strong government control, the forests began to be recklessly cleared through widespread illegal logging. It was in this context that regional NGOs in Southeast Sulawesi became alarmed by the rapid disappearance of the teak plantations and decided to develop the concept for a Social Forestry Program in the KonSel District.

The Social Forestry Program in KonSel

The goal of the Social Forestry Program in KonSel was to stop illegal logging and improve community livelihoods by turning management of the state teak forest over to the villages surrounding the forest. The program was instigated in 2003 by a network of community-based, non-governmental organizations in Southeast Sulawesi known as Network for the Forests, or 'JAUH' (*Jaringan untuk Hutan*).

To begin, JAUH organized interested community members living in the 46 villages surrounding the state teak forest into groups at the village-level. JAUH did this through trained facilitators who were each assigned to live in the villages and help each village group to organize its meetings, elect group officials and determine group rules. These village groups, together with local government forest staff, were then engaged in participatory mapping of the state forest adjacent to their villages, using Global Positioning System (GPS) units.

After each village group was developed, the elected leaders of the group were sent to a district-wide forum to develop general rules for inter-village communication and organization. This forum was named the Organization for Communication between the Groups, or 'LKAK' (*Lembaga Komunikasi antar Kelompok*). Here the elected representatives also elected a secretariat committee in charge of convening meetings. They then officially applied to the national government for the right to manage the state teak forest. The government, however, insisted that only a legally registered business organization could apply for the right to manage the state teak forest, not an unofficial affiliation like LKAK. This requirement prompted the LKAK representatives to establish the Cooperative for Successful Sustainable Forestry, *Koperasi Hutan Jaya Lestari*, or 'KHJL'. The KHJL's Management Committee (MC) was comprised of community leaders elected by the LKAK. Also, as part of the legal requirements for cooperatives in Indonesia, a Monitoring Body of 3 community members was elected to monitor the activities of the KHJL Managing Committee and staff.

It was through this process that the communities created a strong, legally-recognized group structure in which members held decision-making and management power, and over which they felt ownership. Since the communities were involved in the design of the group structure from the beginning, they also had a strong understanding of its rules and the responsibilities of its members and leaders. This structure could then be used for communal decision-making, group marketing and as a legally-recognized structure through which smallholder farmers could get wood-related permits and sign sales contracts with factories or other market actors.

Once created, the KHJL then submitted its application to manage the state teak forest to the Ministry of Forestry for Indonesia. Unfortunately, the application was not immediately approved due to a perceived conflict between the Social Forestry legislation and previous Community Forest legislation regarding the process for granting state forest management licenses to communities. For one year, while the Ministry of Forestry and various national NGOs discussed this issue, the KonSel Social Forestry Program came to a standstill and illegal logging continued at a rapid pace. To date (over 3 years later) the matter has yet to be resolved at the national level.

Partnering with the Tropical Forest Trust (TFT)

As the state forest was being degraded, JAUH was losing community support for the Social Forestry Program. JAUH was also hampered by a lack of trained foresters or business managers on staff, and thereby had no one who knew how to manage the forest area sustainably or market the forest products. It was at this point that JAUH opened communication with the Tropical Forest Trust (TFT). The TFT provided the benefits of being able to provide training in sustainable forestry techniques and wood product processing, as well as a ready market for their teak and potential business investors.

The TFT specifically seeks to work with forests producing wood species that TFT member companies need for their supply chains. Since teak was in high demand among TFT members, the TFT was able to guarantee that there would be a ready market for the KHJL teak. The next condition allowing TFT to become a partner in the program was that the KHJL was willing to work toward FSC-certification of the forests it managed and had to agree to give preference to TFT members in wood sales contracts, as long as they matched the best-offered price for the teak. In June 2004, JAUH and the KHJL signed a Memorandum of Understanding with the TFT, which agreed to train and facilitate the KHJL in the sustainable management of its members' forests and business structure, as well as provide access to environmentally-conscious teak markets.

Institutional structure and legality

Initial discussions with the community members and JAUH revealed that, although the communities had formed the legally-registered cooperative, they had little understanding of what a cooperative was or how it functioned. Therefore, one of the first tasks for the TFT was to help them understand the structure and purpose of cooperatives, the concept of member ownership and dividend payment, the way cooperatives were democratically governed, and how profits were calculated and distributed. This training process was fundamental to raising members' understanding and faith in the cooperative system, as well as creating well-educated members with the capacity to hold the KHJL accountable to the laws governing cooperatives.

In most cooperatives, the Annual Member Meetings are open to all members and serve as the primary rule-making body of the cooperative. This function is difficult, however, when the members are spread out over a large area and those living far away are less likely to be able to attend such important meetings. As a result of the orientation on cooperative governance, the KHJL members decided that the KHJL Annual Member Meetings would instead be comprised of one elected representative from each village group, similar to the structure of the LKAK. However, since members still strongly wanted dividend payments paid to individual members, individuals still formed the membership unit, rather than groups. The participants of the cooperative's Annual Member Meeting then took on essentially the same structure as the original LKAK. It was therefore decided that the 'KHJL Annual Member Meeting' and the LKAK would be synonymous. Next, the meeting led to the decision that the elected LKAK Secretariat was desirable, but was to be incorporated into the KHJL structure by writing it into the KHJL constitutional by-laws. Through these by-laws, the two original organizations became one legal structure that the communities understood and felt ownership over.

Incorporating community teak into the business of the KHJL

While waiting for the communities to receive the license to manage the state forest, the TFT and JAUH were eager to train the village groups in forest management techniques. They thus decided that the KHJL could gain some basic organizational and forestry skills and earn some start-up money by engaging in the management and trade of teak that had been planted on the village and transmigration lands, commonly called 'community teak'. Since the original trees had been planted at the same time as the state forest, they were also now ready for harvest.

Once the basic structure of the cooperative was established and agreed upon by the community groups, the focus shifted to management rules for the community teak. A sustainable management system must be in place before market access is enabled, so that the international market does not quickly deplete local forests. FSC would be used as the standard for a sustainable management system. It was decided that the KHJL would apply for FSC-Certification under the Group Rules for Small and Low-Intensity Managed Forests (SLIMF). In this structure, the KHJL Management Team would act as the 'group manager,' ensuring that each of the individual members' teak management met the KHJL's general group standards. The document *Group Certification for Forests; A practical guide* (Nussbaum 2002) was used to guide the process.

Establishment of group rules needed to be done in such a way that the rules were created by the community members, based largely on the way they already managed their teak. Similarly, rules and processes would need to be tested on a small scale for applicability before being implemented in all 46 villages. Thus, 12 'pilot villages' were selected by the KHJL All Member

Meeting to undertake initial implementation of all new rules before they became officially part of the overall KHJL structure. In general, establishment of the group rules was conducted using the following circular process:

1. Through Participatory Rural Appraisal (PRA) techniques, village groups were facilitated to describe and document their current teak management system(s) and techniques.
2. Community group discussions were facilitated to understand the Forest Stewardship Council (FSC) Principles & Criteria (P&C), and compare their current system(s) with the criteria.
3.
 - a) If the group felt that their current system already met the FSC P&C, they were supported to document the system in terms of group rules and to explain why they believe it met the FSC standards.
 - b) If the group felt their current system did not meet the FSC standards, group processes were facilitated to create and agree upon simple group rules that would meet the standards, and were easy for villagers to implement.
4. A trial implementation of the rules in pilot villages then started, with regular review to analyze whether or not the rules were being followed.
5.
 - a) In cases of successful implementation, the rules were made permanent by asking the All Member Meeting for ratification.
 - b) In cases of unsuccessful implementation of rules, there was analysis on why the rule was not being followed, re-assessment of whether the rule was necessary and sufficient as written and simply needed better communication and enforcement, or if it could be changed slightly to better fit what members were doing while still meeting the FSC standards. If it was changed, the process went back to step 4.

