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## **The Past and Future of Community-Based Forest Management in the Philippines**

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# The Past and Future of Community-Based Forest Management in the Philippines

Community-based forest management (CBFM) schemes are often cited as ideal for rehabilitating denuded forestlands and alleviating upland poverty in developing countries. This article examines the Philippine CBFM in the context of the forestry industry: It tracks the outcome of community-based reforestation and undertakes a simple input-output analysis. It presents three propositions for the future success of CBFM in the Philippines. First, it must secure farmers' access to financial returns from tree plantations. Second, industrial policy must link the demand for timber from other industries to the forestry industry. Third, CBFM needs to be integrated with livelihood opportunities for the poor.

**KEYWORDS: DEFORESTATION · FOREST REHABILITATION · POVERTY ALLEVIATION · LEONTIEF MULTIPLIER · SUSTAINABLE LIVELIHOODS**

The UN Millennium Project (2005) set eight millennium development goals with a deadline of 2015. Notable among these goals are eradicating extreme hunger and poverty and ensuring environmental sustainability especially in developing countries. As such it has been well recognized that persistent poverty and environmental degradation form a vicious cycle. When the poor are left with almost no choice but to take whatever they can to stay alive on a daily basis, the usual consequence is that the surrounding natural environment deteriorates and natural resources are depleted. Maathai (1995, 1997) has argued that poverty is both a cause and a symptom of environmental degradation and they have to be dealt with together. In other words, the protection of terrestrial and marine natural resources is essential to poverty alleviation, which in turn is a prerequisite for environmental sustainable economic development.

From customary communal tenure systems that have lasted for hundreds to thousands of years in Switzerland, Japan, the Philippines, and many other countries, Ostrom (1990) arrived at the landmark view that intentionally designed community-based natural resource management (CBNRM) could be effective in reversing the overexploitation of public or open-access resources. The concept of CBNRM has been applied to diverse types of natural resources, such as water catchments, wildlife, fisheries, and forests. A variety of intentional community-based forest management (CBFM) programs have been introduced in a number of countries. In places such as the Philippines and India, CBFM programs have evolved as a means to both reduce poverty incidence in rural areas and overcome severe deforestation. Interestingly community-led forest management approaches in developed countries—for example, Landcare Australia (Wilson 2004)—have been adopted to maintain nontimber benefits such as recreation, education, carbon sequestration, soil conservation, ecotourism, water resources conservation, and biodiversity conservation.

Some intentional, as opposed to traditional, CBFM schemes have been more successful than others in achieving the goal of breaking the vicious cycle of deforestation and poverty in developing countries. The joint forest management (JFM) program, an Indian version of community forestry, has been seen as successful and has received considerable attention since the early 1990s (Harrison et al. 2001; Husain and Bhattacharya 2004; Ravindranath and Sudha 2004). The JFM is a fixed-share joint venture

between government and local communities that are granted use rights. In exchange for a share of the final timber harvest, the communities manage and protect the plantation areas. In contrast, the uptake of the Philippine CBFM has been found slow due to a combination of social, economic, and political impediments (Harrison et al. 2001; Harrison et al. 2004; Pulhin et al. 2007).

There is an abundant literature that investigates the social, marketing, and policy aspects of CBFM in the Philippines, but little attention has been paid to its economic viability in the broad context involving the forestry industry and the livelihood of upland communities. This article aims to probe why Philippine CBFM has not been a driving force for reforestation and poverty alleviation. It first discusses the key institutional elements of community-based natural resource management schemes in general, and then focuses attention on the Philippine deforestation–poverty trap together with a brief historical review of the Philippine CBFM. The discussion identifies CBFM’s current status in the context of the country’s forestry industry, and presents a comparative industrial linkage analysis of the Philippine economy between 1985 and 2000. It then brings to light the sustainable livelihoods approach as a pathway to a more successful CBFM movement, capped by the policy implications of the study.

