

Community-based Natural Resource Management (CBNRM) in PNG



Discussion of issues and Guidelines for implementation

18th August 2013

Preface

These guidelines are intended to provide practical guidance for people involved in planning for and implementing community based management of natural resources, both terrestrial and marine, in PNG. The main target audiences are NGOs, government policy makers and provincial officials, industry groups and educators.

The guidelines draw heavily on experiences in PNG during the past decade, mainly those of NGOs working in conservation oriented projects. The structure of the guidelines is strongly influenced by previous TNC experience that led to the preparation of a training manual: “*Community conservation tools and processes: A training manual for clan based conservation practitioners*” in 2010. The present guidelines are also informed by experiences from other countries in the Asia-Pacific region where various forms of CBNRM have been trialled and often mainstreamed as major government programs.

A conceptual model for CBNRM in PNG and the first outline for these guidelines were presented to a workshop in Port Moresby in May 2013. Following input from the workshop participants the conceptual model and the outline were refined and the guidelines were written. The refined guidelines were discussed at a stakeholder consultation in Madang in June 2013 and the comments and feedback helped to sharpen the focus, clarify many of the issues and fill several important gaps in coverage. This final version was further refined after the Madang workshop and finalized in July 2013.

Among the key lessons that come from experiences in implementing CBNRM across the region is that it needs to be seen in the context of a wider national development agenda. The guidelines make this link with government planning frameworks explicit. It is clear that if CBNRM is adopted as a mainstream approach in PNG there will be a need for reform of associated regulatory frameworks and governance arrangements. This is a challenge for the future.

Yati Bun and Don Gilmour took the lead in writing the chapters and collating the guidelines. They were ably supported by the TNC team of Francis Hurahura, Clement Kipa and Andrew Ingles, who provided comment and feedback throughout the process. Particular thanks are due to Ashley Brooks (TKCP) for his role in critiquing each of the chapters as they were written and providing helpful suggestions for improvement.

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¹ The **Responsible Asia Forestry & Trade** partnership (RAFT) is a regional program that provides capacity building and knowledge sharing services to Asia Pacific countries in support of their efforts to promote trade in responsibly harvested and manufactured wood products. RAFT is supported by the Australian and U.S. Governments and is implemented by The Nature Conservancy (TNC), the Institute for Global Environmental Strategies (IGES), TFT (The Forest Trust), the Tropical Forest Foundation (TFF), TRAFFIC – the Wildlife Trade Monitoring Network, and WWF’s Global Forest & Trade Network (GFTN). In addition to these core partners, RAFT works with government, industry, IGOs and educational institutions from across the globe. The program targets 6 countries—China, Indonesia, Lao PDR, Myanmar, Papua New Guinea and Vietnam—with others involved through regional dialogues and learning exchanges. www.responsibleasia.org

Acronyms and abbreviations

CBNRM	Community-Based Natural Resource Management
CBO	Community-Based Organization
DAFF	Department of Agriculture, Forestry and Fisheries
DEC	Department of Environment and Conservation
FMA	Forest Management Agreement
FPCD	Foundation for People and Community Development
FPIC	Free, Prior and Informed Consent
FSC	Forest Stewardship Council
ICAD	Integrated Conservation and Development (projects)
ILG	Incorporated Land Group
LLG	Local Level Government
MEA	Multilateral Environment Agreements
MOU	Memorandum of Understanding
MTDP	Medium Term Development Plan
NGO	Non Government Organization
NR	Natural Resource
NRMP	Natural Resource Management Plan
PES	Payment for Environmental Services
PFP	Provincial Forest Plan
PNGFA	PNG Forest Authority
PRA	Participatory Rural Appraisal
REDD	Reducing Emissions from Deforestation and Degradation
SME	Small to Medium Enterprise
TKCP	Tree Kangaroo Conservation Project
TNC	The Nature Conservancy
UNCBD	United Nations Convention on Biodiversity
UNCCD	United Nations Convention to Combat Desertification
UNFCC	United Nations Framework Agreement on Climate Change
YUS	Yopno-Uruwa-Som (Conservation Area)

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1. INTRODUCTION

Approaches for managing natural resources have undergone substantial changes in many countries during the past several decades. The changes are frequently associated with deep seated governance reforms aimed at decentralization of government responsibilities from central to lower tiers of government, and devolution of decision making to decentralized entities, including community-based organizations (CBOs). In the majority of countries the management of natural resources, initially state-dominated, is becoming more diversified, allowing a wider range of stakeholders to participate. PNG is among those countries embracing wider structural reform processes, and these guidelines have been prepared in the context of these wider national reforms. In addition, PNG is unique in that 97% of the land along with its associated natural resources is under customary ownership, and this adds a unique element to the way that decentralization and devolution are played out.

1.1 Purpose and structure of guidelines

Natural resource management in PNG has been characterized by a lack of support to local communities to manage their natural resources effectively and sustainably. These guidelines are intended to guide the next phase of rural engagement in the country and provide practical guidance for people involved in planning for and implementing community-based management of natural resources, both terrestrial and marine. They draw heavily on experiences in PNG during the past decade, mainly those of NGOs working in conservation oriented projects. However, they are also informed by experiences from other countries in the Asia-Pacific region where various forms of Community-Based Natural Resource Management (CBNRM) have been trialled and often mainstreamed as major government programs.

The guidelines commence with a brief discussion of CBNRM as a concept, and why it is relevant to the contemporary situation in PNG. A number of principles are then presented that form a background to all aspects of implementation. A generic four phase process for implementing CBNRM is outlined to give practical guidance to implementers. A final Chapter presents a range of scenarios that illustrate various options for communities to connect to markets to generate income from the sustainable management of their natural resources that can be used to contribute towards livelihood enhancement and community development.

1.2 Target audience

The main target audiences for the guidelines are NGOs, government policy makers, provincial and district officials, industry groups and educators. However, they will also be useful for those reflecting on the effectiveness of existing management arrangements and seeking better ways to achieve the twin objectives of sustainable management of natural resource and improvements in rural livelihoods.

In the short term it is probable that NGOs, CBOs and possibly industry groups will be the major users of the guidelines, but it is hoped that in the longer term government officials will also wish to make use of them as they operationalize their decentralization and devolution reforms. If CBNRM is taken up more widely, then training institutions will find the

guidelines a useful starting point for preparing training material for facilitators and others involved in planning for and implementing CBNRM.

1.3 Additional assistance

There is a wealth of experience in implementing various types of CBNRM in the Asia-Pacific region and much has been written on the topic that will be of assistance to implementers, policy makers and educators. A selection of useful sources of additional information and documents is given in Appendix 1.

2. BACKGROUND

2.1 What is CBNRM?

Community-based Natural Resource Management (CBNRM) is a concept that enables non-state actors, such as local communities, to participate actively in, and benefit from, the management of their natural resources. It is characterized by the adoption of participatory and locally controlled resource management which is formally recognized and supported by the state. It is an inclusive development model that combines growth with equity and environmental sustainability and it offers a vision for inclusive rural futures in PNG.

The key building blocks for such a model in PNG's context include:

- The legal recognition of communities to manage their natural resources for both conservation and development outcomes.
- Community-based natural resource management plans (developed using a spatial planning approach and applying participatory tools, techniques and approaches).
- Natural resource management plans aligned with government planning frameworks.
- Institutional arrangements (building on existing decision-making mechanisms) for local management of natural resources.
- Community-based enterprises to harvest and market forest goods and services.

An essential part of this approach is that clans retain ownership of their land, and their property rights are respected and strengthened.

These key building blocks are shown conceptually in Figure 1, along with a set of enabling factors that are essential to ensure that CBNRM is operationalized efficiently, effectively and equitably. The practical aspects of implementing CBNRM are described in Chapters 3 to 7.

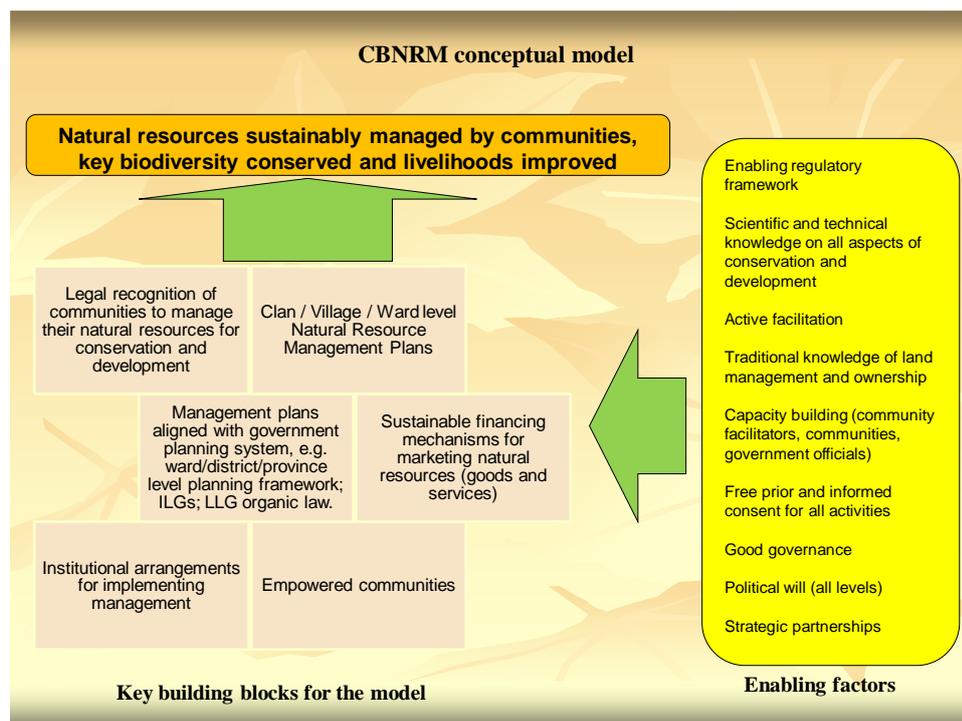


Figure 1. Key building blocks of a CBNRM model for PNG, and the enabling factors needed for its successful implementation.

The end result of the application of the model is that communities are empowered, in an equitable and inclusive way, to manage their natural resources sustainably and improve their livelihoods by benefiting from the goods and services that come from their management efforts. CBNRM also has the potential to provide a platform for addressing broader national agendas such as those associated with the establishment of a national protected area network and climate change mitigation and adaptation, including REDD+ initiatives.

2.2 Evolution of CBNRM in PNG

A number of projects have worked in various parts of PNG during recent years exploring possibilities for a new paradigm of managing both terrestrial and marine natural resources. A common characteristic of those projects that have been successful is that they place local communities at the heart of decision making and benefit sharing. Most of these projects have been initiated by NGOs, and have generally commenced with a conservation focus, either on individual species (such as tree kangaroos or butterflies) or on ecosystems (such as cloud forests or coral reefs)². In almost all cases, over time, project staff have recognized the need to balance their conservation agenda with a much wider development agenda of interest to communities. In essence, they moved from their original focus on the species or ecosystem to a more holistic consideration of community development needs. In other words they have moved from a resource-centred focus to a people-centred one. This is a fundamental shift that

² Most of these projects fall under the umbrella of Integrated Conservation and Development (ICAD) approaches which tend to use community development as a means of achieving a primary conservation objective. Most were also conceived outside the targeted communities and responded to outside rather than community perceptions of need.

has profound consequences for how the interventions are perceived, how planning is carried out, how activities are implemented and how the whole process is facilitated.

Sufficient experience has now been accumulated to describe the new approach and test it across a range of settings. This vision for the future is one where local communities are empowered to develop their own natural resource management plans and manage their resource base for their own benefit with support and facilitation by government and other organizations. The process of implementation described in Chapters 3 to 7 draws heavily on the lessons learned from this local experience.

2.3 Why is CBNRM relevant for PNG?

Arguments in support of adopting different approaches to resource management are often presented in merely pragmatic terms, i.e. what is most effective in biophysical or economic terms. However, there are both ethical and practical reasons for embracing CBNRM. The ethical reasons relate to the recognition of fundamental human rights and that rights-based approaches should be incorporated into policies, programs and interventions to ensure that they are consistent with, and actively promote, human rights as recognized in international and national law. Human rights are mandated under a number of human rights instruments and conventions which place an obligation on signatory states to respect the specified rights and actively work to implement them. Two particularly relevant conventions are the Universal Declaration of Human Rights and the Convention on Rights of Indigenous Peoples³. PNG is a signatory to both of these instruments. PNG's Constitution commences with five National Goals and Directive Principles that emphasize various aspects of human rights, including the equal participation of women in all activities⁴. One of these Goals also makes specific reference to important aspects of economic and social development that should guide the direction of the overall development process. The relevant paragraphs are:

5 (2) *“particular emphasis in our economic development to be placed on small-scale artisan, service and business activity”*, and

5 (4) *“traditional villages and communities to remain as viable units of Papua New Guinean society, and for active steps to be taken to improve their cultural, social, economic and ethical quality”*.

Hence, there is an obligation on the government to recognize the rights of indigenous peoples to own and control the lands, territories and other resources that they traditionally own, occupy or otherwise use; to place emphasis on small-scale artisanal activity and to take steps to improve the cultural, social and economic quality of community life. All of these aspects are integral parts of CBNRM.

Among the practical reasons why CBNRM is a viable option for natural resource management in PNG are:

³ Article 26.2 of the Declaration acknowledges that “[i]ndigenous peoples have the right to own, use, develop and control the lands, territories and resources that they possess by reason of traditional ownership or other traditional occupation or use”.

⁴ National Goals and Directive Principles 2 (5).

- Natural resources in PNG have always been locally owned. However, there has never been any effective support for or guidance to local landowners (who are also the resource managers) to assist them to manage their resources more effectively to obtain a wide range of goods and services. These could include: increased productivity of the natural resources; more effective market linkages; improved decision making and governance; disaster risk reduction; community development; protection of culture/traditions and biodiversity conservation. CBNRM can be a vehicle to support local landowners to realize a new vision for increasing the benefits from their natural resource base.
- After almost four decades of independence many local people want to take a more pro-active role in managing and benefiting from their own natural resources. The growing power and influence of clan landowners in seeking to assert their rights and claims over resources more directly is causing a re-assessment of previous approaches to natural resource management. CBNRM has at its heart the recognition of land ownership and property rights and the empowerment of local landowners to manage their own natural resources.
- CBNRM can build on traditional approaches for managing natural resources that have been developed and applied by clans over many years. In many cases these traditional systems include allocation of the resource base to different uses as agreed to by clan members. Among the common allocations are areas reserved for hunting, spiritual and cultural purposes. Hence, spatial planning and resource allocation, which are the basis of CBNRM planning, are not alien concepts to local communities.
- The state dominated paradigm that has characterized forest management during the past 30 years is coming to an end (see Box 1 for details). CBNRM is an option for ensuring that forests are managed sustainably and equitably in the long term.

Box 1. Status of forest management in PNG

For the past 30 years forest management in Papua New Guinea has been dominated by an industrial model in which the key characteristics are:

- A Forest Management Agreement (FMA) is negotiated between the State, land owners and industry. This provides a mechanism whereby landowners transfer forest management rights to the State which is supposed to manage forests sustainably on behalf of the landowners.
- Landowners receive a guaranteed portion of royalty payments.

Over the years widespread dissatisfaction with this model has emerged centred on: (i) unacceptable levels of destruction and degradation of large areas of forests that landowners value for a wide range of goods and services, and (ii) inequitable sharing of benefits.

Industrial forestry has now come to an end in several provinces, and is declining rapidly in most others. By and large, the easily accessible forests have been harvested. An alternative model for forest management is needed to address the deficiencies of past approaches and to commence planning for the future.

Source: Gilmour *et al.* 2013; Holzknicht *et al.* 2012

- Local and provincial government agencies have a limited ability to deliver goods and services to local communities and support local development. CBNRM is a practical

way to: (i) link community development priorities with local government plans and budgets and (ii) generate goods and services directly from the sustainable management of community managed natural resources that can benefit local communities.

- The government has found it difficult to develop effective approaches to plan for and manage protected areas. CBNRM is an option to incorporate protection of natural resources (both species and ecosystems) into community level natural resource management and to link this to national conservation priorities.
- The government has embraced decentralization and devolution as part of its fundamental governance reforms, but has yet to operationalize these effectively. CBNRM is a concept that can support and assist this process.
- Land use planning is recognized by the government as a national priority, but has yet to be mainstreamed. (Spatial planning for natural resource management is embedded within the government's Vision 2050 strategy.) CBNRM is a practical way to contribute to achieving this vision by linking community level land use and natural resource planning with district and provincial planning frameworks. CBNRM can also directly contribute to several deliverables in the current Medium Term Development Plan (MTDP) as shown in Box 2.