To begin management of community wood, it was agreed in the All Member Meeting that 12 villages would be chosen as 'pilot villages', to experiment with initial implementation of the proposed group rules (step 4 above). In this way, problematic rules or procedures could be identified in the 12 pilot villages before training & implementation was extended to all 46 Social Forestry Villages. Another reason it was decided to focus on 12 pilot villages was that it was not clear how FSC assessors would view the KHJL system. By having an FSC assessment of the structure in 12 villages only, any major problems with certification would be identified before the system was replicated in all 46 villages. Additionally, if the KHJL system in the 12 villages was FSC-certified, then, as long as KHJL applied the same basic rules to newly-registered villages, new villages could join the certified system gradually overtime without the need for an additional FSC-assessment. Instead, each FSC Annual Audit would allow the assessors to check whether or not KHJL was still implementing its original system with all new villages and members.

Based on the process described, each of the 12 groups was guided through the development of draft rules. The rules were then categorized according to whether they pertained to individual members' teak management, institutional rules, or management protocols. The rules pertaining to individual management were combined in a single 'Membership Agreement' document, which all individually registered members would be required to agree to in writing. The institutional rules were ratified into the KHJL's constitution and by-laws, and the management protocols were documented as Standard Operating Procedures (SOPs).

Challenges in creating rules for agro-forestry management

Land Tenure

Throughout the process of creating group rules and SOPs a number of challenges unique to smallholder agro-forestry management were encountered. The first was the issue of smallholder land tenure. FSC Principle 2 requires that the forest area has secure land tenure. In Indonesia, the most official type of proof for land ownership for farmers is a Letter of Ownership (*girik*). In practice, to obtain this farmers are required to pay a substantial fee, plus go through a bureaucratic process requiring expensive bribes to complete. Only the wealthy and well-connected can usually secure such a document for their land. Instead, most villagers rely on their district Property Tax receipts ('SPPT') to show proof of ownership. Due to the common availability of SPPT's, the KHJL decided to make photocopies of this and use it as their required 'proof of land tenure' for each member.

Additionally, the head of each village (*Kepala Desa*) is responsible for keeping track of village land ownership, as well as collecting the land tax receipts. In some villages, the *Kepala Desa* will insist on keeping the land tax receipts, thereby denying villagers this proof of land tenure unless the villager submits a request to the *Kepala Desa*, (often accompanied with a bribe). Given the central role *Kepala Desas* play in village land tenure, letters from the *Kepala Desa* confirming land tenure also serve as a proof of land ownership in the region and were added to the KHJL's acceptable proofs of land tenure. Nonetheless, in some of the villages there were conflicts between individuals and their *Kepala Desas*, so potential members could not secure the proof of tenure necessary. In one extreme case, the *Kepala Desa* had a personal conflict with the elected village unit coordinator, and withheld proof of land ownership to all of the potential members in the unit.

To overcome this problem, the KHJL decided to produce a written document making a public commitment to pay all village taxes on wood harvesting and sales (these are taxes that are often left unpaid by illegal loggers). The immediate impact of this was that many village leaders thus decided to raise their local harvesting and sales tax, but discussions between JAUH, LKAK, the village units and the village heads convinced most village governments to keep the tax rise relatively low. This effort to recognize and adhere to village tax rules won the favor of most village heads and the problem faced by members in securing proof of land ownership were drastically reduced. It also served to improve local governance since it legalized payments made to the village, while providing the village government with operating funds.

Another land tenure-related problem raised by the Smartwood Assessors was how to ensure that registered village plots did not overlap with state forest land. Since the state forest boundaries had already been determined with local participation, marked in the field, and marked digitally on provincial forest department documents using GPS under the Social Forestry Program, this problem was relatively easy to solve. A process was created so that each registered member's teak plot location would be mapped using GPS, and the location of the plot would be marked on a digital map. Plots located within 300 m of the state boundary had to be assessed by a joint team of the member/plot owner, unit coordinator, one KHJL Management Committee Member and a district forest staff person. If the plot was found to be outside the state forest, an official letter was written by the Forest Department affirming its legality. If the plot was indeed shown to be in the state forest, the member was not allowed to register it with the KHJL.

The KHJL now keeps copies of proof of land tenure for each of its members. This provides a second source of tenure proof, outside that of the *Kepala Desas* and helps members invest more confidently in long-term crops, such as trees and teak.

Determining Annual Allowable Cut

Determination of Annual Allowable Cut for smallholder forestry plots was also challenging since teak trees were not spread out evenly across the landscape and were also of uneven age. Some registered plots would have as few as 5 trees, while others would be fully stocked with over 500 trees per plot. Plots also ranged in size from .25 ha to 5 ha. In Indonesian production forests, the most common system for determining Annual Allowable Cut is by dividing the entire production area by the rotation age of the timber tree, and creating annual harvesting blocks for each year of the rotation cycle. The wide variation in the density of teak trees per hectare for community teak made an area-based Annual Allowable Cut impossible to create.

Instead, the KHJL based their Annual Allowable Cut on the cubic meters of standing teak tree volume, as determined by a full member inventory of all teak trees over 10 cm in diameter. Teak trees with diameters 30 cm or more were considered to be of harvestable size. An estimation of teak growth rates for the region was provided by the local forest department as approximately 1.5 cm diameter per year. Based on this, it was predicted that the trees in the 20-29 cm range would take approximately seven years to enter the 30 cm diameter range, and thus the total standing volume of the 30+ cm trees should be divided by seven to calculate the Annual Allowable Cut.

The other challenge in determining Annual Allowable Cut is that the KHJL forest area per standing tree volume is not constant. As existing members register more teak plots, new members join, and some members may leave or pass away, the number of trees registered with the KHJL changes. Thus, the actual total standing volume for trees with 30+ cm is constantly changing, as is the Annual Allowable Cut. These changes can be monitored on an ongoing basis by the inventory team, who keeps a database of all registered teak trees per member and can calculate at any time the current Annual Allowable Cut and compare it with the volume already harvested for the year. Thus, Annual Allowable Cut monitoring is a constant and ongoing activity.

For the sake of clarity for co-operative members, Annual Allowable Cut is also calculated on a unit-by-unit basis, so that if one unit adds new members with teak trees over 30cm in diameter, their Annual Allowable Cut will go up, and if a member from that unit leaves the KHJL, the unit will see its Annual Allowable Cut go down. This helps village units understand the importance of long-term member commitments to the KHJL model, and the importance of harvesting within their Annual Allowable Cut. In practice, some units may not want to harvest their full Annual Allowable Cut each year, in which case, other units can cut more than their Annual Allowable Cut, as long as the unit that is over-harvesting realizes that in the future they will need to under-harvest, and allow other units to cut more. Thus, the total KHJL Annual Allowable Cut is set and monitored on an on-going basis, while the village units' Annual Allowable Cuts are provided more as general guidelines for members and unit coordinators.

Harvesting Distribution

Once the Annual Allowable Cut is determined, the cooperative must decide which members' trees will be harvested each month. Through discussions with community groups, it was found that villagers often use their teak trees as a form of savings, to cut when the household needs a large sum of money, such as for wedding ceremonies or medical emergencies. Farmers therefore cannot predict 20 or even five years into the future when they would like to harvest their teak. Instead, a highly interactive process was established to determine which farmers would harvest their teak each month (running over 3-4 months):

1. First, the KHJL Management would send lists to each unit of which members had completed all their registration requirements and, based on the inventory of their land, had teak trees over 30cm and ready to harvest.

2. The KHJL Management team would also send an estimate of the proportional amount that could be harvested from each unit and still stay within the annual allowable cut.
3. The Unit Coordinators (UC) would then call a unit meeting to find out if any of the members on the list would like to harvest their teak. Based on this meeting, the UC would send a list of willing members back to the KHJL.
4. The KHJL Management reviewed each list of ‘willing members’ and selected the members whose teak would be harvested each month.

Using this system, flexibility in the harvest timing for villagers was retained, while the KHJL was guaranteed to stay within its Annual Allowable Cut.

