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PHILIPPINES CBNRM STOCKTAKING REPORT

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Authors:	**Gilbert Braganza, Miledel Quibilan & Rina Rosales**

Cover photo: Photo of stocktaking team meeting with members of the Dumagat community.

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ABBREVIATIONS

ADSDPP	Ancestral Domain Sustainable Development and Protection Plan
ADMP	Ancestral Domain Management Plan
ARMM	Autonomous Region of Muslim Mindanao
BFAR	Bureau of Fisheries and Aquatic Resources
CADT	Certificate of Ancestral Domain Title
CADC	Certificate of Ancestral Domain Claim
CARP	Comprehensive Agrarian Reform Program
CBCRM	Community Based Coastal Resources Management
CBFM	Community-Based Forest Management
CBFMA	Community Based Forest Management Agreement
CBFMO	Community Based Forest Management Office
CBMPA	Community-Based Marine Protected Area
CBNRM	Community-Based Natural Resource Management
CBRMP	Community Based Resources Management Project
CCRMP	Camiguin Coastal Resource Management Project
CDD	Community-Driven Development
CFP	Community Forestry Program
CRM	Coastal Resource Management
CRMP	Coastal Resource Management Project
CVRP	Central Visayas Regional Project
DAI	Development Alternatives, Incorporated
DENR	Department of Environment and Natural Resources
DILG	Department of Interior and Local Government
EcoGov	Eco-Governance Project
EIRR	Economic Internal Rate of Return
ENRO	Environment and Natural Resources Office
EO	Executive Order

FIRR	Financial Internal Rate of Return
FISH	Fisheries for Improved Sustainable Harvest
FLUP	Forest Land Use Plan
FMB	Forest Management Bureau
FRMP	Forest Resources Management Program
HDI	Human Development Index
IP	Indigenous Peoples
IPRA	Indigenous Peoples Rights Act
IRA	Internal Revenue Allotment
ISFP	Integrated Social Forestry Program
IUCN	International Union for the Conservation of Nature
KBA	Key Biodiversity Area
LGU	Local Government Unit
MEAT	Management Effectiveness Assessment Tool
MPA	Marine Protected Area
NGO	Non-Governmental Organization
NGP	National Greening Program
NIPAS	National Integrated Protected Area System
NRM	Natural Resource Management
NRMP	Natural Resources Management Program
PACBRMA	Protected Area Community Based Resources Management Agreement
PAO	Provincial Agricultural Office
PDP	Philippine Development Plan
PES	Payment for Ecosystem Services
PhP	Philippine Peso
PO	Peoples Organization
PR	Property Rights
TLA	Timber License Agreement
UNDP	United Nations Development Program

USAID	United States Agency for International Development
USD	United States Dollar
WB	World Bank
WWF	World Wide Fund for Nature

PREFACE

This report is intended to facilitate deeper discussions and dialogue among stakeholders – donors, implementers, service providers, and others – as a means to optimize, sustain, and scale up the gains of community-based natural resource management (CBNRM) in the Philippines. The report seeks to consolidate the rich experience of CBNRM and is an attempt to analyze current and past CBNRM initiatives in the context of impacts and economic outcomes and, at the same time, to identify opportunities for moving the CBNRM approach and agenda forward.

A number of interviews with key resource persons in the sector as well as focus group discussions with stakeholders in the field were conducted from April to June, 2011. A total of 12 sites were visited across the country, each one providing a variety of CBNRM experiences and operational nuances. Consultations with the Department of Environment and Natural Resources (DENR) and various civil society organizations active in CBNRM enabled clarity and contextual appreciation of the various institutional, technical, and policy aspects of CBNRM. These interactions resulted in identifying key learning, best practices, and areas needing further attention. (Please see Annex A for a list of sites visited and persons contacted.)

The first part of the report below presents the history of CBNRM, focusing on the factors that contributed to its conception and induced its evolution. The second part discusses the impacts of CBNRM based on its three fundamental principles, namely resource conservation, economic contributions or benefits, and empowerment. The third part presents best practices and lessons learned based on the sites visited and available information. Finally, a set of recommendations is presented to sustain, optimize, and scale-up CBNRM in the country.

The primary audiences for this report include the national government agencies that have been vital in the implementation of CBNRM in the Philippines, provincial and municipal government units who have natural resource management as a strategic developmental agenda, and people's organizations who continue to struggle as de facto natural resource managers. For academe and civil society organizations, the report may provide fodder for strengthening technical capacities and facilitating constructive alliances. Finally, for donors and agencies that have actively supported and are exploring further contributions to CBNRM, the report lays down areas of possible engagement and opportunities for strengthening collaboration.

The report departs from the significant, milestone effort produced by the Ford Foundation that captured the wide and rich breadth of CBNRM in the Philippines. The book, *After The Romance* (Gollin and Kho, 2008), is a watershed achievement, encapsulating more than 30 years of Philippine CBNRM experience. It eloquently discusses the various features of CBNRM ranging from governance, to policy, to community development, and to sustainability, among others. With the vast volumes of work on CBRNM, including case studies, technical working papers, and project assessments, this stocktaking report seeks to enrich the literature and understanding of CBNRM by assessing, to the extent possible, the socio-economic impact of CBNRM initiatives based on what is happening and what happened on the ground. The undertaking does not seek to assess projects nor elaborate on the merits and relevance of CBNRM. The stocktaking is an effort to look deeper into how CBNRM works in terms of affecting the lives of people and their environment. For many stakeholders, CBNRM is an attractive approach on a

theoretical level, but concrete, quantitative impact data is needed to open deeper discussion among decision-makers, practitioners and doubters of CBNRM's utility and sustainability. Hopefully, this latter is what this report can contribute.

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EXECUTIVE SUMMARY

The Philippine Government's continues to regard economic growth as its top priority. However, given that a significant portion of the Philippine economy is reliant on natural resources, and with a high level of vulnerability of many areas to natural disasters, the focus on economic growth calls for a balance between stimulating economic progress and sustainably managing natural resources and the environment. With the rapid depletion of the country's once vast natural resource base and unique biodiversity due to increasing population, over-exploitation of resources, and the occurrence of illegal extractive activities, implementing vital natural resources management measures and safeguarding the economy from excessive environmental costs become urgent concerns.

The historical experience of natural resource management in the Philippines is marked by severe exploitation of these resources, institutional disregard for social welfare, and the extreme greed of the privileged few. It also a history of changing development paradigms, exploration, experimentation, and innovation. Early forms of coastal resource management, practiced during the 1950s and 1960s, were mainly driven by national government interest in promoting optimal extraction and utilization of the resources in an open access environment. During the following decade, clear regulations on coastal and fisheries extraction were initiated by the government and greater attention to controlling the open access regime emerged. The social unrest and tension caused by these management strategies and the rapid decline of the natural resources sparked the need to revisit resource management approaches and the overall development paradigm. The idea of engaging communities as partners became attractive, but it also posed serious institutional challenges.

Community-based natural resource management or CBNRM traces its roots to various movements in the 1970's, particularly with the establishment and organization of irrigation groups. In the forestry sector, early CBNRM-type efforts were mainly focused on contracting forest dwellers and engaging upland families to do reforestation work. By the 1980's, community forest management expanded the scope and modality of engaging communities by broadening their participation to include aspects of inventory, planning, financial management, and monitoring. Interventions also consisted of community development and organizational capacity building. Partnership arrangements between local governments, peoples organizations, technical agencies and academe were also explored.

A number of key policies and increased donor attention enabled stronger institutionalization of CBNRM as a major natural resource management strategy. A landmark enabling policy was the Local Government Code of 1991 which triggered the devolution of specific natural resource management functions to the local government, mainly through the integrated social forestry program. In 1996, Executive Order 263 was issued, adopting community-based forest management as a national strategy for sustainable forest management. The Indigenous Peoples Rights Act of 1997 upholds the rights of indigenous peoples over the management of resources within their ancestral domain. In the coastal sector, Republic Act 8550 or the Philippine Fisheries Code of 1998 devolved the functions of fisheries and coastal resource management to Local Government Units (LGUs). In 2006, Executive Order 533 adopted Integrated Coastal Management as a national strategy to ensure the sustainable development of the country's coastal and marine resources.

In the last two decades, about 30 major, foreign assisted CBNRM-type projects were implemented totaling close to USD $730 million in loans and grants. There has also been a relative increase in the government's budget for CBNRM-type projects and programs. The Department of Environment and Natural Resource's (DENR) community-based forest management program, the Upland Development Program and the forthcoming National Greening Program have significant budget allocations.

Developing an accurate overall picture of CBNRM remains a challenge mainly because of the lack of consolidated work on CBNRM, the difficulty in accessing the information, and the quality of spatial data on CBNRM. The information is not been merged and collectively analyzed. Data remains fragmented and scattered. Accessing information requires visits to numerous offices and agencies where CBNRM-type activities were implemented and supervised. The quality of spatial information is mixed in terms of value and usefulness.

Currently, a total of 1,815 community based forest management agreements (CBFMAs) have been issued, covering about 1.6 million hectares. It is estimated that about 225,500 families are benefitting from CBFMAs. There are 1,169 marine protected areas (MPAs) that have been established, 852 of which have known areas. CBNRM activities are also included in the Ancestral Domain Sustainable Development and Protection Plans (ADSDPPs) of indigenous communities with Certificate of Ancestral Domain Titles (CADTs). Based on information provided by the National Commission on Indigenous Peoples, there are about 151 CADTs covering approximately 22,746 km^2 (including ancestral waters). It is important to note that, although ADSDPPs are integral to the CADTs, not all CADTs have approved ADSDPPs. Currently, only 91 ADSDPPs have been affirmed by the National Commission on Indigenous Peoples. There are about 53 community-managed resource zones in protected areas, located mainly in the buffer areas. Communities are issued protected area community based resources management agreements (PACBRMAs); these PACBRMAs cover about 22,884 hectares and an estimated 5,699 families are benefitting.

CBNRM IMPACTS

For the present stocktaking exercise, impacts were assessed with respect to CBNRM's three main objectives, namely resource conservation, socio-institutional development, and economic improvement.

Resource Conservation. Based on the information gathered, it was evident that, CBNRM activities have contributed to resource conservation at the project level, and that CBNRM efforts are linked to identified, national key biodiversity areas. Reports from CBNRM-type projects show that there is substantial evidence demonstrating improved management and conservation of local natural resources. Project reports illustrate that activities undertaken achieved most, if not all, major resource management targets. A review of completion reports of donor-assisted projects indicates substantial execution of targeted outputs such as areas reforested, areas under agroforestry, establishment of fish sanctuaries, and nursery establishment, among others. However, it is difficult to ascertain the sustainability of these gains since no follow-up evaluations were undertaken. The information gathered shows that many of the CBNRM efforts are indeed linked with identified, national key biodiversity areas. For example, national priority watersheds are being used as one of the key considerations in identifying where community based resources management activities may take place.

Socio-Institutional Development. Socio-institutional development in the context of CBNRM is often associated with governance, gender balance, participatory development, and devolution. Many of the CBNRM projects reviewed showed that there was improved natural resource governance through the

establishment of local or municipal environment and natural resources offices, improved capacity in fiduciary management, and increased attention to the role of women and indigenous peoples in natural resource management (NRM). With regards to improved fiduciary management, it was observed that, simultaneous to the focused attention on communities as planners and implementers of NRM, there has been an equal attention to the fiduciary aspects of implementation, i.e., financial management and procurement. Recent CBNRM initiatives included building capacity in accounting, bookkeeping, funds disbursement and procurement. Lastly, CBNRM has contributed to the increase in the level of participation of women and indigenous peoples in the overall process of NRM. Through CBNRM, there is greater recognition of communities as actual, de-facto and in-situ natural resource managers thus creating greater awareness of the active involvement of all members of the community.

Economic Improvement. CBNRM appears to have generally provided socio-economic benefits to its intended beneficiaries during implementation and shortly after the programs were completed. Anecdotal evidence shows CBNRM to have contributed to improving the living standards of the Peoples Organization (PO) members who participated in the programs focused on decentralizing natural resource management. Specifically, CBNRM activities are reported to have increased incomes at varying levels, realized positive economic and financial rates of return, increased government savings, and decreased poverty incidence. However, evidence is scarce with respect to whether these increases have been sustained after CBNRM projects end. With regards to economic and financial rates of return, in most donor-funded projects where these assessments were determined, information shows that both economic and financial rates of return yielded positive results in terms of the soundness of the project on the whole, though indirect benefits were not valued. For some CBNRM projects, estimates of government savings were significant enough to enable local stakeholders to undertake the protection activities themselves. Such savings should definitely be considered as part of the economic benefits of CBNRM, as the savings can be utilized for other government priority programs without sacrificing natural resource management. The case of Nueva Vizcaya's Tree for Legacy Program showed that CBNRM can result in very dramatic changes with respect to poverty. Through the 12 years of the program, poverty incidence in the province drastically dropped from 52% in 1992 down to 3.8% in 2004. From being one of the poorest provinces in the Philippines, Nueva Vizcaya had the distinction of having the 2nd lowest poverty incidence by the middle of the following decade.

LESSONS LEARNED AND BEST PRACTICES

In the more than three decades of CBNRM implementation, a few key lessons and best practices have been identified. Some of these are already documented and thoroughly discussed in the numerous, enriching literature on the subject. Some of the lessons and practices are also persistent, having been recognized but not adequately addressed.

Short-term objectives of CBNRM should be focused on economic benefits - Linking people with markets is crucial for the sustainability of CBNRM. In many CBNRM-type projects, livelihoods and enterprises are integral to sustainable NRM but are not receiving proper attention. Determining market potential and the development of marketing strategies for livelihood interventions at the early stages of CBNRM projects will ensure the success of income-generating activities and enable them to become part of the sustainability mechanism.

Sustainable financing is a key to sustainable CBNRM - One of the lessons learned during the earlier years of CBNRM implementation was the need to focus on organizational strengthening of POs and increasing

the capacity of both POs and LGUs with respect to financial management and resource generation. An important element for achieving these goals is building financial and business management capacity for POs and LGUs at the local level. Along with LGU capacity in financial management, increasing the capacity of POs to engage in business enterprises is equally important.

Employing co-management schemes is the best institutional strategy for CBNRM implementation - The best examples of successful CBNRM initiatives, with respect to both resource conservation and socio-economic development, are found in areas where co-management schemes have been fully implemented and greater devolution of authority to approve tenure and use rights is granted to local partners. These positive CBNRM experiences point to the need for greater devolution in implementing CBNRM throughout the country.

Science-based approaches in creating area boundaries for conservation prove to be effective – The increase in community participatory approaches has led to improved local resource management. Recent developments in linking these approaches with science-based and technical inputs have enabled local strategies to become more efficient and effective. Setting up MPAs and identifying forestland management activities based on both local knowledge and technical guidance ensures greater suitability between the activity, the available resources, and the desired outcome.

Providing exclusive and full rights is a powerful incentive to conserve - One important lesson learned in community-based coastal resource management is the imposition of limits or controls on the exclusive access and use of municipal waters to members of the host community. In the terrestrial sector, when communities are granted full rights to utilize their forest resources, there is a marked difference in the way they contribute to conservation. The sense of full ownership provides a strong incentive to manage the resource in a sustainable manner.

Provincial LGUs can facilitate the integration and scaling up of CBNRM - Provincial LGUs can provide the integrating policy framework that can create economies of scale for CBNRM to have a wider impact. Local policies can be harmonized and standardized at the provincial level. Furthermore, Provincial LGUS are not in the forefront of enforcement and thus have more resources to dedicate to providing technical and information management support.

MOVING FORWARD

CBNRM is, and remains an effective strategy to sustainably manage the Philippines' natural resources. The evidence shows, albeit in strong and reliable anecdotal forms, that CBRNM works. The evidence also shows that there is still a lot of work that needs to be done. The story and evolution of CBNRM is continues and the prospects of strengthening its application and ensuring positive outcomes are promising. The following are recommendations for moving CBNRM forward. These recommendations are arranged around sustaining the gains of CBNRM, optimizing the synergies that have been created, and scaling up the impacts to effect greater development outcomes.

- Sustain the Gains. In order to sustain the many gains generated by CBNRM during the last two decades, there is a need to undertake the following:
- *Provide incentives for LGUs as enforcers and sustainability agents*: Awards systems and government subsidies for successful CBNRM implementation and sustainability will help strengthen the perception that sustainable NRM is a worthwhile development endeavor.

- *Integrate participatory NRM planning in the overall process*: NRM planning is the basis and guide for community participation. The planning process should include local perceptions of the resources, identifying areas of intervention and risks, possible alliances and arrangements, and areas needing technical guidance. Participatory approaches are available and will need to be modified and adjusted to ensure optimal use and impact.
- *Mechanisms for engagement and strategy development must be flexible and contextually relevant*: There is a need to find more innovative ways to amplify the ecological and socio-economic impacts of CBNRM. The use of participatory tools complemented with scientific and technical information strengthens the value and utilization of available social, intellectual, cultural and institutional capital.
- *Conduct socio-economic monitoring on a regular and long-term basis:* Consistent and regular monitoring and assessment of CBNRM sites at the local level, particularly regarding whether socio-economic impacts are sustained over a prolonged period of time, is vital.

Optimizing Synergies. A number of arrangements and collaborative mechanisms have been developed among various stakeholders in the CBNRM sector. These working relationships need to strengthened and sustained if CBNRM is to continue as a priority NRM strategy:

- *Build partnerships with service providers, technical agencies, and academe*: Technical assistance provided to the LGUs by local, technical line agencies needs to be more targeted. This can be addressed by improving coordination and working relationships with the provincial government's environment and natural resources or agricultural offices. Non-governmental organizations or academe can help facilitate or bridge some of the gaps, especially in monitoring results and evaluating outcomes, strengthening the technical, coordination and fundraising/leveraging capabilities of LGUs.
- *Build networks of stakeholders*: Establish and implement MPA networks that aim to address larger biodiversity and fisheries management goals. Improve the role and contribution of the CBFMA federation and its alliances. Build a network of CBNRM-minded LGUs.
- *Developing a holistic approach to enterprise development*: Enterprise development has been a major strategy in most CBNRM projects, but it appears that the time and effort to ensure that this activity is able to take root before projects end has been insufficient. The approach to enterprise development may be made more effective if it is dealt with in a holistic manner. The identification of specific enterprises would be improved if equal consideration is given to both the demand and supply side. Enterprise development for CBNRM should be mainstreamed into the general, local development planning process.
- *Strengthen linkages between national policy and program implementation*: There needs to be greater consistency on how policies are applied and interpreted in the context of program implementation. In many CBNRM sites, this inconsistency has led to frustration, desperation and even violence during the implementation phase. Similar to this, is the inconsistency in the level and quality of enforcement, provision of technical guidance, and legal advice.

Scaling Up – Broadening the mode and expanding the types of interventions that make up CBNRM should be mainly based on what has succeeded on the ground. Clearly, not all areas in the country can be placed under community management. However, in areas where CBNRM is appropriate, and where the resources are in critical condition, CBNRM can be strengthened and expanded if the following are considered:

- *Strengthen link between CBNRM and local development*: Recent experiences in CBNRM show that unless natural resource management is integrated into the local development agenda, the level of legitimacy, ownership, effectiveness and sustainability are jeopardized. By linking CBNRM with local development, there is thus greater likelihood for sustainability and relevance.
- *Innovative financing schemes should be encouraged and mainstreamed in future CBNRM projects*: An important monitoring aspect that is now emerging as a crucial component of NRM is the measurement of indirect economic benefits via the improvement of environmental services brought about by sound NRM. Payment for Ecosystem Services schemes will necessitate the economic valuation of ecosystem services and a regular monitoring system of the services' benefits to sustain the schemes in the long run.
- *Build linkages with the private sector*: Vital to enabling communities to move from a resource protection and rehabilitation role to enterprise development agents, and a trajectory that is being recognized as a key direction for sustainability, private sector involvement will need to be explored, built, and strengthened. Microfinance support for CBFMA and MPA resource managers in the form of savings, micro credit, support systems, insurance, and adaptation support for climate change impacts are all areas that the private sector can explore, since no banks are currently supporting CBNRM resource managers.
- *Explore and develop cost-effective approaches*: CBNRM is expensive and scaling up will require innovative approaches that are cost-effective. CBNRM costs money, particularly regarding social and institutional capacity building. An emerging opportunity is to seek access to financing for household-level investments as community members assume greater responsibility and become more accountable with respect to natural resource management. Unless there are serious efforts to seek efficiency and effectiveness, CBNRM will remain a "subsidy-driven program" and a form of conditional cash transfer in the uplands and coastal areas.

BACKGROUND

Sustainable economic growth remains at the core of the Philippine Government's strategic development framework. Not only is the Philippine economy acutely dependent on its natural resources, but the recent acknowledgement of many of the country's area's vulnerability to natural disasters has drawn serious attention to the need to seek a balance between stimulating economic progress and sustainably managing natural resources and the environment. With the rapid depletion of the country's once vast natural resource base (some of which is unique to the Philippines) due to increasing population, over-exploitation of resources, and the occurrence of illegal extractive activities, implementing vital natural resource management measures and safeguarding the economy from excessive environmental costs becomes an urgent concern.

