Conservation and Environment Protection Authority

PAYMENT FOR ECOSYSTEM SERVICES OPTIONS AND OPPORTUNITIES FOR NEW BRITAIN ISLAND PAPUA NEW GUINEA

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Cover Photo: Mangrove seedling being assessed in Numuru village, PNG © Nick Turner/ UNDP

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ACRONYMS

BSDS	Benefit Sharing Distribution System
CbFCCRM	Community-based Forest and Coastal Conservation and Resource Management
CEPA	Conservation and Environmental Protection Authority (of PNG)
DEC	Department of Environment and Conservation
DPI	Department of Primary Industry
ENB	East New Britain
ES	Environmental Service(s)
ETS	Emission Trading Schemes
FMA	Forest Management Agreement
FPIC	Free, Prior and Informed Consent
FSC	Forest Stewardship Council
GEF	Global Environmental Facility
/ha	per hectare
ICBG	International Cooperative Biodiversity Groups
ICD	Integrated Conservation and Development
IFP	Integrated Framework Plan
ILG	Independent Land Groups
IPA	Investment Promotion Authority
LLG	Local Level Government
LMMA	Locally Managed Marine Areas
LUP	Land Use Plans
MMT	million metric tonnes
MTDP2	Medium Term Development Plan 2
NARI	National Agricultural Research Institute
NGO	Non-Government Organizations
OCCD	Office of Climate Change and Development
PES	Payment for Ecosystem/Environment Services
PGK	PNG Kina
PNG	Papua New Guinea
PNGFA	Papua New Guinea Forestry Authority
SABL	Special Agricultural Business Lease
SME	Small and Medium Enterprise
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WNB	West New Britain
WMA	Wildlife Management Area

1. EXECUTIVE SUMMARY

When water is naturally filtered for human consumption, or trees absorb carbon to prevent global warming, or when a rich biodiversity produces medicinal plants, nature is providing a beneficial service that is enjoyed by all. Society often pays a price for the loss of that service and hence, there is value in its preservation.

Payment for Ecosystem Services (PES) is an innovative resource management tool that uses economic incentives to promote conservation while providing livelihoods and reducing poverty for rural landowners. An ecosystem service (ES) is a process or activity that occurs in nature and that benefits people. Often the ES occurs on private land and the individual owners may destroy that service in an effort to rightfully gain income from their resource through farming, logging, mining, hunting or other extractive activities.

The beauty of PES lies in its simplicity: a landowner receives a payment to stop any activities that would prevent the ES from continuing. The payment becomes an economic incentive to encourage conservation while leaving the landowner better off, or at least no worse off, than what the extractive activity provided.

This report summarises a nine-month research project to determine the most feasible options to create a PES scheme on New Britain Island, Papua New Guinea (PNG). The work started by reviewing the academic literature on PES to understand its theoretical limitations and learn about the practical challenges from other PES schemes worldwide.

The concept of PES is attractive because it follows straightforward logic and uses market forces to prevent environmental degradation. PES is a popular conservation tool because it makes conservation a financially self-sustaining enterprise through a private exchange between two mutually interested parties. However, although it appears simple, many complications are associated with designing a PES scheme, including the challenges that arise from the transactional, market-place nature of PES. Another challenge is to create a PES scheme that provides immediate benefits to the landowner while building long-term, self-sustaining environmental solutions.

The information in this report helps raise the warning flags on the right and wrong ways to create a PES. PES schemes must be created uniquely to fit the specific site in question as each area will have a unique combination of environmental resources, demand for those resources, willing sellers, the capability to sell, and a socio-political and cultural context. The major issues to prepare for include economic valuations, time duration of the programme, scalability, the nature of the buyers and sellers, legality of selling ES and the legal precedents that it creates, and the overall efficiency of a PES scheme.

PES is one of many conservation tools available to resource managers and policy makers. Other tools include government regulations, taxes, integrated conservation/development projects, land acquisition programmes, comprehensive land use planning, forest management plans and product certifications like Forest Stewardship Council (FSC) or Fair Trade. These are not PES schemes but most, if not all, are compatible with PES.