Harvest Licensing and Simplification of the Supply Chain

One of the major barriers KonSel smallholders faced in regard to market access was that of obtaining the licenses necessary to legally harvest, sell and transport teak from privately owned land. To legally harvest and sell more than 10m³ of teak from village and transmigration lands in KonSel District, a Community Land Harvesting License (*Ijin Pemungutan Kayu pada Tanah Milik*), or ‘IPKTM’, is required. According to local district law, the following list of documents is needed in order to be granted an IPKTM:

1. Proof of land ownership, specifically an official Letter of Land Ownership.
2. A recommendation letter from the Sub-District Head.
3. A recommendation letter from the Head of the local Forest Department Branch.
4. Permission letters from the landowners.
5. A map of the land made by the Head of the local Forest Department Branch.
6. A survey report of the standing tree volume on the lands where harvesting will take place.
7. An approval letter from the Head of the District.

Clearly, the requirement for extensive documentation and number of government approvals involved in gaining harvesting licenses excludes most smallholder farmers from ever securing such a license for harvesting their own wood, and selling their wood directly in city markets or to factories. Due to this licensing system, a chain of production has developed in the region whereby wealthy, well connected individuals who can invest the large amounts needed to secure an IPKTM, function as wood traders buying wood from farmers, taking care of all the necessary licensing and transport, and re-sell it to factories with a large profit. Since District Heads usually only issue IPKTM licenses to one or two individuals at a time, the wood trader often has a monopoly on wood buying in the district.

One of the first challenges for KHJL was how to gain the start-up funds necessary to secure the IPKTM and take on the role of the ‘wood trader’. The KHJL however, would be a wood trader managed by communities and help local farmers by paying the highest possible price for their wood, limiting the difference between buying price and selling price to the actual costs of operations, without taking an excessive profit at the expense of farmers. This approach was taken to ensure that the participating farmers receive the best price on the market and would be less tempted to sell to outside buyers. Furthermore, it would help to avoid corruption among the cooperative’s leaders, who would be responsible for safeguarding all profits until the end of the year at the annual member meeting where profits were divided among the members as dividend payments. Many previous cooperatives in the region failed when farmers did not get fair prices up-front, and then saw their dividends disappear when corrupt leaders pocketed them. To secure the start-up funds, the TFT gained assistance from a member

factory and retailer who provided the start-up funds for licensing to the KHJL as a short-term, no-interest loan, to be paid back through cash or wood sales over the first few years of operation.

Benefits of FSC certification

Once KHJL had clear member rules, registered members with inventoried teak, and an IPKTM license to legally harvest and sell teak in the region, it was ready for FSC-assessment and certification. But the question still remained: was FSC Certification really necessary, and how would it benefit the KHJL? Clearly, the main initial reason KHJL worked toward FSC Certification was because as a pre-requisite to partnering with the TFT, a partnership that brought them free forestry and business training, no-interest loans and international market access. Since TFT members were prepared to also cover the costs of the FSC assessment, applying for certification was a low-risk decision for the KHJL.

Besides partnership with the TFT, the KHJL also received other benefits from FSC certification. First, since there is already an international niche market for FSC-certified teak, the KHJL could be relatively certain that there would be a price premium associated with FSC certification. Second, FSC certification brought international recognition and credibility to the KHJL as a forest management unit with the capacity to sustainably manage forest areas. This international credibility helps the KHJL in its bid to manage the state forest area by countering the usual reason for national government officials to withhold management rights: communities' lack of capacity to sustainably manage forests. Finally, the recognition brought by FSC Certification helped KHJL members to access national forest trainings, discussions regarding forest governance and community forest conferences. In this way, FSC certification has helped the KHJL as an institution to keep abreast of ongoing forest technologies, techniques and laws.

Keys to sustainability of the KHJL

Clear member benefits & price premium

The greatest key to the sustainability and success of the KHJL is its ability to bring a multitude of benefits to its member farmers. KHJL members all receive training in best management practices for teak, as well as free teak seedlings to plant on their plots each year. Membership fees are kept low and when KHJL makes a profit, members receive a modest dividend each year. But the most important direct benefit to members is the price premium they receive by selling teak to the KHJL. Members reported the KHJL buying price to be up to 100% higher than the previous price offered by wood traders. Many members also admitted to previously working for illegal logging companies, but decided to leave this work when they saw that they could make more money by selling the teak from their own land than that teak from state forests (It is also a KHJL membership requirement that all members refrain from illegal logging activities). As long as KHJL continues to provide a price premium well above competitor teak prices to its members, it will continue to have a growing membership and forest area for management. Similarly, the price premium indicates to farmers that there is a strong market demand for teak, and encourages them to plant more teak on their land, thus increasing the future teak supply for the KHJL.

Transparency & accountability: long-term monitoring by JAUH & TFT

Transparency of management practices and strong systems for monitoring corruption are also necessary to sustain the success of the KHJL. This monitoring depends on members understanding their rights and actively holding their elected managing committee (MC) accountable for good institutional and financial management. Currently, JAUH and TFT also serve as monitors to ensure that corruption is not being practiced in the management of the KHJL. If the KHJL MC is perceived to be swindling funds, they will quickly lose legitimacy. KHJL has already selected certain MC members to be responsible for training new members and others for monitoring financial management. As long as members and the leaders assigned to monitoring tasks continue to take their jobs seriously, corruption will be minimized. Time is needed, however, for the KHJL to develop a culture of transparency and accountability independent from TFT and JAUH monitoring. Most likely JAUH & TFT will need to continue as monitors long after they are no longer needed for economic support or training for capacity building.

Economic Sustainability

Finally, economic sustainability is crucial for the KHJL. In the first year of KHJL's operations, the KHJL made a profit in its first year of management (if profit is calculated according to the amount of money earned through wood sales, minus the amount of money paid for operations expenses and loan repayment). Approximately 30% of this profit was divided as dividend payments to members, who received up to twice as much back as they paid in membership fees at the beginning of the year. This also helped the KHJL gain legitimacy with the regional communities, and many more farmers registered as members in 2006 than 2005.

However, TFT continues to support KHJL economically by 1) allowing them to pay back the no-interest loan on a 'per container' basis; 2) covering the costs of FSC Certification and 3) using some of the loan money to pay 3 inventory staff salaries. If the costs of all the inventory staff salaries, along with FSC Annual Audits are figured into the profit calculation, the KHJL would still make a profit, but it would not currently make enough profit to support its Management Committee.

Future economic sustainability therefore largely depends on:

- 1) KHJL's growing capacity to become economically independent through a smooth and gradual transition away from donor funds;
- 2) KHJL's ability to 'scale up' by expanding its forest area through inclusion of more members and more village groups;
- 3) KHJL's ability to incorporate 'value adding' activities to its business, such as a system for setting wood prices by grade and offering sawn timber or eventually furniture;
- 4) KHJL's access to markets being appropriate to its scale, allowing flexibility in dealing with communities, and being equipped to gain a price premium for the wood that is FSC certified; and
- 5) KHJL's ongoing ability to function efficiently enough to ensure members clear price premiums and dividend payments, while still covering its operational and staffing costs.

Conclusion and potential for replication in other regions

Keys to success

Although only two years old, the KHJL is so far a successful case of sourcing and certifying high-value timber from smallholder farmers' agroforests. In summary, the the key ingredients in KHJL's success as an organization so far include:

1. The group structure resulted in a simplified supply chain and, due to the assistance of TFT and JAUH, was credible in the eyes of the government and the international market.
2. The program began small, in 12 pilot villages, with a simple system for gradual growth over time. Monitoring is provided to ensure that the rate of production growth does not outstrip the rate of community capacity development in business management.
3. The KHJL was linked to key niche markets of appropriate size, which were able to capitalize on the environmental and social aspects of the wood source and pay premiums for FSC-certification.
4. Before production began, a system was put in place to sustainably manage the wood source based on actual inventory data. Well-known annual allowable cuts limited the amount of wood KHJL could harvest and sell in any given year.
5. Intensive training and capacity-building was given to community managers so that they could meet the demands of the international markets in aspects such as:
 - a. Wood Quality
 - b. Reliability in meeting contract commitments
 - c. Consistency of supply over time
6. Initial start-up funds were provided together with training in business planning and management.
7. The program has the long-term support of an outside monitoring body, and will gradually be weaned off its financial and training support.