Box 2. Potential of CBNRM to contribute to the priorities in PNG's Medium Term Development Plan (2011-2015)

CBNRM can contribute directly to the following listed Deliverables of Goal 5.6 of the MTDP:

- 1.2 Develop environment and natural resource development plan for Economic Corridors
- 1.3 Comprehensive range of natural resource management guidelines that addresses drivers of deforestation
- 1.6 Enhance the coastal zone conservation management plan
- 3.1 Implement Multilateral Environmental Agreements (MEAs) like the UNCCD, UNCBD and UNFCCC
- 4.1 Endangered species and habitats conservation and management plan for marine and terrestrial protected areas
- 4.4 Strengthen customary practices for enhancing and preserving the environment and educate landowners on the importance of conserving the environment
- 4.5 REDD + and payment for ecosystems services (PES)
- 5.7 Introduce land zoning systems to increase agricultural production

- Increasing pressure on natural resources from rapid population growth and consequent increase in demand for goods and services has led to resource degradation in many places. CBNRM is a practical way to address this situation by empowering local communities to manage their resource base sustainably with support from government and other agencies.
- Expansion of the private sector, particularly resource extraction such as mining, has placed additional pressure on communities to enter the globalized world. CBNRM is a

mechanism that can assist this process by ensuring that local communities remain at the heart of decision making by balancing the competing demands of various interest groups in their territory.

- In many parts of rural PNG, as yet untouched by extractive industries, there is significant pressure on hunted species and habitat loss due to encroachment on forests, fire, and incremental forest degradation due to subsistence practices. CBNRM can contribute to biodiversity conservation as it encourages local dialogue and the development of consensus to identify and protect locally-valued species.
- CBNRM creates opportunities to help facilitate the empowerment of women and other marginalized groups within PNG society, by enabling their active participation in planning and decision-making for the community. Although PNG is extremely culturally diverse, and women occupy a range of different roles within communities across the country, they generally enjoy far less opportunity to engage in political and decision making fora (at all levels) than their male counterparts. While ensuring the sustainable management of natural resources, effectively designed and implemented CBNRM programs can also entail important co-benefits to help improve social equality.

2.4 What is the appropriate planning unit for CBNRM?

The discussion to date has referred to “community” management of natural resources, without defining just what “community” means in PNG’s context. Ninety-seven per cent of the land in PNG is under the customary ownership of clans and in remote rural areas all the land falls under customary tenure. Hence, it would seem logical for clans to be the basic planning unit for CBNRM. The experience of several projects has suggested that in all cases clan boundaries need to be defined as part of the planning process, but there can be practical benefits in considering larger areas as planning units for developing natural resource management plans. This allows discussion within a community (of multiple clans) of the distribution of natural resources across the landscape and the development of strategies to address resource management issues outside the boundaries of an individual clan. In some situations one village can constitute a ward, even though the clan territories may not be contiguous with the ward boundaries. Adopting a ward as the planning unit has some advantages when aligning natural resource management plans with local government planning (and budget) frameworks.

In summary, the basic unit for developing natural resource management plans can vary, depending on the local context. It could be clan, community (generally a village of several clans) or ward.

2.5 Regulatory (legal and policy) settings for CBNRM in PNG

Ownership of land by local clans is enshrined in PNG’s 1975 Constitution. Details of the conservation and management of terrestrial and marine natural resources is covered in specific subsidiary legislation and policy. The 1991 Forestry Act deals with the management and development of PNG’s forest resources. Clause 46 of the Act notes that the rights of customary owners of a forest resource shall be fully recognized and respected in all transactions affecting the resources. The 1991 Forest Policy reinforces the position that forest resources are owned by the local people and that their rights are recognized and respected in all transactions. Further, Clauses 57 and 59 of the Act state that the PNGFA needs to obtain

consent from landowners prior to preparing a Forest Management Agreement for their forests. The Act goes on to say that the PNGFA has the power to acquire forest resources from the local people through the Forest Management Agreement process.

In practice, the ability of clan landowners to manage their own resources for livelihood purposes is largely left in their own hands, but commercialization of natural resources, such as timber, requires that management rights be transferred to the government, which then exercises management on behalf of the customary owners (see Box 1 for details of how this operates in the case of forest resources). As part of the process, clan owners are required to register as Incorporated Land Groups (ILGs), which legitimizes their ownership of the resource and gives them a legal identity.

Community Forestry is mentioned in the Forest Policy. However, it describes this activity as forestry extension work, which probably refers to providing support to land owners to carry out technical forestry activities such as tree planting. Nonetheless, it could be taken to mean support for implementing forestry activities within a CBNRM framework. Hence, there is a policy opening for CBNRM within the regulatory framework, at least for forest resources.

The 1995 Organic Law on Provincial and Local-level Governments (LLGs) makes provision for provinces and LLGs to develop legislation to cover natural resources and their management. Chapter 42, Sub Chapter 1 of the Organic Law states that, subject to the Constitution and the Organic Law, a **provincial legislature** may make laws to cover several matters, including: community and rural development, agriculture, forestry, agro-forestry fishing, fisheries and renewable natural resources. This provision precludes large-scale activities. Chapter 44, Sub Chapter 1 of the Organic Law states that, subject to the Constitution, the Organic Law and a provincial government law, a **local level government** may make laws on several matters, including: community planning, improvement of communities, flora and fauna and local environment.

This opens up the possibility for CBNRM management committees (or similar bodies) to be recognized as legal entities and be empowered to take control of the management of their natural resources, subject to meeting certain conditions, such as developing an approved management plan. This could apply even if the CBNRM planning unit is not contiguous with ward boundaries. This process can overcome the difficulty associated with wards being the lowest level planning unit recognized by the government under the Organic Law.

2.6 Government planning procedures impinging on CBNRM

The government has adopted a range of planning instruments that impinge on the planning associated with CBNRM, particularly as decentralization policies become operationalized in line agencies. For example, Provincial Forest Plans (PFPs) outline provincial and district priorities for forest management and allocate budgets for specified activities. PFPs are likely to be of considerable relevance to CBNRM. At the present stage they do not include provincial or district spatial plans, although individual logging and mining companies do operate with spatial boundaries for their concession planning. Similarly, LLGs develop local level plans and have budgets, particularly for socio-economic development. LLG budgets tend to be focused on specific needs such as providing a roof for an aid post, or a drinking water supply, and are not in any sense linked to priorities identified from a spatial planning exercise. These various planning instruments and their budgets need to be taken into

consideration when planning for and implementing CBNRM. This is dealt with in detail in later chapters.

3. OVERVIEW OF THE CBNRM PROCESS

This chapter discusses how the **concept** of CBNRM is operationalized, and outlines the **principles** and **processes** needed for implementation.

Intervention into village communities by outside agencies, government or NGO, is not simply a technical process, it also involves social processes, and the sociology of CBNRM interventions is now well understood. Before going on to describe the approach needed to implement CBNRM, it is useful to consider some of the social processes involved and to enunciate some overarching principles that should guide implementation.

3.1 Implementation principles

Principle 1: *Effective implementation of CBNRM requires taking a holistic view of all aspects of natural resources and their management.*

CBNRM is an approach that uses spatial planning and takes into account all natural resources across a defined landscape (generally bounded by clan, community or ward boundaries). For this reason it is necessary to take a holistic view of all aspects of village life and development and not just those of immediate interest to the intervening entity, such as conservation of a particular species or ecosystem.

Principle 2: *Implementation of CBNRM should be people-centred rather than resource-centred.*

There are both ethical and practical reasons why people should be the central focus of CBNRM interventions. The ethical reasons relate to the rights of indigenous people to own and control their land and resources. There are also several important practical reasons. Local communities are required to comply with the requirements of natural resource management plans that are integral to the CBNRM process. If they don't feel a sense of ownership of the process and the plans and if their needs and aspirations are not being met, then their compliance is unlikely to occur. Putting local people at the centre of resource management decision making generally poses a considerable challenge for staff of government line agencies who have a mandate to protect or sustainably manage a particular natural resource. Not unnaturally, they view the resource as being of central concern. This is essentially a clash of paradigms and one that needs to be given focused attention by facilitators.

Principle 3: *CBNRM interventions should acknowledge and respect clan land ownership.*

Ninety-seven per cent of the land in PNG is owned by customary owners (clans) and they have a legal and vested interest in ensuring that their ownership is respected by any intervention. Further, it is important that clan land owners are the major beneficiaries of any management that involves natural resources on their land.

Principle 4: *There should be active participation of all community members in all aspects of planning for and implementing CBNRM, leading to local empowerment.*

There are important practical reasons why there should be a substantial element of local control and ownership over decision making about how natural resources are managed and how the benefits are shared. It is essential to recognise the diversity within communities, and as such, the need to engage in processes that actively help to foster a sense of ownership in all members of the community, including women, men, girls, boys, and people of varying ages, socio-economic status and ability. If the interests of such groups within the community are not reflected in the planning process, failure to comply with the resulting management plan is highly probable. Thus, it is important to develop a broad consensus within a community on key decisions related to management of natural resources. For example, women are generally major collectors of natural resources and are particularly knowledgeable about many aspects of the resources. Hence, their active involvement is crucial.

Principle 5: *The CBNRM process needs to be flexible and adaptive and adopt an explicit action-learning modality.*

One common lesson from experience in the region is that implementation involves mutual learning, by those who initiate and facilitate the intervention and those who are targeted for intervention. Hence, mutual learning is one of the fundamental outcomes from CBNRM interventions. The most effective way to ensure that mutual learning is effective is to adopt action-learning as an explicit operational modality. This also helps with the acceptance that many of the outcomes of intervention are not known at the outset or are at least uncertain. For these reasons the overall approach needs to be flexible and adaptive (to account for unknowns and uncertainties that are always part of the operating environment) and iterative (so that results are fed back into the planning system to allow on-going revision and re-planning). This is discussed further in Chapter 3.2.

Principle 6: *Align community-based natural resource management plans with government planning processes (and timeframes) at provincial, district and LLG levels.*

Communities do not live in isolation from wider government influence. Government line agencies at province and district levels as well as provincial and local governments all have various types of development plans (and associated budgets) that can support many aspects of local development. Theoretically, these plans should be compatible with each other, but the systems to do this are not yet fully functional. At the present time, none of these government plans are spatial in nature. Hence, it makes good sense for CBNRM planning and implementation to be carried out in the full knowledge of what the various arms of government are planning so that there is compatibility rather than conflict between CBNRM and government planning frameworks. Aligning CBNRM with the various levels of government planning can ensure that linkages are made with government budgets that can support the overall implementation of CBNRM and in particular, can support community development priorities that cannot be funded from project budgets.

3.2 Process of implementation

Implementation of the CBNRM concept outlined in Figure 1 can be conveniently thought of as involving a series of four interlinking and overlapping phases as shown in Figure 2.

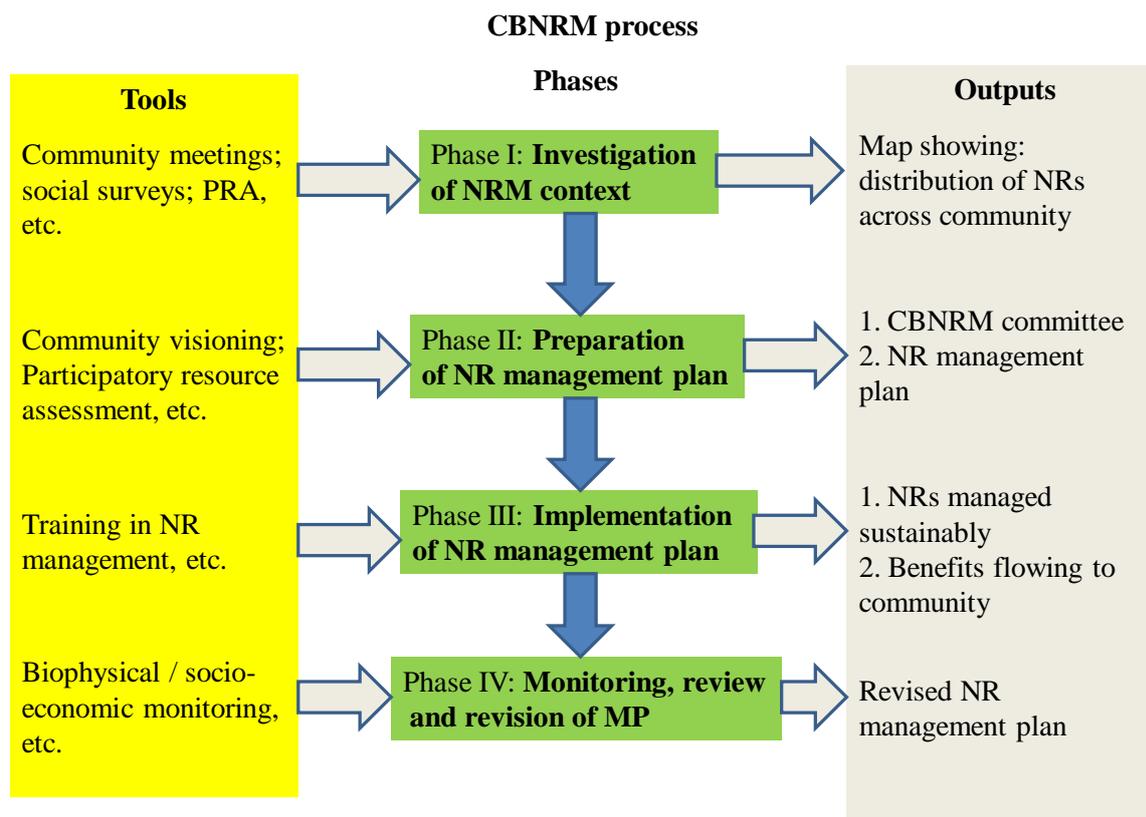


Figure 2. Schematic summary of the phases involved in implementing CBNRM showing indicative tools to support the process and the major outputs from each phase.

The practical aspects associated with working through each phase are covered in Chapters 4 to 7, and the following discussion briefly summarizes each of the phases.

The **investigation** phase is one where a facilitator spends time in the community developing rapport and trust while working with the community to gather biophysical and socio-economic contextual information (using participatory tools, techniques and approaches) needed to develop a management plan.

Preparation of the natural resource management plan involves a series of participatory exercises aimed at accommodating multiple interests covering the spectrum of conservation and development possibilities. Negotiations include setting overall and specific goals and objectives for both biophysical and socio-economic aspects of management. As well as the plan itself, attention needs to be paid to the development of local institutions with the capacity to implement effective management.

Implementation of the management plan is carried out by community members (led by a management group, such as a CBNRM committee, that builds on existing leadership arrangements) who should be empowered by their active participation in the process. Where new initiatives are included, such as harvesting and marketing goods and services derived from the sustainable management of natural resources, there will probably be a need for additional capacity building and on-going facilitation and support.

Monitoring, review and revision of the management plan will need to take place to assess the impact of management activities on both biophysical and socio-economic aspects. Monitoring should be on-going and not simply relegated to a one-off activity several years after the management plan is completed. It should feed constantly into the action-learning cycle from the very beginning of the intervention. Diverse members of the community should be actively involved in monitoring, review and revision of the management plan.

Implementation of the process should not be thought of as linear and prescriptive, where phases are completed sequentially, even though the schematic summary shown in Figure 2 could be interpreted in this manner. Rather it should be thought of as an organic process consisting of interrelated and overlapping phases where experiential learning is continually used to update knowledge and inform future planning and action. For example, collecting and updating information to understand the context will be a process that is on-going, not just confined to Phase I. The organic nature of implementation is captured in Figure 3, which illustrates a series of action-learning loops that operate throughout the entire process. Each one of the major phases will involve smaller learning cycles. Principle 5 above emphasizes this important aspect of implementation.