### **Key Elements of Community-Based Natural Resource Management**

Natural resources characterized by “non-excludability and rivalry” (Cornes and Sandler 1996) tend to be overexploited or even depleted. Hardin (1968) has called this phenomenon the “tragedy of open-access resources.”<sup>1</sup> The open-access problem occurs due to the absence of incentives for anyone to conserve those resources for long-term use, since if they do then others will simply use more. For this reason, as Ostrom (1990) has illustrated, the tragedy of open-access resources often translates to “prisoners’ dilemmas” (Luce and Raiffa 1957).

The CBNRM adopts a mixture of rights- and incentives-based approaches to address prisoners’ dilemmas. The establishment of well-defined property rights is a conventional institutional arrangement for society to tackle resource overexploitation caused by open access (Coase 1960). Financial incentives or disincentives can also be effective measures because resource users are expected to make rational decisions in response to the measures and

eventually alter their behavior of overexploitation. In contrast, command-and-control approaches are often criticized as infeasible or undesirable in mandating human economic behaviors because “top-down” regulation tends to be heavy handed and to construct people as villains.

There are three types of property rights regimes in the resource management arena (Feeny et al. 1990; Ostrom 1990): state property, communal property, and private property regimes. State property (e.g., state forest) is owned and managed by the government. Communal property (e.g., inshore fisheries) refers to that which is exclusively accessible to a community or an identifiable group. Communal property rights stipulate what a community may or may not do with the resources to which the community has access and the extent to which the community may possess, use, transform, bequeath, transfer, or exclude others from its property. Under private property, rights to the resources are vested in private agents. Private property rights are usually stronger than communal property rights in terms of transferability and duration.

An intentional CBNRM scheme is to turn open-access resources into communal properties: that is, a bundle of legally defined property rights is presented to a specific community as an incentive for the community to be able and willing to achieve desired natural resource management outcomes. From her case studies of traditional CBNRM, Ostrom (1990, 90) has summed up seven key elements of any exemplary community-based resource institution. These key elements are:

- Clearly defined boundaries
- Congruence between appropriation and provision rules and local conditions
- Collective-choice arrangements
- Monitoring
- Graduated sanctions
- Conflict-resolution mechanisms
- Minimal recognition of rights to organize

As Ostrom (1990) has elaborated, clearly defining the rights to communal property is the first step to making a successful CBNRM case. When the boundaries of property rights are blurred, the community remains uncertain as to what their rights and responsibilities are and what is managed for whom.

Facing a risk that outsiders can reap any benefits that they generate by their own efforts, the community will not be motivated to engage in collective action in the first place. The importance of the congruence of the property rights with the needs of the local community should also be kept in perspective. In the context of CBNRM, this means that the communal rights should be strong enough to compensate for the opportunity costs of protecting and managing natural resources. Last but not the least is the proper recognition of the right to organize among participants. CBNRM is based on the notion that local communities have a greater interest in the sustainable use of their surrounding natural resources than government-appointed officials, and that they have the knowledge of local ecosystems that allows them to manage the resources well. Thus, decentralized resource management and bottom-up decision making are at the core of CBNRM. With a lack of autonomy, any CBNRM scheme could end up being nothing but a hybrid of “command-and-control” natural resource management policy.

### **Deforestation and Poverty in the Philippines**

Logging in native forests used to be a driving force of the Philippine economy. In the 1950s the Philippines as Asia’s largest rainforest timber exporter witnessed a per capita gross domestic product (GDP) even higher than Taiwan and South Korea. Massive commercial logging by concessionaires converting primary forests into secondary forests continued to take place in the Philippines until the early 1990s (Bao 2012). The commercial loggers had little incentive to reforest the harvested areas and moved on to other concession areas, abandoning logging access roads, which opened up the residual forests to landless lowland farmers, who eventually converted secondary forests into agricultural lands. The Philippines ended up clearing about half of its forest cover by the early 2000s: about 15.7 million hectares (52 percent) of the Philippines were classified as forest cover in the 1930s (Pulhin et al. 2006), but 8.5 million hectares of the forest cover had been cleared by 2003 (FMB n.d.).

To address the problem of severe deforestation, the Philippine government has banned exports of log as well as of lumber from natural forests since 1986 and 1989, respectively (Harrison et al. 2000). In addition, logging in all primary forests and in secondary forests with slopes greater than 50° and over 1,000 meters above sea level has been banned throughout the country since 1991 in the wake of the flooding disaster in Leyte province.