The World Bank noted that environmental loss and the accompanying costs in recent years have been high. The country continues to experience severe forest degradation with forest cover reduced from 70% in 1900 (21 million hectares) to about 19% at present (National Economic Development Authority, 2011), less than 1 million hectares of which is old growth forests (World Bank, 2003). In the early 1960s, the timber industry was the largest source of foreign exchange earnings; however, this declined rapidly and by the 1990s the sector's contribution to export earnings was very marginal. Current local timber requirements are mostly being imported while some are still being sourced from illegal entities. Limited forest cover and the lack of effective upland management have led to further deterioration of watersheds thus limiting aquifer recharge and increasing water runoff and soil erosion. It is estimated that around 267 watersheds covering a total area of 10.6 million hectares need immediate rehabilitation – mainly because these priority watersheds support national irrigation systems and are the major sources of domestic water supply. As of 2010, approximately 11.6 million hectares of forestlands were covered by some form of community forest management under various government programs. Despite the recent increase in the number of tenurial instruments[1] provided, few protected areas have been declared and deforestation continues (National Economic Development Authority, 2011).

Natural biodiversity is also being depleted rapidly; in the context of the Philippines being identified as one of the world's mega-diverse countries, this reality becomes even more disturbing. Rapid deforestation and over-exploitation of upland and coastal resources has placed many species under severe threat and a significant number are endangered. About 331 species on the International Union for the Conservation of Nature's (IUCN) Red List of extinction risk in 2002 (compared to 183 species in 1992) are endangered while 23% of the endemic vertebrate species are threatened. The problems of over-fishing and fishery stock depletion are attributed to the prevalence of open-access systems, the use of destructive fishing techniques, and the inability of government enforcement agencies to regulate entry to fishing waters and penalize destructive and over-fishing practices. Furthermore, upstream activities and trends such as pollution, siltation, sedimentation, and the use of synthetic pesticides and fertilizers have contributed to the decline in fishery stock. The limited management of fisheries resources is estimated to cost PhP 23

[1] A legal document that defines and contains clear rules and responsibilities for natural resource ownership, access, control, use and management. Typically, tenurial instruments define two main, broad types of rules, i.e., rules on access and conservation. An example is a Community Based Forest Management Agreement (CBFMA) which is an agreement entered into by and between the government and the local community, represented by the Peoples Organization, as forest resource managers, which has a term of twenty-five (25) years and is renewable for another twenty-five (25) years; it is consistent with principles of sustainable development and pursuant to a community resource management framework.

billion (USD $420 million) annually in lost revenues. The loss or damage of coral reefs, mangroves, and other fish habitats has likewise compounded the problem. Only one third of coral reefs remain in good condition, while most are degraded with 27% in poor condition. Coastal mangroves are also significantly depleted with coverage falling from 450,000 hectares in 1918 to 112,400 hectares in 1997. The destruction of coral reefs is estimated to cost more than USD $1 billion annually in decreased fishery production and tourism potential (Gollin & Kho, 2008).

CBNRM IN THE PHILIPPINES

THE EVOLUTION OF CBNRM

The historical experience of natural resource management in the Philippines is one of relentless exploitation, institutional disregard for social welfare, and the extreme greed of the privileged few. It also is a history of changing development paradigms, exploration, experimentation, and innovation.

Exploitation of the Philippines' forests for commercial purposes began during the Spanish period that left the country with 70-80% forest cover at the end of the 19th century. During the American colonial period, the forest industry flourished as policies were enacted that encouraged further exploitation by large American companies, resulting in an annual deforestation rate of about 140,600 hectares from the 1920s to 1934 and leaving almost 66% of the country covered by forests by the end of World War II. It was, however, the post-war period that saw the most rapid increase in forest exploitation activities which peaked during the 1960s up to the mid 1970s. This was also the period that witnessed immense economic growth as timber production significantly contributed to the national revenue. During this period, log production contributed approximately 58% of the total share of exports. By the mid 1970s, it was estimated that there were more than 400 timber license agreements (TLAs) and 'special permits' that were conveniently awarded by President Marcos to his relatives, business partners, and military cronies. With some concessions typically covering between 40,000 to 60,000 hectares, annual timber production steadily increased and soared to almost 15 million cubic meters in the mid 1970s. By capitalizing on its timber resources, the TLA system was expected to provide the impetus for the country's move towards industrialization. During its heyday, the Philippines was one of the world's premier single log producers and one of the region's fastest developing countries. However, this was also the period that experienced great social unrest as the unbalanced distribution of wealth resulted in a glaring division of rich and poor. The economic benefits derived from the timber industry and enjoyed by the political elite led to increased migration from lowland to upland areas displacing many indigenous cultural communities and creating greater pressure on the forests. Indigenous communities consequently lost their ancestral land to encroaching lowland migrants and timber companies simply because they were unable to produce the legal claims to their domain.

Coastal resource management (CRM) during the 1950s and 1960s was mainly driven by national government interest in promoting optimal extraction and utilization of the resources in an open access environment. It was only during the following decade that clear regulations for coastal and fisheries extraction were initiated by the government and greater attention to controlling the open access regime emerged. This initiative caused concern and conflict among the stakeholders, particularly between the small fisher-folk and the larger companies, as enforcement of the regulations began to affect extraction.

The social unrest and tension, and the rapid decline of the natural resources sparked the need to revisit resource management approaches and the overall development paradigm. The idea of engaging communities as partners became attractive, but it also posed serious institutional challenges. Though there were initial ventures into community-based resource management approaches, such as the landmark effort in the 1960s to ensure sustained irrigation when irrigation associations were organized as a means to make local users and community members more responsible and accountable regarding the management

of the water resource and distribution infrastructure, it was only later that the idea of formally engaging communities in natural resource management took flight, albeit undergoing significant birth pains.

To address the problems in the uplands, the Social Forestry program was implemented during the 1970s primarily as a deterrent to forest destruction caused by upland communities, generally known as *kaingeros*. *Kaingeros* is a term identifying people and communities that practiced forest land conversion to allow shifting cultivation or slash and burn farming, known as *kaingin*. These people were labeled by the government as the main culprits of deforestation, and as such, were identified as 'squatters,' 'illegal residents,' and 'trespassers' on government owned land. Upland dwellers were thus looked upon as criminals. The main goal of the Social Forestry program was to control the illegal and destructive activities, such as *kaingin*, by not allowing communities to reside in upland areas. This approach led to increased conflict between local communities, government agencies, local political elites, and private corporations. In many cases violence erupted and became rampant, especially where valuable natural resources were extracted. The program showed very little positive impact due to the government's limited capacity to enforce controlling measures. During this time, and up to the early 1980s, the main drivers and challenges of resource management in the uplands were empowerment, tenure, access rights, and containing upland migration and controlling destructive land use and over-extraction of the resources.

It was in the early 1980s that a shift in the government's perception towards communities became clearer. Upland dwellers were now perceived as partners and de facto managers for sustainable forest management activities, and there was a greater attention given to poverty alleviation as a means to address peace and order in the marginal areas. The establishment of programs such as communal tree farming, family reforestation, and forest occupancy management encouraged upland communities to collaborate on protection efforts and participate in sustainable upland agriculture and agroforestry. The main thrust of community-based forest management (CBFM – a type of community-based natural resource management) during this time was the need to close open access after cancellation, suspension, and non-renewal of logging concessions. This further expanded and evolved from typical forestland management with communities and upland farmers into a more integrated, programmatic, and spatial management approach.

Also, in parallel to this, community-based coastal resource management models were developed. Marine conservation programs were designed and implemented in the Visayas and coastal resource management planning became an integral part of local development strategies through donor-supported projects and efforts by civil society organizations. Community-based coastal resource management (CBCRM) started as small marine protected areas[2] (MPAs) with fragmented approaches, eventually building into a major component of an overall CRM strategy. Subsequently, these various efforts were slowly linked to MPA networks as a result of science-based understanding of how MPAs are connected by sea currents, access, fishing practices, local governance, and local or community knowledge. Through CBCRM, planning, protection, conservation, and enforcement became integral to local development and local governance mainly because natural resources were beginning to be recognized as assets.

[2] The operationalization of MPAs in the Philippines is mainly driven by communities (which can mean either a Peoples Organization [PO], or a Local Government Unit [LGU]). This includes the active participation of the community in identifying the area, as well as in planning, mobilization, implementation, monitoring, and enforcement. These activities are expected to be complemented by the technical assistance and guidance of the relevant national government agency (DENR or DA-BFAR) or a civil society organization.

It was during the term of President Aquino (1986 to 1992) that the political climate encouraged a broader and more progressive approach to sustainable natural resource management. Emboldened by the prevailing social consciousness and participatory governance at that time, the government aggressively undertook innovative projects and programs funded by multilateral and bilateral agencies such the Integrated Social Forestry Program (ISFP), the Filipino/German Integrated Rain Forest Project, the Community Forestry Program (CFP), the Central Visayas Regional Project (CVRP), and the Forestry Sector Project, among others. These initiatives had their own operational and management strategies, but mainly followed the basic and general concept of community-based resource management.

THE ENABLING MECHANISMS

The current practice and operational strategy of community-based natural resource management (CBNRM) in the Philippines is rooted and nurtured by three enabling mechanisms, namely (a) a sustainable development paradigm; (b) national priority and attention; and (c) financial assistance. Firstly, community-based natural resource management is inspired by the principles of sustainable development. Almost two decades ago, the government was emboldened by the outcomes of the Rio meeting (United Nations Conference on Environment and Development) and the national agenda for economic development was launched, entitled Philippines 2000. This agenda defined and articulated strategies that would lead the Philippines to becoming a newly industrialized country by the year 2000 through the sustainable development principles of the 1992 summit. The agenda embraced a shift in the direction and approach of development that would enable the country to achieve economic growth and at the same time preserve its remaining and much depleted natural resource base. This laid the foundation and impetus for pursuing a more formal and holistic CBNRM strategy. Through partnerships with communities, there was recognition of the importance of a "bottom-up" and "place-based" approach in the management of natural resources. The focus on communities as de facto resource managers placed particular attention on local stakeholders and accountability and paid particular attention to sustainable natural resource management as a means of improving economic well-being. CBNRM was thus regarded as a worthwhile approach that embodied both effective resource management and social justice. CBNRM was, and still is, considered as an approach to sustainable resource management, a social movement, and a local development and economic driver.

The government continues to have a high regard for CBNRM as expressed in the 2011-2016 Philippine Development Plan (PDP). The PDP's chapter on the environment and natural resources recognizes the relevance of community-based natural resource management efforts in forestry, biodiversity conservation, protected area management, CRM, and in integrating resilience to emerging natural and economic challenges, especially among vulnerable groups. The PDP also states that, to improve the conservation, protection, and rehabilitation of the country's natural resources, the sector shall pursue their sustainable use and integrated management. This means that improving the condition of various ecosystems and natural resources will be undertaken in consonance with providing resource-dependent communities with sustainable livelihoods. Integrated natural resource management should thus encourage communities to enhance protection and sustain productivity of reforestation and upland areas for livelihoods and poverty alleviation. The PDP also specifically mentions that communities should take greater responsibility in transforming open, denuded, and degraded areas into protection forests or economically productive assets and should be encouraged to develop multi-purpose forests. Communities are expected to take an active role in conserving, preserving, and managing protected areas. Protected area management should be

strengthened through partnerships with local communities via issuance of tenure security documents and provision of alternative livelihoods. In addition, the PDP encourages co-management[3] arrangements and multi-stakeholder partnerships through enabling mechanisms that encourage greater stakeholder participation and commitments.

Equally important, the government undertook reforms to enhance the policy and institutional framework for natural resource management, and numerous laws and regulations are already in place. The provision of tenurial instruments, enabled by various policies and programs, such as the Forest Land Management Agreement, the Community Forest Management Agreement, the Certificate of Community Forest Stewardship, and the Industrial Forest Management Agreement, comprised the basis for legitimizing communities as resource managers. The CFP, launched in 1989, embodied the basic principles of sustainable development such as multi-sectoral participation and community-based development initiatives.

Another major shift was the transfer of centralized government functions to local governments via the passage of the Local Government Code of 1991, which advocates comprehensive decentralization and devolution of some of the Department of Environment and Natural Resources' (DENR) functions to Local Government Units (LGUs). In 1996, Executive Order 263 (EO263) or the Community Based Forest Management Program was issued, adopting community-based forest management as a national strategy for sustainable forest management. Moreover, the Indigenous Peoples Rights Act (IPRA) of 1997 upholds the rights of indigenous peoples over the management of resources within their ancestral domain, using indigenous knowledge and practices and placing emphasis on culture as a key element in natural resources management. The Republic Act 8550 (Philippine Fisheries Code of 1998) devolved the functions of fisheries and CRM to local government units, thereby allowing greater local responsibility and accountability. The DENR-Department of Interior and Local Government (DILG) Joint Memorandum Circular 2003-01 strengthened the DENR-DILG-LGU partnership with respect to devolved and other forest management functions through joint management agreements and partnerships. In 2004, Executive Order 318 was issued to promote sustainable forest management whose major features included community-based approaches, resource valuation, and sound environmental governance. In 2006, Executive Order 533 adopted Integrated Coastal Management as a national strategy to ensure the sustainable development of the country's coastal and marine resources. Table 1 below presents a summary of the major enabling policy and operational mechanisms of CBNRM.

TABLE 1: CBNRM ENABLING MECHANISMS

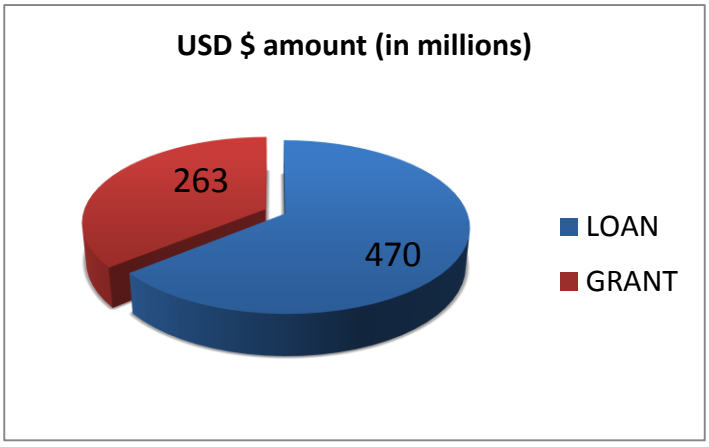
Period	Coastal	Terrestrial (Forest)
1970s	• Incipient and growing awareness of coastal zone and fisheries depletion • Silliman University, in cooperation with Oslob, Cebu declares a marine reserve in Sumilon Island (1974)	• Social Forestry Program implemented to control destructive extraction and land conversion practices of upland communities (kaingeros)
1980s	• Marine conservation and development program (MCDP) begins in 3 small islands in	• Various community-based efforts initiated such as communal tree farming, family reforestation, and

[3] Co-management is a mechanism where partnerships and institutional arrangements are forged between and among key stakeholders; in the case of CBNRM, the partnership is established between the DENR, the LGU and the community/PO, for the primary purpose of managing natural resources. This arrangement is formalized and made legal through a co-management agreement (similar to what was done in Magat Watershed, Nueva Viscaya) which is similar to a CBFMA but with a much broader presentation of accountabilities and tasks expected from each party.

Period	Coastal	Terrestrial (Forest)
	the Visayas (1984) • Central Visayas Regional Project -1 (CVRP–1) begins (1984) • NGOs pilot CB-CRM projects (mid-1980's) • ASEAN collaborative effort to develop ICRM plans (1986) • DENR commits to rehabilitate and develop mangroves at defined priority sites (1987)	forest occupancy management • Communal Forestry Program and the Integrated Social Forestry Program launched • Donor assistance for community-based projects increased such as Forest Sector Program and Central Visayas Regional Project
1990s	• DA Fisheries Sector Program (1990) • Coastal Environment Program (CEP) (1992) • RA No. 7584 and NIPAS Act of 1992 • GEF-supported conservation projects (1994)	• Local Government Code gives local governments the responsibility to manage their resources • EO263 (Community-Based Forest Management Program) launched • The Indigenous Peoples Rights Act empowers indigenous communities to plan and manage the resources inside their ancestral domain
2000s	• EO533 adopts Integrated Coastal Management as a national strategy to ensure sustainable management of the country's coastal and marine resources	• DENR-DILG Joint Memorandum Circular 2003-01 allows co-management arrangements between the LGU and the DENR • EO318 promotes sustainable forest management through community-based approaches and local governance

Lastly, the financial assistance from donor agencies and provision of government funds for CBNRM has been significant in developing and implementing CBNRM during the last two decades. Since the 1990s, there have been about 30 major foreign assisted CBNRM-type projects that were implemented totaling close to USD $730 million (loans and grants). The major official development agencies supporting CBNRM were the World Bank (WB) and the Asian Development Bank. Other financial assistance to CBNRM efforts in the country also came from the Japan Bank for International Cooperation, Japan International Cooperation Agency, the *Gesellschaft für Internationale Zusammenarbeit* (formerly the *Gesellschaft für Technische Zusammenarbeit* or GTZ), the International Tropical Timber Organization, the United Nations Development Program (UNDP), the Global Environment Fund, and the Food and Agriculture Organization of the United Nations, among others. Currently, the DENR is implementing about a dozen CBNRM-type projects totaling about USD $240 million. In 2009, the national government allocated approximately USD $30 million for its Upland Development Program to mobilize communities to manage 52,000 hectares of forestlands. Currently, the CBFM program of the DENR has a total budget of about USD $3 million for 2009 to 2011.

FIGURE 1: AMOUNT OF ASSISTANCE FOR CBNRM EFFORTS (1991 TO PRESENT)



The United States Agency for International Development (USAID) has been a major donor for CBNRM efforts and significantly contributed to pioneering community-based resource management that began as early as the 1970s. Projects such as the Buhi-Lalo Upland development project in the late 70s and early 80s, followed by the Rainfed Resources Development Project during the 1990s, then the Natural

Resources Management Program (NRMP) (phases 1 and 2) through 1999, and the Eco-Governance (EcoGov) Project through 2011 all contributed significantly to the evolution and institutionalization of CBNRM. These efforts promoted innovative arrangements among stakeholders, such as co-management arrangements and LGU-Peoples Organization (PO) partnerships, among others, and practical strategies, such as developing Forest Land Use Plans (FLUPs) and using community mapping in resource inventory and planning, that contributed to the government's approach and direction in CBNRM. The facilitation for the enactment of the EO 263 was carried out by USAID under NRMP 1 and 2, including the preparation of the first version of the CBRM Implementing Rules and Regulations.

Another organization that had an important role in the history and evolution of CBNRM in the Philippines is the Ford Foundation. From 1982 to the early 1990s, the Ford Foundation played a major role in supporting the beginnings of Social Forestry through the Upland Development Working Group, engaging academe to provide the rigorous research and social science that would enhance the socio-cultural and institutional dimensions of the CBNRM process. Groups like the Institute of Philippine Culture in Ateneo de Manila University, Upland NGOs Assistance Committee in La Salle University, and the College of Forestry and the Institute of Environmental Science and Management at the University of the Philippines in Los Banos were engaged to contribute to the development and documentation of various CBNRM methodologies and processes. The assistance from the Ford Foundation laid the essential groundwork for building the "social- and development-oriented perspective" of CBNRM that further influenced policy and operational strategies. These efforts also provided the needed capacity building support for piloting, research, and synthesis at the DENR senior management level.

THE CURRENT STATE OF CBNRM ACTIVITIES

Developing an accurate picture of CBNRM in the Philippines is not easy. This is mainly due to three major challenges, namely, the lack of consolidated work on CBNRM despite the abundance of documents and literature on the implementation of CBNRM interventions at the local and project levels; the difficulty in accessing this information; and the quality of spatial information on CBNRM. For donor-assisted projects, there are implementation completion reports detailing implementation assessments and reviews of emerging impacts and outcomes. The overall challenge, therefore, is in consolidating, validating, and making sense of the fragmented and scattered materials. Moreover, there has been limited effort with respect to ascertaining post-project impact and sustainability. With regards to accessing information, the majority of information may be found in the respective agencies or offices that implemented or collaborated on the project. The DENR, through its Community Based Forest Management Office (CBFMO), only keeps track of projects implemented by the office. The DENR's Foreign Assistance and Special Projects Office is mainly responsible for housing information on DENR-implemented CBNRM projects funded by donor agencies. For community-based management activities in protected areas, the DENR's Protected Areas and Wildlife Bureau is mainly responsible for collecting and maintaining relevant information. The Department of Agriculture and other national government agencies implementing CBNRM activities have their own repositories of information on their respective projects. In the case of natural resource management in ancestral domains, the data and description of activities are indicated in the respective indigenous communities' Ancestral Domain Sustainable Development Plans.