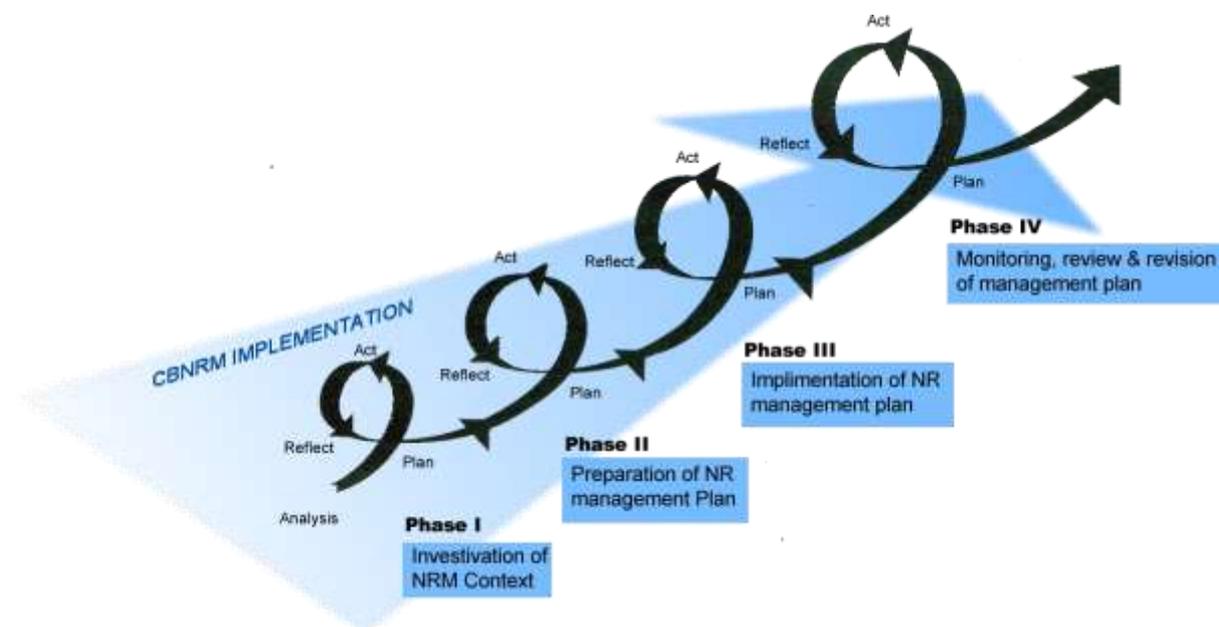


Figure 3. Phases in the implementation of CBNRM, showing the iterative action-learning nature of the process⁵

3.3 Facilitation of the process and capacity building

It is very clear from the experience of recent projects in PNG (reinforced by experience in other countries) that skilled and trained facilitators are critical to success, and the following chapters constantly draw attention to the role of facilitators in implementing CBNRM. Such people need to act as “honest brokers” who can operate as neutral entities both within the community (between different community groups and interests) and between the community

⁵ Adapted from: Kemmis, S. and R. Mc Taggart (eds) (1988) *The action research planner*. Deakin, Australia, Deakin University Press.

and outside agencies. However, the question arises: who will be the facilitators, what skills do they need and how do they get trained? This is a major challenge, particularly if CBNRM becomes adopted as a mainstream program in the country. It is also important to consider the impact that the characteristics of the facilitators (such as age, gender, socio-economic status) might exert upon the process, and level of engagement and buy-in shown by community participants.

At the present time facilitators, sometimes local community members, are generally trained and supported by NGOs. In the longer term, facilitation could be carried out by government line agency staff, ward councillors, etc. If CBNRM moves in this direction it would be desirable for education institutions to become actively involved in developing training material and delivering practical training to build the capacity of facilitators, community groups and others for all aspects of planning and implementation.

3.4 Sustainability of CBNRM

Many of the current CBNRM initiatives depend on continuing support from NGOs, and may not be sustainable in the long term once project technical and financial support are removed. In the short term, NGOs have an important role to play in continuing to support CBNRM and to analyze and refine their experiences so that others, including the government, can learn from them. This can make a significant contribution to a national dialogue on future options for natural resource management, which will be needed if significant changes are to take place. However, while CBNRM remains a small scale enclave development supported by NGOs it is unlikely to have a significant impact on conservation or development outcomes across the landscape or seascape. Large scale impacts will require the adoption of CBNRM by government as a mainstream implementation modality. The private sector could also play a role in supporting CBNRM by harnessing market forces, engagement in fair trade certification of community resources, ecotourism and as part of their corporate social responsibility.

Long term sustainability, even with government backing and linking to the private sector, depends on communities receiving sufficient benefits from their management efforts to make their continuing commitment worthwhile. Benefits do not necessarily have to be financial, but funds do tend to be needed for both personal livelihood improvement and for community development activities that cannot be funded by government.

4. PHASE I. INVESTIGATION OF NRM CONTEXT

Purpose of Phase I: *To initiate the process by developing rapport and trust in the community and gathering information needed to prepare a participatory natural resource management plan (NRMP).*

As a general rule, outsiders do not enter a community unless invited, because of historical, cultural and social reasons including sensitivities about outsiders wanting access to land or resources for personal gain. The clan land owners must invite or request help to legitimize the entry of government officials or non-state actors into the community. In situations where there is a natural resource of national or international interest (either for conservation or commercial purposes), a dialogue needs to be entered into between the interested entity and the community, leading to an invitation from the community to provide support. From the outset, it is important to acknowledge that traditional power structures within the community may limit opportunities for the less-powerful to have a say in this invitation; although ‘the community’ may welcome the intervention, specific individuals may have differing views on its benefit or utility.

Once an understanding is reached between the community and the government officials or non-state actors, it is important to formalize the partnership with a Memorandum of Understanding (MOU) between the parties. This should outline the respective roles and responsibilities of each of the key stakeholder groups. It is desirable for the LLG to be included as a signatory to the MOU to enhance the long term institutional sustainability of the initiative by obtaining a buy-in from the government. While this process is important, it should be recognized that there are risks that some members of the community such as the non-literate, women and children may not be effectively involved or give their endorsement of the intervention.

Once entry into the community is agreed to, there are a number of activities needed to get the CBNRM process underway. Rapport and mutual trust must be developed with as many community members as possible, though this process will have started with the initial contact and the negotiation of the MOU. A certain amount of basic contextual information covering a range of biophysical and socio-economic aspects is necessary to prepare a management plan. One of the key implementing principles in the previous chapter referred to active participation leading to local empowerment, so, to the greatest extent possible, the information should be collected using participatory techniques to obtain local buy-in to the activities, leading to a sense of local ownership of the entire process. It is tempting to collect more information than is really needed, and this can lead to weariness among community members and information overload. It is useful to continually pose the question: is this information really needed to prepare a management plan?

One important consideration is that local communities already have their own systems in place to manage resource allocation and to prescribe management regimes for special purposes such as hunting and protection for spiritual and cultural purposes. Hence, CBNRM should be thought of as adding to, refining, improving and regularizing what is already being practiced, rather than imposing something that is radically different.

In order to achieve the purpose of this phase, four groups of activities need to be carried out. These are discussed below and a summary, along with suggested tools and major outputs, is shown in Table 1.

4.1 Activities to guide investigation of NRM context

1. Discuss options for recognizing, formalizing or legalizing clan land ownership to assist in legitimizing community management of their NRs. Options include: Incorporated Land Groups (ILGs); special LLG laws, etc.

Suggestions for facilitator

It is highly desirable for community groups involved in CBNRM activities to be formalized and recognized as legitimate entities so that they can be supported by the state. Such formal recognition will facilitate opening bank accounts and entering into contracts with outside bodies. Several options are available for a community to be recognized as a legal entity. Whatever approach is taken it is essential that Free, Prior and Informed Consent (FPIC) is obtained before an initiative is commenced. Among the options that are available are:

- Incorporated Land Groups (ILG)

The ILG process is a mechanism to enable clans to be formally established as legal entities. It does not apply to multi-clan communities. The process opens up many possibilities for clans to develop their natural resources including establishing their own businesses or going into business with an outside entity. The ILG process is currently required by the PNGFA and the Mining Department when developing arrangements with landowners for commercial utilization of their natural resources. Completing the ILG process is required prior to establishing a Forest Management Agreement under the 1991 Forestry Act and also to formalize land ownership when clans negotiate with mining interests.

The ILG process needs to conform with recent changes to the law under the Land Groups Incorporation (amendment) Act 2009 and the Land Registration (customary land) (amendment) Act 2009.

- Special Local Level Government (LLG) law

Possibilities exist within the regulatory framework of LLGs to pass special laws to empower local landowners to develop community-based land use management plans and conservation agreements that legitimize their ability to manage their natural resources for their own benefit. An essential part of this approach is that clans retain ownership of their land and the process does not involve or encourage either land registration or clan incorporation, which many clans fear, as they perceive that these can be precursors to losing control of their land.

- Incorporating CBNRM approaches into LLG planning framework

Another option to legitimize the recognition of communities as legal entities is to develop the CBNRM process as an integral part of LLG planning. The basic unit of planning in this case would be a ward, i.e. a cluster of multi-clan communities. CBNRM then becomes a *de facto* LLG entity with multiple funding sources: from government budgets, from community management of natural resource goods and services and (possibly) from outside sources such

as a conservation trust fund. The role of the facilitator is, in part, to make linkages between higher levels of government and the LLG.

2. Review all sector plans for the target area, particularly province, district and LLG, in order to align the NRMP with these planning frameworks.

Suggestions for facilitator

For long term sustainability of CBNRM, it is desirable to align CBNRM planning with the government planning process to ensure the maximum degree of compatibility. This will require, among other things, a formal letter to the authorities to advise them of the planned CBNRM initiative. In particular, it is necessary to ensure that NRMPs are informed by sector and other government plans (including associated budgets) and that relevant information about government interests and priorities is incorporated into community-based management plan discussions.

The National Government Vision 2050 sets out the overall framework for the development of the country, and this translates into the following levels of planning:

- PNG Development Strategic Plans
- PNG Medium Term Development Plans
- Provincial Plans (including sector plans for forestry, mining, community development, health, education, transport, etc.)
- District Plans
- Local Level Government Plans
- Ward Council Plans.

The national plans provide the framework within which the provincial, district and LLG plans are developed and guide the disbursement of funds. The 22 provinces are at various stages in their planning from the provincial level down to the village level. It is primarily at the provincial level where up-to-date information can be collected and local contacts made. In particular, the Provincial Forest Office can provide information about the Provincial Forest Plans (PFPs).

3. Conduct meetings in different parts of the community to explain what the process of CBNRM entails and to ensure that all groups likely to be affected are brought into the discussions.

Suggestions for facilitator

The purpose of these meetings is to:

- Explain the intent of the proposed intervention, particularly the key characteristics of CBNRM (what is involved, etc).
- Develop rapport (trust and understanding) with community leaders and community members, including women. (Communities can open up and talk freely if they trust

the facilitator; therefore the facilitator can help in this process by being open, transparent and truthful.)

- Explain the role of government and/or an associated NGO as it relates to management of the community's natural resources.

Whilst conducting these meetings, the facilitator needs to keep in mind the following:

- Every community is unique and it is important to treat each one with respect. An approach that is appropriate in one community might not be appropriate in another community.
- It is important to work through the village leaders and elders and the current village organizational and decision making structures.
- There are generally individuals from the community who live in urban areas and they need to be informed of the planned CBNRM initiative.
- The process is helped if discussions are undertaken in a manner that is relevant to community understandings and appropriate resource materials are provided.
- Each community is heterogenous, and comprises males and females of diverse abilities, ages, and socio-economic status, who will likely differ in their perceptions of and engagement with the intervention.
- All members of the community should be invited to participate in the meetings, recognising that the different roles and responsibilities of various community members may impact upon their ability to participate. For example, in order to ensure that women are able to participate, meetings should not be scheduled at times when they may be preparing meals (which tends to be the primarily responsibility of females in Pacific households), or in locations to which it is physically difficult for them to travel.

4. Gather relevant information for management planning (biophysical, socio-economic, governance and market)

Suggestions for facilitator

It is important to bear in mind that CBNRM is not intended to take over government responsibilities for all development activities; its focus is on the management of natural resources to achieve both biophysical and socio-economic outcomes. It is necessary to collect a certain amount of biophysical, socio-economic and other information that is **relevant to the development of a NRMP**, although inevitably, additional information will be collected. This can be used as a basis for connecting community plans to government planning frameworks where there may be budgets that could be brought to bear (this is discussed in more detail in Chapter 6). The contents of a NRMP are outlined in generic form in Table 3 in Chapter 6, but it is useful to refer to them prior to and during data collection activities so that the purpose of the data collection is clear. The information needed to prepare a NRMP can be grouped into the following categories:

- **Biophysical information**

Community understanding of natural resources and their management is often different from the scientific perspective and both have equal validity. What is needed is to bring together both perspectives so that they can contribute towards the common goal of managing natural resources sustainably for maximum community benefit. Excellent information is readily available from satellite imagery and topographic maps. Land cover mapping, land use patterns and the availability of resources can be based on these sources and enhanced by community input. Such basic information may also serve as a baseline for monitoring subsequent changes.

The following list discusses the type of information that is likely to be needed:

- Current land uses (including village habitation areas, home garden areas, forest zones, locally observed protected areas, sacred sites, cultural sites, etc.) need to be mapped using participatory methods and in a way that captures the differential roles of various members of the community. GPS technology can be used by trained local people to do much of this work.
- Farming systems, including agricultural crops and an annual calendar of agricultural activities should be documented.
- Condition of the natural resources, including actual and potential threats, is basic to management and should be discussed and documented.
- Trends in natural resource management over time, e.g. forest clearance, garden abandonment, increase or decrease in fires, etc. can be discussed and documented.
- Areas with a potential for high carbon storage and those with low carbon storage potential can be identified.
- Traditional systems, including values and beliefs, for managing natural resources should be explored and documented.
- Any scientific information relevant to the area's natural resources should be compiled and made available to the community. In particular, any information on the presence of threatened or endangered species or ecosystems should be brought to the attention of the community.
- Existing or planned commercial exploitation for agricultural crops, timber, fish or minerals should be sought out from provincial and national sector plans and documented.
- Any conflicts over the use of natural resources should be sought out and documented.

- **Socio-economic information**

A community is generally made up of more than one clan. It is important to find out how many clans there are and key aspects of their history. Land, and the natural resources on it, is owned by the clan members, even though there may be many users who are not owners. The following list indicates some of the information that will be needed.

- Clan boundaries need to be delineated and mapped using participatory techniques. If there are disputes about clan boundaries, the locations of the disputes should be noted and mapped. If there is an obvious or potential conflict over resource use for that piece of land/sea, then discussions with the clans should take place to develop a road map for resolution. The facilitator could provide mediation or support if requested by the clans concerned. While the process of resolution takes place, the facilitator could assist with a process with clans that the land or sea in question remains ‘*tambu*’ or off limits.
- In many situations there will be people residing in the territory who use natural resources but do not own them. The relationship between these people and the owners needs to be discussed and recorded.
- At some point a decision needs to be made regarding the appropriate unit of planning (clan or community or ward) for the development of a management plan. This decision should be made by community members, with appropriate facilitation of the discussions.
- Current income generating activities need to be explored and documented, and a sense obtained of wealth distribution across the community. This should be disaggregated by demographic categories as much as possible, so as to capture potential inequalities within households (for example, on the basis of age, gender or ability).
- General information on the extent of infrastructure such as schools, aid posts, churches, etc. and access to government services can also be compiled and mapped.

- **Governance information**

Both formal and informal decision-making arrangements exist in all communities and these should be explored and documented, particularly those relevant to the use and management of natural resources. It is particularly important to identify marginalized groups who have little power to influence decisions, as they need to be brought into the process to ensure that the outcomes of resource management are equitable.

- **Market information**

Detailed discussions about marketing goods and services coming from sustainable resource management occur in Chapter 8. However, it is useful at this stage of the planning process to gain some first impressions of the potential for different goods and services to find market outlets, as well as the interest of community members to become more pro-active in marketing their goods and services. This can come from community and interest group discussions.

Data collection and management

This Chapter has discussed the data needed to support the preparation of a NRMP. The questions arise: “who should collect the data and who should hold it”? Because of the explicit emphasis of CBNRM on community empowerment, it is highly desirable for the facilitator to build the capacity of community members to be active participants in data collection. This should, over time, lead to a situation where there is a group within the community that can be

responsible for initiating data collection and maintaining appropriate records. This is also important for future activities associated with monitoring changes in biophysical and socio-economic parameters.