The export ban was lifted once only for twelve months from 1997 to 1998 in response to the country's urgent need for foreign currency brought about by the Asian economic crisis (Gullison et al. 2001).

Apart from licensed timber harvesting, the illegal logging by poor rural families who migrated to the uplands had been largely responsible for deforestation and land degradation in the Philippines (Amacher et al. 2008; Bao 2012). According to Amacher and his colleagues (2000), upland farmers dependent on small-scale subsistence agriculture had destroyed 0.2 million hectares of native forests annually in the 1980s and 1990s. The sloping terrain was poorly suitable for agriculture, and therefore upland farmers practiced a temporally and spatially cyclical agricultural system known as *kaingin* (shifting cultivation or slash-and-burn agriculture), which accelerated the conversion of secondary forests into agricultural land (Thrupp et al. 1997; Bao 2012).

The total upland population in the Philippines is estimated to be approximately 18 million, the term "upland" or "forestland" being defined as land with a slope of 18 degrees or over (Pulhin et al. 2006; Stenberg and Siriwardana 2007). The upland dwellers are dependent upon the resources of public forests for survival. More than half (54 percent) of the rural population suffers poverty, and the poverty incidences of families are expected to be much more pronounced in upland areas (Rola 2011; Bao 2012).

Schelzig (2005) has discussed several major causes of poverty in the Philippines, including weak macroeconomic management, employment issues, high population growth, and an underperforming agricultural sector. In fact, these causes are interrelated. High population growth accompanied by weak economic growth has resulted in high unemployment rates. The ever-increasing population and unemployment have led to continued migration to upland areas, resulting in the continued conversion of forestlands to agricultural uses.

Many studies (e.g., Coxhead et al. 2001; Shively 2001; Sheeran 2006) have argued that lowland agriculture has the potential to absorb excess labor in upland areas and slow down forest clearing. However, employment opportunities in lowland agricultural areas are not guaranteed to be sustained or to stop forest clearing by poor upland communities. The reason for this is that the agricultural industry does not build up a strong backward linkage effect. In other words, the agricultural industry is not conducive to creating employment opportunities. Therefore, emphasis needs to be placed on

sustainable macroeconomic performance driven by secondary and tertiary industries in the economy, both of which have the potential to absorb the excess labor supply in rural areas.

### **CBFM in the Philippines: A Historical Overview**

Comprehensive and ambitious national reforestation programs had been introduced in the Philippines since the early 1970s (Harrison et al. 2004; Pulhin et al. 2007). Under Administrative Order (AO) 62 in 1971, the Kaingin Management and Land Settlement Regulation was first introduced to prevent further encroachment of shifting cultivation into forestlands. *Kaingineros* (slash-and-burn cultivators) were allowed to occupy public forestland in specified sites, provided they undertook soil conservation and tree-farming activities.

Introduced in 1975, the Forest Occupancy Management Program (FOMF) clarified property rights to the public forestland occupied by *kaingineros*. It was stipulated that forest occupancy permits could be issued to participating *kaingineros* and that the land in question should not exceed 7 hectares per occupant.

The Family Approach to Reforestation (FAR) program introduced in 1973 was designed to accelerate forest rehabilitation by enhancing the participation of local families. The Bureau of Forest Development entered into short-term contracts with families to set up tree plantations on denuded public forestlands.

The Communal Tree Farming Program (CTFP) was introduced in 1979 to establish tree farms or plantations on open or denuded public forestlands and idle private lands in cities and municipalities. Reforestation was to be undertaken by forest occupants as well as civic organizations and municipal government units. The maximum land size was restricted to 20 hectares. Families were provided with a one-year provisional title, which could be converted to a twenty-five-year title and renewable for another twenty-five years, on the condition that performance of the participant was satisfactory.

The Integrated Social Forestry Program (ISFP) that commenced in 1982 was designed, as an initiative in upland development, to maximize land productivity; enhance ecological stability; and improve the socioeconomic conditions of forest occupants and communities. Participants in this program were granted the right to occupy and develop their areas for a period of twenty-five years, which was renewable for another twenty-five years.