Establishing an overall spatial sense and picture of CBNRM is constrained by the lack of complete information on where CBNRM interventions occurred or are being implemented. For example, locating all community-based forest management agreements is difficult due to a lack of data on Regions[4] 4b, 5, and 7, while data for Region 8 has an erroneous spatial reference (the coordinates do not fall on land). In addition, the spatial information on Community Based Forest Management Agreements (CBFMAs) in Region 13 is corrupted, except for the province of Agusan del Sur. There is no spatial data for the provinces of Sulu and Tawi-Tawi in the Autonomous Region of Muslim Mindanao (ARMM). Also, information regarding community stewardship certificates, the precursor of CBFMAs, is no longer tracked except for those that were converted to CBFMAs. In terms of locating community-based coastal managed areas, locating the marine protected areas (MPAs) is relatively easier; they have better attributes compared to CBFMAs as they provide status/rating of implementation. However, only about 10% of the MPA data are represented as polygons while the rest are indicative locations.

More reliable spatial information of CBFMAs can be accessed through the Philippine Environmental Governance-USAID Mindanao Mapping Project and the Forest Management Bureau (FMB) of the DENR. Based on the information provided by the DENR, there are a total of 1,815 CBFMAs that have been issued, covering about 1.6 million hectares. It is estimated that 225,500 families benefit from CBFMAs. Region 10 has the highest number of CBFMAs issued, but Region 2 has the largest area under CBFMAs and the highest number of household beneficiaries. Region 4a has the smallest number of CBFMAs and, with that, the least coverage (please refer to Table 2 below for additional details).

TABLE 2: CBFMAS ISSUED AS OF JANUARY 2011

Region	No. of CBFMAs Issued	Area Covered (ha)	No. of Benefitting Families/Households
CAR	57	51,183	10,454
R1	140	39,107	13,202
R2	99	263,869	45,955
R3	120	79,154	11,703
R4-A	47	17,525	3,957
R4-B	78	93,944	9,252
R5	112	51,254	8,330
R6	104	34,054	8,775
R7	197	56,601	13,862
R8	143	107,393	9,175
R9	145	93,152	15,605
R10	292	211,636	28,257
R11	99	206,571	12,762
R12	56	97,892	17,969
R13	126	201,327	16,277
Total	**1,815**	**1,604,662**	**225,535**

Source: DENR-FMB, Jan. 2011

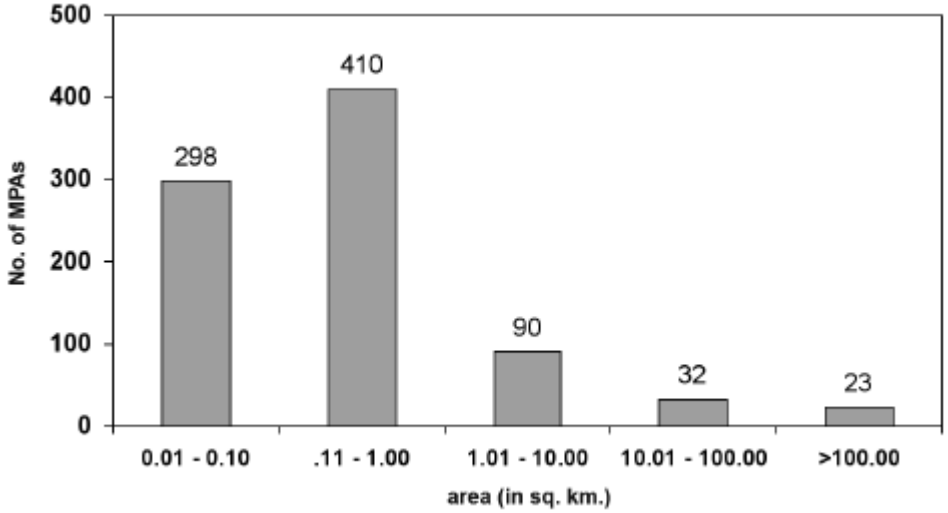
[4] The Philippines is divided into 17 geo-political regions.: Region 1: Ilocos Region; Region 2: Cagayan Valley Region; Region 3: Central Luzon Provinces; Region 4a: CALBARZON Region; Region 4b: MIMAROPA Region; Region 5: Bicol Region; Region 6: Western Visayas Region; Region 7: Central Visayas Region; Region 8: Eastern Visayas Region; Region 9: Zamboanga Peninsula Region (Eastern Mindanao); Region 10: Northern Mindanao Region; Region 11: Davao Region; Region 12: SOCCSKSARGEN Region; Region 13: CARAGA Region; Cordillera Autonomous Region (CAR); Autonomous Region of Muslim Mindanao (ARMM); and the National Capital Region (NCR).

The CBFMA sites may be located but the shapefiles and summary list lack attributes needed for an accurate description of the status of implementation at each site. Linking the data from the resources available at the CBFMO with the shapefiles is possible, but the level of information is mixed and the procedure is hampered by limited technical and manpower capacity at the DENR. Providing current and accurate implementation status attributes would be highly valuable and could provide a good perspective on spatial trends, patterns, and differentiation across the array of topographic and spatial circumstances of the different regions.

Various actions have been taken to address threats to coastal resources. Several initiatives led to the establishment of marine protected areas (MPAs) covering around 22,540 square kilometers. However, of more than 1300 existing and proposed MPAs, only 10-15% are effectively managed; many MPAs are either unmanaged or nonfunctioning. Sixty percent are located in the Visayas Seas region – the most heavily fished waters in the country. It is estimated that 4.9% of coastal municipal waters are protected as MPAs, but only 0.5% are within no-take areas. One study shows that marine corridors are also not well represented by the current MPAs: four of the nine identified corridors[5] have no designated MPAs.

The Coastal Conservation Education Foundation, the Siliman University Angelo King Center for Research and Environmental Management, and the USAID-assisted Philippine EcoGov were the main sources of information on marine protected areas. Currently, there are 1,169 MPAs that have been established, 852 of which have a known area; 35% are less than 10 hectares and 48% are 11 to 100 hectares. About 50% of established MPAs are located in the Visayas region. Figure 2 below presents the current size frequency distribution of MPAs.

FIGURE 2: SIZE DISTRIBUTION OF MPAS



Source: Arceo et al., 2008

There are promising developments in MPA establishment in the last 10 to 15 years. Compared to 1997 baselines, one study reported that the number of MPAs in the Philippines more than doubled during a 10-year period. Table 3 below presents the number of MPAs established from 1997 to 2007 by region.

[5] The nine identified corridors are: (1) Babuyan Corridor, (2) Mindoro-Calavite Tablas Triangle, (3) Balabac Strait Corridor, (4) Sibutu Passage-Sulu Archipelago Corridor, (5) Ticao Pass-San Bernardino Strait-Samar Sea Corridor, (6) Panay Gulf Guimaras Strait Corridor, (7) Philippine Sea Corridor, (8) Tapiantana Corridor, and (9) Bohol Sea – Surigao Strait Corridor.

TABLE 3: MPAS ESTABLISHED FROM 1997 TO 2007

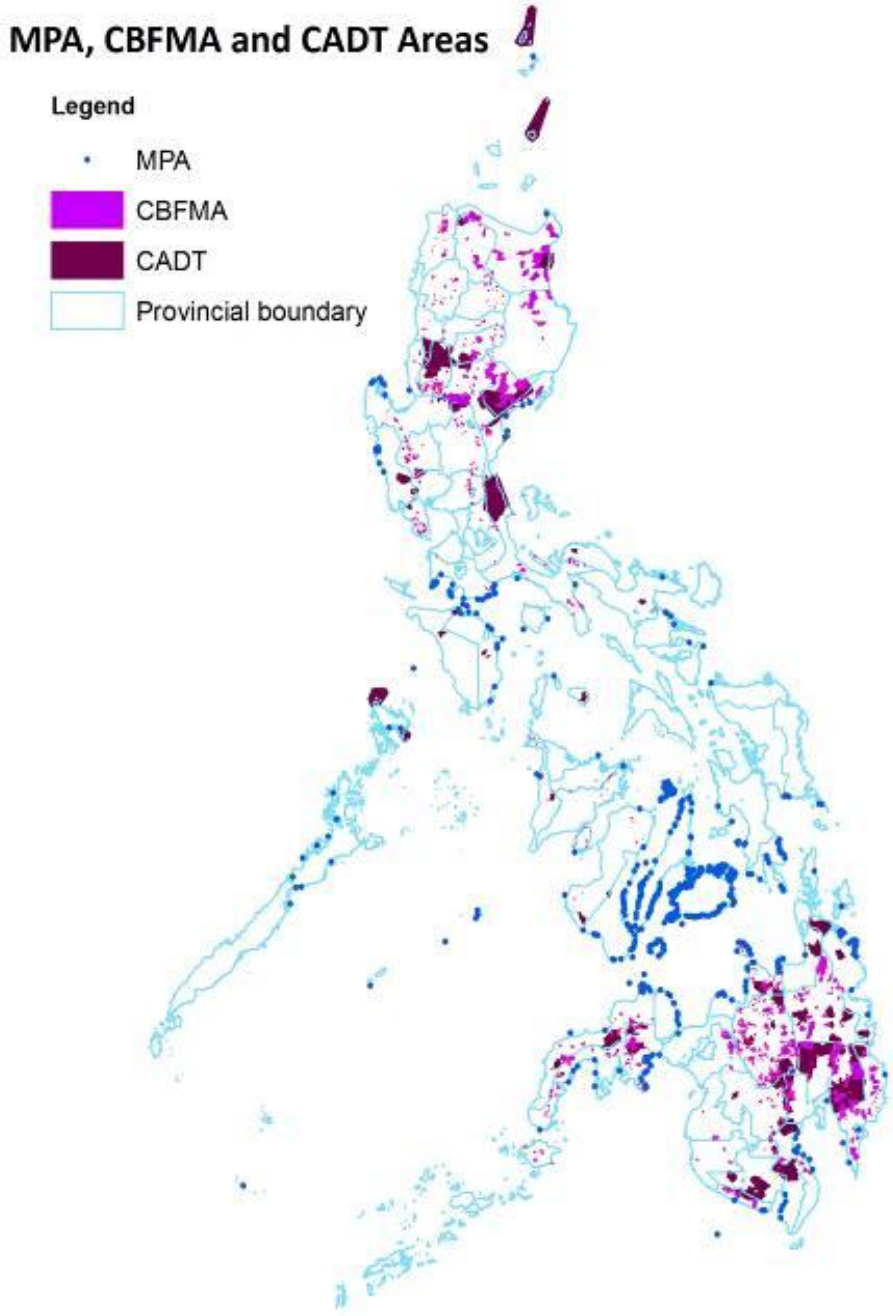
Region	1997*	2000**	2007***
1	6	7	20
2	4	8	11
3	6	10	22
4	77	59	205
5	41	98	90
6	18	28	48
7	106	127	417
8	77	98	120
9	23	40	56
10	16	20	46
11	14	21	35
12	3	7	15
13	44	36	66
ARMM	2	4	16
NCR	2	2	2
TOTAL	**439**	**565**	**1169**

Source: *Pajaro et al., 1999; ** Aliño et al., 2002, ***Arceo et al. 2008

CBNRM activities also occur in the Ancestral Domain Sustainable Development and Protection Plans (ADSDPPs) of indigenous communities with Certificate of Ancestral Domain Titles (CADTs). Based on information provided by the National Commission on Indigenous Peoples (NCIP), there are about 151 CADTs that have been issued, covering about 22,746 km^2 (including ancestral waters). It is important to note that although ADSDPPs are integral to the CADTs, not all CADTs have approved ADSDPPs. Currently, only about 91 ADSDPPs have been affirmed by the NCIP.

There are about 53 community-managed resource areas in or adjacent to protected areas, located mainly in the buffer zones. Communities are issued protected area community based resources management agreements (PACBRMAs) for these areas. Similar to CBFMAs, communities with PACBRMAs are allowed access to, and use of specific resources in the buffer zones under certain guidelines. The issued PACBRMAs cover about 22,884 hectares and an estimated 5,699 families are benefitting. Figure 3 below presents a map of issued CBFMAs, MPAs and CADTs. No spatial data are available for locating the PACBRMAs.

FIGURE 3: LOCATION OF CBFMAS, MPAS, AND CADTS



Ongoing CBNRM-type projects encompass a variety of interventions such as information and education activities, organizational capacity building, community development, technical planning, enterprise development, agroforestry, reforestation, and small infrastructure, among others. Whereas, CBNRM activities during the 1970s and 1980s mainly centered on organizational development and specific resource management activities such as reforestation and nursery establishment, current activities include a wider array of rural development elements. Hence, communities are no longer perceived only as

implementers of resource management activities, but are also seen as planners, sustainability agents, brokers, and managers. In short, communities are viewed as drivers of development. In many donor-assisted projects, the components of the project or program are integral to each other and are designed to complement the thrusts and approaches being operationalized. In this context, integration, in terms of the operational and technical features of the CBNRM project becomes paramount. Also, the concept of the management unit associated with CBNRM has evolved. In the past, CBNRM activities were implemented in specific areas or zones identified as needing rehabilitation or restoration. The notion of an ecosystem, watershed, and landscape began to receive more attention when it was realized that previous approaches only resulted in fragmented outputs and disconnected outcomes. Moreover, the use of a spatially integrated approach, for example ridge-to-reef, made more sense because it was consistent with the spatial understanding of communities and reinforced the sense of belonging and accountability. Ongoing donor-assisted projects are now designed emphasizing the use of the ecosystems approach.

CBNRM IMPACTS

For the stocktaking exercise, impacts were assessed with respect to CBNRM's three main objectives, namely resource conservation, socio-institutional development, and economic improvement. Impacts were primarily based on the evidence presented in various CBNRM documents, results of consultations during the site visits, and interactions with key resource persons.

RESOURCE CONSERVATION

One of the main objectives of CBNRM is to ensure, through stakeholders' active participation, that sustainable resource management and conservation are achieved. The stocktaking assessment showed that (a) CBNRM activities have contributed to resource conservation at the project level, and that (b) CBNRM efforts are linked to identified, national key biodiversity areas.

CBNRM RESOURCE CONSERVATION EFFORTS ARE SIGNIFICANT AT THE PROJECT LEVEL

Reports of CBNRM-type projects show that there is substantial evidence demonstrating improved management and conservation of local natural resources. Firstly, reports indicate that activities undertaken achieved most, if not all, of the major resource management targets. For example, the completion report of the CVRP, one of the early and groundbreaking community-based natural resource management efforts, presented increased forest cover and improvement of coral reef conditions due to the project's reforestation and coastal resources conservation activities. The Community Based Resources Management Project (CBRMP), implemented in four regions[6], reported an accomplishment of 16,000 hectares being managed through agroforestry, 7,000 hectares placed under tree plantations, 11,000 hectares of established fish sanctuaries, and putting in place 738 artificial reefs all contributing to improving the conditions of local resources and as a means of improving the communities' economic well-being.

By the time the Northern Mindanao Community Initiatives and Resources Management Program closed in 2010, the project's natural resource management (NRM) component was able to achieve, among other results, 16 municipal watersheds declared and established, five lakeshore and marine protected areas and mangrove sites reforested, and a number of local NRM plans developed and adapted in local development plans. These accomplishments were expected to lay the foundation for sustainable and productive resources management. The assessment of the EcoGov2 project showed that it was able to contribute to the improvement of 280,000 hectares of natural forests. As a final example, the Tree for Legacy program implemented by the provincial government of Nueva Viscaya in the 1990s was a noteworthy effort that resulted in significant improvement in the management and conservation of key watersheds in the province.

However, in spite of these efforts, it is very difficult to ascertain if the positive outputs reported, particularly with regards to forest resource management, did indeed lead to an overall improvement of the condition of the natural resource and if there are long-lasting, positive outcomes. This challenge is mainly

[6] CBRMP was implemented in Regions 5, 7, 8, and 13.

based on the limited attention to develop a comprehensive and accurate picture of how CBNRM project interventions contributed to national-level natural resource status and trends. For example, there have been declarations that forest cover and fish stock have improved in the last five years. However, determining how community based efforts have contributed to this is not clear. Also, the level of post-project monitoring is not being fully implemented and this has significantly constrained a deeper understanding of how CBNRM efforts are being sustained. Although there was positive feedback from some of the communities consulted, many, if not most, have experienced or are experiencing serious difficulties in sustaining their local CBNRM efforts.

In the coastal sector, there are indications that community-established fish sanctuaries and MPAs are being sustained mainly because these have provided relatively immediate benefits. The best demonstrations of the positive effects of community-based MPAs (CBMPAs) to local fisheries come from Central Visayas, specifically Sumilon and Apo reserves. The establishment of many CBMPAs in the country in last two decades or so can be attributed to the success of these marine reserves, which up to this day, continue to serve as models for CBCRM. Dr. Alcala and colleagues were able to provide empirical evidence that coral reef fish abundances and species richness were higher inside the reserve compared to the non-reserve areas and that there was a steady increase in fish caught by fishers from the non-reserve area, demonstrating the "spillover effect." Fish were also observed to be larger inside reserves which can potentially produce more eggs and larvae that can potentially seed other areas (Alcala, 1998). The small CBMPAs in Bohol provide another example of the positive impacts of protection. Some studies have shown that there were increasing trends in the density of top trophic level fish inside MPAs compared to those outside the MPAs after 7 years of monitoring. However, recent efforts towards privatization of CRM in some areas in the Visayas have caused uncertainties regarding how initial, community-based efforts can be sustained.

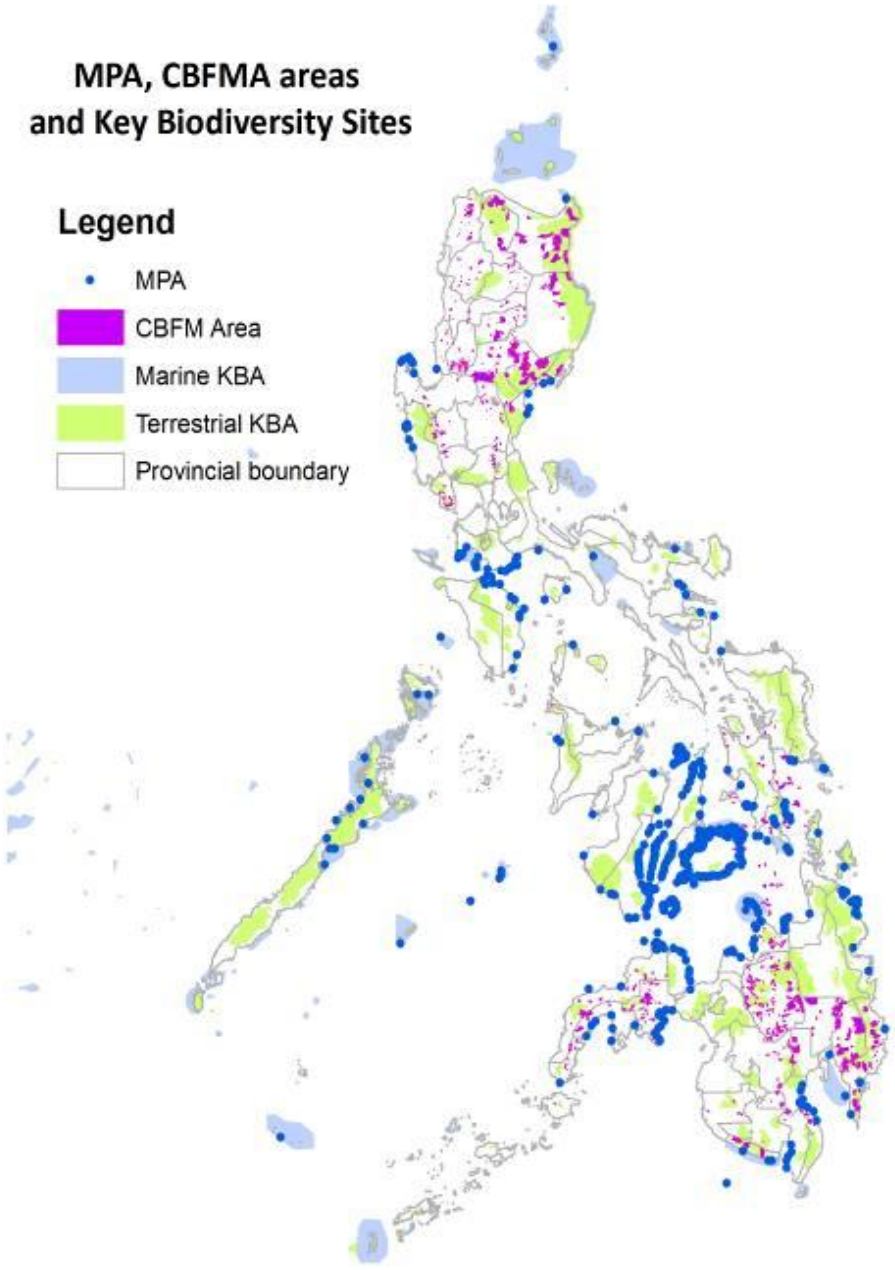
Experiences in forest resource management are not as promising as that of the coastal areas. For example, the Dumagats in Gabaldon, Nueva Ecija are now resorting to alternative resource use and extraction methods after a policy limiting resource extraction and use was issued, despite the existence of a CBFMA. Changes in leadership and development priorities in the province of Nueva Viscaya have also undermined the achievements of the Tree for Legacy program.