Opportunities for replication

The question, however, remains as to whether such a model can be replicated elsewhere? In conclusion, the key conditions that have contributed to the success of the KHJL model, which would most likely need to be present for successful replication of the model elsewhere, include the following:

1. Smallholders in the region are already providing wood to national and international markets (i.e., there is a ready supply and market for the wood).
2. Smallholders already include the target tree species in their traditional agro-forest systems (i.e., traditional forest management systems for the trees are already in place).
3. A complex chain of custody prevents smallholders from receiving high prices for their wood, or regional laws or economic conditions have created a monopoly situation in which smallholders have little choice regarding who to sell their wood to, and wood traders make a substantial profit. This situation could be overcome through a group organization of farmers equipped with initial start-up funds.
4. There is a regional NGO(s) or business network prepared to facilitate the smallholders in group structure establishment and training in forest and business management techniques; especially including documentation and formalization of current sustainable traditional techniques being used, and assistance in initial implementation and on-going monitoring.

This list clearly excludes situations in which wood produced by smallholder farmers is only used and sold locally and is not sufficient to direct to national or international markets. It also excludes situations where smallholders already have direct access to national and international markets, or where there is already a simplified chain of supply and strong competition for farmers' wood. In these situations it would be hard for a group structure to provide much of a price premium to members, and farmers would be less likely to commit to sell their wood only to the group. However, group structures may still be useful in helping farmers gain access to capital and selling goods collectively.

This case study serves as a detailed example of a model in which a group organization of smallholders selling teak successfully gained FSC certification, but more importantly, created a system that provides clear and potentially sustainable benefits to its members. KonSel communities are already recognizing the usefulness of the group model and beginning to explore the possibility of selling other agroforest products, such as pepper or cocoa through the cooperative. It is hoped that the details about the KHJL system provided here can offer both inspiration and information for other similar programs throughout the world.

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NEW BAMBOO INDUSTRIES AND PRO-POOR IMPACTS: LESSONS FROM CHINA AND POTENTIAL FOR MEKONG COUNTRIES

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Introduction

Oxfam Hong Kong (OHK) and the Mekong Private Sector Development Facility (MPDF) have carried out a bamboo sector feasibility study for Viet Nam, Lao PDR and Cambodia¹. The Study was conducted in close conjunction with a bamboo value chain pilot led by MPDF in Thanh Hoa province, Viet Nam which over the past 18 months has been carried out in partnership with the domestic private sector, farmers and international buyers².

¹ Feasibility Study (US\$ 250,000) jointly funded by OHK and MPDF.

² Supply-chain pilot (US\$ 315,000) main donor IFC - MPDF. Other contributions from M4P project of ADB, IKEA.



Together, the study and the pilot demonstrate that an efficient high-value pro-poor industry includes the critical component of near-source pre-processing of bamboo. Near-source pre-processing, where farmer businesses split the culms into parts and channel these parts and residues into separate product chains, creates an efficient industrial supply-chain. China, having coupled this supply-chain innovation with technology and new product development, has led the growth of the now US\$ 7 billion global bamboo market, which also include bamboo shoots and handicrafts. The industry where 75% of the total market value is pro-poor - in terms of farmer returns and worker salaries - has potential for the Mekong countries as a scaleable rural industrial model, transferring value to growers, creating viable local businesses and leading to more widespread economic transformation.

Government, donors and development agencies have made large investments to tackle poverty in the region. While these efforts may have contributed to development in general, the evidence shows that they have been less effective in tackling more entrenched issues in remote and upland communities. Development of integrated value chains for bamboo products, appropriate training and technology, access to capital, business development services and practical government policies are required for the poor to access markets and transform poverty.

This paper presents findings and conclusions from the feasibility study which was composed of contributions by more than 20 consultants from 14 organizations who carried out component studies in Viet Nam, Lao PDR, Cambodia, China and globally during the first half of 2006. The study explored the potential of the sector through analyses of bamboo resources and farming systems, technology processes, global and domestic product markets and business environments. This paper presents a selection of the analysis and main conclusions including:

- Recent developments in the bamboo industry.
- The global bamboo market.
- Potential for the bamboo sector in Mekong countries.
- Lessons from China.

Recent developments in the bamboo industry

New commercial uses of bamboo

Many people's experience of bamboo products is limited to sitting on bamboo furniture and matting, using bamboo baskets or using bamboo chopsticks to eat some bamboo shoots. The last 15 years has seen a dramatic growth in the variety of commercial bamboo products such as flooring, laminated furniture, building panels (similar to timber-based plywood, chipboard or MDF), high quality yarn and fabrics, activated carbon and bamboo extracts,. The emergence of bamboo as a timber substitute has coincided with a growing demand for timber. Bamboo's appearance, strength and hardness combined with its rapid growth cycle and capacity for sustainable harvesting make it an increasingly attractive wood substitute. The market outlook for bamboo is strong.

These recent developments have created new opportunities for bamboo markets to be targeted for rural development and poverty reduction. In particular, the emergence of near-source value-adding in modern supply-chains increases the sector's potential economic impact on poor rural communities. The feasibility study shows that in Viet Nam today, every ton of bamboo used for producing bamboo flooring has almost 5 times the pro-poor financial impact than if it were used to make paper.

Bamboo in three distinct sub-sectors

It is useful to divide the sector into three stand-alone sub-sectors:

1. Handicrafts: characterized by manual processing and extremely high value-adding to relatively small volumes of raw bamboo.
2. Bamboo shoots: a high-value agricultural food crop that can also be grown in parallel with the production of culms.
3. Industrial processing: semi-mechanized and mechanized processing of large volumes of bamboo culms. The industrial processing sub-sector offers many opportunities for major growth and pro-poor impacts on rural farming communities. Industrial processing can be further divided according to the value of the processing and the grade of material used:
 - Premium processing (eg. flooring, laminated furniture)
 - Medium value processing (eg. chopsticks, mat boards)
 - Low value and bulk processing (eg. charcoal, paper & pulp)
 - Unprocessed culms (eg. scaffolding and traditional construction)

Premium processing requires the highest value parts of the bamboo, typically the middle lower part of large culms. Lower value products can be made with upper and residue parts. So modern bamboo supply-chains now comprise different businesses producing a variety of products, with premium bamboo parts going for high value uses such as flooring, laminated furniture, mid quality parts going to medium value-added processing such as blinds, mats, and chopsticks, and the leftover or residue parts, such as the use of sawdust in paper, charcoal or chipboard.

The pre-processing revolution in bamboo

The revolution in the industrial bamboo sub-sector began in China 15 years ago when it was forced to innovate in response to scarce timber resources. Previously, factories would purchase whole culms for production and were forced to deal with mountains of culm residue and waste. This led ultimately to technical and supply-chain innovations which produced the critical supply-chain step of pre-processing. At, or near-source, pre-processing workshops with specialized but simple machinery separate bamboo culms into various parts and direct these parts into different supply-chains. This creates industry-wide efficiency and greater value-adding at the local level.

The revolution in industrial bamboo practices permitted transportation and waste handling savings, the potential for 100% utilization rates and zero wastes, in short, resulting in a model for achieving maximum resource utility. Business, research institutes and government all contributed to the technology development driving this innovation.

The new premium processing industries generate the highest rates of pro-poor development of all the industrial bamboo processing industries. However, they cannot exist in isolation and must operate within a diversified industry for maximum industry-wide value and value creation.³

³ Zhejiang Province in China now has more than 20 industrial plant and equipment suppliers providing the specialised equipment required for all levels within the industrial supply-chain from pre-processing to production lines for premium end products

World bamboo market and Mekong countries' potential

Overview

The Study estimates that at present, bamboo markets have a combined annual value of approximately US\$ 7 billion⁴. Traditional products account for almost 95% of this value. Newer industries offer growth potential and are expected to rival traditional bamboo-related markets over the medium-term.