Forest Land Management Agreements (FLMA) were issued during the early 1990s, replacing the former short-term contract reforestation systems. This program was designed to generate incentives to entice more tree-planting activities. Family and community contractors were granted the sole and exclusive rights to occupy, develop, and manage specified areas of forestlands. More importantly, the participants in the program were allowed to continue to benefit from the areas they reforested.

Introduced in 1995, the CBFM program subsumed all of the previous people-oriented forestry programs and projects, which included FOMF, FAR, CTFP, ISFP, and FLMA.<sup>2</sup> The CBFM program was instituted under Executive Order (EO) 263, entitled “Adopting Community-Based Forest Management as the National Strategy to Ensure the Sustainable Development of the Country’s Forestlands Resources and Providing Mechanisms for its Implementation.” Section 1 of EO 263 states that “CBFM shall be the national strategy to achieve sustainable forestry and social justice.” This statement suggests the twofold primary objectives of CBFM. One is to protect forests from further destruction caused by illegal logging and slash-and-burn practices. The other is to alleviate the poverty of upland dwellers.

Section 2 of EO 263 recognizes that approximately 18 million upland dwellers are in the best position to manage the forests, stating that the needs and aspirations of local communities whose livelihoods depend on the forestlands shall be taken into account. More importantly, Section 3 stipulates that the communities participating in CBFM “may be granted access to the forestland resources under long term tenurial agreements, provided they employ environment-friendly, ecologically sustainable, and labour-intensive harvesting methods.”

Several forms of tenurial agreements under the CBFM program are specified in AO 96–29, promulgated by the Department of Environment and Natural Resources (DENR) to provide the rules and regulations for the implementation of EO 263. These agreements include the Community-Based Forest Management Agreement (CBFMA), Certificate of Stewardship Contract (CSC), and Certificate of Ancestral Domain Claim (CADC). The CBFMA is a production-sharing agreement between the government (i.e., DENR) and a local community, represented by a people’s organization (PO), for the duration of twenty-five years renewable for another twenty-five years. The CSC is awarded to individuals or families actually occupying or

tilling portions of forestlands for up to a maximum of 5 hectares for a term of twenty-five years renewable for another twenty-five years. The CADC applies to indigenous cultural communities who opt to enter into a CBFMA over a portion of their ancestral domain claim. These are the communities that occupy and possess ancestral lands and natural resources, including all adjacent areas that are necessary to ensure their economic, social, and cultural welfare.

The CBFMA is an intentionally created tenure, whereas the CSC and CADC are customary communal tenures. In other words, the CBFMA is intended to be the main driver of nationwide reforestation in the Philippines. A CBFMA entitles the community to occupy, use, develop, and manage a designated area of up to more than 30,000 hectares of public forestland and its resources as well as harvest timber from plantations and second-growth forests subject to government rules and regulations. In return, the community is required to reinvest a portion of the income derived from timber harvesting to maintain, improve, and renew the forest resources and also to finance livelihood alternatives to timber harvesting (Lasco and Pulhin 2006; Pulhin et al. 2006; Pulhin et al. 2007).

Section 8 of EO 263 ensures that the DENR shall establish a CBFM Special Account to support the implementation of the strategy and provide a financial and professional incentive system to deserving communities and government personnel. The availability of funding support from the different financial institutions in the late 1990s to the early 2000s has boosted the country’s reforestation efforts. Much of the funding for reforestation have come from public investment, including foreign loans and grants from the Asian Development Bank and the Japanese Bank for International Cooperation (Pulhin et al. 2006).

Table 1 presents the status quo of the Philippine CBFM in terms of the tenured area and the number of households involved. The total CBFM tenured area has amounted to about 4.9 million hectares, 1.6 million hectares of which are under CBFMAs. It should be noted that tenurial instruments under CBFM include CBFMA, CSC, and CADC. About 320,000 households have been involved in CBFMAs as of 2008. Table 1 clearly shows that the tenured area under CBFMAs and the number of households involved have never been expanded afterward.