CBNRM EFFORTS ARE LINKED TO KEY BIODIVERSITY AREAS (KBAS)

Many CBNRM initiatives are linked to identified, national KBAs. National priority watersheds are used as one of the key considerations in identifying where community based resource management activities may take place. Oftentimes, the prioritized watersheds are part of the target areas for project-based NRM activities, mainly those that are foreign-funded. Most of the prioritized watersheds are, in turn, distinctly linked to KBAs and major priority protected areas. Many CBFMAs are located in the Northeastern part of Luzon where the Sierra Madre Mountain Range is found. The CBFMAs are scattered along the buffer zones of the Sierra Madre Nature Park, a prioritized conservation area. A number of CBFMAs are also located in watersheds that are linked to key coastal conservation areas. The CBFMAs in Surigao del Sur such as those in the municipalities of Marihatag and San Agustin are located in watersheds that drain into Lianga Bay. Unfortunately, there has been no clear attempt to accurately determine the level of overlap between CBFMAs and KBAs. This is not the case with MPAs. The MPAs proclaimed under the National Integrated Protected Area System (NIPAS) were selected based on a set of criteria as suggested by international bodies like the World Commission on Protected Areas of the IUCN. Not only has the number of MPAs significantly increased, but many are significantly linked to marine KBAs: overall, 71%

(829) of MPAs overlap with marine KBAs. Figure 4 below shows the location of CBFMAs and MPAs in relation to KBAs.

FIGURE 4: LOCATION OF CBFMAS, MPAS AND KBAS



SOCIO-INSTITUTIONAL DEVELOPMENT

One of the pillars of CBNRM is socio-institutional development. This pillar is often associated with governance, gender balance, participatory development, and devolution. CBNRM was thus regarded as a means of placing communities, with their diverse social and institutional nuances, in the driver's seat of

natural resource management. Achieving this end required strategic interventions in cultural strengthening, institutional development, and fiduciary management, among others. This socio-institutional dimension of CBNRM builds the foundation from which appropriate practices and operational innovations are developed, applied, and sustained. The active involvement of communities, from local people's organizations to local government units, thus ensures increased ownership, accountability and efficiency of natural resource management practices.

In the 30 or so years of CBRNM in the Philippines, there has been a plethora of literature on its positive socio-institutional impact. Based on the consultations with stakeholders in the sites visited, three key empowerment features are prominent – improved NRM governance through the establishment of local or municipal environment and natural resources offices, improved capacity in fiduciary management, and increased attention to the role of women and indigenous peoples (IPs) in NRM.

PROMOTION OF LOCAL ENVIRONMENTAL GOVERNANCE THROUGH LOCAL ENROS

In many of the CBNRM projects implemented in the last 10 years, the establishment of local environment and natural resource management offices and the assignment of environment officers and personnel constituted major outputs. This was driven mainly by the Local Government Code's recommendation that local government units take the initiative to establish their own environment offices. Projects like CBRMP, EcoGov and CVRP for example facilitated, as part of their implementation design and outputs, the establishment of local environment and natural resources offices (ENROs) primarily to ensure that CBNRM activities were mainstreamed into the development strategies in the respective LGUs. Along with the establishment of the local ENROs, corresponding personnel and budgets are also provided by the LGUs in line with the counterpart scheme that was part of the project design. The local ENROs become the primary agency in the LGU tasked with sustaining CBNRM activities and ensuring that key CBNRM principles – participatory planning and implementation – were incorporated as part of the LGUs' NRM approach.

IMPROVED FIDUCIARY MANAGEMENT (FINANCIAL MANAGEMENT AND PROCUREMENT)

With the focused attention on communities as planners and implementers of NRM, there has been equal attention to the fiduciary aspects of implementation, i.e., financial management and procurement. Recent CBNRM initiatives included building capacity in accounting, bookkeeping, funds disbursement and procurement. The level of involvement of communities in NRM has evolved from mere providers of manpower and labor for essential NRM activities to actually taking full responsibility of NRM implementation, from planning to procurement to implementation to monitoring. The World Bank's community-driven development (CDD) approach encapsulates the essence of this movement. CDD relies on the basic partnership of the LGUs and the communities in managing natural resources and provides opportunities that can alleviate poverty from the lives of rural communities. As such, through CDD the central and indispensable role of communities in sub-project planning, implementation, maintenance and operation and in monitoring and evaluation are recognized, built, and sustained. By enabling LGUs and communities to participate actively in the procurement of goods, works and services, project ownership and sustainability are strengthened thus leading to greater community empowerment and local accountability.

INCREASED PARTICIPATION OF WOMEN AND IPS IN NRM ACTIVITIES

A key emerging impact of CBNRM has been the increase in the level of participation of women and indigenous peoples in the overall NRM process. In the early years of community-based natural resource management, male community members were engaged and tasked to perform major project activities on initiatives such as the massive reforestation and CRM projects in the late 1970s and early 1980s, which were designed and monitored by national agencies. Subsequent to this and based on the realization that communities are in fact the de-facto and in-situ natural resources managers, there was a significant shift in the degree and level of participation of the communities' "marginal" members. Donor-funded CBNRM projects now clearly specify women and IP participation as key requirements in the implementation arrangements.

The impact assessment of CBRMP reveals that female respondents' adoption rates of social and institutional development and upland resources management knowledge is higher than male respondents but that the reverse was found in CRM. The project's income study showed that both men and women were involved in income generating activities but that there was differentiation in the activities for each gender. Women were more engaged in livestock and craft activities. Men were more involved in marine activities, as well as processing and marketing. Planting activities were shared between men and women but with men working in more isolated locations. Also, social safeguard mechanisms are put in place to ensure that women and IPs are targeted not only as beneficiaries but also as key members in the institutional and operational arrangement of the project. However, developing an overall and consolidated picture of this impact remains a challenge despite the emphasis placed on this aspect. On a project level, the baseline and impact data are available and these present an anecdotal perspective of how CBNRM contributed to positive shifts in the participation of women and IPs. At the national level, no data exists. The government's data on CBFMA beneficiaries only contains disaggregation of gender as well as distinguishing IPs from non-IPs. However, aside from frequency, there is no information available on the level of participation and roles of the men, women and IPs in CBFMA areas.

ECONOMIC IMPROVEMENT

Based on the literature review and the project sites visited for this study, CBNRM appears to have generally provided socio-economic benefits to its intended beneficiaries during project implementation and shortly after the programs ended. Anecdotal evidence shows CBNRM to have contributed to improving the living standards of the PO members who participated in program implementation, often with the overarching goal of decentralizing natural resource management. However, impacts cited were piecemeal in nature. In general, systematic and long-term measurements of economic well-being have not been done by government agencies nor by most project implementers; moreover, the measurements that were done, were not conducted over a prolonged period of time that would have allowed analysis on sustainability. With respect to the Coastal Resource Management Project (CRMP) for instance, the community-based approach was the main theme of the project. Strategies included developing alternative economic opportunities for displaced fisher folk and assisting them with adoption of a more enterprise-oriented approach to fishing. However, the results framework of the project did not include any indicators that measured the economic impacts of the project on project beneficiaries. It relied heavily on indicators measuring the project's influence on LGU awareness and leadership. This was validated by statements made by LGU stakeholders in CRMP sites such as Siquijor, Dumaguete, Siquijor, and Cebu.

Because many of the impact or assessment studies were conducted without the benefit of baseline socio-economic data, and most were done only when the project was about to be completed, conclusions based

on long-term quantitative evidence could not be reached, despite the rich experience in implementing CBNRM in the Philippines. Be that as it may, certain inferences can be drawn from the literature review and interviews conducted for this assessment. When available, quantitative impacts are enumerated, usually on a per-project or per-site basis.

INCOME LEVELS AND SUSTAINABILITY

Guilotongan Marine Sanctuary

In all instances of implemented CBNRM projects, increases in income levels is an impact claimed by evaluation reports as well as testimonials of selected project participants. Although there is no systematic survey conducted in most cases, there is an overwhelming assertion that CBNRM has generated economic benefits for project beneficiaries through direct increases in their incomes. In CBCRM projects that have conducted perception surveys, most stakeholders and beneficiaries claim their livelihoods have improved because of CBCRM interventions, particularly due to the establishment of MPAs and mangrove reforestation projects. This is especially true if fishing is the main livelihood activity in the area. MPAs and mangroves are presumed to improve fish biomass, which in turn benefits fishers through increased fish catches after six months or so. There are no hard facts and figures to support these claims in many cases, but perceptions are consistent throughout CBNRM projects. The case studies enumerated below include some figures to demonstrate improvement in income levels of some beneficiaries. They are cited to provide some evidence of this claim.

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What is more disconcerting is that these CBNRM impacts have not been sustained years after the project has ended. A major constraint to sustainability lies in the manner in which the national government has exercised its authority by arbitrarily revoking harvesting permits. In some instances, DENR's permanent revocation of timber harvesting permits leaves no alternative for local stakeholders and they return to traditional, unsustainable livelihood practices. In other cases, the interpretation of the revocation at the local level is extended to non-timber forest products such as rattan, further exacerbating poverty and negating the gains of the CBNRM program previously enjoyed by the local stakeholders.

Such was the case in Dupinga, Gabaldon, Nueva Ecija, where approximately 60 Dumagat families formerly benefitted from their Certificate of Ancestral Domain Claim (CADC) and earned substantial revenue from rattan harvesting. Upon revoking their rattan harvesting permit in 2005, the DENR required IPs to apply for individual permits despite their CADC and approved Ancestral Domain Management Plan (ADMP)[7]. The process was too expensive for the IPs and since then, they have gone back to their former livelihood activities that generated much less revenue, such as wildlife hunting. They do have an ecotourism activity that allows them to earn an average of PhP 29,000 (USD $632[8]) a year, but clearly this is not enough to sustain the whole community's needs. Other income sources now include operating chain saws, charcoal making and illegal logging. Their ADMP has ceased to be implemented and monitored. Worse, the IPs are now harvesting a tree called *bocaue*, which used to be spared due to its capacity to provide watershed protection and soil erosion control. Now it is being harvested, and it fetches a harvester around PhP 120 to 150 (USD $2.78 to $3.48) per day. Overall, a number of documents in the literature have brought to the government's attention the disincentives being created by allowing DENR to maintain full control over harvesting permits in CBFM areas.

Another major constraint lies with the pricing system, wherein farm gate prices of timber cannot compete with the prices of other agricultural commodities that are incompatible with forest conservation. The experience of the POs in Bayawan Negros Oriental is a case in point. Upon the termination of CVRP, farmers maintained their reforestation areas for the next 15 years until the trees were ready for harvest. At the time of harvest, *Gmelina* prices were at a very low farm gate level of PhP 5 (USD $0.16) per board foot. At the same time, sugar prices had increased tremendously relative to the time reforestation efforts had started. Coupled with the usual difficulties farmers experienced in obtaining harvesting permits from the DENR, they immediately shifted back to establishing sugar plantations and cleared their reforestation areas after their first timber harvest, negating the gains initially established by CBNRM. Although this is usually beyond the scope of most CBNRM projects, it is worth taking note of the effects of such economic drivers and taking this into consideration when designing future projects. Technical assistance might be needed to influence farm gate prices and ensure that farmers are obtaining fair compensation for harvesting timber and other non-timber forest products from their production areas.

Sustainability was also compromised on earlier CBNRM projects when LGU personnel did not feel they had the capacity to sustain what the projects had started as well as replicate the efforts in other parts of their locale. For CVRP for instance, although incomes were improved during project implementation (see case studies below), Siquijor, Bohol, and Negros Oriental project sites were not able to replicate the pilot

[7] The ADMP was the planning instrument developed by the beneficiary IPs under Department Administrative Order 02 (DAO2), which was the policy prior to the IPRA law. Under DAO2, IP beneficiaries received their Certificate of Ancestral Domain Claim (CADC). When the IPRA law was passed, it was expected that all CADC beneficiaries would convert their CADCs into Certificates of Ancestral Domain Titles (CADTs) and their ADMPs into Ancestral Domain Sustainable Development and Protection Plans (ADSDPPs).

[8] For the purposes of this report, the May 2011 exchange rate is used: USD $1 = PhP 43.13.

activities and have not been able to create sufficient impact regarding resource conservation, mostly due to the lack of capacity and quantity of LGU personnel remaining at the end of the project. These were hard lessons which succeeding CBNRM projects in the last decade have attempted to address.

CASE STUDIES ON CBNRM INCOME LEVELS

Early CBNRM projects such as the World Bank-funded CVRP attempted to measure economic impacts through surveys conducted near the project's completion date[9]. CVRP was composed of three major components: the upland agricultural component, the social forestry component, and the near-shore fisheries component. For upland agricultural participants, most of the positive impacts cited were related to the transfer of technical know-how and the provision of material inputs for agricultural activities. Farm and off-farm incomes of beneficiaries showed increases, as well as expenditures on major household items (e.g., food, clothing, medicine and recreation). Income from planted trees could not be measured, since income was still prospective at the time of the survey.

A more definitive measurement of increase in incomes was done for the social forestry component, and this study indicated a 144% increase for the component's participants. This income increase, however, encompassed those who were employed by the project for reforestation and other project-related activities. Still, social forestry beneficiaries did indicate a doubling of their incomes due to new agroforestry techniques introduced by the project. The third component of near-shore fisheries was able to provide impacts to PO members and non-PO members alike, mostly due to the non-exclusive nature of the fisheries sector. Higher fish catches were reported by community members who fished near the artificial reefs and fish sanctuaries that were established by the project; this was partly attributed to lower incidences of illegal fishing and mangrove rehabilitation in some areas. However, incomes remained below the poverty line despite their increase, indicating the inadequacy of the project's interventions if poverty alleviation was an objective. One particular recommendation was the provision of livelihood assistance for the wives of fisher folk in order to bolster household income in the fishing sector.

For CRMP beneficiaries, economic impacts were detected as early as six months after the establishment of MPAs, supposedly from increases in the fish catch of small fishers operating near the MPAs. Equally important is the emphasis CRM has placed on enterprise development as an alternative livelihood scheme that would not only increase incomes but would further complement conservation by replacing traditional resource extraction activities. In Olango Island, the initial success of ecotourism was enough evidence for the locals that conservation had a higher economic value compared to resource extraction. In Bohol, enterprises such as oyster culture and traditional craft weaving were established, which supplemented the community's income while simultaneously contributing to the improved management of the river system and nearby village. In Palawan, women were organized to undertake sardine processing and were able to successfully market their product commercially. For mangrove reforestation sites, alternative livelihoods were introduced, such as crab fattening, bee and honey culture, limited aquaculture, and sustainable use of selected wood products, all of which allowed community members to augment their incomes.

The case of Gilutungan Cebu – first established through the CVRP then later assisted by USAID's CRMP – is touted as one of the more successful CBCRM sites. Since its establishment in 1991 and re-establishment in 1998, it has been able to generate revenues of as much as PhP 4.2 million (USD $97,400) a year as a scuba diving and snorkeling site for recreationists. The revenue is managed by the

[9] Penalba et al., 1994.

municipal LGU, and is shared with community members through various employment schemes directly serving the MPA; a 30% share goes to the *barangay*[10] LGU for its various development projects.

The success has not been free of controversy, however. Although it continues to earn revenue in the millions of pesos a year, the LGU has decided to rent the entire buffer zone area to a Korean group, which pays a monthly rental fee of PhP 350,000 (USD $8,115). The arrangement has freed up LGU resources that were formerly used for revenue collection and management. The LGU has been criticized though, because the current management scheme, i.e., rental, has veered away from its original community-based aspect. Nevertheless, growth in revenues has occurred since the initiative's re-establishment in 1998, and the LGU continues to gain from existing arrangements. It should be noted that the present study was not able to validate the success of the MPA with the PO members. However, reassurances were provided that PO members were still hired to perform functions directly related to MPA management, such as tour guiding, coral reef monitoring, catering services for tourists, boat rentals, and employment as life guards.

TABLE 4: ANNUAL REVENUES GENERATED BY MPA IN GILUTUNGAN CEBU, CY 2000 TO 2011

Year	Amount of Annual Revenue, in PhP (and USD)
2000	Over PhP 300,000 (USD $6,956)
2001	Almost PhP 1,000,000 (USD $23,186)
2002	Over PhP 1,000,000 (USD $23,186)
2003 to 2007	Almost PhP 4,000,000 (USD $92,743)
2008	PhP 6,000,000 (USD $139,114)
2009 onwards	PhP 4,200,000 (USD $97,380)

Source: Personal Interview, Mr. Timoteo Menguito, Municipal LGU employee, Gilutungan Island, May 21, 2011

Aside from the case of Gilutungan, quantitative impacts of enterprise development were not monitored in other CRMP sites. This is unfortunate as it would have provided hard evidence of the success of this type of intervention.

For CBRMP sites, incomes reportedly increased by an average of 65% for each household involved in the project[11]. The sources of income increases varied, from short-term labor opportunities in reforestation programs, to substantial income increases from more sustainable sources including 13 enterprise types enterprises that had operated for at least 3 years, and several others that had demonstrated innovation.

The EcoGov project was implemented in 150 municipalities and cities, but only a few sites had records of income increases directly attributed to the project's interventions. It was difficult to measure economic impacts of the project on all its partner communities simply because the design of the project did not emphasize economic indicators as part of its performance monitoring system. Governance and biophysical indicators were mainly used to measure the project's success in improving natural resource management. The monitoring system is commendable in this respect, but a more complete picture could have been presented if monitoring of economic indicators had been established from the start of the project.

[10] The smallest political administrative unit in the Philippines. As stated in the 1991 Local Government Code, "As the basic political unit, the *barangay* serves as the primary planning and implementing unit of government policies, plans, programs, projects, and activities in the community, and as a forum wherein the collective views of the people may be expressed, crystallized and considered, and where disputes may be amicably settled."

[11] World Bank, 2008.

Be that as it may, there are a few indicators that seem to point to positive economic impacts of the project at some sites. Evaluation reports contained quite a bit of anecdotal evidence showing positive economic impacts in terms of perceived increases in incomes. Moreover, in preparation for their final evaluation, the project was also able to gather some hard facts from some of their sites that demonstrated positive impacts in terms of income and other economic indicators. In particular, the LGU of Kiamba in Saranggani was able to track the volume of production and farm gate prices for four agroforestry crops introduced during the project for property rights (PR) holders: rubber, coffee, fruit trees and abaca. In Wao, households were able to augment their annual income by as much as USD $955 from corn production, USD $3,068 from rubber plantations, and USD $2,182 from coffee production. Table 5 below enumerates the individual success stories in income increases gathered from project documents and interviews with key project staff.

TABLE 5: INCOME INCREASES OF ECOGOV PROJECT BENEFICIARIES

Location	No. of Beneficiaries	Source of Income	Increase in Income
Kiamba, Saranggani	37	Rubber	PhP 44,552 (USD $1,033)/hh
	31	Coffee	PhP 22,581 (USD $524)/hh
	67	Fruit trees	PhP 2,798 (USD $65)/hh
	1161	Abaca	PhP 12,111 (USD $281)/hh
	300-400	Coffee, in partnership with private investor	PhP 26,400 (USD $600)/hh/month
Wao, Lanao del Sur	8	Forest guards	
	11	Nursery laborers	
		Corn	PhP 42,000 (USD $974)/hh/year
		Rubber	PhP 135,000 (USD $3,130)/hh/year
		Coffee	PhP 96,000 (USD $2,226)/hh/year
	153	agroforestry plantings for multiple cover crops, and riverbank and streambank stabilization (subsequent harvesting)	
Bayawan, Negros Oriental	198	Forest guards re-hired by LGUs to assist DENR in enforcement	
		Tree planting and agroforestry	
Jagna, Bohol		Dive shop	
		Migrant workers' remittance and investment due to visible gains from solid waste management	
		Composting for organic fertilizers	
		Increased fish stocks flowing through markets	
Samal		Perceived improvement in fish catch	
Illana Bay	69% of respondents in community perception survey	Increase in fish abundance	

Sources: Draft EcoGov Final Evaluation Report and EcoGov Database, 2011

Moreover, some EcoGov-assisted LGUs were assumed to benefit in revenue increases from the implementation of sound CBNRM practices. In Wao, a payment for ecosystem services (PES) scheme was set up involving the municipal water district as buyer paying PhP 75,000 (USD $1,739) annually to PR holders as sellers of environmental services. Compost fertilizer was also being sold by the LGU. Solid waste environmental fees are now being collected in Nueva Vizcaya, adding to the local government's

revenues. Finally, Camotes Islands are now being prepared as ecotourism sites, creating the potential for the LGU and local communities to earn additional revenue.

The USAID-funded Fisheries for Improved Sustainable Harvest (FISH) Project was able to track fish catch increases attributed to the sustained CRM efforts in the municipality of Ubay, during the implementation of the CBCRM project. With increased enforcement of CRM rules and regulations, coupled with enhanced training and technical assistance from the project and continuous investments of the LGU into CRM programs, municipal fish catch increases were valued at an average of more than PhP 10 million (USD $231,857) a year over a period of 4 years[12]. The LGU of Ubay likewise has the potential of increasing its income from CRM-related revenues, most of which were made possible through the interventions of the FISH Project. With the full implementation of its municipal CRM Code, potential revenues could amount to as much as PhP 10 million (USD $231,857) per year, which would more than offset the estimated cost of enforcement, valued at more than PhP 2 million (USD $46,371) a year.