There are numerous tools, techniques and approaches that can be used to gather information in a manner that leads to a sense of local ownership of the data collection process and the data itself. This will contribute to the development of local ownership of the entire CBNRM process and hence of community empowerment. These tools, techniques and approaches fall under the umbrella of Participatory Rural Appraisal (PRA), although they may need to be supplemented by less participatory approaches to data collection from time to time.

4.2 Major outputs from investigation phase

The major outputs from this phase include:

1. Formal link to government planning at province, district and LLG levels.
2. List of useful contacts.
3. Trust / relationship developed between intervening agency and community.
4. Meeting reports including attendance list
5. Signed MOU between intervening agency, community and LLG.
6. Reports on:
 - Possibilities for formalizing / legitimizing CBNRM (ILGs; special LLG law, etc)
 - Context of NRs in the community (community history, demographics and structure; distribution of NRs disaggregated by gender/other categories, history of NR use disaggregated by gender/other categories, condition and trends; biodiversity values, cultural and environmental values, existing governance and decision-making arrangements).
 - Appropriate planning unit (clan, community or ward) and potential for aligning NRMP with government planning frameworks.
7. Maps showing:
 - Village settlements, infrastructure, etc.
 - Distribution of NRs and NR use patterns across the community's territory
 - Clan boundaries

Table 1. Indicative activities, suggested tools and outputs for Phase I - Investigation

Activities	Purpose of activities	Suggested tools/approaches	Outputs
1. Discuss options for recognizing, formalizing or legalizing clan land ownership to assist in legitimizing community management of their NRs. Options include: Incorporation of Land Groups (ILGs); special LLG laws, FPIC, etc.	Explore options for community groups to be formalized and recognized as legal entities.	<ul style="list-style-type: none"> • Participatory Rural Appraisal Tools: • Semi Structured Interviews • Group Discussions 	Report on: <ul style="list-style-type: none"> • Possibilities for formalizing / legitimizing CBNRM (ILGs; special LLG law, etc)
2. Review all sector plans for the target area	<ul style="list-style-type: none"> • To ensure that NRMPs are informed by sector and other government plans and relevant information is incorporated into management plan discussions. 	<ul style="list-style-type: none"> • Office visits • View LLG, district and provincial plans. 	<ul style="list-style-type: none"> • Formal link to government planning at province and LLG levels. • List of useful contacts. • Report on government or industry plans that could have local impact.
3. Conduct meetings in different parts of the community to ensure that all groups likely to be affected are brought into the discussions.	<ul style="list-style-type: none"> • Explain intent of the proposed intervention, including the key characteristics of CBNRM (what is involved, etc). • Develop rapport (trust and understanding) with community leaders and community members, including women. • Explain the role of government and the NGO as it relates to management of natural resources. 	<ul style="list-style-type: none"> • Stay on-site for as long as necessary • Group discussions • Focused meetings with community elders/leaders 	<ul style="list-style-type: none"> • Trust / relationship developed between intervening agency and community. • Meeting reports including attendance list (disaggregated by gender/other categories) • Signed MOU between intervening agency, community and LLG.
4. Gather relevant biophysical and socio-economic information, including: <ul style="list-style-type: none"> • Community profile – how many clans in the community • Community / clan history • Community structure, leadership, demographic makeup etc. • History of NR use by clans and others • Scientific information on NRs • Clan boundary demarcations, disputes and roadmap for dispute resolution where disputes occur. • Distribution and status of NRs in community territory and trends over time, 	<ul style="list-style-type: none"> • To collect basic biophysical and socio-economic information needed to develop a community-based natural resource management plan. • To agree on the basic unit (clan, community or ward) for the implementation of CBNRM. 	<ul style="list-style-type: none"> • Stay on-site for as long as necessary • Participatory Rural Appraisal Tools • Semi Structured Interviews • Group Discussions • Forest walks • Participatory mapping 	1. Reports on: <ul style="list-style-type: none"> • Context of NRs in the community (community history and structure; distribution of NRs, history of NR use, condition and trends; biodiversity values, cultural and environmental values; actual or potential threats to environmental and/or cultural values, existing governance and decision-making arrangements). • Socio-economic context (disaggregated by gender where possible) of the area, including: economic livelihoods context (market

<p>including: traditional knowledge, sacred sites, cultural sites, potential and existing mining, etc. (Capture the beliefs and values people have about their natural resources.)</p> <ul style="list-style-type: none"> • Land cover maps derived from topographic maps and satellite imagery. • Conflict over NRs use • Agricultural practices, including annual agricultural calendar • Infrastructure and government services. • Income generating activities, wealth distribution, etc. 			<p>linkages, current commodities and economic opportunities /constraints); potential options for support (e.g. agricultural extension, marketing, market integration, ecotourism, PES, etc.).</p> <ul style="list-style-type: none"> • Appropriate planning unit (clan, community or ward) and potential for aligning NRMP with government planning frameworks. <p>2. Maps showing:</p> <ul style="list-style-type: none"> • Village settlements, infrastructure, etc. • Distribution of NRs and NR use patterns across community territory • Land cover • Clan boundaries
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5. PHASE II. PREPARATION OF NATURAL RESOURCE MANAGEMENT PLAN

Purpose of Phase II: *To facilitate the preparation of a community-based Natural Resource Management Plan and the formation of a legally constituted and recognized community organization with authority to implement the plan.*

Information collected during Phase I will form the basis for the preparation of a management plan. During Phase II this information is discussed in a series of community meetings and consensus decisions are arrived at about several key aspects including:

- A collective vision for the future of natural resources in the community's territory (e.g. resources that are to be delineated for different purposes and how the community wants to see the resources develop in the future).
- Clear objectives to manage natural resources to achieve the collective vision.
- Detailed strategies needed to achieve the management objectives.
- The organizational arrangements and mechanisms needed to implement a management plan.
- Arrangements for monitoring performance and evaluating impacts.

All of these aspects need to come together in a formal management plan that can readily receive official endorsement by government authorities. If the area covered by the management plan is declared under a national, provincial or local level government law, planning and implementation should be in compliance with that law.

Suggestions for facilitator

The facilitator has a critical role to play in ensuring that all activities are carried out in a participatory manner and that the voices of all members of the community, particularly marginalized members, including women, are heard and their views considered. It is rare that consensus will be reached quickly, and there may be many different views of how the community's natural resources should be managed in the future. All views are relevant, and need to be discussed at length until consensus is reached. This process may take a considerable length of time and should not be rushed. If decisions are forced, then underlying concerns or disagreements will not go away, and will inevitably come to the surface later and prevent effective implementation of the management plan. As this Phase unfolds, it is also important that expectations for the future are realistic in the context of what can be achieved by the community with limited support from the government and other agencies. The following discussion describes the key activities that need to be carried out, and Table 4 contains a summary of the activities with suggestions for appropriate tools and approaches and the key outcomes.

5.1 Activities to prepare natural resource management plan

1. Carry out a community visioning exercise with wide stakeholder participation

Suggestions for facilitator

The purpose of this exercise is to engage the community in a discussion about how they want their natural resources to be managed and used in the future. This can bring in much of the information collected during Phase I, particularly information related to changes that have taken place during the past several decades, problems of resource scarcity, potential for managing natural resources to improve personal and community benefit, including direct income.

Using some of the participatory maps prepared during Phase I, supplemented by information gathered of changing trends over time, the facilitator can pose questions such as: “What do you want your forests to look like in 10-20 years time?” “What do you personally want them to be producing?” And “Considering the declining quality and quantity of forest, what could you personally do to improve the situation?” For example, the vision might include: the delineation of certain patches of forest to protect the habitat for some plant or animal valued by the community; or, the allocation of certain patches of forest for commercial harvesting to provide income for personal and community benefit; or, the planting of an area of grassland to provide timber for future utilization or habitat protection. Similar questions can be asked regarding things related to agricultural production and village infrastructure.

One thing to bear in mind is that different groups of people in the community might have very different views. For example, women might have different views from men; hunters might have different views from those who do not hunt; clans with a large area of grassland might have different views from clans with no grassland. Hence, it is important that views of the different interest groups and gender groupings are sought separately and that these differences are not lost in developing a composite vision for the community territory. If a collective vision cannot be developed and if conflict arises, then mediation will be needed.

Finally, a pictorial representation of the future can be prepared for use in later exercises when discussing what needs to be done, and by whom, to realize the vision. This will also aid future monitoring and evaluation.

2. Facilitate setting of goal and objectives for community management of natural resources

Suggestions for facilitator

In order to work towards achieving an agreed vision it is helpful to define an overall goal and several specific objectives. This is a time consuming task that will need several iterations with all community groups and will require careful facilitation. The previous visioning activity will have set the scene regarding what the community hopes natural resources will look like in the future and how and for what purposes they will be managed. This next exercise helps community members to think through how this vision is to be realized. The result will vary depending on the unique set of circumstances that apply in each community, and the following examples are indicative only.

The overall goal could be something along the lines of:

Key biodiversity protected and natural resources sustainably managed to enhance the livelihood and well-being of community members.

The process of developing specific objectives can be stimulated by posing questions and then helping community members convert the answers into objectives. Table 2 illustrates the sort of objectives that might be formulated to realize the vision discussed in the visioning exercise.

Table 2. Examples of converting key aspects of the community’s vision for their natural resources into specific objectives.

Vision	Management objectives to realize vision
Tree kangaroo numbers increased	Key tree kangaroo habitats protected from hunting in Conservation Zone
High quality forest managed commercially to provide income for personal and community benefits	Small scale sustainable harvesting of commercial timber in Forest Use Zone to optimize community benefits
Low productivity grassland converted to productive timber plantation	High value plantation forest established on 100 ha of grassland in Restoration Zone within 10 years
Income from coffee increased	Institutional arrangements in place to negotiate maximum value for organic coffee growers in Agricultural Zone
Coastal reef full of marine life	Coastal reefs zoned to define no fishing zones and zones with strictly scheduled fishing times
Degraded coastal ecosystems restored to help adapt to impacts of climate change	Degraded mangrove ecosystems restored in Rehabilitation Zone

The objectives are important as they form the basis of developing strategies and activities to bring about changes to the way the natural resources are managed. The objectives should be recorded and made available to all community members for further reflection.

3. Facilitate the establishment of CBNRM governance arrangements

CBNRM is about empowering communities to manage their own natural resources. For this to occur, appropriate community led governance arrangements need to be in place. These should include formal organizational structures (such as committees, boards, etc) and institutional arrangements with the capacity and authority to oversee the whole CBNRM process and take a lead role in managing the implementation of NRMPs.

Community level decision-making structures exist in all communities, and these frequently reflect both customary arrangements (formal and informal) as well as those required by government. In many cases there is an amalgam between the two, with customary leaders being elected to formal government positions such as ward councillors. Teachers, magistrates and churches leaders all play important leadership roles in communities, so there is often a rich source of talent to draw on to support CBNRM initiatives. Information on local governance arrangements will have been collected during the investigations conducted during

Phase I. However, it should be recognized that many community leaders have great difficulty in uniting all community members in the pursuit of a common interest. Community leadership is normally fragmented and contested, as communities are internally divided by a wide variety of social and cultural boundaries. This makes the task of developing consensus decisions particularly challenging.

While it is important to work with existing structures, it is also important to seek opportunities to actively empower and include marginalized groups. One way of doing this is by deliberately engaging individuals representing marginalized groups, and in particular those with some degree of leadership and authority. For example, working with women leaders in the community can be an important way of raising their profile and ‘normalising’ female input into the process, in a way that is not seen as unacceptable in terms of cultural norms.

In most situations there will be a need to establish a discrete CBNRM management structure, ideally one that takes advantage of, and possibly builds on to, existing leadership arrangements. However, at the present nascent stage of development of CBNRM type initiatives in PNG there are no governance arrangements that can be proposed to apply universally. Numerous projects, generally NGO funded and with a specific, often conservation orientated focus, have tested different organizational structures and different decision making mechanisms. Some of these are described in the boxes below.

Box 3. Sustainable management of tropical forests, Adelbert Mountains, Almami LLG, Madang Province (TNC supported)

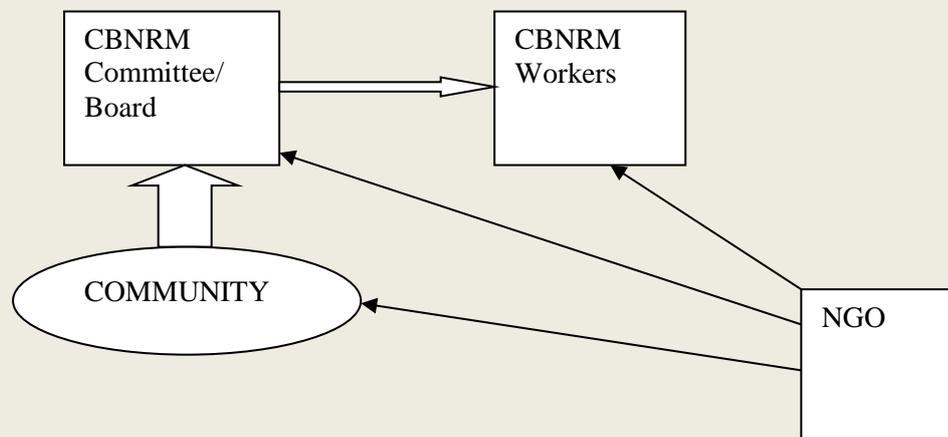
Key elements of the governance arrangements include:

- The Almami LLG Environment and Conservation Law specifies the signing of a Conservation Agreement between the community (clan leaders) the LLG President. This effectively recognizes and legitimizes the operation of CBNRM type activities in the community.
- The Conservation Agreement requires the development by the community of a Land Use Management Plan.
- An Advisory Committee (consisting of youths, women, the conservation communities, church leaders, and ward councillors) is also stipulated by the LLG law as a body which provides advice to both the communities and LLG members before the management plans are endorsed prior to signing of the Conservation Agreement and also during implementation of the plans.
- The NGO facilitating the process liaises with the Advisory Committee to ensure government processes are well informed.
- The existing leadership arrangements within each clan, with support from conservation managers and rangers (appointed by the community) are effectively the management body for CBNRM planning and implementation.

Source: TNC

Box 4. NGO carrying out key planning and implementation roles

In this example a NGO would train a CBO to manage the CBNRM process, with the following organizational structure.



The following table outlines the roles and responsibilities of each of the key stakeholder groups in this model.

Stakeholder	Description	Roles
NGO	Established group Expertise with proven track record	Signs MOU with CBO primarily to help establish CBNRM and train CBO and CBO workers to take over running of CBNRM Conduct workshops/meetings with Community
CBO Committee / Board	Formed by local community with representation from all groups in community. Government rep should be on that CBO if possible Registered with Investment Promotion Authority Need to be trained in their roles and responsibilities	Governed by a Constitution that is developed and agreed to by the community. All members have fixed terms of appointment
Community	Various clans and groupings that make up the community	Participate in development of the Constitution Agree to have a CBNRM Appoint / vote in members to the CBO Board / Committee
CBNRM Workers	Appointed by the CBO board to do the leg work of the CBNRM Should be paid	They do the daily work of the CBNRM They report to the CBO They work on the job with NGO

Source: FPCD Inc.

Box 5. Tree Kangaroo Conservation Project, Morobe Province (TKCP supported)

Key elements of the governance arrangements include:

- A landscape-wide community representative body – the YUS Conservation Organization (YUS CO) – which serves as an advisor to TKCP;
- Biannual meetings of the Conservation Area Management Committee (YUS CAMC) – bringing national and local government together along with landowner representatives and NGO partners;
- A Conservation Endowment fund that provides financial support for management of the YUS Conservation Area in perpetuity.
- The “project” is registered as a PNG NGO (TKCP-PNG). It is a site-based NGO established with an explicit mandate to support conservation management and sustainable use at a single site. It provides long term commitment of support to landowners, allows robust relationships to develop locally, and provides a mechanism for local employment. TKCP-PNG has a technical staff of conservation, livelihoods and community development professionals and rangers totaling 24 people (19 of whom are YUS landowners, three PNG nationals from outside Morobe Province, and two international staff).