Table 2 presents the annual outcome of the CBFM program in terms of the area reforested. No additional reforested area under the CBFM program

**Table 1. Accumulated tenured area in hectares under CBFM, Philippines, 1998–2008**

YEAR	CBFM	CBFMA		
		NUMBER OF HOUSEHOLDS	NUMBER OF POS	TENURED AREA
1998	3,934,033	–	14	5,887
1999	4,010,974	–	16	6,630
2000	4,276,099	–	–	–
2001	4,395,740	–	–	–
2002	4,395,740	–	–	–
2003	4,904,116	–	–	–
2004	4,904,116	–	–	–
2005	–	–	1,781	1,622,129
2006	–	321,538	1,781	1,622,129
2007	–	321,638	1,783	1,622,403
2008	–	321,638	1,783	1,622,404

Note: – denotes data not available

Source: FMB [1999a], 23; [2000a], 28; [2001a], 26; [2002a], 22; [2003a], 22; [2004a], 32; [2005a], 32; [2006a], 32; [2007a], 32; [2008a], 31; [2009a], 31

has been reported since 2005. This may be interpreted to mean that there has not been much public forestland left available for new CBFMA contracts. In reality a lack of substantial new external funding has been the underlying cause of the stagnation of reforestation under the CBFM program. Juan Pulhin and his colleagues (2007) point out that most POs used the income they generated for consumption and productive purposes, viewing CBFM activities as a one-off project and not as a long-term financial investment. It is notable, however, that forest rehabilitation efforts have not been declining as indicated in the first column of table 2. In other words, reforestation programs apart from CBFM have been implemented.

Many studies (e.g., Harrison et al. 2001; Pulhin et al. 2007) have found that the communal tenure rights under the CBFMA have been perceived as insecure due to frequent government policy changes as well as excessive and tedious bureaucratic requirements and procedures. In this context, Contreras (2000) underscores that mere participation in a community-based forestry project does not automatically empower the participants if the participants are involved not as subjects but as objects of a government-controlled development project. Pulhin and colleagues (2006) note that

**Table 2. Area in hectares reforested by CBFM, Philippines, 1998–2008**

YEAR	TOTAL REFORESTED AREA	CONTRACT REFORESTATION BY DENR	AREA REFORESTED BY CBFM
1998	42,368	1,670	214
1999	42,167	702	319
2000	27,632	1,897	14
2001	31,444	292	199
2002	25,620	1,761	344
2003	15,088	1,118	504
2004	20,338	2,628	568
2005	16,498	3,491	–
2006	7,223	2,427	–
2007	27,837	–	–
2008	43,609	2,634	–

Note: – denotes data not available

Source: FMB [1999b], 28; [2000b], 23; [2001b], 27; [2002b], 24; [2003b], 24; [2004b], 36; [2005b], 34; [2005c], 36; [2006b], 35; [2007b], 35; [2008b], 33; [2009b], 34

the opportunities for additional budgetary management in connection with CBFM rehabilitation projects create room for the local CBFM implementation authority to be involved in graft and corruption.

A number of studies (e.g., Harrison et al. 2001; Harrison 2003; Pulhin et al. 2006, 2007) have suggested a variety of reforms to rectify the problems associated with CBFM in the Philippines. Among others, it is often emphasized that the communal rights to tree plantations should not only be well defined but also secure and strong enough to attract the local community to invest their time and efforts. On close examination, most of the reform policies suggested to date reinforce the key elements of exemplary community-based resource management schemes discussed in Ostrom (1990).

### **CBFM and the Philippine Forestry Industry**

Incentive-based microeconomic and rights-based institutional reforms are crucial, but not sufficient for promoting the Philippine CBFM. Tree plantation, forest management, and timber production activities under the CBFM program constitute a part of the forestry sector, which functions as



**Table 3. Log and wood production in the Philippines (volume in thousand cubic meters), various years**

YEAR	SAW LOG & VENEER LOG	PULPWOOD	POLES AND PILES	TOTAL
1976	8,646	–	–	8,646
1980	5,978	390	–	6,368
1984	2,876	987	9	3,872
1988	3,185	615	9	3,809
1992	800	487	151	1,438
1996	400	365	6	771
2000	384	400	16	800
2004	410	355	3	768
2008	474	338	3	815

Note: – denotes data not available

Source: FMB [1997], 75; [2009d], 67

part of the Philippine economy. Thus, a broader picture of the Philippine forestry industry and its interactions with other industries can provide useful insights into the problems and opportunities associated with the Philippine CBFM.