TABLE 6: POTENTIAL ADDITIONAL LGU REVENUES FROM CRM ACTIVITIES PER YEAR, UBAY, BOHOL

Revenue Source	Annual Amount (PhP [and USD])
1. Registration and Licensing	
a. Gear	426,900 (USD $9,898)
b. Boats/ fishers	420,400 (USD $9,747)
2. Auxiliary Invoices	
a. Capture Fisheries	212,632 (USD $4,930)
b. Aquaculture	
b.1 Minimum	131,405 (USD $3,047)
b.2 Maximum	1,017,253 (USD $23,586)
3. Permits, Aquaculture	
a. Land Use	2,000,000 (USD $46,371)
b. Production	
b.1 Minimum	707,420 (USD $16,402)
b.2 Maximum	5,887,560 (USD $136,507)
b.3 Average	912,800 (USD $21,164)
TOTAL MINIMUM	**3,740,245** (USD $86,720)
TOTAL MAXIMUM	**9,806,233** (USD $227,365)

Source: Rosales, 2008. Developing an Economic Framework for Analysis of CRM Investments: The Case of Ubay, Bohol

On a smaller scale, income increases have likewise been demonstrated in more recent CBNRM projects in the Philippines, one of which is the New Zealand-funded Camiguin CRMP. Livelihood assistance and enterprise development were only recently implemented, yet have already demonstrated positive impacts with respect to some people's incomes. Table 7 shows how incomes of local community members have increased in some areas, particularly where project interventions for revenue financing schemes have been conducted[13].

[12] Rosales, 2008.

[13] MacKay et al., 2010.

TABLE 7: INCOME FROM BOAT RENTALS TO MANTIGUE ISLAND NATURAL PARK, CAMIGUIN, 2009

Beneficiary	Total Annual Income (PhP and USD)	Average Income Per Person Per Month, in PhP (and USD)
Members	385,200 (USD $8,931)	1,783 (USD $41)
BLGU	42,800 (USD $992)	
Dispatcher	42,800 (USD $992)	3,567 (USD $83)
Cashier	10,700 (USD $248)	
Operator	321,000 (USD $7,443)	1,486 (USD $34)
Boat helper	107,000 (USD $2,481)	

Other additional income sources in Mahinog include vegetable farming in Queobe EcoPark, seaweed farming in MINaP, sea urchin farming in MINaP, and food services for tourists that visit MINaP. Most of these livelihood interventions have just started; hence, recovery of capital provided by the project cannot be expected at the time of this report. Nevertheless, such interventions have started to provide additional income sources even within a matter of months.

TABLE 8: MAHINOG INCOME SOURCES FROM PROJECT-FUNDED LIVELIHOOD ACTIVITIES, 2010

Activity	Total Income (PhP & USD)	Period Covered	Monthly Income (PhP & USD)	Project Cost (PhP & USD)
Vegetable farming, Queobe	37,819 (USD $877)	5 months	7,564 (USD $175)	50,000 (USD $1,159)
Seaweed farming, MINP	4320 (USD $100)	1 month	4320 (USD $100)	40,000 (USD $927)
Sea urchin farming, MINP	600 (USD $14)	1 month	600 (USD $14)	40,000 (USD $927)
Gross sales from Food Service, MINP	400,000 (USD $9,274)	April 2009 to August 2010		

The LGUs being assisted by the Camiguin Coastal Resource Management Project (CCRMP) are now charging user fees for recreational activities, and since 2008, revenues have been steadily increasing.

TABLE 9: MINAP AND WHITE ISLAND REVENUES FROM USER FEES, 2008-2010

Period Covered	Annual Income, PhP (and USD)	
	MINaP	*White Island*
2008	11,910 (USD $276)	
2009	277,475 (USD $6,433)	612,980 (USD $14,212)
2010	603,950 (USD $14,003)	693,040 (USD $16,069)
Growth Rate, 08-09	94%	
Growth Rate, 09-10	161%	13%

Source: Mahinog and Mambajao LGUs, December 2010

In Siquijor, some of the MPAs have been generating revenue since their re-establishment in the last decade. In San Juan municipality for instance, ecotourism has contributed revenues by as much as PhP 1 million (USD $23,186) per year from user fees, and strict enforcement of rules against commercial fishing encroachment has earned the LGU an additional PhP 250,000 (USD $5,796) per apprehended violator since 2006. Revenues from user fees are shared as follows: 40% goes to the PO, 30% to the *barangay* LGU and 30% to the municipal LGU.

Another example of increased revenue from CBNRM comes from Talibon Bohol: a former CVRP mangrove reforestation site has now been expanded and is covered by CBFM instruments for 50 PO members. A larger mangrove area co-managed by DENR and the LGU is being managed by around 124 tenure instrument holders. For both these sites, beneficiaries have claimed improvements in their fish catch, and various projects have introduced livelihood activities such as oyster culture, fish cages and pens, and have also influenced the types of fishing gear that may be allowed in their municipal waters. MPAs are likewise seen to contribute to higher fish catch, and one of these is now being advertised as a scuba diving site that earns revenues for the *barangay* LGU.

One distinction of CBCRM over CBFM is the emphasis the former places on improving enforcement of CRM rules and regulations in its project sites. Most of the CBCRM projects include a component focused on training local fishers and LGU personnel in detection and arrests of would-be violators. The improved efficiency of patrolling and arresting violators has a direct link to improving the resource base, which in turn translates into increased, direct benefits for the local communities that rely heavily on fishing as their main livelihood activity. Furthermore, the restoration of the resource base is much quicker in CRM than it is in forest management. Because of these elements, local mobilization, organization, and support are achieved faster and are more easily sustained in the CBCRM sector.

ECONOMIC AND FINANCIAL RATES OF RETURN

World Bank-funded projects measured the economic internal rate of return (EIRR) and the financial internal rate of return (FIRR) at the completion of each of their major CBNRM efforts. The EIRR and FIRR of the CVRP project were both measured[14]. The FIRR was higher than the EIRR due to the subsidies provided for purchase of farm inputs for beneficiaries. However, there were no attempts to measure the external and indirect economic benefits provided by the increase in forest cover and improved coral cover, nor were the indirect benefits provided by infrastructure development (through provision of roads and water supply systems) included in the computations. Hence, the EIRR would actually be higher than reported. In any case, both EIRR and FIRR attempted to measure the soundness of the project on the whole; the positive results obtained indicate a sound and successful project.

For the CBRM Project, positive FIRRs were substantial for some of its components. For instance, for the vegetable component, FIRRs ranged from 194% in a 2-crop module to 285% in a 3-crop module. Bamboo-based riverbank stabilization efforts produced a 17% rate of return, while the sale of propagules from mangrove plantations generated an FIRR of 23%. Higher incomes were further expected when harvesting begins in agroforestry sites. Again, as in the case of the earlier WB project, there was no valuation done for long-term and indirect benefits, such as improved soils, reduced soil erosion, stabilized aquatic breeding grounds, and increased efficiency in institutional operations. These indicators would have increased the EIRR of the project even more.

[14] World Bank, 1993.

EcoGov sites recorded a substantial number of benefits, which, although not valued in monetary terms, did provide economic benefits to the project stakeholders. For example, soil conservation was achieved through increases in forest cover. Moreover, more forest carbon is now being stored, with an estimated 8,487 tons of carbon stored in Wao's 41 ha of protected forests. Watershed protection improved through the rehabilitation of 99 ha of forests in Bayawan. In addition, damage has been avoided via the provision of livelihood alternatives to illegal tree cutting in adjacent forests, as well as via an increased population (estimated at around 346,000 people) now being served with wastewater treatment facilities. Less material is now going into landfills, and additional benefits are gained through the reduction in chemical fertilizer use as they get replaced by organic fertilizers from composting activities. At the project end, there was an estimated average decrease of 34% of solid waste being put in landfills at some EcoGov sites. In the coastal sector, fish habitats and nurseries have improved with MPAs and mangrove rehabilitation efforts, and more communities have increased their capacity to adapt to climate change as more coral reefs and mangroves are protected.

As noted earlier, attempts were made to measure the economic value of indirect benefits from the implementation of the FISH Project in Ubay Bohol. With damage to coral reefs and fisheries reduced due to increased enforcement, total benefits accruing to the municipality were estimated to be as large as PhP 98 million (USD $2.27 million) annually[15].

TABLE 10: SUMMARY OF ANNUAL ECONOMIC BENEFITS FROM ENFORCEMENT, UBAY, BOHOL, 2004-2008

Economic Benefit	Value (PhP and USD)
Increased municipal fish catch, legal methods	10,261,156 (USD $237,912)
Damage avoided from blast fishing	20,475,000 (USD $474,728)
Damage avoided from illegal fishing methods	4,008,643 (USD $92,943)
Increased coral cover from MPAs	56,700,925 (USD $1,314,652)
Damage avoided from commercial fishing encroachment	6,670,800 (USD $154,667)
TOTAL	98,116,524 (USD $2,274,902)

Source: Rosales, 2008. Developing an Economic Framework for Analysis of CRM Investments: The Case of Ubay, Bohol

INCREASE IN GOVERNMENT SAVINGS

Government savings may be considered as constituting part of the positive economic impacts of CBNRM. In reviewing the performance of USAID's Forest Resources Management Project (FRMP), it was estimated that CBFM was able to benefit close to 2 million Filipinos, with the potential of benefitting around 20 million upland residents if CBFM continued beyond the project. Estimates of government savings were significant at PhP 127 million (USD $2.94 million) annually for forest protection (in 1999 prices), if local stakeholders were successfully mobilized to undertake the protection activities themselves[16]. Such savings could definitely be considered as part of the economic benefits of CBNRM, as the savings could be utilized for other government priority programs without sacrificing natural resource management, assuming of course that the program is successfully continued.

[15] Rosales, 2008.

[16] Total savings are based on the following assumptions: total CBFM is 5.5 million ha; 1 forest guard patrols 4,000 ha; 1,375 forest guards are needed for the total CBFM area; and each forest guard is paid PhP 92,142 annually.

POVERTY INCIDENCE

When all the right elements of a sound CBNRM program are in place, the positive economic impacts can be dramatic. Such was the case of Nueva Vizcaya's Trees for Legacy Program, which was the provincial government's response to environmental degradation and poverty problems. The case of Nueva Vizcaya is highlighted here as it contains the best documented evidence of how the LGU was able to achieve both environmental rehabilitation and poverty alleviation targets.

In the early 90s, the LGU decided to embark on a massive reforestation program for the whole province using the principles of CBNRM. Deforestation of 75% of the forests was causing major problems in the whole province, including dwindling water supply provided by the watersheds as well as massive flooding and soil erosion. The co-management scheme between DENR and the LGUs was put in place, allowing the provincial LGU to efficiently carry out its plans and programs for its watersheds. The provincial LGU credits the assistance it received from a variety of foreign-funded programs, one of which was the USAID Governance for Local Development project that provided much needed training in government planning tools and concepts such as participatory governance, financial management, and budgeting. Additional assistance was provided by related projects and donors such as the European Union's upland development project, the Ford Foundation, the United Nations Fund for Population Activities, and USAID's EcoGov project which helped formulate FLUPs at the municipal level.

Social fencing, which provided tenure to locals within the watersheds, proved to be a successful model as it offered the right incentives for locals to participate actively in forest protection. Other economic incentives were also established such as cash prizes for *barangays* that reported zero fires in a year. Participation of civil society in local government planning and budgeting was enhanced officially by allocating more decision-making positions for ordinary citizens. Although DENR still maintained its role of granting harvesting permits, the LGU acted as guarantor, and permits were issued quickly. Finally, livelihood assistance was prioritized and substantial funds were allocated for such programs, including the establishment of a market terminal in the city that served as the main market for agricultural produce from the CBFM areas.

The program continued until 2004 and during its 12 or so years, poverty incidence in the province drastically dropped from 52% in 1992 down to 3.8% in 2004[17]. From being one of the poorest provinces in the country, Nueva Vizcaya had the distinction of the 2nd lowest poverty incidence by the middle of the next decade. Moreover, UNDP recorded the highest per capita provincial Human Development Index (HDI) for Nueva Vizcaya in 2004. There were also other major long-term programs implemented by the LGU such as the creation of programs to empower marginalized sectors and groups, particularly the deaf and blind, the improvement of financial management through an overhaul of the real property tax system, the improvement of the health sector through the training of hospital personnel, and the implementation of an early childhood development program. The coordinated implementation of all these programs definitely contributed to the drop in poverty incidence and the improvement of the province's HDI, but the LGU credits the Trees for Legacy Program as its flagship program which primarily contributed to the positive trends in poverty incidence.

Other indicators of success included the following: there were higher school enrollment rates among children as parents started earning revenue from their CBFMAs. Transport vehicles such as jeepneys were purchased by people in the uplands. House construction seemed to improve, with more expensive

[17] Ramos-Jimenez et al., 2004.

materials being used. Incomes were reportedly higher from growing tomatoes and fruit trees as well as rattan harvesting. The LGU was widely recognized by various governmental awards as it offered an exemplary model for environmental management, peace and order, and overall sound local governance. As far as the forests were concerned, fire incidence in the two major watersheds of the province dropped to zero, and there was a marked improvement in water supply for domestic use and irrigation.

However, some stakeholders are apprehensive that the gains from the province's CBNRM success may not be sustained for long, due to the suspension of the program's expansion by DENR in 2006 as well as the newly proclaimed national ban on logging through EO 23 of the Aquino government. Furthermore, the current Governor has set new targets for the province, focusing on the tourism potential of the watershed instead of expanding the Trees for Legacy Program. There is now a move by civil society in the province to transfer co-management of the watersheds to the municipal LGUs from the provincial LGU, a move that is being supported by the DENR-Provincial Environment and Natural Resources Office. Meanwhile, the Trees for Legacy Program is in limbo, and its future expansion is on hold until management problems are resolved.

LESSONS LEARNED AND BEST PRACTICES

In over three decades of CBNRM implementation in the Philippines, a few key lessons and best practices have been identified. Some of these have already been documented and thoroughly discussed in the many enriching studies, reports and analyses on CBNRM. Moreover, some of the lessons have been persistent through time, having been recognized but not adequately addressed.

SHORT-TERM OBJECTIVES OF CBNRM SHOULD BE FOCUSED ON ECONOMIC BENEFITS; LINKING PEOPLE WITH MARKETS IS CRUCIAL FOR THE SUSTAINABILITY OF CBNRM

Early CBNRM efforts were focused on environmental management and conservation, without paying enough attention to how conservation activities would affect poor people's livelihoods and economic status, particularly people who were totally dependent on resource extraction for a living. Bitter lessons were learned from this orientation as local stakeholders caused physical damage to reforestation projects, there was a lack of local support for government programs that banned resource extraction at the onset, and anti-conservation attitudes festered, all of which impeded the success of NRM efforts. CVRP realized this as a major lesson and concluded that the short-term objectives of NRM should include increasing incomes and responding to more immediate quality-of-life needs of local stakeholders. Conservation, in contrast, should be a medium-term benefit; hence conversion of farms to perennial land use systems (e.g., permanent forests) should be attempted only after the short-term objectives have been achieved.

Subsequent CBNRM projects in the terrestrial sector have incorporated livelihood components and objectives in project designs based on this lesson. For example, the CBRMP project concluded that an assessment of the market potential and the development of marketing strategies for livelihood interventions should be required at an early stage of the project. This would ensure the success of the income-generating activities that would be introduced as part of the CBNRM activity.

Similarly, during the second phase of the EcoGov project, at some sites, market linkage information and assistance was provided for POs holding CBFM tenure instruments; brokering services between some POs and the private sector regarding drafting long-term contracts with each other was also provided. However, this was only done at a few project sites where the LGUs and POs were judged to be at a more developed level with respect to NRM, and were ready to engage with the private sector during the project's lifespan. In theory, the preparatory work done by EcoGov through its capacity building activities and FLUP formulation in other sites has now prepared them to follow the path taken by the more advanced project sites, such as Kiamba and Maasim in Saranggani, Bayawan in Negros Oriental, Wao in Lanao del Sur, and Jagna in Bohol.

SUSTAINABLE FINANCING IS A KEY TO SUSTAINABLE CBNRM

A major hurdle for sustainability of CBNRM has always been securing sustainable financing. One of the lessons learned during the early years of CBNRM implementation was the need to focus on organizational strengthening of POs and increasing the capacity of both POs and LGUs with respect to

financial management and revenue generation. An important element for achieving this is to build capacity for business management for both POs and LGUs at the local level. Such components were evident in later CBNRM projects such as the World Bank-assisted NRM-Second Adjustment Loan and CBRMP projects as well as EcoGov and FISH of USAID.

Experience in CBNRM, in both upland and coastal areas, shows that for activities to begin and early challenges overcome, an initial subsidy or financing of at least 3-5 years is needed. This is particularly important if there are no existing and accessible resource-based household enterprises such as post-harvest, value-added practices, farm processing, packaging, and transport. In almost all cases, communities will need to rely on initial financial support to jump-start activities, build local capacities, and initiate momentum for sustainability. Along with the preparatory work in providing support for obtaining PRs and other tenure instruments for local beneficiaries, there are costs associated with training on financial management for LGU treasurers and financial personnel of other stakeholder groups.

In some cases, local officials concerned with revenue generation have been trained on identifying innovative financing possibilities through local taxation schemes. This provides the LGUs with greater efficiency and more sources for financing their NRM programs even after a given CBNRM project ends its assistance. Innovative financing schemes have also sourced funds from user fees for ecotourism activities at CBNRM sites. In Mabini, Batangas for instance, the implementation of the scuba diving entrance fee scheme has generated substantial revenues for the LGU over the past decade. Its five-year average for the period 2004 to 2008 has amounted to almost PhP 1.3 million (USD $30,141) a year and has augmented the budget used for MPA enforcement and management activities.

TABLE 11: CRM REVENUES IN MABINI, 2003 TO 2008[18]

Year	No. of Divers	Collected Dive Fees (PhP & USD)
2003	2,225	225,000 (USD $5,217)
2004	10,005	1,000,510 (USD $23,198)
2005	16,778	1,677,750 (USD $38,900)
2006		1,350,000 (USD $31,301)
2007		1,130,300 (USD $26,207)
2008		1,150,000 (USD $26,664)
5-Year Average		1,299,894 (USD $30,139)

Source: Municipal Environment and Natural Resources Office, Mabini, Batangas

Along with LGU capacities in financial management, increasing the capacity of POs to engage in business enterprises is equally important. During the implementation of USAID's FRMP for instance, its CBFM enterprise development component struggled because POs needed a lot of capacity building before they could be expected to engage in the market as full-blown enterprises. In many cases, the project's partner POs experienced huge losses, despite having been granted harvesting rights, due to their lack of experience in operating a business, lack of access to markets, insufficient capital, high production costs due to infrastructure deficiencies, low forest stock density, corruption resulting in high transaction costs, and fast-changing policies and bureaucratic red tape[19]. In general, skills training will not only capacitate POs, it will further assuage lending institutions with respect to the capacity of POs to manage credit lines.

[18] Rosales, 2009.

[19] Blaxall, 1999.

Some of these challenges were addressed in later CBNRM programs which included activities such as capacity building in operating businesses, providing direct market linkages (see previous section on providing market linkages), providing assistance in accessing seed capital, and road and water supply infrastructure development.

With respect to providing seed capital, the case of the World Wide Fund for Nature's (WWF) assistance for Sibuyan Island's NRM program can be cited as a model or best practice. To begin, WWF provided funds for the establishment of a Whole Livelihood Fund. Twenty percent of this fund was channeled to a Direct Loan Fund, part of which was used to guarantee loans given by rural banks that charged half of the interest costs of the Direct Loan Fund. Beneficiaries included the poorest enterprises that have been traditionally excluded from the formal banking system. They were now given priority if they were assessed to be able to contribute to conservation objectives in the area. The system thus allowed these enterprises to access funds from the formal banking system while simultaneously participating in the island's NRM activities.

Production costs of local communities can be substantially lowered if basic infrastructure is put in place. This was demonstrated by the provision of infrastructure as part of the total project design of the World Bank's CBRMP. Recognizing the fact that improving people's livelihoods should include the provision of basic needs, the project embarked on a community-driven development approach that was "demand-driven." Farm-to-market roads were improved, footpaths and footbridges were built, and potable water supply and irrigation systems were provided when absent. These basic infrastructure facilities were provided in support of identified income-generating activities, but their benefits extended far beyond this objective, further improving people's lives at the project sites.

The biggest source of sustainable financing for NRM is still the regular allocation of budgets from government coffers, earmarked for NRM activities. In this regard, USAID projects have had success in obtaining the commitment of their partner LGUs to allocate part of their internal revenue allotments (IRAs) for NRM activities. During FRMP implementation from 1996 to 1998, LGU contributions grew by 132% to 215% from their original allocations during the 2nd year, and an additional 18% to 186% more during the 3rd year.