New Britain Island was investigated for its unique ability to sell ES. The investigation included months of site visits to a wide range of locations and interviews with businesses, government officials and non-government organizations (NGOs). Options for New Britain Island fall into three major market categories: Biodiversity or carbon offset credits, Watershed protection or land management schemes, and aesthetic beauty or ecotourism schemes. Each of these schemes were analysed for New Britain according to three overarching criteria: supply of the service, demand for the service, and the institutional capability to sell the service to the market.

Ecotourism has emerged as the greatest opportunity for creating a PES scheme on New Britain Island, which has an excellent supply of options especially adventure-based tourism and ecotourism. International tourism is growing rapidly and it is one of the few industries that imports foreign currency without having to extract natural capital or other forms of national wealth. The tourism market is well established, labour intensive and employs a wide range of skill sets and ages as well as both genders equally. Selling ecotourism in a PES scheme will have its challenges, however, as it must still be focused on conservation as the end goal and not only job creation.

This report concludes with 12 major recommendations, outlined below, plus another 12 sub-recommendations suggesting long-term structural changes in policy and short-term quick wins on tangible projects on the Island:

1. Create an Ecotourism Leadership Council with the authority to implement all report recommendations.
2. Strategic Implementation of Ecotourism: this includes two back-to-back, five-year strategic plans that will improve the ecotourism market while providing immediate short-term benefits to landowners.
3. Implement seven Quick Win projects: including guest house rehabilitation, eco-tours and capacity building and training for guides and other operators.
4. Create an Integrated Framework Plan that combines ecotourism with conservation.
5. Create an Ecotourism Network around the Island with Palmalmal town as the Hub.
6. Objective analysis of the economic impacts of tourism versus other major industries on the Island.
7. Formalise PES-like arrangements: there are several cases where some business arrangements on the Island can be converted to a PES scheme.
8. Improve transportation links: this includes establishing a new ferry service around the Island.
9. Market feasibility study of corporate conservation: an investigation into the propensity of corporations to contribute to conservation within specific industrial sectors.
10. Establish a National Biodiversity Offset Policy that identifies key protection areas on the Island.
11. Create a National PES Policy Framework.
12. Create a Benefit Sharing Distribution System (BSDS) policy for PES.

These recommendations will move PES forward. Some are large in scope and will require considerable time, funding, human resources and long-term commitment to complete. Others are short-term to help build local support. The structural recommendations, when completed, will result in lasting changes to how natural resources are managed and conserved on New Britain Island. The striking beauty of the Island, its mysterious culture and world-renowned resources deserve nothing less.

Dried cocoa is bagged and sold in East New Britain © Nick Turner/ UNDP

2. INTRODUCTION

The PNG Conservation and Environmental Protection Authority (CEPA), with financial support from the Global Environmental Facility (GEF) and the United Nations Development Programme (UNDP), have launched a national effort called the Community-based Forest and Coastal Conservation and Resource Management (CbFCCRM). The goal of CbFCCRM is to develop and demonstrate resource management and conservation models for landholding communities that effectively incorporate community-managed conservation areas, as part of agreed national priorities with industry and government. In March of 2015, CEPA hired Crane Associates, an international consulting firm specializing in sustainable economic development, to explore the feasibility of creating a PES scheme on New Britain Island.

PES is one of many tools that can be employed to create sustainable Wildlife Management Areas (WMAs). CEPA was interested in determining the feasibility of PES because it has the potential to be financially self-sustaining. However, creating a PES scheme requires the right combination of enabling policies, economic conditions and technical skills. PES must be created on a site-specific basis and for certain marketable resources. The question then becomes, does New Britain Island have a supply of resources with sufficient marketable demand that offer greater economic incentives to conserve forests than the existing incentives to engage in extractive industries?