Source: Tree Kangaroo Conservation Project (TKCP)

The actual and potential levels of empowerment in the examples shown in Boxes 3, 4 and 5 differ substantially. The Box 3 example exhibits a medium level of community empowerment, but has the potential for empowerment to increase over time. The example in Box 4 has a low level of community empowerment as all key decisions are in the hands of the outside NGO. There is some potential for this to change over time as experience is gained and if community members take over more responsibilities. The outside NGO will be there to provide advisory support in future. The example in Box 5 exhibits a relatively high level of empowerment as the NGO is a site based entity with most of its membership drawn from community members. There is potential for local empowerment to increase further as experience is gained and outside members withdraw from the NGO.

For the purposes of this manual, the term “CBNRM committee” will be adopted to describe the organizational structure with a mandate to oversee and manage implementation of the entire CBNRM process, even though in practice the type of structure may vary. The CBNRM committee should be a community structure, run by and for community members for their benefit. In line with the basic premise behind CBNRM, any outside agency facilitating the process should have as an ultimate aim the empowerment of the CBNRM committee to take over full authority and responsibility for managing the community’s natural resources. Outside technical and other advice and guidance could be available from external entities if requested.

The following issues need to be considered and discussed before deciding on the appropriate form and function of a CBNRM committee.

- **Institutional arrangements** (including a formal organizational structure such as a CBNRM committee and related decision making mechanisms) to oversee and guide implementation of the NR management plan should be compatible with the local situation;
- **Roles and responsibilities** of each of the key stakeholder groups, particularly the CBNRM committee, advisory committee, wider community members, NGO (if present) and government;
- Possibilities for having the **CBNRM committee recognized as a legal entity** (as discussed in Chapter 2.5 and in Chapter 4);
- Desirability of **building the capacity of local people** to take on as many roles as possible, with support from outside entities if necessary.
- Composition of the CBNRM committee, taking into account the degree of representation of diverse groups from within the community, including women

4. Facilitate community discussion to zone natural resources for different uses

Suggestions for facilitator

This builds on the visioning and goal and objective setting activities. It requires visiting all parts of the community's territory and a good deal of discussion to reach agreement on what parcels of the land or marine environment are to be allocated to specific purposes and what needs to be done to achieve each of the objectives. Some of the information gathered during Phase I will be of value in these discussions, but more information may also be needed, depending on the vision that emerged earlier, e.g. estimates of commercial timber available for harvesting; estimates of mangrove stands along coastal shore lines; density of tree kangaroos in different areas, etc.

It is likely that different points of view and conflicts will arise during this part of the process and the facilitator needs to ensure that conflicts are managed constructively. It may be necessary to seek outside assistance from the local land mediator to help resolve conflicts.

At the end of this exercise, which is essentially a land or marine use zoning exercise, a map, or series of maps, should be prepared to illustrate the allocation of different pieces of land (or marine environment) to specific activities. This could be a refinement of the pictorial representation developed during the visioning exercise. It would be common to have a mosaic composed of Agricultural, Forest Use, Restoration and Conservation Zones (see Figure 4 for an example).

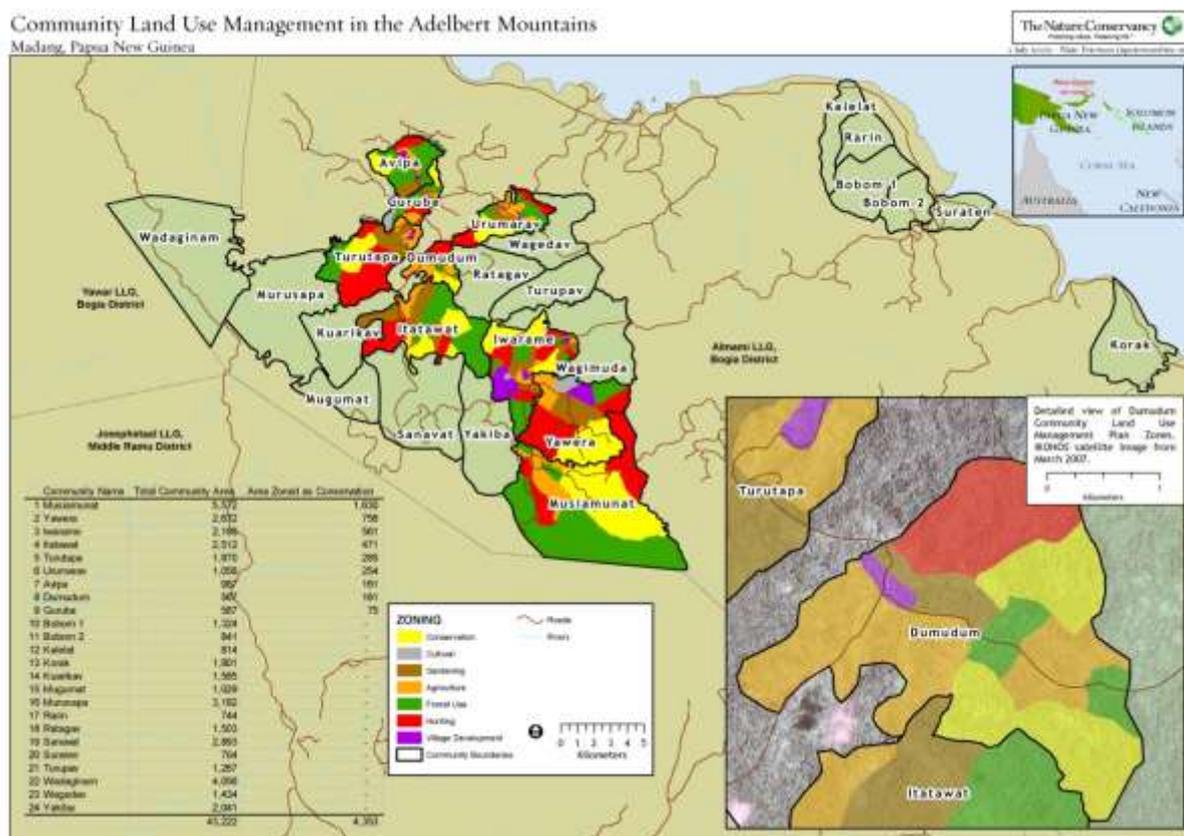


Figure 4. Land use zoning map developed by a community in the Adelbert Mountains, Madang Province, showing zones allocated for: conservation, cultural, gardening, agriculture, forest use, hunting and village development purposes.

5. Facilitate community discussion and draft a Natural Resources Management Plan (NRMP)

Suggestions for facilitator

The next stage of the process involves:

- Working out what strategies are needed to achieve the various objectives;
- Agreeing on a set of by-laws or local rules necessary to guide implementation;
- Agreeing on sanctions to apply to those who transgress the rules;
- Agreeing on mechanisms to resolve conflict;
- Exploring possibilities for connecting the community with outside agencies (public and/or private) which can support implementation;
- Ensuring that a CBNRM committee (or comparable structure) is in place to oversee drafting and implementing the NRMP;
- Drafting a NRMP to bring everything together.

The establishment of an organizational structure such as a CBNRM committee, to take on the responsibility of implementing the management plan is a crucial activity. The committee

should have clear Terms of Reference and include mechanisms for appointing and retiring of members. Where possible the CBNRM organization should build on existing community decision making structures, rather than establish something completely new.

All of the previous activities come together in a formal management plan. As a general rule it is desirable that the management plan be as simple as possible, but of a sufficient standard to be acceptable by the local government. In particular, it should be developed in such a way that there is a high degree of local ownership of the process and the final plan. While the details of each management plan will differ depending on the unique characteristics of each community, there are some features that are likely to apply across the country. A table of contents for a generic management plan is shown in Table 3, along with a summary of the information that needs to be included.

Table 3. Contents of a generic Natural Resource Management Plan

Table of contents	Information to be included
1. Introduction	Brief introduction of the management plan, including name and description of community, location, demographic information, etc.
2. Traditional/customary natural resource management practices	Traditional/customary management practices and decision making systems
3. The planning process	Steps that have led to the development of the management plan
4. Status of natural resources	Description and maps showing location, present status and trends over time of major natural resources
5. Socio-economic situation	Description of relevant socio-economic information and maps showing location of villages and other infrastructure
6. Zonation of area for specific uses	Rationale for allocation of different areas to specific purposes and maps showing the use zones
7. Management goal and objectives	Goal and specific management objectives
8. Strategies for achieving objectives	Major strategies for achieving each of the management objectives
9. By-laws, rules and sanctions	Agreed by-laws and local rules that guide implementation and list sanctions to apply to transgressors
10. Organizational mechanisms for implementing management plan	Details of composition and role of management committee and other mechanisms such as voluntary or paid rangers, etc.
11. Alignment with government planning frameworks	Points of connection between the NR management plan and government planning frameworks, particularly at LLG, district and provincial levels
12. Outside support for implementation	Mechanisms to connect with outside partners and agencies such as NGOs, businesses and government to provide support for implementation
13. Legal situation regarding recognizing community as a legal entity	Steps taken to ensure the community is recognized as a legal entity

14. Timeline for key events	Details of time when management plan comes into force and expires; and monitoring and review arrangements
15. Appendices	Maps and tables (including: details of visioning exercise; location and status of natural resources; natural resource zonation; infrastructure and socio-economic information).

The long term management plan includes strategies that describe how the objectives will be achieved. In practical terms it will be unlikely that all of the desired strategies will be acted on simultaneously so there is generally a need to prioritize the objectives and the associated strategies so that resources (human, technical and financial) can be assembled and applied. Once the high priority objectives and strategies are determined annual activity plans can be compiled that would schedule activities and identify budget needs. This aspect is discussed in detail in the next chapter.

6. Review draft plan by community and other stakeholders and sign plan by community representatives and relevant government agencies

Suggestions for facilitator

Once the plan is drafted it needs to be discussed and reviewed by all key stakeholder groups both in the community and outside, to ensure that there is complete consensus on all aspects of the document. It is particularly important that the voices and opinions of women are heard and taken note of, as well as those of other marginalized groups such as people who are resource users but not owners. This may mean that separate sessions in which feedback is sought may be required.

Once final consensus is reached the plan will be signed by representatives of the community and government plus NGOs if relevant. It is generally desirable for the signing to take place at a formal public ceremony where key community, NGO and government stakeholders are present. Media presence is also desirable so that the event can be publicized.

7. Managing major disagreement or conflict

This Chapter has emphasized the need to reach community consensus on many important aspects of managing natural resources including: a vision for the future; goals and objectives for managing natural resources; land / marine zoning for different uses and institutional / organizational arrangements for management. Some or all of these issues may be contentious, and reaching consensus may be difficult or even impossible in the short term. As previously noted, it is rare that consensus will be reached quickly, and there may be many different views of how and for what purpose the community's natural resources should be managed. Consensus does not mean that everyone in the community will agree on everything, but it does mean that there is sufficient agreement by a majority of community members to ensure that decisions will be durable and respected. While the process of reaching consensus should not be rushed, the question arises: what should be done if consensus cannot be reached on one or more issues? Several options are possible:

- The facilitator could provide mediation or support if requested by the clans concerned;

- If the issue involves some but not all parcels of land or sea, or some but not all aspects related to management objectives or institutional arrangements, then the contested aspects can be set aside and the process of developing management plans can be continued by addressing those aspects where consensus has been reached. At a later stage the contested aspects can be re-visited to try to reach consensus;
- Outside assistance can be sought from the local land mediator to help resolve conflicts if this is requested by the clans concerned.

If none of these options is effective, then it may be necessary for the facilitator to cease working with the community until such time as internal discussions reach a stage where facilitation can re-commence. This is generally a better option than pushing ahead and forcing an apparent consensus where the underlying conflict is not addressed, as any resulting management plan is unlikely to be respected by all stakeholders. In other words, implementation of the management plan will fail if a sufficient degree of consensus is not reached on the key aspects of management.

5.2 Outputs from management plan preparation phase

The major outputs from this phase will include:

1. A schematic representation of how natural resources and other key aspects of community life will look in the future (result of the visioning exercise).
2. Agreed goal, objectives and strategies for management of natural resources.
3. A map or series of maps illustrating the allocation of different pieces of land to specific activities (land or marine use zoning).
4. A draft natural resource management plan.
5. Institutional and organizational arrangements capable of overseeing implementation of the NRMP.
6. Final approved version of Natural Resource Management Plan signed by all parties.

Table 4. Indicative activities, suggested tools and outputs for Phase II – Preparation of NRMP

Activities	Purpose of Activities	Suggested tools/approaches	Outputs
1. Carry out a community visioning exercise with wide stakeholder participation	To engage with all community groups to reach a common agreement on a vision for the community's natural resources in the future – how do people want their natural resources to look in the future, and what goods and services do they want them to provide.	Visioning exercise with all groups in the community	A schematic representation of how natural resources and other key aspects of community life will look in the future
2. Facilitate setting of community goal and objectives for managing natural resources	To identify a long term goal and realistic and specific objectives that can contribute to realizing the goal and vision.	Facilitated group discussions	Agreed goal, objectives and strategies for management of natural resources.
3. Facilitate discussion on management arrangements for implementing CBNRM and establish an appropriate management structure	To: <ul style="list-style-type: none"> • Agree on and establish a formal structure to oversee CBNRM in the community, including implementation of the CBNRM management plan. • Define roles and responsibilities of each of the key stakeholder groups, particularly CBNRM management committee, wider community members, NGO, industry and government. 	Facilitated group discussions, including LLG members as well as all community stakeholders	<ul style="list-style-type: none"> • Agreed organizational structure to oversee CBNRM process, particularly implementation of NRMP. • Agreed roles and responsibilities for key stakeholder groups.
4. Facilitate community discussion to zone natural resources for different uses	To engage with all groups in the community reach a consensus view on the zoning of natural resources for different uses.	<ul style="list-style-type: none"> • Forest walks • Sketch mapping • Historical transects • Facilitated group discussions 	A map or series of maps illustrating the allocation of different pieces of land to specific activities (land use zoning).
5. Facilitate community discussion and draft a Natural Resources Management Plan (NRMP)	<ul style="list-style-type: none"> • Work out what strategies are needed to achieve the various objectives; • Agree on a set of by-laws or local rules necessary to guide implementation; • Agree on sanctions to apply to those who transgress the rules; • Agree on mechanisms to resolve conflict; • Draft a NRMP to bring everything together. 	Facilitated group discussions	<ul style="list-style-type: none"> • A draft natural resource management plan • Institutional arrangements capable of overseeing implementation of the NRMP
6. Review draft plan by community and other stakeholders and sign plan by community representatives and relevant government agencies	To review the completed NRMP and revise it if necessary based on feedback from key stakeholders to ensure wide acceptance, and facilitate its signing.	<ul style="list-style-type: none"> • Facilitated discussions between community representatives and relevant NGO and government agencies • Public signing ceremony 	Final version of Natural Resource Management Plan signed by all parties

6. PHASE III. IMPLEMENTATION OF NATURAL RESOURCE MANAGEMENT PLAN

Purpose of Phase III: *To facilitate the preparation of activity plans, and support their implementation*

This phase involves translating the intent of the management plan, as expressed in prioritized strategies, into concrete activities on the ground. Its implementation is the responsibility of the CBNRM management committee (as discussed in the previous chapter).

In most situations implementation will need technical and possibly financial support from outside the community as well as good facilitation, particularly in the initial stages. An important part of the process is capacity building of community members as they take on additional responsibilities associated with more pro-active management of the community's natural resources. In some situations, NGO or government projects will have the ability to provide limited support for specific activities, often focused on a particular interest, such as conservation (e.g. protected area establishment or conservation of a particular species) or development (e.g. establishment of timber plantations or small scale artisanal harvesting of commercial timber).

The following discussion describes the key activities that need to be carried out, and Table 7 contains a summary of the activities with suggestions for appropriate tools and approaches and the key outcomes.

6.1 Activities for implementation of NRMP

Suggestions for facilitator

The activities associated with implementation can conveniently be divided into several generic groups which are discussed below, although it is important to bear in mind that there will be a lot of overlap between groups.

1. Develop an activity plan and associated budget

This should be done initially for the high priority strategies in the management plan. It should include identification of specific activities (what to do, when and by whom) by community members and others to achieve biophysical and socio-economic objectives of the NR management plan. The objectives set by communities in their NRMP and in particular the strategies they identify for priority action will differ greatly between communities. Hence, it is difficult to provide a format for a universally applicable annual activity plan. Table 5 illustrates a simple activity plan aimed at enhancing forest conservation in the Adelbert Mountains.

Table 5. Simple activity plan developed and applied by the Yawera community in the Adelbert Mountains in Madang Province.