TABLE 12: CONTRIBUTION OF LGUS TO CBFM ACTIVITIES, FRMP

Region	1996 (PhP & USD)	1997 (PhP & USD)	1998 (PhP & USD)	Growth Rate (GR) 96-97	GR 97-98
2	650,000 (USD $15,071)	1,507,000 (USD $34,941)	2,725,000 (USD $63,181)	132%	81%
10		700,000 (USD $16,230)	2,000,000 (USD $46,371)		186%
11	670,000 (USD $15,534)	1,950,000 (USD $45,212)	2,300,000 (USD $53,327)	191%	18%
TOTAL	1,320,000 (USD $30,605)	4,157,000 (USD $96,383)	7,025,000 (USD $162,880)	215%	69%

Source: FRMP Final Report

Similarly, EcoGov results showed increases in budgets being allocated for NRM. In Wao, the LGU allotted PhP 1 million (USD $23,186) per year for forest management, focused on the protection of 41 ha of forestland. In Jagna Bohol, counterpart funds were provided by the *barangay* LGU supporting the

MPA, along with regular funds provided by the municipal LGU. Overall, EcoGov-assisted LGUs increased their NRM investments by an average of 65% during the 6th year of project implementation.

Despite being among the relatively poorer municipalities, LGUs in the province of Camiguin have consistently allotted a substantial proportion of their regular IRAs for CRM activities. This is a significant achievement, as this indicates a strong commitment to sustain CRM in their areas of jurisdiction.

TABLE 13: 2010 IRA ALLOCATIONS FOR CRM, BY MUNICIPALITY

LGU	20% Development Fund	CRM Budget	CRM Related Programs
Mahinog	6,096,668 (USD $141,356)	268,000 (USD $6,214)	865,611 (USD $20,070)
% to Total DF		*4.4%*	*14%*
Mambajao	10,000,000 (USD $231,857)	751,320 (USD $17,420)	
% to Total DF		*8%*	
Sagay	4,476,710 (USD $103,796)	223,835 (USD $5,190) (assuming 5% of 20% DF)	
Provincial LGU		3,455,750 (USD $80,124)	

Sources: Mahinog, Mambajao and Sagay Municipal Treasurers, December 2010

EMPLOYING CO-MANAGEMENT SCHEMES IS THE BEST INSTITUTIONAL STRATEGY FOR CBNRM IMPLEMENTATION[20]

The decades-long experience of the national government in implementing CBNRM juxtaposed against the dismal failure of natural resources to regenerate at an ideal pace seems to point to the conclusion that the national government simply cannot succeed using a business-as-usual approach. The best examples of model CBNRM practices, with respect to both resource conservation and socio-economic development, are found where co-management schemes have been fully implemented and where greater devolution of authority to approve tenure and use rights is provided to local partners. Earlier studies on CBNRM performance in the Philippines point to four basic principles that a CBNRM program should employ, in keeping with international legal trends and global experiences in effective natural resource management[21]:

- Transparency and community access to information about policies and regulations, including full transparency with respect to their development.
- Community consent and organization using traditional means of community decision making when negotiating natural resource transactions.
- Devolution of State power, i.e., giving local communities a primary role as natural resource managers, and considering them capable of making good economic decisions regarding these resources.
- Economic equity and environmental sustainability in a manner that enables local communities to integrate themselves into the global market economy on their own terms.

The third principle clearly points to the need for greater devolution in CBNRM implementation throughout the country. The argument for co-management is further strengthened by the failure of the

[20] For a deeper and lengthier discussion on the pros of co-management schemes with LGUs, the reader is referred to the book edited by Gollin & Kho, 2008.

[21] Gollin & Kho, 2008.

ISFP whereby DENR devolved the program to LGUs without devolving the authority to allocate resource use rights and without providing adequate funding[22].

A number of success stories regarding co-management schemes have been documented, and these have been highlighted in this report for purposes of emphasis. An exemplary site that has been used to illustrate the potential of CBNRM is the province of Nueva Vizcaya: the LGU acknowledges the co-management arrangement with DENR as one of two keys to the success of their CBNRM program, the second being the practice of participatory governance and complete trust in local community partners to be able to co-manage the province's watersheds. POs and non-governmental organizations (NGOs) were involved at early stages of planning and project design, and were consistently involved in the decision-making process of the LGU. Other CBFM sites acknowledge the potential of CBFM to improve livelihoods and conserve forests sustainably if DENR had not cancelled harvesting permits across the board. Finally, the DENR itself has been hard-pressed to find solutions to the perennial problem of lack of manpower and budgetary resources in implementing CBNRM across the country. Co-management with LGUs is the best way to take the program forward.

Even with respect to conducting baseline studies and monitoring, the LGUs are considered to be the most appropriate entity to perform this important task in the context of the overall CBNRM program. It has been reported that "a consistent finding of the CBNRM review was that genuine assessment of environmental sustainability impacts was impossible because in project after project, initial baseline information was lacking… The LGU level is the most appropriate link to those who have the greatest stake in knowing the status of the local resource base and whether management efforts are working…"[23]

SCIENCE-BASED APPROACHES IN CREATING BOUNDARIES FOR CONSERVATION AREAS PROVE TO BE EFFECTIVE

The increase in participatory community approaches has led to improved local management. Recent developments in linking these approaches with science-based and technical inputs have enabled local strategies to become more efficient and effective. Setting up MPAs and identifying forestland management activities based on both local knowledge and technical guidance ensures greater accord between the activity, the available resources, and the desired outcome.

The recent implementation of CBCRM has gained much from earlier experiences in the 70s and 80s. Science-based approaches for establishing MPAs and fish sanctuaries are now being practiced: MPAs are chosen on the basis of which sites, when protected, can provide the greatest benefits in increasing and protecting fish larvae until they grow to mature levels. Source and sink studies are now providing scientific bases on the best locations for MPAs. Related to this, artificial reefs are not being encouraged anymore, due to the unintended effect of such structures serving as fish aggregating devices and diverting fish from otherwise healthy coral reefs nearby, hence defeating the overall purpose of increasing fish biomass and density. Instead, natural regeneration and strict protection of healthy coral reefs are the main processes that are currently being encouraged in CBCRM projects.

In terms of fishing gear being employed, earlier CBCRM projects did not foresee the proliferation of the use of more efficient gear by municipal fishers when commercial fishers were excluded from municipal

[22] Gollin & Kho, 2008.

[23] Gollin & Kho, 2008.

waters; consequently, this development was not taken into account when designing policy interventions and proposing regulations. The use of more efficient gear naturally prevented fish biomass from increasing despite the presence of MPAs, thus defeating the whole CRM program at some sites. Fortunately, both local and national government agencies did not overlook this important lesson and have now included the regulation of fishing gear in the design of their overall CRM program.

The use of community maps, initially employed to present local perceptions of a given area's resources and as a basis for planning needed interventions to address local resource management concerns, later employed technical spatial information to strengthen the technical quality and political value of the maps. Technical integration was accomplished through the use of geographic information systems and cartographic software. As a result, there was greater dialogue and consensus between and among stakeholders.

Another emerging scientific or technical approach is social accounting, particularly at the household level, and determining an intervention's ecological footprint. The trailblazing work being done by the Maximo T. Kalaw Foundation for Sustainable Development in some areas in the country shows that households and community members have the potential to assess and determine the risks and impacts of interventions, thereby enabling them to make appropriate decisions.

PROVIDING EXCLUSIVE AND FULL RIGHTS IS A POWERFUL INCENTIVE TO CONSERVE

One important lesson learned in CBCRM is the imposition of limits or controls on access to, and use of municipal waters exclusively by members of the host community. Some municipal waters are now being used exclusively by members of that municipality, thus encouraging the latter to engage in protection activities as tenure is imposed. Early CBCRM projects showed that the non-exclusive use of municipal waters by host communities was a deterrent to sustaining their MPAs, as gains from protection are eventually spread too thinly, rendering the whole effort unsustainable after some time.

In the terrestrial sector, it has been noted that use rights or harvesting rights have largely been retained by the central government, despite the issuance of tenure instruments for CBNRM. In theory, these tenure instruments should grant all tenure rights except alienation, which remains with the State. In practice, however, CBFMA has only provided access rights and partial withdrawal rights. Separate permits for use, harvest and transport still need to be secured from the national government. Under the current system, the state can withdraw these rights at will without having to compensate the tenure holders[24]. Suspension of harvesting and use rights has happened time and again (1998, 2004, 2006, 2010) and has caused great insecurity among CBFMA holders, leaving them with little option but to go back to their traditional, often unsustainable, livelihood practices. Moreover, tenure holders cannot use their certificates to borrow funds from the banks as is also the case with MPA community managers. This impedes the tenure holders to consider their land and resource as assets, and thus further limits their capacity or motivation to seek the necessary inputs and interventions to properly conduct protection and conservation work.

When communities are granted full rights to utilize their forest resources, there is a marked difference in the way they contribute to conservation. Presumably the sense of full ownership provides a strong incentive to manage the resource in a sustainable manner. The Nueva Vizcaya case study can be used to

[24] Gollin & Kho, 2008.

illustrate this: watersheds were reforested and the social fence theory of protecting the watersheds worked when residents were granted rights to use and harvest.

A more significant example would be that of forestlands being managed by IPs once they are recognized as the owners of their ancestral lands; a case in point is the Banao watershed which is owned and managed by the Banao tribe. This watershed, located in the Central Cordillera region, represents the ancestral domain of the Banao tribe, who reside in three *barangays* of Balbalan, Kalinga and four *barangays* of Malibcong, Abra. The NIPAS-proclaimed Balbalasang-Balbalan National Park is located within the watershed. Recent data on the distribution of old growth forests in the Philippines indicate that the northern Central Cordillera, especially the province of Kalinga, supports one of the most extensive tracts of forest remaining in the country[25]. The Banao watershed has remained a model of sound environmental governance. Prior to the establishment of formal government institutions in the Cordilleras, the Banao people had enforced a system of natural resource management – called the *lapat* system – that is unique to that part of the country. *Lapat* mandates all members of the community to abide by its laws pertaining to tree cutting, non-timber forest product gathering, wildlife hunting, and fishing. Administered by a council of elders, the *lapat* system has proven its effectiveness and has ensured that natural resources are protected from exploitation. Currently, the concepts and provisions of *lapat* are already incorporated in more formal government instruments such as *barangay* ordinances. Harvesting is thus permitted, albeit at controlled levels which are determined by the locals themselves.

Despite these restrictions, Banaos have exhibited a very high level of environmental awareness and have attached a high value to their forestlands. Based on a study conducted by Resources Environment and Economics Center for Studies and CARE in 2007, which attempted to measure how local people perceive the Balbalasang-Balbalan National Park, respondents affirmed the protected area's impacts on their livelihoods to be mostly positive. Table 14 lists the impacts of the Protected Area that were scored by the people as being relevant to their livelihoods. Out of twelve impacts, only three were considered to be negative by some members of the tribe, namely, payment of fees and fines (due to the ordinances on fees and fines), inaccessibility of timber for harvesting (due to the partial ban on timber harvesting), and the proliferation of pests (due to the partial ban on wildlife hunting) that caused conflicts with human activities, e.g., agricultural production[26]. Overall, members of the Banao tribe were clearly benefitting from the management scheme in their ancestral domain while contributing to the overall protection of the remaining forests of the country.

TABLE 14: LOCAL PERCEPTION OF BBNP IMPACTS, MARCH 2007

Impacts	% Positive Responses	% Negative Responses
1. Knowledge about biodiversity and conservation	59	0
2. Quantity and quality of water	52	0
3. Promoting and protecting the rights of IP groups	47	2
4. Access/availability of tress for timber harvesting	46	27
5. Conserving habitats of endemic species	39	0

[25] REECS, 2010.

[26] Rosales, 2007.

Impacts	% Positive Responses	% Negative Responses
6. Paying fees/ fines because of PA	35	20
7. Productivity of farming	32	1
8. Wildlife hunting	25	2
9. Livelihood knowledge and skills	16	0
10. Securing land tenure/property rights	11	2
11. Access/ availability of NTFPs	10	3
12. Human-wildlife conflict	0	62

Source: Rosales, R., Assessment of PA Benefits and Costs: BBNP

There are admittedly other factors that may have contributed to the high environmental awareness and strong conservation attitudes of the Banaos, most probably related to the strong cultural ties they have to their land as indigenous people. If this is the case, then a separate model of CBNRM could be implemented for ancestral domains, wherein IP groups who hold CADTs should be given full and complete access and rights to use the resources found within their lands. In other words, decision-making should be fully devolved to them, and the national government should transform its role to a more supportive one and limit its authority to monitor on a regular basis. The concept of full devolution of use rights to IPs is well enshrined in one of the country's existing laws, the IPRA of 1997[27].

PROVINCIAL LGUS CAN PROVIDE THE FOUNDATION FOR INTEGRATING AND SCALING UP CBNRM

Provincial LGUs can provide the integrative policy framework that can, in turn, create economies of scale needed for CBNRM impact. Local policies can be harmonized and standardized at the provincial level. Furthermore, provincial LGUs are not on the front lines of enforcement and thus have more resources to dedicate to providing technical and information management support. However, most LGU support in terms of social support and small infrastructure has been marginal, delayed, or non-existent. Experience shows that the importance of small social infrastructure and its related inputs lies in providing links with buyers as well as a stabilizing force in marketing and production contracts and agreements. This is an area where provinces can become strategically important.

This lesson has been tested and demonstrated in provinces that have had the advantage of implementing CBNRM for the past two or three decades. Negros Oriental was one of the earlier provinces to initiate a provincial environmental management office lodged within the provincial LGU. The Environmental and Natural Resources Division has been actively pursuing CBNRM and providing assistance to municipal and urban LGUs since it was established during the early 90s. Its long-standing partnership with the local academic community has also added great value to its efforts to provide technical and financial assistance, particularly with respect to CBCRM activities. After experiencing the implementation of CVRP, FRMP and CRMP, Bohol province realized it needed a permanent office that would coordinate all CBNRM-related activities in the province. The Bohol Environmental Management Office was created and is now coordinating all CBNRM-related activities within the province. One of its important tasks is to conceive strategies to provide incentives to other municipalities that need to develop their NRM sectors and activities. Siquijor programs are now being coordinated at the provincial ENRO that has just recently been re-established and is being assisted by NGOs in the Visayas. In Luzon, Palawan has been used as the

[27] De Vera, 2011.

model site for natural resource management through its Palawan Council for Sustainable Development. Batangas and other provinces in the Verde Island Passage have also created ENROs that have continued CBCRM efforts through the creation of MPA networks and coordination of *bantay-dagat*[28] teams.

The experience of Nueva Vizcaya has likewise proven the effectiveness of implementing CBNRM at the provincial scale, as its positive impact on reduction of poverty incidence was experienced province-wide. The basic elements attributed to this success include the practice of participatory governance through the actual implementation of decentralized decision-making and power-sharing with stakeholders, along with a strong and professional political leader who delivered basic services in a systematic and efficient manner.

[28] Local coast guards or sea patrols, i.e., community members who volunteer to guard designated coastal management areas such as sanctuaries and reserves and enforce relevant local laws and ordinances; some groups/members are deputized by the DENR or DA-BFAR to apprehend those engaging in illegal activities.

MOVING FORWARD

CBNRM is, and remains, an effective strategy to sustainably manage the Philippines' natural resources. But it is not perfect and it has not yet realized its full potential. The evidence shows, albeit from strong and reliable anecdotal sources, that CBRNM works. The evidence also shows that there is still much work that needs to be done. Overall, the story and evolution of CBNRM in the Philippines continues and the prospects of strengthening its application and ensuring its positive outcomes are promising. At the time of this report, the government is planning to undertake a massive and ambitious program that will try to achieve the rehabilitation and restoration of 10 million hectares of forestlands in the next 3-6 years. This National Greening Program (NGP) is the new NRM flagship of the government and will engage all government agencies in its various activities. More importantly, the NGP is designed to engage CBFMA holders in the implementation of NRM activities, including financial management and procurement aspects. A community participation procurement manual, adapted from the CDD procurement manual used in various World Bank-assisted projects, has been developed and is currently being reviewed by the government. It is envisioned that, via the use of this manual and other support, POs who are CBFMA holders will optimize their skills and resources, as well as build their fiduciary management capabilities in implementing the program.

Although noteworthy and encouraging, it can be expected that the NGP will encounter significant implementation and sustainability challenges. Thus, to ensure that the NGP accomplishes not only its targets but also achieves its desired development outcome, the government – particularly the DENR – will need to carefully and seriously consider several practical elements that have emerged and that are vital ingredients for effective CBNRM. For NGP to work as a CBNRM-oriented strategy, and to guide government to optimize the benefits that CBNRM can potentially provide, the following actions are recommended for sustaining the gains of CBNRM, optimizing the synergies that have been created, and scaling up the impacts to achieve greater development outcomes.

SUSTAINING THE GAINS

In order to sustain the many gains generated by CBNRM during the last two decades, there is a need to undertake or reinforce the following actions.

PROVIDE INCENTIVES FOR LGUS AS ENFORCERS AND SUSTAINABILITY AGENTS

While there are good indications that the number and sizes of community-based MPAs have significantly increased from baseline values, effectively managing these individual MPAs continues to be the biggest challenge. One major reason why sustained management is challenging is because of the LGUs' inability to meet basic MPA management needs. These could include enforcement-related activities like the maintenance and operation of boats, regular patrolling, and providing financial or in-kind assistance to the *bantay-dagat* members. It could also include MPA management-related activities such as the maintenance of MPA marker buoys and signs, support for information, education and communication activities, and ecological and fisheries monitoring.

A national MPA awards and recognition system is already in place and it is hoped that this will provide the LGUs with the necessary positive and constructive drive to become sustainability agents. Since 2005,

the best managed MPAs have been recognized every two years. Greater participation is expected in the years to come due to support from the League of Municipalities in the Philippines. MPA assessment tools have also been developed by the Coastal Conservation Education Foundation and adopted by most LGUs as an objective means to evaluate their own progress in terms of MPA management. This assessment tool has been used as a first-cut basis for nominating the best managed MPAs in the country.

Another key incentive mechanism that has motivated LGUs to undertake CBNRM and local NRM endeavors is the DILG's Galing Pook Awards. Each year the DILG selects LGUs that have been recognized as outstanding performers in various aspects of governance, including environment and natural resource management. Notably, a number of LGUs who were beneficiaries of CBRMP have been recognized for their CBNRM initiatives (e.g., Cagwait in Surigao del Sur, Socorro in Surigao del Norte, and Inabanga in Bohol Province, among others). Considerable monetary reward to sustain and strengthen the outstanding performance accompanied the recognition. These LGUs were also able to access additional funding to support further expansion of their CBNRM activities.

INTEGRATING PARTICIPATORY NRM PLANNING IN THE OVERALL PROCESS

Another common reason why many CBMPAs are not sustained is the absence of a clear MPA or CRM management plan. MPA or CRM plans, if developed through participatory processes with clear buy-in from stakeholder, help clarify the most critical resource management issues to be addressed, the strategies to address these issues, and define the roles of stakeholders and the specific activities that would require funds to meet management objectives. USAID's CRM project demonstrated that community-based resource inventory and planning, using community mapping methods, can lead to an improved sense of ownership and heightened participation in all aspects of the project implementation cycle.

The use of community mapping as a planning, implementation and monitoring tool was initiated by the Environmental Science for Social Change organization in their project sites in Mindanao, Cordillera and Central Luzon. Maps drawn and characterized by communities were integrated with government and science-based, technical information that allowed communities to establish a dialogue with government, donors and local governments. Other organizations such as the Philippine Association for Intercultural Development further extended the use of community mapping by developing these into three-dimensional maps showing contour and landscape characteristics. These tools have been adapted and practiced in many CBFMA

Dumagat children enjoying the community consultations

sites as well as in projects that are currently being funded by foreign donors. However, despite significant efforts to institutionalize community mapping as a participatory planning, implementation and monitoring tool, successful use has been hampered by limited manpower and capacity in the government agencies directly involved in the implementation of CBNRM.

Mechanisms for Engagement and Strategy Development must be Flexible and Contextually Relevant (institutional and cultural)

As an approach, CBCRM continues to be a vital and popular strategy for mitigating the threats to marine biodiversity as well as the depletion of coastal fisheries in the Philippines. However, there is a need to find more innovative ways to amplify its ecological and socio-economic impacts. At present, CBMPAs are key 'entry points' to CRM, but should not be perceived as 'silver bullets' that can solve all CRM- and fisheries-related problems and concerns. In practice, most established CBMPAs, especially those that are 'no take,' are small (<10 hectares) and are situated in secondary sites. They are called 'secondary sites' because these are sites that local communities choose not because of their high biodiversity or fisheries value, but because they are not situated in traditional fishing grounds or because they can be easily enforced, or both.

Similarly, the 'top-down' orientation, oftentimes based on desktop analysis and generalized reviews, does not fit properly with local needs and knowledge. The experience in coastal areas is also mirrored in the uplands where many local officers dictate and determine not only sites where activities are targeted, but also the modes of operation and the materials to be used. This is mainly driven by factors such as convenience (easily supervised), expediency (limited time), and cost cutting (cost and availability of materials and inputs). This was the common modus operandi during the early years of CBNRM whereby the government undertook massive reforestation activities, providing both the materials and technical advice to communities, who were merely wage laborers. The absence of a clear and direct link with local culture, socio-economic need, and indigenous knowledge severely affected output and sustainability.