This research study, and recommendations herein, is based on:

- conducting an extensive literature review of PES in theory and practice
- an assessment of past and present efforts to create a PES on New Britain Island
- a policy review and gap analysis
- 59 days of site visits, workshops and interviews with relevant stakeholders on the Island.

LITERATURE REVIEW

A literature review was provided as a separate deliverable, a brief summary of which is provided in this sub-section. The purpose of the literature review was to provide a base of information on which future PES projects on New Britain Island may be launched. The review provided background information to help prevent past errors made by other entities and to improve upon lessons learned. The research focused on both the theoretical analysis of PES and its practical applications in locations worldwide.

As we learned, there are no completely developed operations of PES on New Britain Island. Instead, there are case studies by NGOs and for-profit companies. Some seek to pay local landowners for environmental protection. Others are looking to create sustainable livelihoods in rural villages. Even without fully operational PES projects, there are many relevant lessons to learn.

While a PES is simple in concept, it becomes complicated in application. Before creating a PES, important questions must be answered including: Who buys and sells the services? How is the government involved? Are the sellers of the ES the rightful owners of the resource? Will the PES scheme result in conservation and improved natural resource management?

The review of PES theory provides the reader with warning flags of key challenges that must be addressed, such as:

- wrong valuations for natural resources can lead to disincentives for conservation
- wrong policies can lead to rewarding polluters for pollution and encouraging more destruction
- successful applications of PES require long-term capital investments, something that rarely crosses the mind of those seeking to implement a PES scheme.

Combined, the two sections of PES – the theory and practice – provide educational materials for capacity-building workshops and a solid foundation to start building locally-appropriate livelihood projects. The literature review provides valuable lessons that will be incorporated into recommendations of this report. The lessons learned include:

- External assistance over a long period of time is needed to move a community from a traditional economy to a more modernised economy. People living at the village level in rural PNG actually have ample capital wealth in terms of natural resources. What makes them poor is the need for cash. The transition from capital wealth to financial wealth is difficult since it requires understanding of the global

economy. NGOs provide this vital link between the village and the outside world. However, since the global economy can be difficult to understand, this assistance is needed over the long term. NGOs (and church-based groups) may be the best available option for this role in PNG since their missions include long-term perspectives.

- Community-based business enterprises have a poor success rate. Establishing for-profit business ventures on a communal basis has been tried and has failed numerous times. Successful livelihood projects will require empowering multiple individual family units and not just one community, village or ward. This is not to say that communal decisions are not necessary – in fact, they are very important. However, these decisions should be reserved for land use planning, building cooperative capital assets and other traditional public realm activities. Businesses, on the other hand, should be operated by the individual or family, but not communally.
- Ecotourism is showing promise from many perspectives:
- The natural and cultural resources that ecotourists want to see are spectacular on New Britain Island. Exotic birds, vibrant marine life, mysterious cultures, and the opportunity to see rare and endangered species in their natural habitat are some of the main reasons PNG is an attractive destination.
- The Government of PNG announced in 2013 that Kokopo town, and New Britain Island in general, should be established as the tourism headquarters for the country.
- Conservation organizations have identified many locations on the Island as High Conservation Valued areas. This labelling attracts visitors from around the world. The UN World Heritage programme is also considering Nakanai Range as a designated World Heritage site, thereby boosting its prominence. Finally, the local landowners fully believe in the power of the land. They portray a sense of pride when speaking about their land and they care deeply about its health.
- The trend in sustainable economic development at the local level is shifting focus from project-based work to more comprehensive, integrated land use planning. Therefore, Land Use Plans (LUPs) are becoming increasingly more important as the focus broadens to integrate multiple natural resources (land, water, biodiversity, air). LUPs help optimise each resource's niche in the local economy. Some areas are ideally suited for certain uses and not others. It is the combination of all uses that will make a community more productive, for example, communities are recognizing that gardening is more appropriate along the flat coastal areas, public services near the community centre, and conservation in the historically undisturbed areas rich with biodiversity. This tactic bodes well with the family-focused approach described above. Each landowner will have his or her own specialization on which to build a business instead of the whole community focusing on one project on one section of land.