The Philippine forestry industry has shrunk in terms of its GDP share in the country. The forestry sector accounted for less than 0.1 percent of the GDP in 2010, compared to 1.6 percent in 1985 (NSCB 2010). The forestry sector in the Philippines can be said to have been more of a drain on, rather than a contributor to, the economic growth of the country. The relatively weak status of the forestry sector in the current Philippine economy can be explained by the trend in annual log and wood production in the Philippines over the last three decades as presented in table 3. The production of sawlogs and veneer logs has significantly decreased since 1992. The sharp decline in log and wood production has been attributed largely to the ban on log and lumber exports from old-growth forests and the ban on logging in natural forests, which has effectively phased out large-scale commercial logging under timber license agreements (TLA) (Sheeran 2006).<sup>3</sup>

As presented in table 4, the imports of log and wood products have dramatically increased, and by contrast the exports of these have decreased in terms of volume since the early 1990s. Historical data reveal a shortage of log supply in the Philippines during this period. No wonder, the country has

**Table 4. Exports and imports of log and wood products in the Philippines (volume in thousand cubic meters), various years**

YEAR	EXPORTS				IMPORTS			
	LOG	LUMBER	PLYWOOD	VENEER	LOG	LUMBER	PLYWOOD	VENEER
1976	2,332	493	261	166	–	–	–	–
1980	721	742	322	164	–	–	–	–
1984	996	540	250	71	–	*	*	–
1988	174	629	243	79	7	3	*	*
1992	*	56	71	22	530	43	*	*
1996	–	145	*	26	878	567	*	95
2000	*	120	2	5	585	359	1	119
2004	2	124	42	7	177	247	2	51
2008	*	215	39	4	78	135	2	23

Note: – denotes data not available

\* indicates less than one thousand cubic meters

Source: FMB [2009e], 91; [2009f], 95; [2009g], 172

turned into a net timber importer from being one of the world's largest log producers and exporters (Harrison et al. 2001). It is notable that the shortfall of timber has led to the pressure to log coconut trees for coco lumber, thereby reducing the capacity of coconut trees to produce the valuable export commodities of the Philippines, namely, copra and coconut oil (Harrison and Herbohn 2001).

Input-output analysis can strengthen the aforementioned argument. Input-output analysis, also known as interindustry analysis, is an accounting technique for defining the degree of interdependency between an economy's various industrial sectors (Miller and Blair 2009). An input-output account normally consists of three matrices, namely, a transaction matrix, a technical coefficients matrix, and a Leontief inverse matrix. The transaction matrix presents the flow of goods and services in dollar terms among industrial sectors. The technical coefficients matrix presents the coefficient values of inputs required in the production of one unit of output in each sector. The technical coefficients are derived by dividing each element in the transaction matrix by the total input of each sector, assuming that the inputs are in fixed proportions to the total input. The Leontief inverse matrix is an array of Leontief multipliers. Each Leontief multiplier in the matrix tells how much production from the  $i^{\text{th}}$  row industry is induced by the  $j^{\text{th}}$  column industry when there is one unit increase in the final demand for the



$j^{\text{th}}$  column industry. Using the Leontief inverse matrix as a comparison tool across different economies or different points in time for the same economy has the merit of neutralizing economic and population sizes.

Table 5 presents Leontief multipliers of selected Philippine industries in 1985 and 2000. The data indicate that the Leontief multipliers of “wood and wood products” (0.1547), “furniture and fixtures” (0.0458), “paper and paper products” (0.0378), and “construction” (0.0060) against the forestry sector in 2000 were all smaller than those corresponding Leontief multipliers in 1985. In other words, the direct and indirect production from the forestry sector induced by a one-unit increase in each of the forwardly linked sectors in 1985 was larger than that in 2000. It follows that the downstream industries of the forestry industry in the Philippines in 2000 did not play a role in driving forestry development as much as in 1985.