Agreed actions	When it is to be done	Location	Who is responsible for making this happen
1. Replant trees	On-going whenever a tree is removed	All zones	All community members
2. Reforestation	Upon the harvesting of old garden sites	General Use Zone	All community members
3. Harvesting of Conservation Area resources	Only on special occasions	Conservation Zone	Approval from clan leaders and visits will be supervised by conservation managers
4. Removal of rotten trees	On-going	All zones	All community members
5. Planting trees	When trees are removed from natural disturbance	Along river/creek banks	All community members

The activities outlined in the simple plan shown in Table 5 could all be carried out by community members without any special outside technical or financial assistance. However, the following scenarios, drawn from the objectives in Table 2 in Chapter 4, outline approaches which are more complex and would in most cases require outside support.

Scenario 1. Activity plan for protecting tree kangaroo habitat

Under this scenario the NRMP will have identified the boundaries of a Conservation Zone where protection of tree kangaroo habitat is a priority strategy.

Indicative activities:

- Appoint community wildlife rangers, develop Terms of Reference and arrange training on species identification, use of GPS if required, and jointly develop a monitoring methodology.
- Prepare and promulgate rules to restrict hunting of tree kangaroos in Conservation Zone.
- Monitor compliance with rules.
- Monitor tree kangaroo numbers.

Scenario 2. Activity plan for small scale (artisanal) harvesting of commercial timber in the Forest Use Zone

Under this scenario the NRMP will have identified a Forest Use Zone where small scale commercial timber harvesting is a priority strategy.

Indicative activities:

- Carry out market survey of timber from small scale harvesting operation.

- Carry out inventory of commercial species in the Forest Use Zone.
- Prepare estimate of annual allowable cut.
- Divide forest into blocks for sequential harvesting.
- Make arrangements for small scale sawmill to operate in community (either owned/managed by community members or privately owned and operating under direct community oversight).
- Negotiate sale of timber to market.
- Manage income from harvesting operations.
- Monitor harvesting operations and impact on forest.

Scenario 3. Activity plan for improving biodiversity conservation in the Marine Conservation Zone

In this scenario the NRMP will have identified reef areas to be zoned as no-take areas (essentially a marine conservation reserve) where restoration of the reef ecosystem is a priority strategy.

Indicative activities:

- Organize consultation meeting with clan chiefs (the reserve owners) and other community stakeholders to identify the sites for restoration.
- Prepare rules and regulations on fishing gear and fishing practices and harvesting target marine resources.
- Carry out mapping of key marine reserves and *tambu* areas.
- Erect sign post and sign boards proclaiming new rules.
- Carry out awareness raising campaign so that new rules are widely known and understood.
- Monitor community behaviour for compliance with rules.
- Carry out biological monitoring to assess effectiveness of new management arrangements on biodiversity.
- Carry out socio-economic monitoring to assess impact of new management approaches on socio-economic parameters.

Table 6 shows a more detailed activity plan and associated budget for two key strategies of an environment and conservation plan in communities in Manus Province.

Scenario 4. Activity plan to rehabilitate degraded mangrove ecosystems in the Marine Rehabilitation Zone

Under this scenario the NRMP will have identified degraded coastal areas where rehabilitation will contribute to the ability of critical ecosystems to adapt to climate change.

Indicative activities:

- Carry out awareness raising on importance of fully functioning mangrove ecosystems for adapting to climate change impacts
- Identify communities who are the traditional owners of the priority areas selected for rehabilitation
- Train members of the community on:
 - Establishment of nurseries to propagate mangrove seedlings
 - Techniques for planting mangrove seedlings
 - Tools and techniques to monitor performance of planted mangrove seedlings

Table 6. Example of activity plan and budget (for selected strategies taken from Pere-Manus-management plan)

Strategies	Activities	Tasks	Material needed	When to be done	Who will do it	Budget est. (PGK)
Objective: To create more <i>tambu</i> areas at Pere Marine Managed Area						
1. By June 2009, Four <i>tambu</i> or marine reserves are created at Pere Environment and Conservation Area.	Zoning and mapping of Pere MMA	Organize a meeting and Manuai to facilitate the discussion	GPS, Boat, fuel and refreshment	Jan, 2009	Manuai, Core group, 5 ward councilors, Resource owners.	500.00
	Put up sign board at Tambu area	Purchase materials for sign board	Flat iron, paints, cement and brush	April, 2009	Manuai, Core group, 5 ward councilors, Resource owners.	500.00
Objective: To organize and conduct replanting and restocking of coral, mangroves and marine sedentary species such as trochus and clam shell in Pere's Environment and Conservation Area						
1. By end of 2010, 1000 mangrove seedlings are planted in three selected areas within Pere Environment and Conservation Area.	Carry out mangrove reforestation program	Write and submit proposal to potential donors (internal/external)		May, 2009	Pere Core group and community monitors	6,000.00
		Purchase poly bags and collect mangrove seedlings and prepare nursery areas	Poly bags, seedlings, refreshment, transport			
		Organize planting of mangroves	Refreshment, Boat and fuel	Nov, 2009 during community working days	Pere Environment committee and community monitors	1,000.00
2. By end of 2010, 1000 coral heads are planted at 3 <i>tambu</i> areas of Pere Environment and Conservation Area	Carry out coral replanting program	Write and submit proposal to potential donors Purchase materials to build coral table	Boat, fuel, tie wire, arch mesh wire and refreshment	July, 2010 during community working days	Manuai and Pere Community monitors	5,000.00
3. By end of 2009, 1000 adult and juvenile trochus and 10 giant clams are transferred into marine reserve zone for restock at Pere Environment and Conservation Area	Carry out trochus restocking program.	Organize collection of seedlings and brood stock from outer reef	Boat, fuel, rations	May, 2009 during community working days	Pere 5 Ward councilors and Environment committee	5,000.00

2. Carry out an assessment of training needs to determine skills needed to implement activity plan.

Many of the activities listed in the activity plan are likely to require skills and abilities in addition to those the community members normally possess. These could cover a wide range of needed skills including technical, financial and administrative. Ideally, it would be useful to carry out a formal training needs assessment to identify clearly the gaps in capacity.

3. Arrange capacity building (of technical, administrative and financial aspects) to enable community members to take on new roles associated with managing their natural resources.

Once the gaps in capacity are identified, specially targeted training and capacity building can be carried out. This will generally require support from outside the community. It also provides an important opportunity to build the capacity and confidence of marginalised members of the community, so deliberate efforts should be made to ensure that they are included in this process.

4. Build and maintain linkages between community groups (such as CBNRM committee) and ward, LLG, district and provincial planning.

Government line agencies such as the PNGFA, DEC, Department of Agriculture and Livestock and Fisheries Department have national, provincial and district planning frameworks supported by budgets. Similarly, LLGs (and their wards) have planning systems and budgets, although these are not fully functional. In spite of limitations in the effectiveness and efficiency of government planning and service delivery, it is of value for communities to be aware of government approaches and for government agencies to be aware of community approaches and priorities. Mutual awareness can lead to mutual support, whereby government can support the achievement of community development objectives, and communities can better understand and contribute to government development objectives. This could include such things as: improvements in community health and infrastructure (a direct community priority) and contributions to the establishment of a network of protected areas (a specific government priority).

5. Mobilize technical and financial support (from both government and NGO sources) and carry out the activities in the activity plan.

Some activities in the activity plan will be within the financial and technical capacity of the community to implement, but many will need outside support. As noted above, government line agencies operate with their own planning (and budget) frameworks, and can be a source of technical expertise to provide assistance to communities in areas that align with national, provincial or district priorities. In addition, some government agencies have extension services that can be brought to bear to provide direct technical assistance. LLGs have little capacity to provide technical support for community activities, but do have budget allocations for community development needs, and these can be called on to support community priorities. NGOs can also be an important source of technical and other support to community activities, particularly where there is a limited geographical focus (as opposed to a province wide focus).

6. Facilitate connection between community producers and market.

As communities, and particularly the CBNRM committees, gain more confidence and capacity to manage their natural resources they may wish to improve the flow of benefits by marketing goods and services that can be derived from their management efforts. Marketing goods and services is complex, as small scale community groups tend to be price takers rather than price setters, and are often at the mercy of middle men or entrepreneurs. Particularly in the early stages, help will be needed to make connections with the outside market and discuss how to add value to traditional products to maximize financial benefits. Possibilities for marketing goods include collective marketing of agricultural products such as cocoa or coffee; conforming to fair trade requirements and marketing timber through collective outlets. Marketing services such as watershed, conservation or carbon storage services also have possibilities, but access to such markets requires sophisticated knowledge and involves a great deal of uncertainty. Expert assistance will be required to support communities to make appropriate linkages and negotiate payments.

7. Seek support from LLG, district and provincial budgets for priority development activities not covered by project budgets.

By their very nature, natural resource management plans have a primary focus on the sustainable management of natural resources. However, the community visioning exercise described in Chapter 5 may have identified numerous community development priorities that would lead to improvement in overall quality of life, but that are unrelated to natural resource management. Some of these priorities could fall within the ambit of LLG, district or provincial plans and budgets. The CBNRM committee should be sufficiently empowered and aware to seek support from various government (and other) agencies to fund some of those community development priorities that are not covered from other sources.

6.2 Outputs from implementation phase

The major outputs to come from successful implementation of a natural resource management plan include:

1. Enhanced capacity of community members to plan for and manage their natural resources.
2. Functional, effective and empowered community-based management institutions.
3. Natural resources managed sustainably.
4. Benefits flowing to community members from improved management of natural resources.
5. Income flowing to community for development and other activities (from project budgets, government budgets and community enterprises).
6. Costs and benefits shared equitably within community.

Table 7. Indicative activities, suggested tools and outputs for Phase III – Implementation of NRMP

Activities	Purpose of Activities	Suggested tools/approaches	Outputs
1. Develop an annual activity plan (and associated budget) for the high priority strategies in the management plan. This should include identification of specific activities (what to do, when and by whom) by community members and others.	To develop activity plans and budgets to achieve biophysical and socio economic objectives of the NR management plan.	Group discussions	Annual activity plan and budget
2. Carry out an assessment of training needs to determine skills needed to implement annual activity plan.	To assess the skills and knowledge (covering technical, administrative and financial aspects) needed to implement an annual activity plan	Training needs assessment	List of gaps in capacity needed to implement annual activity plan.
3. Arrange capacity building (of technical, administrative and financial aspects) to enable community members to take on new roles associated with managing their natural resources.	To build the capacity of community members (particularly marginalized ones) and the CBNRM committee to develop and implement annual activity plans.	On-site and off-site training courses covering technical, administrative and financial aspects needed to implement annual activity plan.	Increased capacity of community members and CBNRM committee to plan for and implement CBNRM annual activity plan.
4. Build and maintain linkages between community groups (such as CBNRM committee) and ward, LLG, district and provincial planning.	<ul style="list-style-type: none"> To raise awareness in community of government planning and budget processes; To raise awareness at ward, LLG, district and provincial levels of government of CBNRM processes. 	Meetings and discussions in community (involving government representatives) of purpose and content of ward, LLG, district and provincial plans.	Increased awareness among key community and government stakeholders of both government and CBNRM planning processes.
5. Mobilize technical and financial support (from both government and NGO sources) and carry out activities in the annual activity plan.	To implement annual activity plan	Knowledge of technical and financial support available for communities from government and NGO sources.	<ul style="list-style-type: none"> Technical and financial support flowing for CBNRM activities; Activities in annual activity plan implemented; Benefits flowing to community; Natural resources managed sustainably.
7. Facilitate connection between community producers and market.	To assist the community to make functional connections with markets for the goods and services generated from the sustainable management of their natural resources.	Knowledge of commercial opportunities for goods and services derived from the sustainable management of natural resources.	Functional connections between community and commercial markets for selling goods and services.
7. Seek support from LLG, district and provincial budgets for priority development activities not covered by project budgets.	To link with government planning and budget processes	Discussions in community of purpose and content of ward, LLG, district and provincial plans.	Money flowing from ward, LLG, district and provincial budgets to fund priority community development needs.

7. PHASE IV. MONITORING, EVALUATION, REVIEW AND REVISION

Purpose of Phase IV: *To describe the key steps needed to monitor implementation, evaluate impact on biophysical and socio-economic parameters, assess progress towards achieving NRMP objectives and review and revise NRMPs*

The meanings of “monitoring” and “evaluation” often blur, but it is common to differentiate between them in terms of the concern of monitoring with the normal operations of a program and the concern of evaluation with its impact on the underlying assumptions (including the goal and objectives). In essence, monitoring can have a day-to-day or year-to-year focus and a concern with inputs, activities, management and outputs. It is concerned with keeping track of activities. Evaluation re-examines the design of the program and assesses its impacts. It can include assessing and analyzing information gathered during monitoring, but it includes much more. This distinction between monitoring and evaluation, while not always clear cut, is used throughout the following discussion.

Many stakeholders are involved in CBNRM and monitoring and evaluation are part of the process whereby collective input and feedback are needed. It enables stakeholders to:

- Learn from their experience in implementing activities;
- Improve accountability;
- Assess the effectiveness of their decisions.

Monitoring and evaluation are critical tasks for the CBNRM committee as they provide the key feedback mechanisms to enable on-going and periodic assessment of progress and the identification of problems. Application of the action-learning cycle of planning, action, reflection and re-planning (as illustrated in Figure 3) will maximize the benefit from monitoring and evaluation activities and help to institutionalize them within the CBNRM committee’s operating culture.

The following discussion describes the key activities that need to be carried out, and Table 9 contains a summary of the activities with suggestions for appropriate tools, approaches and the key outcomes.

7.1 Monitoring

Continuous monitoring of implementation is an essential process to maintain managerial overview of performance and to improve accountability. It aims to gather information that can be used to inform key stakeholders of progress and make adjustments to improve the overall result.

A variety of approaches can be incorporated into a monitoring system, including focused field visits, data collection and the production of reports. There is a tendency for monitoring activities to be objective and quantitative (such as an account of funds expended or a list of seedlings planted) rather than analytical. However, it is often analysis of the results of activities that yields the most useful managerial information and can contribute to improving future action-learning cycles (plan-act-reflect-re-plan). This approach can be assisted by

posing and answering simple questions. The following type of questions can be used within the CBNRM committee to help them share experiences (both successes and failures) in carrying out specific activities and working together to learn from these to improve implementation.

- What have been the major achievements or successes? e.g. the seedlings planted the previous year in the Forest Restoration Zone have survived and grown well.
- What contributed to this success? e.g. (i) a local ranger patrolled the area regularly and (ii) the local people did not burn the surrounding grassy areas which they had done previously.
- What problems have occurred? e.g. the seedlings planted the previous year in the Forest Restoration Zone were destroyed by fire.
- What are the causes of the problems? e.g. (i) the locally appointed ranger left the community and a replacement ranger was not appointed, and (ii) people living adjacent to the site allowed fires to escape when clearing land for their new gardens.
- How has the process impacted differently on men and women, and marginalized groups within the community?

Posing and answering questions such as these injects an evaluative element into the monitoring exercise and in this sense, monitoring and evaluation tend to blur. An important aspect of carrying out monitoring is that sharing information and reflecting on successes and failures can contribute to group learning. This will improve the ability of the CBNRM committee to draw lessons from the experience and decide on a course of action to improve future planning and implementation. Future activity plans could then reflect past implementation experiences.

What should be monitored?

All aspects of the activity plan need to be monitored and reported to the CBNRM committee. The following generic list gives an indication of the level of detail that is generally required for monitoring specific activities.

- Inputs, such as: labour, funds, equipment, supplies, activities.
- Outputs, such as: achievement of planned targets; expenditure of funds; on-going effectiveness of the activity.

As well as monitoring individual activities, more general aspects need to be subject to periodic monitoring, and these include:

- Overall compliance with activity plan provisions

An overall assessment is needed to determine whether the activity plan is being implemented as written. This includes whether the planned activities have been carried out on time and on budget, and whether the expected results have been achieved.

- Effectiveness of activity plan procedures

There is a need to assess the effectiveness of the activity plan procedures. Are there any bottlenecks or wastages? What can be done to improve implementation?

- Problems encountered by community in implementing activity plans

The community may have problems with understanding details of the activity plan or problems with implementing activities. These need to be identified and discussed.

- Condition of the NR base and changes over time

Many of the activities in the activity plan will be focused on the natural resources themselves, to improve their quality and quantity. Changes associated with these activities need to be monitored and reported on. For example, if the activity plan includes planting 10 ha of new plantations, the planting area needs to be monitored to assess whether the seedlings were planted and whether they have survived.