Fisheries provide access to food for local communities, PNG © Andrea Egan/ UNDP

3. THE BENEFITS OF PES

Siegfried's Rainforest Frog, PNG © Rainforest Junkys

As PNG starts to embrace PES as a means of forest conservation, the benefits of the programme need to be fully understood. PES has emerged as an alternative approach to nature conservation and restoration that takes advantage of the growing demand for ES through the provision of direct economic incentives.

The underlying principle of PES is based on contractual payments, voluntarily made by people or entities purchasing an ES, to providers of the same service, subject to the condition that the provider maintains pre-defined standards and conditions that result in environmental improvements.

The attraction to creating a PES agreement is that it generates a new infusion of private sector capital (often from international sources) and has the potential of making conservation a profitable and financially sustainable enterprise through the mutual interest of both parties (Pagiola, 2007). It uses existing market forces to make conservation of natural resources more financially attractive than extraction. With the rise of globalization and with international economic systems becoming more integrated through expanding trade agreements and common currencies, free market capitalism is becoming a more globally dominant economic system. The use of market forces functions well within PES schemes since they will often rely on international markets to become successful.

"PES is one of the most effective ways of incorporating private sector capital into conservation efforts. The private sector responds well to incentive-based systems, and PES is based on a voluntary exchange that, when designed correctly, will motivate both parties."

Private sector funding is recognized as the largest untapped resource in international conservation. The United Nations Framework Convention on Climate Change (UNFCCC) Conference of Parties in Warsaw 2013 committed to a renewed effort of including private sector sources in financing conservation.

PES schemes are consistent with this new emphasis. PES advocates also contend that conventional conservation approaches – such as Integrated Conservation and Development (ICD) projects and Sustainable Forest Management – provide too little value for money and that PES can mobilize new, especially private sector, funding (Wunder, 2005).

Advocates for the poor see PES as a means toward poverty alleviation. Poor communities selling ES have a new source of revenue to improve their livelihood without destroying their natural capital. Therefore, PES generates support from other stakeholders outside of conservation realms. The links between tropical forest conservation and poverty alleviation are well documented, therefore, the need to develop cost-effective, replicable and sustainable conservation models remains a top priority for both poverty alleviation and conservation advocates.

In addition, PES schemes are seen as a means to potentially change environmentally harmful behavior and bring benefits to rural livelihoods in developing countries (Tacconi, 2011). Since PES supports multiple benefits, bilateral and international donor organizations have become more interested in supporting these approaches.

SOME CAUTIONS

Although PES schemes present some unique opportunities for conservation, several authors of research studies have identified areas of concern. Kallis et al. (2013) show that the majority of successful PES programmes are implemented in developed countries where 'transaction costs are low, land ownership is clearly defined and protected by law, enforcement agencies are well-funded, and there are credible external monitoring systems.'

A growing number of PES programmes have also been established in developing countries with 'similarly well-defined institutional frameworks' (Clements et al., 2009). Unfortunately, many of these initiatives – such as the

national programmes in Costa Rica and Mexico – have had limited conservation impact. In Costa Rica for example, studies have shown that areas of low deforestation risk were often targeted, with payment allocations 'largely determined by the influence of the forestry sector, which saw in the PES scheme an opportunity to capture public funds.'

In addition, 'large capacity gaps are found for developing reference levels and establishing measurement, reporting and verification systems' in non-Annex 1 countries (Murdiyarso et al., 2012). Wunder (2005) also concludes that PES schemes are likely to be harder to implement in a weak institutional context, particularly countries where 'land ownership and resource tenure are unclear, with land and resources technically still owned and managed by the state.'

Cranford and Mourato (2011) propose a two-stage approach to community conservation that takes into account both the strengths and the weaknesses of PES. Stage One develops a 'social context conducive to conservation' through indirect capacity building inputs that could receive ICD (not PES) funding. Stage Two implements 'a direct market mechanism to reinforce the new conservationist behavior' that could receive PES payments.