On the other hand, “wood and wood products” induced by a one-unit increase in the “furniture and fixtures” industry and the paper and paper

products industry in 2000 were 0.3229 and 0.0225, respectively. These were noticeably higher than the corresponding Leontief multipliers, 0.2807 and 0.0009, for 1985. This suggests that there is a potential for the “wood and wood products” industry to trigger forestry redevelopment in the Philippines. This finding warrants intensive research into the supply chain of forest products in the Philippines, mapping out appropriate policy measures to fill the gap between the two industries.

## Integration of Community-based Forest Management into Upland Livelihoods

Rights-based forest management schemes are appropriate policy instruments for reforestation and poverty alleviation. However, rights-based forest management per se is not a champion approach unless such a program is supported by steady and strong growth of the forestry sector in connection with other industrial sectors in an economy. Moreover, any suggestion of policy instruments would be mere cliché if the day-to-day livelihoods of the participants in the program are not factored in. Borrowing the words of Ostrom (1991), neither institutional arrangements nor microeconomic policies to redevelop the forestry industry would be effective if they are not congruous with the needs of the local community.

The framework of the CBFM program in the Philippines needs to be redesigned in a way that enables the program to relieve hunger and ensure food security for the poor. The sustainable livelihoods approach adopted by DFID (1999) is worth being considered in shaping a new operation framework for the CBFM. This approach postulates that the economic sustainability of the poor is the key to ecological sustainability in upland areas. Without achieving and sustaining a baseline of economic welfare for the poor, it would be next to impossible to protect their surrounding natural resources from being exploited. The baseline of economic welfare can be measured by annual per capita poverty thresholds defined by the government. The households under the thresholds could not help but desperately seek an immediate increase in net returns to any activities they undertake.

Food security is a core element of economic sustainability. To make the CBFM program more congruous with the needs of the poor, the program can be integrated with upland livelihoods such as the growing of fruit trees and livestock. When the upland poor are convinced that active participation in a CBFM project would enable them to earn food or money on a regular

**Table 5. Leontief multipliers for selected industries of the Philippines, 1985 and 2000**

	INDUSTRY	FORESTRY	WOOD AND WOOD PRODUCTS	FURNITURE AND FIXTURES	PAPER AND PAPER PRODUCTS	CONSTRUCTION
1985	Forestry	1.0376	0.7314	0.2095	0.2623	0.0825
	Wood and wood products	0.0005	1.0319	0.2807	0.0009	0.0811
	Furniture and fixtures	0.0000	0.0000	1.0017	0.0001	0.0001
	Paper and paper products	0.0034	0.0029	0.0098	1.5017	0.0174
	Construction	0.0002	0.0002	0.0004	0.0006	1.0005
2000	Forestry	1.0052	0.1547	0.0458	0.0378	0.0060
	Wood and wood products	0.0009	1.2333	0.3229	0.0225	0.0458
	Furniture and fixtures	0.0003	0.0012	1.0334	0.0007	0.0058
	Paper and paper products	0.0012	0.0099	0.0160	1.7460	0.0138
	Construction	0.0010	0.0012	0.0021	0.0016	1.0075

Source: NSCB 1991, 2006

basis, they would learn that tree plantation and forest protection are in their best interest. Muhammad Yunus (1998, 2005), Arnold (2001), and Brown and Lassoie (2010) have also stressed that providing income-generating opportunities is the most effective way to help the poor protect natural resources and escape the poverty trap.

Growing timber trees entails a long-term investment. The CBFM program was designed, on the one hand, to help alleviate poverty among upland dwellers through the long-term productivity of trees and, on the other hand, to protect the public forestlands from illegal harvesting by empowering the upland dwellers with exclusive access to the public land. A problem associated with these dual goals of CBFM is that the upland poor cannot afford to invest their time and labor for uncertain future benefits because poor households are preoccupied with making subsistence income or finding food on a daily basis. They are not inclined to engage in tree planting and management activities, even though these might lead to improving their livelihoods in the long term (Osmani 1989; Holden et al. 1998; Sachs 2005; Mariani et al. 2009). They do not have the mindset to wait for future benefits and therefore tend to be risk averse to any uncertainty inherent in long-term investment.