- Extent of benefits from managing NR goods and services

An assessment needs to be made of the extent of the benefits that come from implementation of the activity plan. Benefits can be tangible and intangible. Money earned from the sale of timber produced from a community operated sawmill is tangible. Benefits from the protection of a forest area tend to be intangible (although there may be tangible aspects if, for example, a previously rare animal species is now more available for hunting). Benefits associated with empowerment are intangible, but are real nonetheless. They may lead to more tangible benefits if, for example, the empowerment enables a CBNRM committee to negotiate higher prices for goods and services, or leads to an improvement in the ability of marginalised groups to participate in decision-making processes.

If the plan includes activities aimed at delivering services such as eco-tourism or a carbon capture pilot, what benefits have accrued from the implementation of those activities?

- Equity in sharing benefits and costs

A critical aspect of CBNRM operations relates to how the benefits (and costs) are shared. There are both ethical and practical reasons for this. The ethical reason to strive for equity in sharing costs and benefits is one of basic human rights. The practical one is that if there is too much inequity the whole system may break down. People will not continue to invest their time in activities if they do not receive an equitable share of the benefits or if they have to bear an inequitable share of the costs. Several questions can be posed and answered. For example: do most of the benefits go to people or entities outside the community? Does everyone in the community share equitably in the benefits and costs, or do some individuals or groups receive or bear a disproportionate share? Is the intervention helping to address inequality within the community, or is it possible that it is inadvertently deepening existing inequalities? Transparency in record keeping will assist to improve overall accountability and allow these questions to be answered.

Who does the monitoring?

The responsibility for ensuring that on-going monitoring takes place should be part of the mandate of the CBNRM committee. In some cases community rangers will be appointed and monitoring could be included in their Terms of Reference. Depending on the sophistication of the CBNRM governance system, written monitoring reports could be prepared, perhaps using a standard format, and presented to regular CBNRM committee meetings. In most situations considerable capacity building will be needed for those carrying out monitoring exercises and

members of the CBNRM committee to make effective use of monitoring reports. Consideration should also be given to the demographic characteristics of the individual(s) responsible for the monitoring, and achieving gender balance as much as possible.

In situations where specific activities covered by the NRMP form part of an external project, monitoring may be carried out by an external body (see example in Box 6). However, in such cases the CBNRM committee should be part of the process to ensure that local control (and empowerment) is not jeopardized. In some situations locally available skills may not be sufficient to do the necessary monitoring, particularly where high level technology skills are required. This could apply, for example, where satellite imagery, and/or spectral analysis is needed to monitor forest or ecosystem changes due to encroachment or bush fire, or recovery from such disturbance. In such cases monitoring would need to be outsourced to a technician on perhaps a five-yearly basis.

Box 6. Monitoring by external body

A group of Madang forest owners has signed a MOU with a NGO to comply with Forest Stewardship Council (FSC) standards of sustainability in their community forestry operations. The operations are centred round the production of commercial timber using portable sawmills. The NGO monitors the operations every month, or as needed, because harvesting is not authorized by the NGO to move to a new location unless past operations are cleared by a Forest Certification Team.

Source: FPCD Inc.

Suggestions for facilitator

There are several activities that need to be incorporated as operational norms of the CBNRM committees. The essential ones are described below.

A **monitoring plan** needs to be developed by the CBNRM committee and used at committee meetings as a basis for discussing progress, identifying problems and determining changes in direction, if necessary. Most monitoring plans will include a set of indicators against which to assess progress. It is common practice for these to be phrased in a manner to pass the test of being SMART, i.e. **S**pecific, **M**easurable, **A**ttainable, **R**elevant and **T**ime-bound. A reasonably sophisticated monitoring plan is shown in Table 7.

Table 8. Example of a monitoring plan (selected items taken from Pere-Manus-management plan)

(a) Biophysical aspects

Best Indicator Identified	Monitoring Method and Communicating Analyzed Result	When to Carry Out Monitoring	Who Implements Monitoring Tasks	Area to be Surveyed	Reporting (Who will report results and to who)	Materials
Population of Ulah (Parrot fish), Kolang (<i>Lethrinid spp</i>) inside and outside tambu area	<u>Belt transect</u> 1) Under water Visual Count (UVC) of Ulah and Kolang population at 100m X 5m transect (500m ²) 2) Communicate results at village and community council meeting after monitoring and at general meeting	1) High tide 2) Every 6 months	Pere biological monitors	Pere village front (Marine reserve) and outside marine reserve area	Monitors to present to community during community meeting week	Water proof papers, fins, Mask/ snorkels, pencil, 100metre tape, slate board
Number of mangrove seedling planted	Physical count of number of mangroves planted and assess mangroves health	Once a month after planting	Community biological monitors	The Taloas reef Palamarut and Nroponon	Matawai Pondrilei to report to the ward councilors and the community at meetings	Paper, slate board

(b) Socio-economic aspects

Socio-economic Factors	Indicators	Methods/Tools	Timing and scale	Who is responsible	Whom and where to report to	Materials
Environmental Awareness increase	% Compliance with management rules	Household survey. No of compliance by household.	Every two years	The community biological monitors	Pere socioeconomic monitoring team leader to submit survey data to TNC for analysis and report back to community	Incident report form Monitoring survey form
Marine resources as the main source of household income	% dependence on marine resources	Base line and monitoring survey	Every two years	The community socioeconomic survey team	Socio-economic monitoring team to vanished data to TNC for analysis	Monitoring survey form and stationeries
Increase number of sea patrols	No of poaching reduces	Direct observation Reported cases at village court	Every month	Pere community	Pere Socioeconomic monitors	Boat, OBM, fuel, Spot light 12 volt battery
Alternate source of income	% dependence on alternate livelihood projects	Household survey	Every two years	Socioeconomic monitoring team	Socioeconomic monitoring team submit data to TNC for analysis and report back to community	Monitoring survey form and stationeries
Togetherness of the Pere MPA	Number of heads of Pere1,Pere 2 Panchal, Machapwar/Loh and Patusi at MPA meeting	Direct observation Key informant interview	Once a month	Ward councilor and socioeconomic monitoring team	Monitoring team to keep track and record in data entry book	stationeries

It is important for the facilitator to encourage the use of the action learning cycle at CBNRM committee meetings, by encouraging the posing and answering of key questions, to encourage reflection and learning.

Record keeping systems need to be developed and maintained so that permanent records of all facets of CBNRM implementation (covering financial, equipment and technical aspects) are readily available. This helps not only with day-to-day management but also contributes to openness and transparency.

7.2 Evaluation

Continuous monitoring, as described above, is different from episodic evaluation of the impact of the CBNRM process in achieving the high level objectives and contributing to the goal set when the NRMP was developed. Evaluation assesses the cumulative impact of all activities on biophysical and socio-economic parameters.

The conventional approach to evaluation in many programs is to: (i) carry out a baseline survey at the beginning of the intervention, and then (ii) try to relate changes in biophysical and/or socio-economic parameters, observed or measured at some later time, to program activities. However, extensive experience demonstrates that identifying impacts due to CBNRM type activities is very difficult, as they are only some of many factors that can bring change in a rural community and its surroundings. Among other factors could include: government interventions (such as building a road); corporate sector interventions (such as commercial logging, mining or fishing); remittances; out migration and changing weather patterns. Sorting out the confounding influence of these multiple factors, plus others, is a near impossible task, particularly for fundamental socio-economic well-being parameters such as household income, empowerment of women and marginalized groups, and general well-being. In addition to the difficulties of determining cause – effect relationships, there are significant problems associated with obtaining reliable quantitative data from surveys in rural economies. Importantly, quantitative surveys are unable to provide an understanding of the social processes that lead to impacts or to identify unintended or unanticipated consequences. This is not to say that baseline surveys have no value. They do, particularly to understand the context in which CBNRM is being implemented. However, they have been shown to have limited value when used as a basis for assessing long term impacts and for carrying out fundamental evaluations.

Assuming an adequate timeframe for meaningful change, quantitative (or “objective”) data may demonstrate that a change in a natural resource (such as increase in sightings of a rare animal) or a human well-being parameter (such as increase in household income or womens’ involvement in decision-making processes) has occurred. We need to pose the question: how and why has this observed change taken place? However, it is often difficult to demonstrate the cause of the change. Is it due to the CBNRM activities? Or, is it part of a natural cycle in the case of the animal, or because of an increase in remittances in the income case? Indeed, there is no methodology that can demonstrate the causes of such changes with certainty. The best that can be done is to apply the sort of analysis used by practitioners of historical sciences, who examine events in order to establish *plausible causal connections*, i.e. to identify the connections between CBNRM interventions and observed change through careful analysis of the context and by constructing qualitative “stories of change”, linking events with each other in a chronological sequence (See Boxes 7, 8 and 9 for examples). These can

be compiled by carrying out carefully targeted case studies explicitly aimed at pursuing the *plausible causal connections* between CBNRM activities and the biophysical and socio-economic aspects of the program objectives.

Box 7. “Story of change” of empowerment of landowners and their ability to take effective control over their natural resources

In 2005 a mining exploration company approached landowners in the Erewanam community in the Adelbert Ranges (in Almami LLG, Madang Province) for permission to explore for minerals in their forested areas. The landowners had been involved with a CBNRM type initiative and were aware of the passing of the 2003 Almami LLG Environment and Conservation Law. They felt sufficiently empowered to chase the exploring team out of their forests and by referring to the law in the village court were successful in striking out the complaint by the exploration company.

Strictly speaking, the LLG law only applies to communities with signed Conservation Agreement, but the villagers argued successfully that, because they were living in the Almami LLG area, the law also applied to them.

Source: TNC

Box 8. “Story of change” about the empowerment of a local community resulting from a combination of indigenous initiatives and enhanced capacity from a CBNRM intervention.

In 1996 local landowners in the Adelberts Ranges (in Almami LLG, Madang Province) objected to industrial logging in their territory because of perceived damage to their forests and the environment—they preferred selection logging options. In 2000 they lodged a case in the National Court objecting to the granting of a FMA in the Adelbert Ranges (the first time such a case had been lodged by local landowners in PNG). The National Court found in their favour in 2003 on the basis that the FMA had been fraudulently negotiated.

A CBNRM type initiative commenced in the area in 1997 and has provided capacity building and general support to the local community since that time. A combination of local initiatives and the capacity building coming from the CBNRM initiative has resulted in a situation where the local community has taken control of their natural resources for both conservation and development outcomes. While there has been little direct economic benefit to date, the community has the capacity to interact with the outside world more effectively than previously.

Source: TNC

Box 9. “Story of change” of how successful implementation of one set of activities can have a wider impact than originally intended.

The Awane community, on the Rai Coast of Madang, paid off their sawmill loan through the sale of sawn timber harvested sustainably from their clan land. After the repayment, the sawmill was handed over to the community at a public ceremony. The Awane Clan subsequently realized that they really were totally responsible for the sawmill and its operation. They now want to set up a timber depot where they can store timber prior to sale.

They also want to build permanent houses for themselves. Ownership of the mill and management of a sawmilling business have opened up many possibilities for clan owners to improve their lives while at the same time managing their forests for long term sustainability.

The public hand-over ceremony had two additional impacts: (i) the other clans in the area now want to move in the direction of looking after their forests and making money from their forests instead of selling it cheaply to timber buyers; (ii) the Awane Clan is in the spot light and every move they make will be watched by others. They realize that they will have to do the right thing and set a good example in community forestry.

Source: FPCD Inc.

Suggestions for facilitator

Evaluation of the impact of activities on NRMP goal and objectives can be carried out by adopting a case study approach that takes account of the processes, both social and biophysical, associated with the interventions. This is not simple, but can be done by using an abbreviated form of participant observation combined with a range of techniques such as those shown below.

- Informal surveys
- Focus group discussions of key stakeholder groups
- Case studies – looking for the causal linkages, making *plausible causal connections* between activities and the observed impact
- Key informant interviews
- Documentation – records of activities (planning, monitoring reports, harvesting, etc.)
- Market studies – looking for availability of markets, income, etc.

This information can be used to construct “stories of change” that make the connections between CBNRM activities and the NRMP’s goal and objectives.

7.3 Review and revision of NRMP

It was emphasized above that regular reviewing of activities should be an integral part of on-going implementation. However, there is also a need to carry out a more formal periodic review of implementation leading to revision of the plan. Management plans are generally time bound, often for five to ten years, and it is towards the end of the plan period that reviews should take place. Where possible, major revision of the NRMP should be carried out at a time when it will align with government planning cycles to make it easier to integrate community and government planning, budgeting and reporting.

Suggestions for facilitator

Reviewing the effectiveness of implementation is usually based on a scrutiny of the regular monitoring records and periodic evaluation reports. However, this needs to be supplemented by focus group discussions of key stakeholder groups, interviews with key informants, etc.

Many of the aspects associated with developing the original NRMP will need to be revisited, including:

- A collective vision for the future of natural resources in the community's territory (e.g. resources that are to be delineated for different purposes and how the community wants to see the resources develop in the future).
- Clear objectives to manage natural resources to achieve the collective vision.
- Detailed strategies needed to achieve the management objectives.
- The organizational arrangements and mechanisms needed to implement a management plan.

7.4 Outputs from monitoring, evaluation, review and revision phase

The major outputs from this phase are:

Monitoring

1. Monitoring plan
2. Regular monitoring reports to CBNRM committee

Evaluation

3. Report on impact of CBNRM activities, progress towards achieving biophysical and socio-economic objectives, and recommendations for improving implementation

Review and revision

4. Recommendations for revising NRMP
5. Revised and approved NRMP incorporating recommendations

Table 9. Indicative activities, suggested tools and outputs for Phase IV- Monitoring, evaluation, review and revision of NRMP

Activities	Purpose of Activities	Suggested tools/approaches	Outputs
1. Develop and implement a monitoring plan	To monitor progress and problems and provide feedback to the CBNRM committee.	<ul style="list-style-type: none"> • Stakeholder consultation 	<ul style="list-style-type: none"> • Monitoring plan • Regular monitoring reports
2. Establish record keeping system	To record all aspects associated with implementation of the NRMP to provide transparency and accountability.	<ul style="list-style-type: none"> • Stakeholder consultation 	Record keeping system
3. Establish and implement evaluation system	To evaluate progress of CBNRM activities towards achieving NRMP objectives and contributing towards attaining goal.	<ul style="list-style-type: none"> • Informal surveys • Focus group discussions of key stakeholder groups • Case studies – looking for the causal linkages, making <i>plausible causal connections</i> between observed impact and activities • Stories of change • Key informant interviews • Documentation – records of activities (planning, monitoring reports, harvesting, etc.) • Market studies – looking for availability of markets, income, etc. 	Evaluation reports
4. Carry out periodic review of the NRMP and revise the plan based on assessment of evaluations	<ul style="list-style-type: none"> • To raise awareness in community of government planning and budget processes; • To raise awareness at ward, LLG, district and provincial levels of government of CBNRM processes. 	<ul style="list-style-type: none"> • Analysis of monitoring and evaluation reports • Focus group discussions of key stakeholder groups 	<ul style="list-style-type: none"> • Recommendations for revising NRMP • Revised and approved NRMP

8. INCOME GENERATION FROM COMMUNITY-BASED MANAGEMENT OF NATURAL RESOURCES

Rural communities have been increasingly drawn into the cash economy during recent decades and access to cash is now almost universally required by most people for items such as health and education, as well as for supplementing food produced from home gardens. LLGs, which have the mandate to provide community services, have limited capacity to do so, and delivery of services to communities has declined in recent years in many locations.

In Chapter 2 of these guidelines, reference was made to two of the goals of PNG's Constitution which state that the emphasis of economic development: "...*be placed on small-scale artisan, service and business activity*" - Goal 5 (2); and that villages and communities remain as viable units with steps taken to improve their economic quality - Goal 5 (4). Small to Medium Enterprises (SMEs) are envisaged in the Constitution as vehicles to drive community-based economic development, so that communities remain as viable units. It is important to recognize that community-based SMEs have a different "logic" from most privately owned capitalist enterprises. In particular, they tend to have multiple objectives that may not be shared by privately owned enterprises. These include generation of income, conservation of the natural resource base, production of public goods for community benefit, and the participation of community members in the enterprise. In spite of these differences, SMEs must compete and survive in an economic context that demands efficiency and competitiveness. However, this mix of environmental, financial and social objectives has implications when assessing the costs and benefits associated with such enterprises.