As a result, there is now greater awareness of these shortcomings and an impetus to strengthen the 'bottom-up' approach, but with stronger local linkages, including local, technical inputs. In this regard, the use of participatory tools complemented with scientific and technical information reinforces the use and value of the available social, intellectual, cultural, and institutional capital. To continue on this path, a developed extension capacity and manpower in the DENR and other agencies where CBNRM is a program and priority will be required. Specifically for the DENR, extension work will necessitate both internal capacity development in terms of social networking and liaison, and external collaboration in terms of establishing working relations with academe and civil society organizations. A main thrust of the extension work should be to enable DENR staff to become facilitators rather than agents of regulation. Similarly, DENR staff should empower communities via the process of identifying possible interventions and capacity building needs, as well as implementing NRM activities, monitoring outputs and outcomes, and ensuring sustainability through external support and local revenue generation. The extension perspective should seek to optimize local socio-institutional capacities.

CONDUCT SOCIO-ECONOMIC MONITORING ON A REGULAR AND LONG-TERM BASIS

A major challenge that remains is the need for consistent and regular monitoring and assessment of CBNRM sites at the local level, particularly regarding whether socio-economic impacts are sustained over a prolonged period of time. This will necessitate purposive surveys among the beneficiaries, measuring improvements (or the lack thereof) in their economic well-being through income and other economic

indicators, conducted at regular intervals and well beyond project completion dates. More importantly, socio-economic baseline surveys should be incorporated in the design and implementation of CBNRM projects, and should be done at the outset in order to be able to establish trends and measure impacts at subsequent monitoring points. Admittedly, this does not seem to be standard practice among CBNRM projects throughout its three decades of implementation.

For CBFM projects, there is already a survey form that has been developed for measuring such economic impacts. It was initially implemented by the DENR's CBFM Office, and is intended to regularly monitor income and expenditures of CBFM stakeholders. Unfortunately, after establishing the profiles, the database has not been populated. In Region 02, CBFM-Comprehensive Agrarian Reform Program (CARP) areas were surveyed recently, to establish the socio-economic characteristics of CBFM beneficiaries[29]. However, there has been no analysis yet in trying to measure the impacts of CBFM-CARP on their socio-economic status. There were strong perceptions, though, that the project will produce benefits in the form of higher incomes and enhanced livelihood sources.

In coastal projects, the latest monitoring system for biophysical and management indicators for MPAs, known as MEAT (Management Effectiveness Assessment Tool), is now being implemented across the country. MEAT is the most comprehensive assessment tool that has been developed to assist both local and national governments in CBCRM efforts. However, because it deals with management effectiveness, the tool is focused solely on management indicators. Unfortunately, it does not encompass monitoring economic impacts on local stakeholders. It seems that this is an opportune time to develop a parallel socio-economic assessment tool for MPA effectiveness in improving human well-being, which now is being espoused as one of the principal objectives of any NRM program worldwide. This will necessitate a separate survey instrument, and will also require regular monitoring surveys of project beneficiaries. Similar to the CBFM monitoring concept, this socio-economic assessment tool should be utilized on a regular and continuing basis in order to provide reliable measurements of the economic impacts of CBCRM programs on people's standards of living and overall livelihoods. Results of these surveys can definitely be useful for management as they should indicate which NRM programs are indeed creating improvements and should therefore be continued and replicated on a wider scale, and which ones should be reconfigured or discontinued if negative economic impacts outweigh the other benefits of the project.

The design and implementation of socio-economic surveys is admittedly tedious and expensive, and this is probably why, despite their importance, they have not been conducted on a regular basis. During the implementation of CBNRM projects, the DENR is almost always assumed to be able to carry out the tasks of monitoring and evaluation once the project ends. Judging from the experience of the past three decades, this seems to be a faulty assumption. There are simply not enough people in the bureaucracy to be able to do this work, let alone the appropriate budget to support such monitoring surveys. Given the huge backlog and the importance of the task, it might be worth exploring a partnership with academe to carry out the surveys for the government. The biophysical monitoring of MPAs is already being led by two of the country's prominent academic institutions, i.e., the University of Philippine's Marine Science Institute and Silliman's Suakrem. This has allowed data to be collected throughout the past two or three decades, and has allowed science to make significant contributions to the growth of MPA establishment and management in the country. If socio-economic surveys are conducted regularly, through similar arrangements, the country might have greater success in sustaining the gains initiated by foreign loans and grants for CBNRM.

[29] Ecosystems Research and Development Service, DENR-02, 2010.

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OPTIMIZING SYNERGIES

A number of arrangements and collaborative relationships have been developed among various stakeholders in the CBNRM sector. These working relations need to strengthened and sustained if CBNRM is to continue as a priority NRM strategy.

BUILDING PARTNERSHIPS WITH SERVICE PROVIDERS, TECHNICAL AGENCIES, AND ACADEME

Technical assistance provided to the LGUs by Regional DENR and/or Bureau of Fisheries and Aquatic Resources (BFAR) offices needs to be more targeted. This can be addressed by improving coordination and working relationships with the provincial government's environment and natural resources offices (P-ENROs) or Provincial Agricultural Offices (PAOs). Non-governmental organizations or academe can help facilitate or bridge some of the gaps, especially in monitoring results and evaluating outcomes and strengthening the technical, coordination and fundraising/leveraging capabilities of the Provincial ENROs or PAOs. The information gathered from the provincial staff of Negros Oriental, Siquijor and Bohol indicates that these offices directly provide technical assistance to local government units in their MPA and/or CRM management planning, implementation, and monitoring and evaluation efforts. They can also assist in leveraging funds for coastal resources management from the provincial government or from donor agencies. With full support from the provincial governor, these offices can perform their coordination function – vertically (governance levels) and horizontally (sectoral).

BUILDING NETWORKS OF STAKEHOLDERS

A key result of the NRMP was the establishment of a federation of CBFMA holders. The objective of forming the alliance was to build a network of practitioners and implementers through which ideas and learning could be shared. It was also envisioned as an enabler of resource and information exchange. More importantly, the federation became a link between government and the people's organizations. This link exists to the current day. Still, as the government pursues CBNRM as a major approach and strategy for sustainable resource management, it is becoming clear that the CBFMA network is not sufficient; building and expanding new networks will be required. This is particularly important with respect to

livelihoods and enterprise development which are areas in which the DENR does not have skills and expertise.

In the coastal sector, there is little evidence to show that there is a network of MPA holders similar to the one existing among CBFMA holders. This implies that the development of MPAs has largely been dominated by local initiatives rather than through a national strategy. Small MPAs are unlikely to provide protection for larger, more mobile species and contribute little to regional conservation objectives. Smaller MPAs must therefore be scaled up to become MPA networks and made resilient to climate change by developing or redesigning them into "climate-smart" MPAs. There is thus a need to establish and implement MPA networks that aim to address larger biodiversity and fisheries management goals. Aside from establishing ecological MPA networks, social or governance networks have been organized (White et al., 2005). An example of these MPA social networks are the Philreefs network which is an informal network of MPA practitioners, established in 1997, and the Marine Protected Areas Support Network which is a network of organizations (in general, development agencies, local and international NGOs, and academe) that assist local governments with their MPAs. Inter-LGU alliances have also been forged in many provinces such as in Southern Cebu, Verde Island Passage, Bohol.

As more LGUs take a serious and careful look at CBNRM, it may be worthwhile to build a network of these LGUs, especially in areas that have been prioritized as needing immediate and intensive attention. Based on information such as key biodiversity areas and priority watersheds, engaging targeted LGUs, and creating a network arrangement based on an environment-based development agenda using CBNRM, may lead to more effective and sustainable CBNRM.

DEVELOPING A HOLISTIC APPROACH TO ENTERPRISE DEVELOPMENT

The main threats to the conservation of natural resources and continued provision of ecosystem services have always been human-induced. At the same time, solutions to pervasive poverty among the upland and coastal dwellers have still managed to evade local economic development planning and implementation, despite efforts to address both issues through CBNRM. Enterprise development has been a major strategy or component of most CBNRM projects, but there doesn't seem to have been enough time and effort devoted to ensure that this strategy takes root before the projects end.

Overall, the approach to enterprise development may be made more effective if it is addressed in a holistic manner. The identification of specific enterprises would be more appropriate if equal consideration is given to both the demand and supply side. As much as possible, the choice of enterprise should be closely (or at least somehow) related to existing livelihood practices in the community.

Once there is buy-in from the community members, market studies should be conducted so as to ensure there is real demand for whatever enterprise will be developed. Setting up linkages with potential private investors and buyers, including conducting the actual negotiations, may be a necessary activity of the project to ensure that alternative livelihoods do flourish.

On the other hand, communities have to be prepared to engage in new enterprises. This will entail not only providing them with the technical skills needed for production, but will include developing professional attitudes and setting up systems that will ensure efficiency of production. Training in financial management, organizational development, and even software use may be necessary. Appreciation of information and data relevant to the enterprise, as well as simple processing of the data, will likewise be needed to sustain the enterprise. In some cases, tenure-holders have expressed the need to

receive advice and training even after a CBNRM project ends, for instance in managing fruit trees when they get to a certain growth stage.

Dupinga River and surrounding watershed

A related issue is that credit access is oftentimes not provided in CBNRM projects, despite the fact that tenure-holders usually do not have any savings to start a business. Because of their poverty status, they are considered as high-risk clients and they are thus not on the radar screen of the formal banking system. In general, inaccessibility of credit remains a significant impediment to enterprise growth and development for most people participating in the CBFM program. Finally, marketing and transport needs should be identified and addressed to complete the cycle of enterprise development.

Oftentimes, CBNRM areas lack basic infrastructure such as decent roads, reliable water supply, and sometimes even constant electricity supply, all of which are necessary for any kind of enterprise, let alone a decent standard of living. The experience of the CBRMP of the WB demonstrated the importance of having basic infrastructure before communities can be expected to engage in NRM in a sustainable manner.

All these requirements will necessitate different sets of technical and material inputs from CBNRM programs. Furthermore, the whole process will take several years to set up. It is also likely that allowances will have to be made for potential failures during the initial stages. In this regard, future CBNRM efforts might consider investing longer periods of time in organizing and building enterprise capacities at the community level. As shown in earlier case studies, sustainability seems to be elusive even after decades of working on CBNRM. Part of the problem might be caused by the project mode of implementing CBNRM, rather than applying a more programmatic approach.

Enterprise development for CBNRM should be mainstreamed into all facets of the local development planning process. In fact, CBNRM itself should be viewed within the context of economic development rather than being treated as a separate sector altogether. In other words, components and targets of the local development plan should always be in relation to the objectives of CBNRM. If tourism is a major growth sector in the area, then tourism-related infrastructure designs must take CBNRM conservation targets into account. If mining is a priority sector, then CBNRM should probably not be pursued anymore. Resource-based conservation, management, and enterprise development should be the framework adopted in local development planning, especially in areas where watersheds and municipal waters make up a large share of the total area of jurisdiction of the LGU.

STRENGTHEN LINKAGE BETWEEN NATIONAL POLICY AND PROGRAM IMPLEMENTATION

In general, there needs to be greater consistency regarding how policies are applied and interpreted in the context of CBNRM program implementation. In many CBNRM sites, this inconsistency has led to frustration, desperation, and even violence at the implementation level. Related to this issue is quality of enforcement, provision of technical guidance, and legal advice.

There are numerous inconsistencies and gaps at the national policy level that have been identified, and time and again, the national government's attention has been drawn to these issues and requested to address them. For instance, the role of DENR in pollution control and in the environmental impact system has conflicted with its conservation agenda. Furthermore, its refusal to devolve jurisdiction on mangroves and foreshore areas has caused frustration at the LGU level. The latter have complained about difficulties in managing alienable and disposable lands and municipal waters efficiently with thin strips of land in between that they have no jurisdiction over, especially if land uses allowed on foreshore areas do not complement local management programs and policies. In addition, at the Department of Agriculture-BFAR level, there still seems to be a bias towards increasing annual production from the sector despite the overwhelming evidence that overfishing is a major problem that needs to be addressed.

Moreover, fines and penalties do not serve as enough disincentives to deter would-be violators due to their extremely low values. Unfortunately, the Penal Code sets very low limits on the amount of fines that can be imposed on violators of NRM rules and regulations. Amendments to these laws are needed, especially if the values of potential damages to ecosystem services are to be internalized.

Finally, enforcement of environmental laws is inadequate due to the undermanned, under-trained, under-equipped and under-budgeted characteristics of national enforcement agencies; they are thus unable to provide the necessary complement to local enforcement agencies with respect to protecting CBNRM areas. Until these problems are resolved, gaps blocking achievement of full CBNRM success will remain, and the program's potential to conserve and manage the Philippines natural resources will not be realized.

SCALING UP

Broadening the mode and expanding the types of interventions that comprise CBNRM should mainly be based on what has succeeded on the ground. Clearly, not all areas in the country can be placed under community management. However, in areas where CBNRM is targeted, and where these areas are in critical condition, CBNRM will be effective if the following suggestions are considered.

STRENGTHEN LINKAGE BETWEEN CBNRM AND LOCAL DEVELOPMENT

The experiences of USAID-funded NRM and CRM projects show that unless natural resource management is integrated into the local development agenda, the level of legitimacy, ownership, effectiveness and sustainability are jeopardized. This insight was further demonstrated during the EcoGov project and CBRMP when LGUs played a more active role in the NRM planning and implementation processes. Community organizations developed partnerships with the LGUs as the implementing agents. The Northern Mindanao Community Initiated Resource Management Project experience also shows that incorporating NRM in local planning can be effective. Lately, the NRM component of the second phase of the Mindanao Rural Development Program places importance on enhancing municipal and *barangay* development plans with simple and relevant natural resource management activities that are linked with local priorities. The work of EcoGov in facilitating the development of FLUPs and spatial information

resulted in stronger LGU and PO buy-in and demonstrated again the merits of having a development-oriented CBNRM strategy. By linking CBNRM with local development, there is thus a greater likelihood of sustainability and relevance.

INNOVATIVE FINANCING SCHEMES SHOULD BE ENCOURAGED AND MAINSTREAMED IN FUTURE CBNRM PROJECTS

An equally important aspect of CBNRM that is now emerging as a crucial component is the measurement of indirect economic benefits through the improvement of environmental services secured via sound NRM. This critical facet of CBNRM was immediately following the completion of the CVRP Project of the World Bank. Moreover, one of the major recommendations suggested by Gollin and Kho (2008) is a payment scheme for the protection of ecosystem services by local communities; this is now more popularly known as PES and could comprise a major incentive for CBNRM programs in the Philippines. In general, PES seeks to create a set of conditions that allows for the generation of funds as recompense for the continued provision of environmental services such as watershed protection, carbon sequestration, biodiversity conservation, and scenic beauty[30]. Under PES, those providing environmental services, particularly marginalized groups such as upland farmers, indigenous peoples and fisherfolk, are compensated by those who benefit from the services, such as water users, tourists, and pharmaceutical companies, among others.

PES will necessitate the economic valuation of ecosystem services and a regular monitoring system of benefits to sustain the schemes in the long run. The United Nations Millennium Ecosystem Assessment has developed a framework that recognizes the value of ecosystem services in providing for and supporting all forms of life, as well as their regulatory and cultural functions that directly impact human well-being. This framework has been used by the recently concluded Philippine Environmental Sector Assessment of USAID which highlights the need for a more comprehensive valuation of ecosystem services as they "simultaneously act as both enabling and limiting factors to inclusive growth[31]." The values derived from the valuation exercise can be used as the basis for negotiating payment schemes for CBNRM tenure-holders as well as for a more accurate measurement of the wealth of CBNRM areas, which in turn may orient economic development planning towards a more sustainable path of growth.

BUILD LINKAGES WITH THE PRIVATE SECTOR

Vital to enabling communities to move from a resource protection and rehabilitation role to enterprise development agents, and a trajectory that is being recognized as a key element of sustainability, private sector involvement will need to be explored, built, and strengthened. At present, the private sector has been very slow in collaborating on CBNRM, while those private enterprises and companies who have gotten involved only do so with LGU support and significant facilitation investment in order to establish an environment in which both parties will benefit. In many cases, NGOs continue to subsidize the early investments, including securing donor funds, as a means to undertake capacity building, community mobilization and other initial actions that contribute to enterprise planning and even access to microfinance. In general, microfinance support for CBFM and MPA resource managers in the form of savings, micro-credit, support systems, insurance, and adaptation support for climate change impacts are

[30] REECS, 2008.

[31] Ateneo School of Government, 2011.

areas where the private sector can contribute since no banks are currently supporting CBNRM resource managers.

Until these communities are linked with the markets through established private sector entities, with initial support from government agencies (through projects) and NGOs, the recurring costs of communities to protect and manage, develop, and sustain their natural resources over time will be a major challenge. In other words, voluntary community efforts are limited with respect to what they can accomplish. As a response, the EcoGov project tried to raise the profile of CBNRM communities via FLUPs and CRM planning as a basis for securing public investments, aligning the development funds of various agencies, and as a basis for promoting and encouraging private sector participation. It will be critically important to monitor the impacts of these efforts.

EXPLORE AND DEVELOP COST-EFFECTIVE APPROACHES

Generally, the establishment of CBNRM initiatives is expensive and scaling up will require innovative approaches that are cost-effective. Although there is limited information on the true overall economic and financial benefits, it is evident that undertaking CBNRM costs money, particularly the aspects of social and institutional capacity building. Hence, increasing the coverage and scaling up the impacts of CBNRM will be more likely if there is an improved, cost-effective system for supporting communities. The importance of capacitating and directing government and non-government service and support providers, building market orientation with a social enterprise perspective, and establishing technical support systems cannot be overemphasized and will need to be undertaken at less cost and with clear outputs. An emerging opportunity is to seek access to financing for household-level investments since community members are taking greater responsibility and are more accountable for resource management. Actions are commencing with respect to household resource accounting as a means to build an internal system of support. However, unless there are serious efforts to seek efficiency and effectiveness, CBNRM will continue to remain as a “subsidy-driven program” and a form of conditional cash transfer in the uplands and the coastal areas.

BIBLIOGRAPHY/DOCUMENTS CONSULTED

COASTAL

Alcala, A. (1998). Community-based coastal resource management in the Philippines: a case study. *Ocean & Coastal Management* 38: 179-186.

Chua, T. (2006). *The Dynamics of Integrated Coastal Management: Practical Applications in Sustainable Coastal Development in East Asia.* GEF/UNDP/IMO-PEMSEA, Quezon City, Philippines.

Crawford B., M. Balgos and C. Padilao (2000). Community-based marine sanctuaries in the Philippines: a report on focus group discussions. CRC, University of Rhode Island and PCAMRD, Narragansett, USA.

DENR, DA-BFAR and DILG (2001). Philippine coastal management guidebook No.1: Coastal management orientation and overview. Coastal Resource Management Project of the DENR, Cebu City, Philippines.

Ferrer, E., L. Polotan-de la Cruz and M. Domingo (eds.) (1996). *Seeds of Hope: A Collection of Case Studies on Community-Based Coastal Resources Management in the Philippines.* College of Social Work and Community Development, University of the Philippines & TWG, Quezon City, Philippines.

Ferrer, E., L. Polotan-de la Cruz and G. Newkirk (eds.) (2001). *Hope Takes Root: Community-Based Coastal Resources Management Stories from Southeast Asia.* CBCRM Resource Center and Coastal Resources Research Network, Quezon City, Philippines.

Gollin, K. and J. Kho (eds.) (2008). *After the Romance: Communities and Environmental Governance in the Philippines*. Ateneo de Manila University Press, Quezon City, Philippines.

Olsen, S., J.Tobey and M. Kerr (1997). A common framework for learning from ICM experience. *Ocean and Coastal Management* 37(2): 155-174.

Olsen, S., K. Lowry and J. Tobey (1999). A manual for assessing progress in coastal management. Coastal Management Report #2211. CRC, University of Rhode Island, Narragansett, USA.

Olsen, S. (2003). Frameworks and indicators for assessing progress in integrated coastal management initiatives. *Ocean and Coastal Management* 46: 347–361.

Pomeroy, R. and M. Carlos (1997). Community-based coastal resources management in the Philippines: A review and evaluation of programs and projects, 1984-1994. *Marine Policy* 21(5): 445-464.

TNC, WWF, CI and WCS (2008). Marine protected area networks in the Coral Triangle: Development and lessons. TNC, WWF, CI, WCS and USAID, Cebu City, Philippines.

White A., R. Eisma-Osorio and S. Green (2005). Integrated coastal management and marine protected areas: Complementarity in the Philippines. *Ocean and Coastal Management* 48: 948–971.

SOCIO-ECONOMIC

ARD, Inc. (2007). Philippine environmental governance phase 2 project (Ecogov2). Midterm evaluation report. Retrieved from http://pdf.usaid.gov/pdf_docs/PDACM501.pdf

Asian Development Bank (2009). Validation report - Philippines: Fisheries resource management project. Retrieved from http://www.adb.org/Documents/Reports/Validation/PHI/in158-09.pdf

Ateneo School of Government (2011). FAA 118/119: Philippines environment sector assessment (*draft*). USAID, Manila, Philippines.