Nusa Island Retreat in neighbouring New Ireland Province is a successful tourism venture, PNG © Alice Plate/ UNDP

4. PAYMENT FOR ECOSYSTEM SERVICES DEFINED

Wunder (2005) promotes the following definition of PES that has since become widely accepted in academic literature:

> ***"PES as (a) a voluntary transaction where (b) a well-defined environmental service (ES) or a land use likely to secure that service (c) is being 'bought' by a (minimum one) service buyer (d) from a (minimum one) service provider (e) if and only if the service provider secures service provision (conditionality)."***

It identifies three important components of a PES scheme

1. the provider
2. the ecosystem service
3. the buyer

This report will rely on this definition moving forward since it is rarely disputed in the literature.

One of the most important elements of the definition is conditionality. Some payments may be voluntarily made between buyer and seller but the payments may not be based on the condition of providing an ES. The 'E' stands for either 'environmental' or 'ecosystem'[1] and the 'S' stands for service. An ES is not a material good but an action that is permanent and sustaining. An ES is a non-extractive provision offered by nature and secured in such a way that it maintains its ability to provide this service in perpetuity. In PNG there are examples of payments to landowners in exchange for the rights to extract logs or minerals, however, these are not PES payments because extractive industries are securing environmental goods not services. In short, an ES is something that results in improvement to environmental health, or at least does not degrade the

PES PERFORMANCE VS. PES TARGET

The ES often has multiple purposes. It can be either 'targeted' or 'paid-for' and they are not mutually exclusive. For example, the Government of Costa Rica wanted to reduce deforestation on 270,000 hectares of forest by paying rural landowners to leave trees standing. In this case, the targeted ES was improved biodiversity, carbon sequestration, aesthetic beauty and water quality. The paid-for ES was sustainably harvested agro-forestry businesses and timber production by small landholders (Pagiola, 2008, Fig 4.1).