The goal of CBNRM is for local communities to manage their natural resources sustainably and to contribute to improving their livelihoods. Application of CBNRM approaches has the potential to take on some aspects of community development, but only if money can be generated by sustainably managing natural resources to produce goods and services that can be marketed. Income generated from natural resource management can also be used to fund CBNRM operations to make them financially self sustainable. In the context of this discussion "**goods**" refers to products including timber, fish and agricultural commodities (such as coffee and cocoa), fruits, nuts, ornamentals, etc., while "**services**" refers to things such as watershed and other ecological services (including eco-tourism) and carbon capture and storage.

Different communities have different development potentials and interests, and there is no one model that will apply universally. Many organizations, particularly NGOs, have explored opportunities for fostering income generation for rural communities, but overall, success has been limited. Nonetheless, it is important to pursue this agenda as rural communities are increasingly becoming connected to the wider market economy. CBNRM offers an organizational framework within which community-based income oriented enterprises can flourish. This chapter discusses some options for generating income to improve economic well-being through small-scale artisanal, service and business activities.

8.1 Initiation of income generation opportunities

The visioning exercise that was discussed in Chapter 5 will have thrown up possible scenarios of how local communities want their natural resources to be managed in the future and what goods and services might be suitable for marketing. This is a good starting point for further discussions about income generation. A useful framework for considering income generation from tree and forest products is available from FAO's Market Analysis and Development Manual⁶.

There are a number of activities that need to be undertaken to assist communities to make informed decisions about becoming more pro-active in marketing goods and services from the sustainable management of their natural resources, and these are outlined below.

Assessment of potential market opportunities

An assessment needs to be made of the potential for goods and services from managing the community's natural resources to be marketed. It is desirable for a qualified business professional to be engaged in this activity; someone with knowledge and experience in small scale enterprises and marketing. Among the information needed will be:

- An inventory of what people are currently doing to generate income;
- An assessment of the potential for goods (such as commercial timber, fish and agricultural crops, e.g. coffee and cocoa) derived from managing natural resources to find a market;
- An assessment of the potential for services (such as clean water, eco-tourism and carbon capture and storage) derived from managing natural resources to find a market;
- Capacity in the community for running small scale enterprises or other entrepreneurial activities;
- Challenges to be met to bring goods and services to market (such as accessibility, etc.).

Community consultation

Wide community consultation will be needed to discuss the options for marketing goods and services and to allow sufficient time for the ideas to be debated and internalized. This process should not be rushed. This needs to be done in a way that captures the perspectives and experiences of different groups within the community, including women and people of varying ages and abilities. Among the ideas to be injected into the debate include:

- Consideration of goods and services that could be marketed;
- Potential opportunities and risks of engaging more pro-actively with the market;

⁶ FAO (2011) Community-based tree and forest product enterprises: Market Analysis and Development-Manual. <http://www.fao.org/docrep/014/i2394e/i2394e00.pdf>

- Changes to present resource management systems as a consequence of marketing goods and services;
- Value adding possibilities for traditionally produced goods (coffee, cocoa, handicrafts, fish, etc.);
- Additional skills and abilities needed in the community to become effective and efficient in marketing goods and services;
- Benefit sharing arrangements associated with marketing goods and services (income, employment, etc.);
- Costs associated with marketing goods and services (financial, time, etc.)
- Management structures and arrangements needed to market goods and services (cooperatives, public private partnerships, micro-enterprises, contractual obligations, monitoring, etc.);
- Sustainability and self reliance of management structures
- Capital requirements.

Networking with other like minded organizations

Numerous organizations, particularly NGOs, are involved in trying to increase economic opportunities for rural communities in PNG. It is of value to connect with like minded organizations that are working in the natural resource management field to share experiences of what works and what does not, and where possible, to collaborate. Strategic partnerships with such organizations can have mutual benefits.

Linking with traders and processors

At an early stage of the process it is important to make linkages with traders, processors and consumers to assess the market demand for goods and services, quality requirements, likely competitors, etc. Most community-based enterprises involve interfacing between community groups and the private sector at some point along the processing and value chain, whether at the point of sale of the primary product or further along the chain. This interface can be a difficult one to negotiate, as different institutional and cultural values can apply on both sides. For this reason, joint ventures (community-private partnerships) between community and private sector groups are one way to overcome these difficulties.

Developing a business plan for selected goods and/or services

Once decisions have been made about the most likely goods or services to try to market it is necessary to prepare a business plan. This is a complex task and will require the assistance of experts. A business plan draws on a wide range of knowledge from many different business disciplines: operations, financial, managerial, human resources and marketing. If start-up finance is needed then the business plan should provide a convincing argument to raise finance and repay the loan.

8.2 Scenarios for generating income from marketing NR goods and services

A range of scenarios is presented below to illustrate some of the options that may be available for communities to engage in income generating activities based on the goods and services derived from managing their natural resources sustainably. Several of them are based on experiences in PNG.

8.2.1 Income generation from marketing goods

1. *Small scale sawmilling*⁷

Forest production since the 1970s has focused on large-scale export-oriented operations run by foreign logging companies. This is often perceived to have reduced access rights of local communities to their traditional forest resources and to have led to unsustainable forestry practices. In addition, customary owners of forests are of the view that their share of the wealth derived from commercial exploitation of their forests has been short-term, transitory and has not met their expectations. All of these factors mean that landowners' attitudes to forest harvesting are changing over time.

Portable sawmills have become popular over the years and have been widely advocated by several NGOs as a way for villagers to receive a greater share of the benefits from forestry, and as an expression of local peoples' desire for greater control over the development of their local natural resources. They argue that the concept of sustainable forest management is unlikely to be strongly supported by local people until traditional landowners have more effective participation in the development and on-going management of their own forests. It is also argued that the use of portable sawmills allows low-impact harvesting and processing of trees and so avoids much of the environmental and ecological degradation associated with large-scale industrial harvesting. In addition, land is customarily owned by local people and portable sawmilling fits in with the local land tenure system. These arguments are consistent with the underlying philosophy of CBNRM.

It is estimated that an average of 500-600 portable sawmills have been sold annually since the 1990s. Since the 1991 Forestry Act came into being all forest operators, small, medium and large, are required to be registered with the PNGFA as Forest Industry Participants. All operators, including portable sawmillers, should apply for a Timber Authority to harvest trees, even if it is on their own land. However, this requirement for registration is not heavily enforced and it is probable that fewer than half of all portable sawmill operations are registered. If small scale operations become more organized in the future and are able to supply timber suitable for high quality national and export markets, registration may become more relevant.

Portable sawmills were originally regarded by the government as something to be used by customary owners to supply timber for their own uses and the local market. However, during the past 10-15 years foreign owned logging companies have started using portable sawmills

⁷ Much of the material in this section is drawn from: Holzknicht, Hartmut, Ryde James and Peter Kanowski (2012) A review of the use of portable sawmills in Papua New Guinea and Solomon Islands. Report No. FR2012-07, Project No. FST/2003/049, ACIAR, Canberra, Australia.

and have done “deals” with local “leaders” as a means of obtaining access to forest resources from the local people for commercial purposes, including export. This defeats the primary purpose for which the regulations were intended (i.e. as a mechanism to legitimize local operators producing for the local market) and has given portable sawmill operations a bad image.

Local experience with portable sawmills is mixed, but in general they are believed to be an appropriate technology for customary landowners, and that training of landowners in their use has often been effective. A review of country-wide experiences of the use of portable sawmills indicated that they tend to operate with relatively low productivity but that this could be explained by the predominance of social rather than commercial objectives, the difficult terrain in which they operate and the relatively undeveloped markets for sawn timber products. The financial returns of portable sawmills are sensitive to efficiency and level of utilization. However, because the initial capital costs are quite low, small-scale sawmill enterprises remain financially viable.

The key factors for success of portable sawmills in PNG are:

- Ownership and control of the entire operation by the community;
- Good understanding within the community of what is involved in running a portable sawmilling forestry business;
- Agreement within the community at all levels (family, clan) about the harvesting of that community’s forest and a process for regular community dialogue;
- A regulatory environment that recognizes and supports the wise use of portable sawmills;
- Adequate technical training in portable sawmill operation and maintenance;
- Adequate technical training in implementation of sustainable forest management principles and practices;
- Efficient and competitive markets for sawn timber products;
- The development of small business skills for operators and communities involved in portable sawmill enterprises.

A principal conclusion is that the greatest deficiency in the operation of portable sawmills as community or individual enterprises is the lack of knowledge concerning business practices and the capacity to resolve disputes about resource ownership.

2. Marketing agricultural products (animals/plants)

Traditionally, rural communities developed very effective and efficient agricultural systems to be self sufficient in food crops. However, as the need to connect with the outside world becomes more imperative, there is a need to connect local economies to regional, national and even international economies. This requires local small-holders to improve the quality of products they wish to commercialize and seek integration into markets outside the community.

One approach that has been trialled in several locations involves establishing cooperative societies as a mechanism of mobilizing members of the cooperative to work together to increase product quality and use their collective power to negotiate with outside traders for a fair price and to access specialist and niche markets. This inevitably requires substantial investment in capacity building in business management skills as well as in skills to improve product quality. Examples are shown in the following boxes.

Box 10. Conservation cooperatives in Almami LLG, Madang Province

Three conservation cooperatives have been registered in Almami LLG in Bogia District, and one of them, Adelberts conservation cooperative, is linked to the fair-trade market to access a premium price for organically grown cocoa coming from communities that have developed land use management plans and set aside conservation areas. The story promoted by the cooperative is: *“cocoa is grown organically by conservation communities who have developed and implementing land use management plans and have set-aside conservation areas legislated under environmental and conservation law.”* Income from the sale of cocoa will provide sustainable finance to conservation efforts, as well as income to clans/landowners who are members of the cooperative.

Source: TNC

Box 11. Sale of organically grown coffee from Morobe Province direct to US buyers

The Tree Kangaroo Conservation Project (TKCP) has supported the development of a coffee farmers' association in a coffee growing area of the YUS Conservation Area. Coffee has been grown in the villages for decades, but most of the beans rot due to the lack of any viable transport option to freight the coffee beans out to buyers in Lae or Goroka. TKCP responded with a two-pronged approach: (i) support to improve coffee quality and (ii) link growers with a buyer.

Improving quality of the coffee involved engaging the Coffee Industry Corporation (CIC) to train locals in better coffee bush management, collection of beans and drying. Concurrent with that process, TKCP engaged a coffee roaster (Café Vita) in Seattle, USA who then agreed to buy the improved coffee beans direct from the farmers. In 2011, Café Vita bought 1.7 tons, in 2012, 3 tons, and in 2013, 5.5 tons. One of the key aspects of maintaining the quality of the coffee for export has been the high level of organizational management within the coffee farmers' association.

The key constraint for YUS coffee is the lack of viable freight options. However, because of the fact that the coffee can attract a premium price (due to it being direct, fair and organic trade, as well as being marketed as “conservation coffee” in the USA), it can be transported by plane out of YUS.

The success of removing obstacles to the development of coffee, market integration, and handover of management to local producers has proved to be an effective model, and the same approach will be used with additional cash crops across YUS.

Source: Tree Kangaroo Conservation Project (TKCP) Lae, Morobe Province.

A major limitation to success of these micro enterprises is access to start up capital and financial managerial skills to ensure funds are accounted for and proper book keeping is done for all transactions. In many parts of the country lack of infrastructure for transporting goods to market is also a major problem.

8.2.2 Income generation from marketing services

1. Carbon forestry

During the past decade there has been considerable debate in the Asia Pacific region about the possibilities of local communities obtaining direct financial benefit by managing their forests to maximize carbon capture and storage by participating in schemes such as REDD+. To participate in such schemes communities have to demonstrate “additionality”, i.e. their management will need to result in “additional” carbon being stored compared with their “normal” management.

Business models are yet to be developed for communities to obtain financial benefit from managing their landscape to increase carbon stocks. However, it is clear that becoming involved in carbon forestry will require strong local governance and management systems as well as effective and efficient ecosystem monitoring methods. However, the overwhelming constraint to REDD+ or carbon trade being rolled out in PNG at the present time is that there is no national framework for them, nor are voluntary carbon markets legal. Thus, while many sites around the country have the potential to be involved in market-based mechanisms, it is not yet possible. For these reasons, this option for generating income is probably some way in the future for most PNG communities, although there are possibilities for field testing of carbon pilot initiatives.

2. Eco-tourism

Eco-tourism is a form of tourism involving visiting relatively undisturbed natural areas and/or culturally interesting sites. It is intended as a low-impact and often small scale alternative to standard commercial tourism. It is generally intended to educate the traveler and to provide funds for direct economic benefit to local communities and sometimes to support biodiversity conservation.

PNG has a biophysical and cultural environment that lends itself to eco-tourism, and numerous entrepreneurs have taken advantage of the potential and established eco-tourism ventures. Probably the best known of these is the Kokoda Trek, but others are associated with activities such as bird watching and reef diving. However, there are few if any examples of eco-tourism operating within the context of CBNRM, with its emphasis on local empowerment and maximizing local benefit. This essentially means key management and operational decisions and benefits remain in local hands. Rather than communities being the passive recipients of hand outs from eco-tourists or tourism operators, they become active managers of the operations.

A recent attempt was made to explore the opportunity for the development of an eco-tourism venture to support conservation and sustainable livelihoods for rural communities in the Adelberts Mountains. This raised important issues that need to be taken into account in

setting up such a venture within a CBNRM context and provided some useful guidelines for the future (see Box 12 for details).

Box 12. Exploring possibility of establishing an eco-tourism trekking venture in the Adelberts Mountains, Madang.

The concept of an eco-tourism venture is for an Adelberts Conservation Trail to be the centre-piece of an overarching framework that facilitates the expansion of conservation areas and contributes to sustainable livelihoods across a large area of the Adelberts Mountains from Keki Lodge in the east to the Almami Conservation Areas in the west. The basic approach is to create: (i) a trekking trail that links conservation communities across the Adelberts, and (ii) a mechanism (essentially a management structure and operational procedures) to generate income for the participating communities.

A Conservation Trail was identified in 2009 that traversed scenic forested areas of the Adelberts Mountains. Various options were suggested ranging from 2-day easy walks to 8-day hard treks, with overnight stays in lodges, village houses or tents.

Conclusions from the trial

1. There is enormous potential in the Adelberts Mountains to link conservation with long-term tangible benefits to rural communities through eco-tourism.
2. The most appropriate approach in the first instance is the development of a range of low impact trekking eco-tourism ventures. These ventures have the potential to supplement the livelihoods of rural subsistence communities directly through payments for food, accommodation, carriers and guides.
3. The development of any venture would require thorough research and risk assessment and the development of a best practice model to ensure the maintenance of the natural and cultural heritage of the Adelberts communities.
4. The development of an Adelberts Conservation Trail will require the development of an up-front agreement to be signed by all communities along the trail that ensures:
 - a. The establishment and effective management of conservation areas by each signatory community
 - b. Commitment to the long-term support of the trekking trail, basic infrastructure and safe passage and support of all trekkers
 - c. Equitable sharing of costs and benefits across all communities
 - d. Standard and agreed payment rates
 - e. Dispute resolution procedures

It was suggested that an established trekking company could partner with the communities to develop and test a working model. The model would need to ensure the development of an overarching management structure to handle: booking systems, people management, information, questions, brochures, transfers, permits, visas, personable and professional guides and staff, etc.

Source: TNC

8.3 Lessons learned from experiences of income generation activities

- There is a general lack of awareness by local communities (resource owners) of the value of their natural resources and the potential to improve their livelihoods by marketing goods and services from their sustainable management efforts.
- There is very low managerial capacity in most local communities – paper work is a new culture in many of PNG's traditional societies.
- The lack of physical access to markets, particularly road infrastructure, severely limits business opportunities for marketing goods.
- Communities must have a long term view when planning income generating activities—there are no short term fixes.

Appendix 1. Additional resources

1. Organizations

Center for People and Forests (RECOFTC), Bangkok, Thailand <http://www.recoftc.org>

Center for International Forestry Research (CIFOR), Bogor, Indonesia <http://www.cifor.org/>

Papua New Guinea Ecoforestry Forum (EFF), Port Moresby, Papua New Guinea
<http://www.ecoforestry.org.pg>

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