Markets for bamboo can be grouped into 'traditional' and 'non-traditional' or 'emerging' markets. Demand remains strong in traditional markets such as handicrafts, blinds and bamboo shoots with profitable opportunities despite moderate growth. Other traditional markets, such as chopsticks, are highly commoditized with low growth and low profit margins. Emerging bamboo markets include flooring, building products and laminated furniture. These represent the largest growth opportunities for bamboo⁵.

Strong international demand coupled with China's export growth and existing bamboo-based industries has produced a growing bamboo sector within wood-based product industries. Supply problems, including the high demand for certified timber, create a positive market outlook for bamboo. Overall prospects for a diversified bamboo sector look strong.

Growth and future global bamboo markets

Current demand is heavily concentrated in traditional bamboo markets. But growth for bamboo products is highest in the emerging wood product substitute-based markets. The scale of future demand for bamboo products will be driven by:

- Global market growth rate: Growth in global markets in which bamboo products compete, and are linked to global GDP growth.
- Penetration rates of bamboo into these global markets: Driven by attitudes of buyers and the price/performance competitiveness of bamboo products compared to alternatives.

We explored various growth scenarios, and conservative 'mid-level' scenarios are reported.⁶ The 'mid-level' scenario estimates that by 2017, the total market for bamboo products will be around US\$ 17 billion, with much of this growth coming from the non-traditional segment of bamboo products, including laminated furniture, flooring and panels.

Mekong bamboo sector potential

Two approaches have been used to develop scenarios for the Mekong sector:

- **Demand Driven:** through analysis of the potential share of the global bamboo markets that could be captured by the Mekong region.
- **Supply Driven:** through analysis of the development of the sector under different industrial models.

⁴ Including: handicrafts, bamboo shoots, chopsticks, blinds, flooring, furniture, panels, builders' joinery & carpentry, charcoal and activated carbon. Excluding paper/pulp and unprocessed bamboo used in construction and household uses.

⁵ Additional niche market opportunities exist for processed bamboo charcoal driven by growing demand for bio-fuels. Bamboo-based activated carbon has the potential to develop strongly in the growing activated carbon market.

⁶ The complete feasibility study contains more data and justifications on these scenarios.

Demand driven scenarios

The assessment of potential market share is informed by analysis of current production levels in the Mekong bamboo industries as well as national export performance in other light manufacturing and agricultural sectors. Mekong countries already capture a good share of some world markets (e.g. 3% of wooden furniture with Viet Nam and growing at over 40% per annum, 7% of coffee exports and 7% of global exports in basket and wickerwork).

Given the Mekong countries' demonstrated ability in bamboo production, three different 2017 world market share scenarios of 2%, 5% and 8% are used for each of the 10 bamboo product industries. The feasibility of each is then estimated based on the current state of each of the domestic bamboo industries and the past performance in other similar industries (Table 1).

Demand driven scenarios suggest that under favorable domestic conditions, by 2017 the Mekong sector could be worth around:

- US\$ 0.6 billion p.a. by capturing a greater share of the existing world bamboo markets (World Bamboo Market Scenario 1 - zero growth)
- US\$ 1.2 billion p.a. by capturing a greater share of a growing world bamboo market (World Bamboo Market Scenario 2 - mid-level growth)

Table 1: “Demand driven” Mekong scenarios

Industry	World Bamboo Market Scenario 1					World Bamboo Market Scenario 2				
	World market (US\$ m)	Mekong Market Share (US\$ m)			Estimate (US\$ m)	World market (US\$ m)	Mekong MarketShare (US\$ m)			Estimate (US\$ m)
		(Existing market - zero world growth)	(Future mid level world growth)							
		2%	5%	8%		2%	5%	8%		
Handicrafts (Bamboo & rattan)	3,000	60	150	<u>240</u>	240	4,200	84	210	<u>336</u>	336
Bamboo shoots	1,500	30	75	<u>120</u>	120	1,700	34	85	<u>136</u>	136
Wood furniture	1,100	22	<u>55</u>	88	55	5,600	112	<u>280</u>	448	280
Wood flooring	100	2	5	<u>8</u>	8	1,200	24	<u>60</u>	96	60
Wood panels ⁷	200	4	10	<u>22</u>	22	2,200	44	<u>110</u>	176	110
Blinds (incl. fish gear)	500	10	<u>25</u>	40	25	1,200	20	<u>60</u>	96	60
Chopsticks	300	6	<u>15</u>	24	15	400	8	<u>20</u>	32	20
Charcoal	100	2	<u>5</u>	8	5	130	3	<u>7</u>	10	7
Activated carbon	20	0	<u>1</u>	2	1	170	3	<u>9</u>	14	9
Paper/pulp ⁸	n/a	n/a	n/a	n/a	80	n/a	n/a	n/a	n/a	110
Raw bamboo ⁸ /construction	n/a	n/a	n/a	n/a	60	n/a	n/a	n/a	n/a	60
Total	6,825	137	341	552	630	16,830	337	842	1,346	1,185

These scenarios show that within the existing world bamboo markets (scenario 1) handicraft, bamboo shoots and paper would continue to be the main bamboo industries of scale in the Mekong. However, in a growing world market (scenario 2), furniture would become

⁷ Viet Nam production of pressed woven mat boards is estimated at US\$ 22 million, hence current market share may be 11%

⁸ Paper/pulp and raw bamboo market size data is not presented as it was not reviewed during this study. However, estimates of future Vietnamese bamboo paper/pulp production and raw bamboo consumption for domestic demand are included here to better illustrate the overall potential scale of the sector.

increasingly important and begin to rival handicrafts as the leading Mekong bamboo industry. Flooring, panels and blinds would also become industries of scale.

When grouped by sub-sector, the growing importance of industrial processing becomes apparent.

Table 2: Contributions of each sub-sector under different scenarios

Sub sector	Mekong Demand Scenario 1 (Existing market- zero world growth)		Mekong Demand Scenario 2 (Future mid level world growth)	
	Overall financial output (US\$ m)	%	Overall financial output (US\$ m)	%
Handicrafts	240	38	336	28
Bamboo Shoots	120	19	138	12
Industrial Processing (incl. Raw culms)	270	43	710	60
Total	630	100	1185	100

The evidence from the recent trade performance of the Mekong countries demonstrates that these scenarios are achievable. Other commodities in which the Mekong countries have achieved similar world export market shares include:

- 8%: Footwear, basketwork, ornamental ceramics, pepper, coffee.
- 5%: Rice, men and women's overcoats, natural rubber, bicycles.
- 2%: Wooden furniture, various garments and agricultural products.

Furthermore, the required growth rates appear to be feasible, if bullish, as they are within the range of annual growth rates achieved by Viet Nam in several similar sectors since 1999. Of particular relevance may be the emergence of the wood furniture sector, which has grown from US\$ 12 million in 1999 to US\$ 1.1 billion by 2004, a sustained average annual growth rate of over 40% per annum (ITTO 2004 & 2005).

Supply-driven scenarios

Supply-driven scenarios for the Mekong bamboo sector are based on the available resource base relevant to each of the sub-sectors.

- **Handicrafts and Shoots.** In the case of the handicrafts and bamboo shoots sub-sectors, they require only 24,000 ha (Demand Scenario 1) and 36,000 ha (Demand Scenario 2).
- **Industrial Processing.** A key variable in the resource scenario is the sustainable yield per ha of bamboo. This is approximately 9.5 tons per ha per year ("luong" bamboo) in the active bamboo processing areas of the Mekong countries covered by the study. In Anji, China, in 2003 the maximum yields achieved by farmers were around 14 tons per ha per year of Moso, an equivalent quality and type of bamboo. Average yields across China are around 9 tons/ha.

Current official estimates for bamboo in the three Mekong countries are: Viet Nam 1.4 million ha, Lao PDR 1.5 million ha and Cambodia 30,000 ha. Allowing for some unreliability in these

government estimates⁹, we can still assume a total area of 500,000 ha would be available for bamboo production in the Mekong countries.

The “New industrial model” explained below is used to illustrate the potential scale of the sector.