Bacal, J., E. Batungbacal, J. Bucia, et al. (2004). CBCRM: Our story in the making. CBCRM Resource Center, Inc., Quezon City, Philippines.

Balisi, A., and F. Manalo (2005). Integrating local notions of citizenship and CBCRM frameworks. CBCRM Resource Center, Quezon City, Philippines.

Blaxall, Martha O. (1999). A review of CBFM enterprise development. Retrieved from http://www.rmportal.net/library/content/tools/biodiversity-support-program/copy_of_cbnfm/USAID-BDB-cd-2-data/philippines-blaxall.pdf/at_download/file

Clausen, R., T. Hammett and J. Seyler (n.d.). USAID's enduring legacy in natural forests: Landscapes, livelihoods and governance, volume 3. Chemonics International, Washington, USA.

Coastal Conservation and Education Foundation, Inc. (2006). Marine protected coast, reef, and management database (MPA Database): MPA report guide. Retrieved from: http://www.coast.ph/userfiles/MPA_Report_Guide_Eng.doc

Coastal Conservation and Education Foundation, Inc. (2011). Marine protected area (MPA) database. Retrieved from: http://www.coast.ph/resource-center/mpa-database/

Community-Based Coastal Resources Management Resource Center, Inc. (2004). Regional workshop on governance in community-based coastal resource management: Experiences and lessons in participation. CBCRMR, Quezon, City, Philippines.

Department of Environment and Natural Resources (n.d.). Completion report: The coastal resource management project – Philippines 1996-2004. Retrieved from http://oneocean.org/download/db_files/crmp_completion_report.pdf

Department of Environment and Natural Resources (n.d.). NRMP - Philippine environmental governance program (ECOGOV). Retrieved from http://faspo.denr.gov.ph/knowledge/lessons%20learned%20faps/Lessons%20Learned-EcoGov%20I.pdf

Department of Environment and Natural Resources (n.d.). Natural resourcesmanagement program - forest resources management project completion report. Retrieved from http://faspo.denr.gov.ph/Project%20Completion%20Report/NRMP_I/NRMP_1.zip

Department of Environment and Natural Resources (n.d.). Natural resources management program II - forest resources management component project completion report. Retrieved from http://faspo.denr.gov.ph/Project%20Completion%20Report/NRMP_II/FRM/NRMP_II_FRM.zip

Department of Environment and Natural Resources (n.d.). Natural resources management program II - coastal resource management project completion report. Retrieved from

http://faspo.denr.gov.ph/Project%20Completion%20Report/NRMP_II/CRMP/PCR_NRMP_CRMP_latest_edition.zip

Department of Environment and Natural Resources (n.d.). Natural resources management program II - industrial initiative for sustainable environment completion report. Retrieved from http://faspo.denr.gov.ph/Project%20Completion%20Report/NRMP_II/IISE/NRMP_II_IISE.zip

De Vera, D. (2011). Indigenous Conservation Areas. PowerPoint presentation at the UNDP-PAWB symposium on indigenous conservation areas. UNDP-PAWB, Quezon City, Philippines.

Fisheries for Sustainable Harvest Project (2005). Consolidated report: Baseline assessment of the capture fisheries and marine protected areas (reef habitats) in the FISH project's focal areas – Coron Bay, Danajon Bank, Lanuza Bay, and Tawi-Tawi Bay. Retrieved from http://www.oneocean.org/download/db_files/baseline_assessment_report.pdf

Fisheries for Sustainable Harvest Project (2010). 7 years and 4 seas: Our quest for sustainable fisheries. A special end-of-project report to partners on the implementation of fisheries for sustainable harvest project in Coron Bay, Danajon Bank, Lanuza Bay, and Tawi-Tawi Bay, Philippines, 2003-2010. Retrieved from http://www.oneocean.org/download/db_files/201110FISHCompletionReportFinal.pdf

Gollin, K. and J. Kho (eds.) (2008). *After the Romance: Communities and Environmental Governance in the Philippines*. Ateneo de Manila University Press, Quezon City, Philippines.

Gould, D. 2002. The Evolution of Land Tenure in Forestry Management in the Philippines. Retreived from http://www.spatial.maine.edu/~onsrud/Landtenure/CountryReport/Philippines.pdf

Guiang, E., S. Borlagdan and J. Pulihin (2001). Community-based forest management in the Philippines: A preliminary assessment. Retrieved from http://beritabumi.or.id/download/2%5B1%5D.%20CBFM-Part%201.pdf

Institute for Popular Democracy. 2004. Beyond Good Governance: Participatory? IPD, Quezon City, Philippines.

Institute for Popular Democracy (n.d.). Democracy in the Philippines. IPD, Quezon City, Philippines.

Juinio-Menez, M. (n.d.). Sustainability in community-based coastal resources management in the Philippines. Retrieved from http://www.unepscs.org/Coral_Reefs_and_Seagrass_Workshop/Module%2009%20-%20CBCRM-MPAs/20-Sustainability-CBCRM-Philippines.pdf

Lopez, C., R. Pomeroy, V. Hoon, P. McCooney, Maria Pena, A. Sanders, G. Sriskanthan, S. Vergara, M. Pido, R. Vave, C. Vieux and I. Wanyonyi, (2008). Socioeconomic conditions along the world's tropical coasts: 2008. National Oceanic and Atmospheric Administration, Global Coral Reef Monitoring Network and Conservation International, Washington, DC.

MacKay, K., L. Padilla and R. Rosales (2010). Camiguin coastal resource management project (CCRMP). Mid-term review final report. New Zealand Embassy, Makati City, Philippines.

National Economic and Development Authority (2011). Philippine development plan, 2011-2016. NEDA, Pasig City, Philippines.

National Oceanic and Atmospheric Administration (2008). Socioeconomic conditions along the world's tropical coasts: 2008. NOAA, Global Coral Reef Monitoring Network and Conservation International, Washington, DC.

Penalba, L., M. de los Angeles and H. Francisco (1994). Impact evaluation of the central Visayas regional project phase 1 (CVRP-1). Discussion paper series No. 94-22. Philippine Institute for Development Studies, Makati City, Philippines.

Pido, M., K Gallardo, L. Garces, D. Padayao, G. Samonte, S. Ross, M. Perez and T. Salva (2011). Policy brief on targeted research and monitoring programs for enahanced management of the seas of East and Southeast Asia. Palawan State University, Partnerships in Environmental Management for the Seas of East Asia, WorldFish Center and Conservation International, Quezon City, Philippines.

Provincial Government of Batangas, Philippines and PEMSEA (2008). State of the coasts of Batangas Province. Partnerships in Environmental Management for the Seas of East Asia, Quezon City, Philippines.

Ramos-Jimenez, P., S. Masulit and Y. Mendoza (2004). Celebrating participatory governance in Nueva Vizcaya. Social Development Research Center, De La Salle University, Manila, Philippines.

Resources, Environment and Economic Center for Studies, Inc. (2008). Marketing the environment through PES. REECS Policy Brief No. 2008-04. REECS, Quezon City, Philippines.

Rosales, R. (2007). Assessment of protected area costs and benefits: The case of Balbalasang-Balbalan National Park. Howard Buffett Foundation, Resources, Environment and Economics Center for Studies, Inc. and CARE-Philippines, Quezon City, Philippines.

Rosales, R. (2008). Developing an economic framework for analysis of CRM investments: The case of Ubay, Bohol. FISH Project, Tetra Tech-USAID, Pasig City, Philippines.

Rosales, R. (2009). Framework for assessing the vulnerability of the tourism sector in Verde Island passage due to climate change impacts: Socio-Economic aspects of the assessment. Conservation International-Philippines, Quezon City, Philippines.

World Bank (2008). Implementation completion and results report (IBRD-42990) on a loan in the amount of US $50 million equivalent to the Republic of the Philippines for the community-based resources management project. Retrieved from http://www-wds.worldbank.org/servlet/WDSServlet?pcont=details&eid=000333037_20080813003231

TERRESTRIAL

Borlagdan, S. (1997). Small-scale community logging and community-based forest management. Ph.D. diss., University of the Philippines, Los Banos, Laguna, Philippines.

Department of Environment and Natural Resources (1994). National CFP implementation plan: Background, issues, options and planning directives. DENR, Manila, Philippines.

de Dios, M. Alarcon, L. Reyes and C. Vera (eds.) (2006). *The Dynamics of Accountability*. CBCRM Resource Center. Quezon City, Philippines.

Dugan, P. (1993). Community-based forest management. Paper presented at Asian Development Bank. ADB, Manila, Philippines.

Ecosystems Research and Development Service, DENR-02 (2010). Socio-economic assessment of four CBFM-CARP project areas in Cagayan Valley, region 02. Tuguegarao, Cagayan, Philippines.

Environmental Research Division (1994). Upland philippine communities: securing cultural and environmental stability, research report. ERD, Manila Observatory, Manila, Philippines.

Gibbs, C., E. Payuan and R. Del Calstillo, R. (1990). The growth of the Philippine social forestry program. In: M. Poffenberger (ed.), *Keepers of the Forest*, pages 253-265. Kumarian Press, Sterling, USA.

Gollin, K. and J. Kho (eds.) (2008). *After the Romance: Communities and Environmental Governance in the Philippines*. Ateneo de Manila University Press, Quezon City, Philippines.

Guiang, E. (1993). Community-based forest management: Its evolution, emerging prototypes, and experiences from the Philippines. Paper presented at the 4th annual common property conference of the International Association for the Study of Common Property. IASCP, Manila, Philippines.

Kummer, D. (1992). *Deforestation in the Philippines*. Ateneo de Manila University Press, Manila, Philippines.

Lopez. M. (1987). The politics of lands at risk in a Philippine frontier. In: P. Little and M. Horowitz (eds.), *Lands at Risk in the Third World: Local Level Perspectives*, pages 230-248. Westview Press, Boulder, USA.

Mercado, E. (2000). Decentralization and devolution of forest management in the Philippines: Uneasy steps to institutional maturity. In: T. Enters, P. Durst and M. Victor (eds.), *Decentralization and Devolution of Forest Management in Asia and the Pacific*, pages 205-209. RECOFTC and FAO, Bangkok, Thailand.

Plantilla, J. (1993). Strengthening community stewardship agreements in the Philippines. In: J. Fox (ed.), *Legal Frameworks for Forest Management in Asia*, pages 73-87. East-West Center, Honolulu, USA.

Poffenberger, M., R. Soriaga and P. Walpole (2006). Communities and forest stewardship: regional transitions in Southeast Asia. Asia Forest Network, Bohol, Philippines.

Resources, Environment and Economics Center for Studies, Inc. (2010). Rapid site assessment: Balbalasang-Balbalan National Park, Banao watershed project site. Foundation for the Philippine Environment, Quezon City, Philippines.

Snelder, D., and E. Bernardo (2005). Co-management in practice: the challenges and complexities of implementation in the northern Sierra Madre mountain region. Ateneo de Manila University Press, Quezon City, Philippines.

Vitug, M. (1993). Power from the forest. Philippine Center for Investigative Journalism, Manila, Philippines.

Walpole, P., et al. (1993). Upland Philippine communities: Guardians of the final forest frontiers. Southeast Asia Sustainable Forest Management Network Research Report, Number 4. Asia Forest Network, Bohol, Philippines.

World Bank (1993). Project completion report: Central Visayas regional project. World Bank, Washington, USA.

World Bank (2003). Governance of natural resources management in the Philippines: Lessons from the past, directions for the future. World Bank, Washington, USA.

World Bank (2005). Natural resources governance: Way forward action plan. World Bank, Washington, USA.

World Bank (2008). Implementation completion and results report (IBRD-42990) on a loan in the amount of US $50 million equivalent to the Republic of the Philippines for the community-based resources management project. Retrieved from http://www-wds.worldbank.org/servlet/WDSServlet?pcont=details&eid=000333037_20080813003231

ANNEX A: SITES VISITED AND PERSONS CONTACTED/INTERVIEWED

Person Contacted	Organization	Position
Dupinga Watershed, Gabaldon, Nueva Ecija, May 2-3, 2011:		
Mr. Adel Manabat	Mangayunan Inc.	Spokesperson
Mr. Victor Dacumos	Mangayunan Inc.	Resource Person/Consultant
Mr. Rogel Nerit	Mangayunan Inc.	Member
Mr. Lover Damdam	Mangayunan Inc.	President
Mr. Boy Verses	Mangayunan Inc.	Member
Mr. Ruben Casamis	Mangayunan Inc.	Member
Mr. Badong Garcia	Mangayunan Inc.	Secretary
Mr. Nato Casamis	Mangayunan Inc.	Member
Sonny Boy Verses	Mangayunan Inc.	Member
Tuguegarao, Gonzaga and Aparri, Cagayan Province, and Bayombong, Nueva Viscaya, May 3-4 and 16-19, 2011:		
Mr. Benjamin Tumaliuan	DENR Region 2	Regional Executive Director
Mr. Roberto C. Apigo, Jr.	DENR Region 2 - ERDS	Regional Technical Director
Mr. Alfonso P. Calimag, Jr.	DENR Region 2 - Forest Resources Development Division	Chief
Ms. Nelia Adsuara	DENR Region 2 - CBFM	Regional CBFM Coordinator
Mr. Noel Soriano	DENR Region 2 - ERDS	Chief
Mr. Oliver de Asis	DENR Region 2	Forester
Mr. Edgar Martin	DENR Region 2 - CENRO (Aparri)	Community Environment and Natural Resources Officer
Mr. Constante B. Vasquez	DENR Region 2 - FMS	Chief
Mr. Lerio Cagampang	DENR Region 2	Project Management Officer
Mr. Bennyfred Sandi	DENR Region 2 - MENRO (Gonzaga)	Municipal Environment and Natural Resources Officer
Mr. Vivencio R. Agcaoili	JMC Multi-Purpose Cooperative, Inc.	Chairman
Mr. Romulo Tacuycuy	JMC Multi-Purpose Cooperative, Inc.	Board of Directors & Brgy Captain, San Jose, Gonzaga, Cagayan
Mr. Henry Patricio	DENR-PENRO (Nueva Viscaya)	Provincial Environment and Natural Resources Officer
Ms. Teresita Jasmin	DENR-CENRO Bayombong City	Forester
Ms. Delia Baculanta	DENR-CENRO Bayombong City	Forester
Mr. Gilbert Ramajo	DENR-CENRO Bayombong City	Forester
Magat and Borobo Watersheds, Bayombong, Nueva Viscaya, May 3-4, 2011:		
Mr. Virgilio Tiongson	Provincial Government of Nueva Viscaya	Formerly Provincial Administrator
Mr. Henry Patricio	DENR Region 2 - PENRO (Nueva Viscaya)	Provincial Environment and Natural Resources Officer
Mr. Constante Espiritu	DENR Region 2 - CENRO (Bayombong, Nueva Viscaya)	Community Environment and Natural Resources Officer

Person Contacted	Organization	Position
Mati, Davao Oriental, May 11, 2011:		
Ms. Anecita Uy	Local Government Unit	Planning and Development Officer
Ms. Narcisa Reancho	Local Government Unit	Budget Officer
Mr. Eddie Cobacha	Local Government Unit	City Environment and Natural Resources Mangement Officer
Mr. Ramuel Martinez	Local Government Unit	Cooperative Development Officer
Ms.Rosalinda Aragon	Local Government Unit	City Agriculturist
Mr. Pepito Soliven	Local Government Unit	Administrative Officer
Mr. Alan Andrada	Local Government Unit	City Councilor (Environment)
Mr. Alan Acera	Local Government Unit	City Councilor (Tourism)
Kidapawan, North Cotabato, May 12, 2011:		
Engr. Lobre Ermino	Mt. Apo Foundation Inc.	President
Wao Watershed, Wao, Lanao del Sur, May 13, 2011:		
Mr. Elvino Balicao, Jr.	Local Government Unit	Mayor
Engr. Al Belotendos	Local Government Unit	Executive Assistant
Ms. Bella Bobadilla	Local Government Unit	Planning and Development Officer
Mr. Luminod Tulayagon	Local Government Unit	Municipal Environment Officer
Mr. Francis Garcia	Local Government Unit	Municipal Councilor (Chairman for Environment)
Ms. Perpetua Magdadaro	Local Government Unit	Chairperson
Mr. Antionito Montanes	Wao-Banga Watershed Development Cooperative	MPDC Staff
Dumaguete City, Negros Oriental, May 18 & June 2, 2011; Bayawan City, Negros Oriental, June 2, 2011:		
Mr. Michael Alcala	Siliman University	Professor
Mr. Renato Claro Jadloc	SUAKREM, Siliman University	Officer
Mr. Rene Abesamis	SUAKREM, Siliman University	Officer
Ms. Mercy Teves	Negros Oriental Provincial Environment and Natural Resources Office	Division Chief
Mr. Kenny Dela Pena	Negros Oriental Provincial Environment and Natural Resources Office	NRM Technician
Mr. Manrick Barillo	Negros Oriental Provincial Environment and Natural Resources Office	Coastal Resources Management Coordinator
Mr. Rene Gaudiel	Local Government Unit	Mayor
Mr. Joel Baterna	Local Government Unit - City Environment Office	City ENRO
Mr. Oscarlito Bajardo	Barangay Narra	Officer
Mr. Luis Magsipoc	Barangay Kalumbuyan	Officer
Mr. Juarlito Magdasal	Barangay Minaba	Officer
Mr. Anacleto Kalidkod	Barangay Nangka	Officer
Mr. Joel Marcelino	Barangay Banay-banay	Officer
Mr. Marion Racamara	Barangay Banay-banay	Barangay Captain
Ms. Faith Napigkit	Local Government unit - Coastal Resources Management Office	Senior Aquaculturist
Ms. Margie Tuale	Local Government Unit - City Planning and Development Office	City Planning and Development Officer
Siquijor Province, May 18, 2011:		
Darrell Pasco	Provincial Agriculture Office	CRM Head,
Glori Abing	Luyang Fisherfolks Association	Former Head and Business

Person Contacted	Organization	Position
		Manager
Jorge Arcaya	Local Government of Larena	Municipal Agriculture Officer
Melvin Alcala	Luyang Fisherfolks Association	PO Head, Enrique Villanueva
Chita M. Maglinte	Local Government of Siquijor	Municipal Agriculturist
Tagbilaran & Talibon, Bohol Province, May 19 & 20, 2011:		
Mr. Leonilo Lafuente	Bohol Environment Management Office	Officer in Charge
Ms. Adelfa Salutan	Bohol Environment Management Office	CRM Sector Action Officer
Mr. Alexander S. Cabando	Cataban Marine Sanctuary	Officer
Mr. Dario Casogia	Cataban Marine Sanctuary	Officer
Mr. Saturnino L. Tagsip	SPIRMA	Officer
Mr. Geoffrey S. Villamil	Local Government of Talibon	Coastal Resources Management Head
Mr. Ednardo Avenido	Local Government of Talibon	Municipal Planning and Development Coordinator
Mr. Lorenzo Flores	Local Government of Talibon	Municipal Engineer
Mr. Jose Garcia	Bohol Environment Management Office	CRM/CLEC Coordinator, 2nd Cong. District
Mr. Dioscoro Vilmonil	Local Government of Talibon	Municipal Budget Officer
Cebu City, Cebu, May 21, 2011:		
Mr. Timoteo Menguito	Gilotungan Marine Sanctuary	Municipal Employee
Mr. Matthias Bonhe	Southwind Tours	Tour Operator
Mr. Edil Lambojon	DENR Region7	Community Organizer, Association Member
Ms. Estela C. Oral	Gilotungan Marine Sanctuary	Association Member
Ms. Stephanie Carite	Gilotungan Marine Sanctuary	Association Member
Mr. Rizaller Amolo	Coastal Conservation and Education Foundation, Inc.	Project Manager
Marihatag & San Agustin, Surigao del Sur, June 14, 2011:		
Mr. Leo Navarro	Local Government Unit	Mayor
Ms. Adelaida P. Moreno	Local Government Unit	Municipal Budget Officer
Mr. Antonieto P. Orbeta	Local Government Unit	Municipal Planning and Development Officer
Mr. Rolando B. Bandibas	Local Government Unit	Municipal Environment and Natural Resources Officer
Mr. Orlando P. Sarceda	Local Government Unit	Municipal Environment and Natural Resources Officer
Mr. Francisco R. Avila	Local Government Unit	Municipal Agricultural Officer
Ms. Rosenda D. Lanela	Local Government Unit	Municipal Budget Officer
Manila, April-June, 2011:		
Dr. Ernesto Guiang	Consultant	EcoGov Project (USAID)
Mr. Ricardo Umali	former Undersecretary	DENR
Mr. Rene de Rueda	former Undersecretary	DENR
Mr. Romeo Trono	Executive Director	Conservation International
Mr. Patrick Dugan	Consultant	FAO/ITTO
Dr. Sixto K. Roxas	Executive Director	Maximo T. Kalaw Sustainable Development Foundation
Mr. Gerochi	DENR	Undersecretary
Mr. Domingo	DENR	Director, Foreign Assisted and

Person Contacted	Organization	Position
		Special Projects Office
Ms. Neria Andin	DENR	Director, Forest Management Bureau
Ms. Billet	DENR	Chief, Community Based Forest Management Office