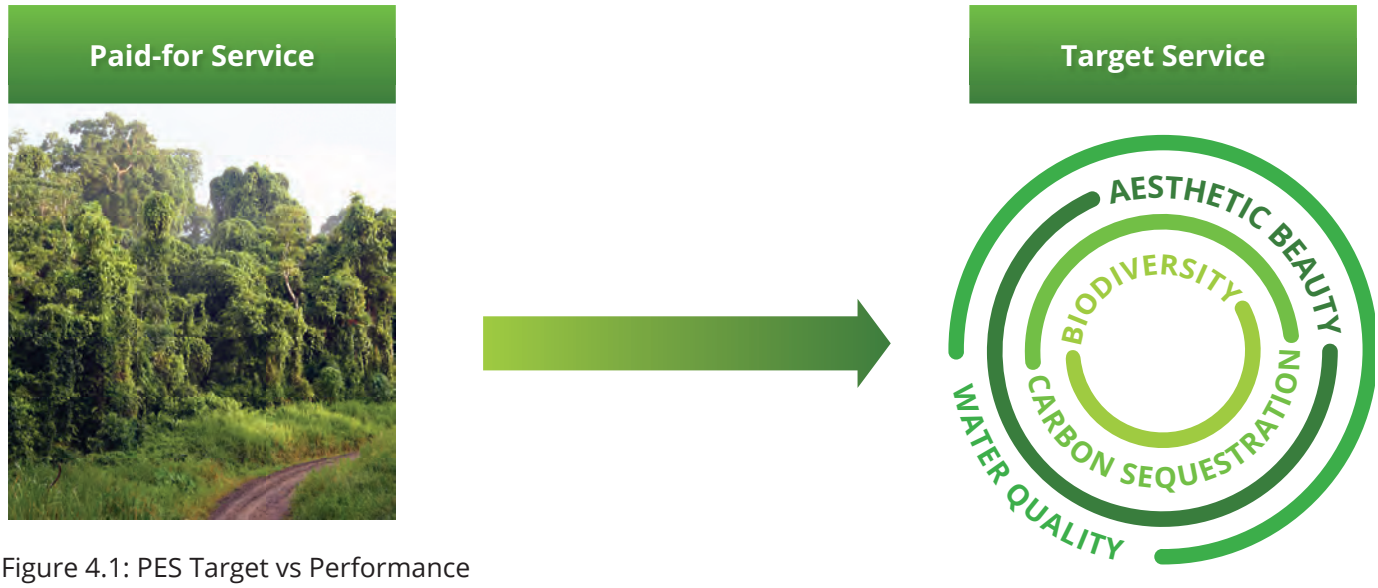


Figure 4.1: PES Target vs Performance

[1]The difference between "environmental" and "ecosystem" is insubstantial for the purposes of PES work; the terms are regarded as synonymous and occasionally used interchangeably.

5. RELATIONSHIP OF PES TO OTHER CONSERVATION TOOLS

While we have a definition of what PES is, we should be reminded of what PES is not. PES should be regarded as one of many conservation tools and techniques in a portfolio of options. It is important to distinguish PES from other conservation options in order to develop the right enabling policies, understand the challenges and learn from past lessons.

PES is not:

- A government regulation. A PES is a voluntary exchange between two willing parties in a free market.
- Funded by unsustainable sources, one-off payments, temporary stop gaps, donations or foreign aid. PES is based on a market exchange and therefore, the value derived in benefits is equal to the value paid. By definition, there would be no need for subsidies under this regime.
- A community development project. While development projects may be funded through PES revenue, a community development project and a PES scheme are two separate and independent endeavours.
- A land acquisition programme. PES does not acquire land and land tenure need not be changed under a PES scheme. In fact, land purchased by government for the purposes of conservation, may potentially eliminate PES exchanges where additionality is required.
- A Sustainable Forest Management Plan, or land use plan. While land use planning may be helpful in establishing a community-based PES scheme, it is not necessary.
- Product certification, such as, Fair Trade coffee or FSC timber.

The relationship between PES and these conservation tools are summarized in the Table 5-1 below.

Table 5.1: Relationship between PES and other Conservation Tools

Conservation Tool	Description	Relationship to PES
Government Policies; Regulations; and Enforcement	Legislation and Agency Rulemaking to enforce environmental protection, i.e.: establishing a national park with continuous monitoring and enforcement. Does not provide economic development.	Can be used to create a market for conservation. i.e.: required carbon offsets. May create "additionality" problems.
Financial Pressure: Taxes; Subsidies; Loans	Using financial markets to put positive pressure on conservation, i.e.: guaranteed price floor for tree nuts creates economic incentives for conservation.	PES-like but buyer is government not voluntary market. Vulnerable to change in policies.
Integrated Conservation and Development (ICD)	Aid for conservation. Rural development projects are implemented in exchange for conservation	Payments as development projects; independent of conservation. Vulnerable to gaming.
Land Acquisition	Land purchased to create protected areas. Buyers can be public, private or NGO entities. Requires creating borders, and exclusivity.	Will eliminate additionality and use of offset credits. Good for creating PES ecotourism projects.
Sustainable Forest Management	Provide technical training for conservation	Can be one required element of a successful PES programme.
Product Certification	Creates product: Fair Trade coffee or FSC timber.	PES vulnerable to world prices.

Mt Tavurvur in Rabaul is an active volcano and tourist attraction, East New Britain, PNG © Nick Turner/ UNDP

6. TYPES OF PAYMENTS

The types of payments in a PES scheme can be grouped into three major categories:

1 compensation payments
2. reward payments
3. market payments.

The designer of the PES scheme must decide which payment approach will be used and this decision plays a significant role in the success or failure of the programme.