Table 3: “Supply driven” Mekong sector scenarios

Sub sector	Mekong Supply Scenario 1 500,000 ha, 9.5 t/ha/yr		Mekong Supply Scenario 2 500,000 ha 14 t/ha/yr	
	Area of bamboo (ha)	Financial output (US\$ m)	Area of bamboo (ha)	Financial output (US\$ m)
Handicrafts	24,000	336	16,000	336
Bamboo Shoots	36,000	138	36,000	138
Industrial Processing (New industrial model)	440,000	495	448,000	729
Total	500,000	970	500,000	1,200

Table 3 summarizes the likely scale of industry that could be supported under different supply scenarios. The supply scenarios indicate that under current raw material production practice and yields, an area of 500,000 ha of bamboo could support an industry worth US\$ 970 million per year. With improved production practice and increased yields the same area of 500,000 ha could support an industry worth US\$ 1.2 billion per year.

Summarizing 2017 Mekong potential

Linking Mekong demand and supply side scenarios with global bamboo market scenarios provides the overall estimate of potential for the Mekong. Table 4 indicates that the conservative mid-level global economic growth scenario could result in a US\$ 1.2 billion per year bamboo sector in the Mekong countries.

⁹ OHK and MPDF are currently funding remote sensing work to upgrade these estimates.

Table 4: Summary of Mekong sector scenarios

Sub sector	Mekong Scenario 1 (Existing market - zero world growth)		Mekong Scenario 2 (Future mid level world growth)	
	Financial output (US\$ m)	%	Financial output (US\$ m)	%
Handicrafts	240	38	336	28
Bamboo Shoots	120	19	138	12
Industrial Processing (New industrial model)	270	43	710	60
Total	630	100	1185	100

Socio-economic and environmental impacts

The potential socio-economic and environmental impacts of the sector have been assessed using a combination of the following measures.

Socio-economic impacts:

- **Overall financial impacts:** the total output value of the sector or supply-chain.
- **Pro-poor financial impacts:** At the center of this approach is the use of measurements for pro-poor financial impacts. These are components of the overall financial impacts linked to waged income, and income to farmers and small businesses close to sources. The feasibility study suggests that this typically amounts to around 75% for the sector (except for products like pulp/paper).
- **Employment creation:** the total number of Full Time Equivalent (FTE) jobs created in farming, pre-processing, secondary processing and associated activities such as transport and loading, trading and wholesale.
- **Total direct beneficiaries:** the total number of workers and farmers gaining direct benefit from the sector. The number of direct beneficiaries will be higher than the FTE employment creation as most farmers only spend part of their time growing bamboo.
- **Distribution of benefits between men and women:** the percentage distribution of benefits analysis between men and women is also carried out for each supply-chain, based on the share of employment creation.
- **Rural distribution of benefits:** the distribution of employment creation along each supply-chain, between farmers, traders, pre-processing and secondary processing workers, is used as a proxy measure for the potential geographical distribution of benefits and hence, the potential for benefits to be captured by more remote, poor communities. The summary indicator used is the percentage of jobs with potential to go to rural communities which is assumed to equal employment creation among farmers, traders and primary processing workers.

Each of these measures is expressed in two forms:

- **Efficiency of impact:** measures the rate of employment creation and financial impact (pro-poor and total) created throughout the sector per hectare of land committed to

bamboo production. This measure permits very clear policy and strategic decision-making, and permits a comparison of benefits with competing options for land use.

- **Scale of impact:** measures the overall scale of impact indicators above.

Environmental Impacts

There are two main environmental considerations from the supply side:

- **Raw material production:** Does the cultivation and harvesting of bamboo have discernable positive or negative environmental impacts?
- **Processing:** What are the main environmental impacts of the different processing industries?

Pro-poor financial impacts

The feasibility study methodology sought to determine how much created value is captured by poor communities, compared with those being captured as profits by larger businesses, imported items costs (fuel), interest payments, or other expenditures that do not attribute value to the local rural economy.

We have used the term “pro-poor financial impact” to describe this local component of total revenue that is captured by poor communities. Part of the study fieldwork included surveys of business cost bases. The data allows the calculation of the proportion of total costs spent on the main “local” costs, such as labor and bamboo processing inputs and provides estimates of profit margins and other main costs.

Bamboo resources and labor together typically represented approximately 80% of the total cost of production for most bamboo processing industries with profit margins of approximately 7% (ranging typically from 0 to 12%). At the processor level, approximately 75% of revenue is captured by local costs compared to approximately 7% taken as profits. The notable exception is paper, where we measure that only 33% of revenue is captured locally.

These estimates reflect the “factory gate” price paid for bamboo. Factory gate pricing includes the total local value-added and profit captured by farmers, traders and transporters along the local value-chain. It includes local costs such as raw material, labor, local fees and profits of farmers and local traders, but also transport costs. When bamboo businesses are sourcing bamboo from poor rural communities, this is a useful approximation of the value captured by poor communities.

However, these estimates are only proxy measures. The main limitations are that they might be subject to include:

- Under-estimating the total pro-poor impacts as they do not reflect the wider impacts of reinvestment of profits and surplus capital by farmers and local traders back into the local economy; and
- Over-estimating the direct pro-poor impacts as they also include transportation fuel costs and do not differentiate between the benefits captured by non-poor farmers and traders and those actually classified as poor. For example, the study found that when transported up to 20km fuel costs may represent around 10% of the factory gate price.

Subsequent stages of work will look more precisely at attribution of value at various points in the market-chain, and wider secondary impacts of supply-chains. For the purposes of a feasibility study, the assumptions above are regarded as reliable in indicating the pro-poor nature of the supply-chains.

Efficiency of impact

“Efficiency of impact” is a measure of total supply-chain impact arising at all points along a domestic value-chain expressed per hectare of source bamboo production.¹⁰ It is determined for each of the individual industry supply-chains for the five socio-economic measures outlined above (Table 5). The analysis is based on data obtained by the feasibility study from farmers, traders and businesses operating in each industry.

Table 5: Efficiency of impact of bamboo industry supply-chains

Industry segment	Overall financial output US\$ per ha	Pro-poor financial impact US\$ per ha	Job creation FTE per ha	Total beneficiaries farmers+ workers per ha	Local Costs % of total costs	% women in supply-chain % FTEs	% jobs in rural communities % FTEs
Handicrafts (VN)	143,000	11,300	39	40	85%	60%	95%
Bamboo Shoots (China)	3,800	3,100	0.4	1.1	90%	31%	100%
Flooring (VN)	3,100	2,400	1.2	1.9	85%	49%	35%
Chopsticks (VN)	1,600	1,300	1.1	1.8	85%	49%	46%
Woven mat (VN)	1,100	1,000	0.9	1.5	100%	42%	100%
Mat board (VN, panels)	1,300	810	0.8	1.5	70%	46%	98%
Charcoal	600	420	0.2	0.9	75%	37%	95%
Charcoal (briquettes, Lao PDR)	320	180	0.3	1	60%	38%	79%
Paper + pulp (VN)	1,500	490	0.3	1	35%	38%	66%
Raw culms (VN)	360	360	0.1	0.8	100%	31%	100%

The most critical measures from a pro-poor perspective are the rates of pro-poor financial impact and employment creation. Against these two measures, the analysis in Table 5 confirms important differences between and within the different sub-sectors.

- **Handicrafts:** Very high rates of pro-poor financial impact and employment creation per hectare of bamboo are seen due to the highly manual processing of relatively small volumes of bamboo, with most benefit gained by small-scale processors and factory workers. This supports the argument that handicrafts are a distinct sub-sector, based on the sale of skilled craft labor rather than of large volumes of bamboo material.
- **Bamboo shoots:** Deliver high levels of pro-poor financial impact per ha due to the higher prices and yields of shoots compared to culms. In this sense, shoots are a high value agricultural crop. However, shoot farming creates relatively little employment. Most of the financial benefits are retained by farmers themselves and not distributed along the supply-chain.
- **Industrial processing:** From a pro-poor perspective, three distinct industry groups emerge within the industrial processing sub-sector: Low-value and bulk; medium-value; and, premium processing.

¹⁰ In line with experience from China, the analysis allows for a further 10% employment creation in related activities such as handling, transportation, trading and wholesaling.