When people are not utterly destitute, they might be able to save and be interested in investing for improving their future livelihoods. Increased income would enhance the overall social sustainability of their livelihoods. They would then have the luxury of being concerned about a better future and be interested in long-term investment and environmental sustainability. The DFID (1999) suggests that it is then imperative to introduce rights-based incentives, including secure access to natural resources.

## Conclusion

The Philippine CBFM program has aimed to promote forest rehabilitation and provide local communities with an additional source of income and livelihood support. The apparent strength of the Philippine CBFM lies in secure access to forest resources and financial returns granted to rural communities. To some extent, the Philippine CBFM has played a role in deterring more severe deforestation through illegal logging and accomplishing forest conservation and rehabilitation.

Despite such remarkable achievements, the progress of the Philippine CBFM has been seen as inadequate. The slow uptake of CBFM in the

Philippines is in part attributed to the sovereignty risk on timber harvesting, coupled with a lack of funds and the complex procedures and requirements of timber utilization. Thus more emphasis should be placed on the security of financial returns from tree plantations to upland farmers to promote the latter's participation.

An important thesis of this study is that appropriate industrial policy measures are required to link the demand for timber from other industries to the forestry industry in the Philippines. Community-based tree-growing, harvesting, and marketing activities are inevitably interlinked to the activities in other industries altogether. Consequently the success of CBFM depends largely on how well the forestry sector performs within the context of the whole economy. As this study has shown, in the Philippines there has been an excess domestic demand for timber products in the last two decades. It has been evident also that the "wood and wood products" industry has developed a relatively strong industrial linkage to the "furniture and fixtures" industry and "paper and paper products" industry, but a weak industrial linkage to the forestry industry. In this light, CBFM has the potential to fill the gap between the demand and supply of timber in the Philippines.

The importance of the CBFM program as a recipe to alleviate poverty should not be ignored, even if it is questionable whether the CBFM program has so far helped upland communities improve their livelihoods. However, the framework of the CBFM program should be redesigned in order to arrest upland poverty. It has been taken for granted mistakenly that growing trees is financially viable in the long run and therefore upland inhabitants must be interested in timber production. In fact, the poor are preoccupied with securing food on a daily basis and hence are not predisposed to investing for their future well being. A CBFM program that meets the immediate needs of upland farmers for food security will have a better chance of convincing them that tree plantation and forest protection are also in their best interest.

## Abbreviations Used

<b>AO</b>	Administrative Order
<b>CADC</b>	Certificate of Ancestral Domain Claim
<b>CBFM</b>	Community-based Forest Management
<b>CBFMA</b>	Community-based Forest Management Agreement
<b>CBNRM</b>	Community-based Natural Resource Management
<b>CSC</b>	Certificate of Stewardship Contract
<b>EO</b>	Executive Order
<b>FMB</b>	Forest Management Bureau
<b>GDP</b>	Gross Domestic Product
<b>TLA</b>	Timber License Agreement

## Notes

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- 1 Hardin (1968) coined the phrase, “the tragedy of the commons.” This article rephrases it into “the tragedy of open-access resources,” as suggested by Harrison 2003; Daly and Farley 2004; and Pearce 2004. The rationale is that the term “the commons” in Hardin (1968) means the open-access resources (e.g., a pasture) to which everyone has access but no user has exclusive access, whereas in the literature the term also refers to communal properties.
- 2 For more details about the evolution of the CBFM program, cf. Harrison et al. 2004; Chokkalingam et al. 2006; Pulhin et al. 2007.
- 3 The total TLA area waned to less than 0.6 million hectares, with 13 active TLAs as of 2008 whereas about 500 TLAs accounted for about 10 million hectares (60 percent) of forestland in 1976, one-third of the country’s total land area of 30 million hectares (FMB [2009c], 37–39).

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