COMPENSATION PAYMENTS

Compensation payments are established when landowners agree to limit, or prohibit, access to their land. The payments are limited to the direct value of loss of use, or opportunity cost, imposed on the service supplier as a result of the agreement. In terms of public policy, the payment can be seen as a moral justification and give society rationality for agreeing to use public money to make the payment.

Compensation payments are restricted to the population of those who bear the costs. In other words, those who bear no direct costs are not regarded as deserving of compensation. This perspective can be controversial because secondary and tertiary impacts occur when the primary landowners are not allowed to conduct their normal livelihoods on the newly conserved land.

Those who suffer the loss of use on land may also seek compensation beyond the direct opportunity costs. This is called 'rent seeking' behavior as the landowners look to gain a 'surplus' from the land they own. Without this surplus, the compensation payment would not achieve any poverty alleviation goals since, in theory, the payment is a one-for-one tradeoff. Poverty alleviation is often a complementary objective alongside conservation. So seeking a surplus may be laudable, however, at that point it is no longer a compensation payment.

"Example: Costa Rica's PES forestry program for private landholders provides fixed payment rates which range from roughly $41/ha per year for natural forest regeneration, to a cumulative sum of $816/ha for a ten-year reforestation contract. Landowners agree to stop using their land in exchange for payments from Costa Rica's Ministry of Forestry."

Native orchid, PNG © RukiMedia/ Shutterstock

Policy Considerations: If a government chooses to engage in compensation payments they should be clear on the objectives of the programme. Are their payments for environmental improvement only? Is poverty alleviation a component of the programme? If public funds are being used, what does the public gain from making the payments to individuals? Are the payments actually compensating all those who bear the cost of restricted access? The source of funds and lifespan of the programme are important considerations as well. Is the programme limited in time or in perpetuity? Are the payments, and more importantly, the source of funds, compatible with the timeline of the programme?

REWARD PAYMENTS

Reward payments are made to landowners who reduce a credible threat to their forest by managing their land in a sustainable manner. Payments are made to landowners based on production of harvestable goods. Unlike compensation payments where the landowner agrees to restrict access to the land, a reward payment does not restrict access to land but rather rewards the landowner for actively using the land in an economically and environmentally sustainable manner.

Reward payments have long-term perspectives that require behavioral changes, in contrast to compensation payments where the benefit is immediately felt in the short term by restricting use. Reward payments try to shift the earning potential of the land from unsustainable to sustainable uses. In doing so, the designer of the PES scheme must be prepared to incorporate any number of potential long-term endeavors such as capacity building, technical training, purchasing capital assets and building public infrastructure. Hence, reward payment PES schemes are also referred to as 'asset-building schemes.'

A landowner who substitutes clear cutting for harvesting of tree nuts may need roads for improved access to urban markets, capital items to safely store and transport the goods, and technical education on market demands and harvesting techniques. These are assets that provide long-term positive benefits to landowners. However, promoting long-term positive benefits, ironically, can also be a bane of the PES programme.

Long-term benefits take a long time to mature before they are enjoyed. Technical education can take years to be understood. Public infrastructure can take a decade to be completed. Meanwhile, impoverished rural landowners need money today. Since reward payments are based on production, and production often needs capital assets, the actual economic incentives are not felt for many years. In the meantime, rural landowners are building expectations of future payments that may not be based on the reality of the markets. As a result, asset-building PES schemes have a gap between the time needed to generate benefits and the demand of the landowners. Practitioners of asset-building PES schemes should be prepared to provide temporary payments to bridge this gap.

Asset-building schemes often rely on international markets to generate revenue. There is greater demand in developed countries for certified, sustainable products. This requires a capability to understand and trade with international markets. Rural landowners will rarely have this ability; therefore, a third party technical facilitator will likely be necessary. International markets are sometimes fickle and the facilitator will need to foresee market trends and establish reasonable expectations with landowners.

> ***"Example: Payments to landowners for tree plantations or sustainably harvested forest products. Payments can be cash or in-kind capital to build assets such as processing plants, mills, or storage facilities."***

Policy Considerations: Asset-building schemes are long-term commitments; usually require technical assistance and capacity building, in addition to capital.