Low-value and bulk processing industries, such as charcoal, paper and pulp, have low rates of both pro-poor financial impact and employment creation. They achieve only marginally higher levels than selling unprocessed raw bamboo culms to the construction industry. This lower impact is partially offset by the fact that the industry can utilize low quality bamboo, leftovers and processing waste from other industries and various species.

Medium-value processing industries, such as chopsticks and mat boards (panels), create similar levels of employment as the premium processing industries, but only half the pro-poor financial impact per hectare of bamboo. However, they are able to use lower grades of bamboo than premium processors.

Premium processing industries, such as flooring, have the highest rates of pro-poor financial impact and employment creation of the industrial processing industries, but require premium quality bamboo. Their rate of economic impact is twice the level of the medium-value processors and five times the level of the low-value and bulk processors. Similar results are demonstrated in China for laminated furniture industries

Table 5 indicates this differentiation across products. Premium products require high value raw bamboo (species, culm size and quality) creating farmer income. They also create more jobs in the supply-chain. But only certain parts of the culm can be used for premium products, so the value from premium products can only be realized through the development of an efficient mixed industry which is maximizing the utility of all parts of the plant. The critical factor to establishing a mixed industrial sub-sector is the presence of near-source pre-processing workshops which process bamboo culms into various parts (including waste), which are then transported to other factories for secondary processing (into paper, blinds, flooring etc). This innovation in the supply-chain structure enabled China to reduce prices and enter a range of new product markets. It shifts material utilization rates from the current levels of sometime less than 30% in Mekong to upwards of 95% in China, increasing overall industrial sub-sector efficiency. Sector ‘industrial mix’ options for a bamboo industrial sub-sector based on 50,000 ha of bamboo for Viet Nam or Lao PDR are shown in Figure 1. Thanh Hoa Province, Viet Nam is the most advanced in its supply-chain and approaches the ‘Medium Mix’ scenario.

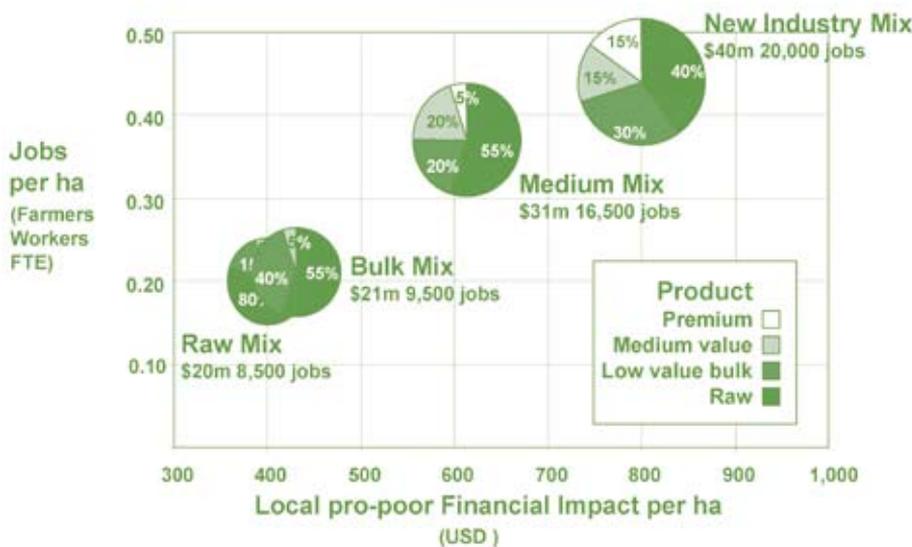


Figure 1. Comparison of the impact of the four product segments as policy choice¹¹

¹¹ Supply-chain “industry mix” scenarios for 50,000 ha.

Scale of impacts

The previously developed Mekong 2017 scenario of a US\$ 1.2 billion bamboo sector (Table 4) combined with the rate data from the feasibility study and Table 5 provides an overall scale of impact across the various indicators (Table 6).

Table 6: Potential scale of impact of the bamboo sector by industry segment

Industry Segment	Mekong Potential (Capturing a greater share of growing world markets)					
	Pro-poor financial impact US\$ millions	Financial output US\$ millions	Employment creation FTE	Total direct beneficiaries People	Area of bamboo ha	World bamboo market US\$ millions
Handicrafts	266	336	920,000	936,000	24,000	4,200
Bamboo shoots	111	136	16,000	41,000	36,000	1,700
Wood furniture	217	280	106,000	170,000	90,000	5,600
Wood flooring	46	60	23,000	36,000	19,000	1,200
Wood panels	100	110	68,000	127,000	85,000	2,200
Blinds	47	60	41,000	44,000	4,000	1,200
Chopsticks	16	20	14,000	23,000	12,000	400
Charcoal	5	7	1,000	2,000	11,000	130
Activated carbon	6	9	1,000	3,100	18,000	170
Paper/pulp	35	110	18,000	69,000	72,000	n/a
Raw bamboo	60	60	24,000	141,000	167,000	n/a
Total	909	1,185	1,232,000	1,592,000	538,000	16,830

The industry is separated into three independent sub-sectors: handicrafts, bamboo shoots and industrial processing. At a sub-sector level, the analysis leads to the following conclusions:

- **Handicrafts** are the most important source of employment creation, accounting for more than 75% of all employment in the sector under both scenarios. The pro-poor financial impact of handicrafts is substantial though they deliver relatively minimal benefits to farmers.
- **Bamboo shoots** represents the smallest of the three sub-sectors, but its high financial impact rate means that it provides 10%-20% of the pro-poor financial impact from employment rates of just 1% - 2%.
- **Industrial processing** emerges as the largest sub-sector in terms of pro-poor financial impact, accounting for up to 60% of the total pro-poor financial impacts of the sector. The sub-sector also consumes by far the largest share of bamboo (over 85%) and so is the most important sector for delivering large-scale benefits to poor farmers.

Environmental impact

Cultivation and harvesting: Bamboo has a number of environmental benefits as compared to industrial economic development options. The main environmental benefits of bamboo include:

- Bamboo is a sustainable cropping system for sloping lands, reducing soil erosion, and delivering sustainable farming systems;
- Bamboo is suitable for the recovery of degraded lands;
- Bamboo reduces rain run-off and downstream flooding and retains water within the watershed;
- Bamboo's rapid growth rate and selective harvesting sequesters up to 12 tons of CO₂ per hectare. It releases 35% more oxygen than equivalent areas of trees; and
- Bamboo may be produced with comparatively low inputs of fertilizer and pesticides (proposed models in this analysis have zero inputs assumed).

However, one main drawback is the biodiversity risk from the development of bamboo monocultures, but this risk needs to be considered in relation to the costs of alternative land use options.

The wider environmental impacts are primarily driven by the extent to which bamboo products are used as a substitute for hardwood and slow-growing timber. Greater use of bamboo as an alternative to hardwoods should contribute to a slowing in the depletion of tropical forests, with corresponding benefits for bio-diversity, conservation and carbon sequestration.

Processing industries: The main industries of concern from an environment perspective include paper/pulp and fiberboard production. The use of large quantities of chemicals and the production of significant volumes of wastewater pose serious environmental concerns to the local environment.

In other industries, the main potential environmental impact is from processing wastes, such as chips and sawdust, but also the chemicals used in the treatment of bamboo (e.g. hydrogen peroxide and borax). The volume of bamboo waste would be reduced in the proposed industrial models.

Summary of impacts

Each of the sub-sectors can make an important contribution to rural development and poverty reduction. However, as shown in Table 7, there are important differences in the nature of their impacts. The stars in the table show levels of impact, with one star representing low impact and five stars representing high impact.

Table 7: Summary of potential impact for Mekong bamboo sector, 2017.

Sub-sector	Overall impact	Impact scale			Impact efficiency			Gender bias of impact % of FTEs to women	Rural bias of impact % of rural FTEs	Environmental Impact
		Pro-poor financial impact US\$ millions	Financial output US\$ millions	Job creation FTE (000's)	Pro-poor financial impact US\$ per ha	Financial output US\$ per ha	Job creation FTE per ha			
Handicrafts	****	***	***	****	****	****	****	****	****	****
		266	336	920	11,300	14,300	39.2	60%	95%	
Bamboo shoots	**	**	*	*	****	****	*	*	****	****
		111	136	16	3,100	3,800	0.4	30%	100%	
Industrial Processing	****	****	****	****	**	**	**	**	**	**
		532	716	296	1,113	1,498	0.6	45%	62%	
Total		909	1,185	1,232	1,690	2,203	2.3	56%	87%	

The table shows that:

- Handicrafts are most important for employment creation and have the highest impact efficiencies, although delivery of benefits to farmers is relatively minimal.
- Bamboo shoot production is a high impact niche that primarily delivers high levels of benefits to a relatively small group of farmers.
- Industrial processing is most important for overall pro-poor financial impact and is the only sub-sector capable of delivering widespread benefits to farmers.
 - Premium processing has a high rate of financial impact efficiency, comparable to bamboo shoots, but on more than double the scale. It also creates more employment than all other areas, with the exception of handicrafts. The scale of the industry should be maximized to take full advantage of available premium grade bamboo.
 - Medium value processing creates substantial employment and pro-poor financial impacts. It has impact rates typical of the industrial processing sub-sector as a whole and should be expanded as part of a diversified industrial processing sector.
 - Low value and bulk processing have impact rates of only on fifth of premium processing industries, and correspondingly low total pro-poor impacts. However, the industry has an important role within a diversified industrial processing industry as a value-added user of low grade bamboo, leftovers and processor of waste from other industries.
 - Supply of raw culms has the lowest rate of pro-poor impact, but is an unavoidable part of the sector due to bamboo's great versatility.

Conclusion

Clear market growth opportunities coupled with appropriate conditions in the Mekong countries offer opportunities to access growing global bamboo markets. The experience from China shows that under the right conditions, bamboo can be a lead sector for rural industrialization and large-scale poverty reduction.

Bamboo industries have been a key driving force in rural industrialization and widespread poverty reduction in Anji county, Zhejiang province, one of China's 10 "bamboo homelands". The benefit has been distributed across the whole population, with average household incomes for the population increasing by 220% in the first ten years of the bamboo boom.

Some researchers have suggested that the greatest impact was the catalyzing effect that bamboo had on the diversification of income opportunities (Ruiz-Pérez and Belcher 2001).

Features for success

Several features were crucial to the dynamic growth of the sector in Anji:

- Strong demand and favorable market conditions:
 - Located in the heart of the Yangtze Delta region, close to the major Yangtze Metropolis around Shanghai and Hangzhou, Anji is ideally located to meet market demand.
 - China's logging ban in the 1990's created additional demand for timber substitutes and led to a 10% -15% jump in bamboo prices over a single year.
- Consistent, sustained leadership from the Chinese Government targeted the development of the bamboo sector as part of economic development planning;
- Parallel development of processing industries and bamboo resources created a "virtuous circle" of demand for farmers products, increasing value-addition and capital in the local economy, as well as reinvestment and diversification of income opportunities;
- Local development of specialist processing technologies and equipment ensured appropriate, affordable equipment was available;
- Minimum scales of production suited to the resources of farmers, SME's and local enterprises [e.g. typical area of bamboo in Anji was 0.6 ha per household (Ruiz Pérez, *et al.* 2004)];
- Lower perceived market risks due to diversity of uses of culms and shoots, leading to greater attractiveness of bamboo for farmers and processors; and
- A readily available existing bamboo resource and a tradition of growing bamboo enabled exploitation of emerging market opportunities.

In addition, there were three pre-requisite policy reforms that paved the way for the rapid development of the bamboo sector in China, and will also be an important consideration for the Mekong countries.

- Land tenure systems: Clear land ownership and usage rights, characterized by 30-50 year land leases that allows for the transfer of rights to family and others;
- Supportive business environment: creating the conditions for a vibrant private (and collective) sector, especially small and medium enterprises; and
- Market liberalization: Opening up of the economy to allow access to international markets and investors.

At the local level, several further points are worth noting:

- Heavy public investment in the development and dissemination of local processing technologies greatly increased their affordability and accessibility to local enterprises;
- Intensification of raw material production was critical to output growth with yields rising to 8.9 ton per ha from 4.9 ton per ha between 1978 and 1998. The area of bamboo cultivation increased by 16% while production of culms increased by 98%; and

- Bamboo shoot production generated sufficient value for farmers to be a stand-alone industry driving poverty reduction, as happened in Li'nan County, but it also provided opportunities for diversification for bamboo farmers.

Recent developments and emerging lessons

Recent developments that have contributed to the growth of the industry, while also presenting new challenges, include:

- Emergence of a pre-processing industry, which greatly assists in achieving very high “added value” utilization rates of the bamboo harvested;
- “Nieyou” a traceability system in Anji allows for easy identification of the age and source of culms and is linked to harvest quotas and regulated by the Forestry Bureau. It has the potential to form the basis of an effective “Certification” or “Chain of Custody” system;
- Quality is becoming an increasingly important requirement in the global market. Anji, and China as a whole, have not yet established a reputation for providing this;
- Raw material shortages and rising bamboo prices (USD\$ 85 per ton for “moso” culms in early 2006) are squeezing profit margins and limiting the output of individual businesses that are unable to secure enough raw material;
- Decreasing profit margins and excessive competition in several markets have driven increasing commoditization of some products; and
- Bamboo demand is driving an increasing risk of monoculture development and adverse biodiversity impacts, and attention to land use management policy is required.

The Mekong Countries' Potential

Both Viet Nam and Lao PDR have extensive bamboo resources. With comparative advantages in both raw material and labor costs, as well as an ability to develop competitive economies of scale (Viet Nam, in particular), the prospects for the Mekong countries look strong. The scale of the opportunity for Lao PDR is more modest and will be maximized by linking with cross border supply-chains (Viet Nam, Thailand, and China).

The opportunity for Cambodia will also be modest, but is still considerable compared to the current size of its market. There remain business environment challenges in attracting investment into the large scale businesses required to achieve volumes in new bamboo supply-chains. Compared to Cambodia and Lao PDR, Viet Nam stands poised to develop a large bamboo sector in the Mekong, and can work as an engine for linked market opportunities for its Mekong neighbours.

The Mekong bamboo sector is poised for significant growth and widespread pro-poor impact. The feasibility study demonstrates that with appropriate support, it can grow from a US\$ 250 million industry to a US\$ 1 billion-plus industry by 2017, an industry with around 1 million jobs and a supply-chain structured so that 75% of the financial impacts are pro-poor. The associated supply-chain pilot in Thanh Hoa, Viet Nam has shown early signs of this potential with recently introduced supply-chain innovations resulting in a dramatic increase in near-source value addition and job creation. The details of this impact will be presented in subsequent reports from MPDF. Preliminary analysis shows that there are now a total of 10 new or converted pre-processing workshops creating 539 new jobs. Annual salaries from these are US\$ 294,000 (US\$ 550 per annum per worker) in an area where average incomes are less than US\$ 100 per annum. Workshop sales of slats (pre-processed inputs to secondary processors to make high-value laminated products) have gone from zero to US\$ 26,000 per quarter over a period of 6 months, a result of introducing the pre-processing supply-chain innovation from China. On the production side, 533 ha of bamboo have been planted with direct support, and on the basis of

current prices, will generate US\$ 159,000 per annum starting from 2010. Raw material demand is increasing, and prices have increased 20% to the benefit of farmers.

Transferring resource development, industrial supply-chain development, and technological and management experiences from the global market leader (China) is necessary and achievable as an important driver of the bamboo sector in the Mekong. Appropriate, targeted support is needed to create progressive farming and business environments and to ensure financial viability and good returns on investment for farmers, processors and others in the supply-chain. This will help expand the success of the supply-chain pilot, and enable an impact of the scale indicated in the feasibility study, thereby creating substantial pro-poor income into the future and potentially creating hundreds of thousands of new jobs in the Mekong region.

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