Coral life, Pacific Ocean, PNG
© Valerijs Novickis/ Shutterstock

MARKET PAYMENT

Market payments in a PES scheme most closely represent a free-market, voluntary exchange between buyer and seller. Market payments are based on the

rules of a previously established market, for example: carbon offset credits; ecotourism; or real estate. These markets were established and have operated under governmental rules and regulations outside of a proposed PES scheme. A PES scheme merely becomes a new entrant into the market.

The buyers of the ES often have the ability to negotiate with the sellers and settle on a price. This system works well with single buyers and single sellers. A tour operator will negotiate with a coastal village for the rights to conduct diving operations in their waters in exchange for the village maintaining a certain marine environmental standard. The agreed price will fall within the ability of the tourism market in this area to support the payment and still make financial sense to the tour operator. A developer of carbon credits will negotiate with a group of landowners for the rights to sell carbon from their forests in exchange for a guarantee that the trees will remain standing. The price range of the carbon sold is determined by commodity markets and the landowners must maintain the forest according to certain international standards.

Single-buyer can reduce transactions costs and facilitate a quick price negotiation. On the other hand, single-buyer transactions increase risk. The international buyer of environmental services is usually privy to much more private information about the transaction than the seller. This gives the seller a disadvantage in the price negotiation. Due to the complexities of the exchanges, there is a need for a third party intermediary, like in the reward payments described above, to help level the playing field. These parties are also needed to ensure fair distribution of payments within the landowners.

Table 6.1: The Three Major Payment Types in PES

Payment Type	Objective	Strength / Weakness
Market payments e.g., carbon credit schemes through reforestation and afforestation; shade grown coffee; or ecotourism.	Provide competition between buyers (public and private sector) for environmental services.	• PES markets are often remote from developing country's doorsteps leading to limited market options for service providers • PES markets usually require well-defined property rights • PES services that are spatially bound may suit single-buyer markets (e.g., hydroelectric power supplier paying for forest management services provided upstream) • Single-buyer markets can reduce transaction costs but increase risk (e.g., tourism operator paying for ecotourism services) • Area-based schemes with caps for agreed number of land units are most common (e.g., forest-carbon plantations, conservation concessions), followed by product-based schemes (e.g., shade-grown coffee, organic farming) • International PES programmes are in need of 'an institution capable of collecting payments from global beneficiaries' as well as an 'efficient mechanism for disbursing payments in exchange for the provision of ecosystem services'.
Reward payments e.g., asset-building schemes, such as restoring a degraded environment by planting trees.	Provide a fair and equitable price for environmental services (public and private sector buyers).	• Reward payments are usually given to area-based schemes. • The payments target everyone who delivers a service. • Reward payments can raise service provider expectations, since low value and/or non-threatened services are unlikely to attract buyers.
Compensation payments e.g., use-restricting schemes, such as setting a protected area.	Provide compensation for the cost of providing an environmental service (public and private sector buyers).	• Compensation payments are usually given to area-based schemes. Compensation payments are more specific than reward payments, targeting those who bear the service provision cost • Compensation payments can be made for both direct and opportunity costs. However, compensation for direct costs does not alleviate poverty, since they only cover costs incurred • Costa Rica's PES forestry programme for private landholders provides fixed payment rates that 'range from roughly $41/ha per year for natural forest regeneration, to a cumulative sum of $816/ha for a ten-year reforestation (i.e., plantation) contract.'

Examples: Carbon credit schemes through reforestation and afforestation; shade grown coffee; or ecotourism.

Policy Considerations: PES markets are often remote from developing countries; limited market options for service providers; require well-defined property rights.

A summary comparison of the three major payment types is shown in Table 6.1

BENEFIT SHARING AND DISTRIBUTION

Regardless of the type of payment, there must be clear rules for how benefits from the sale of ES will be distributed to the resource owners. Within market payment schemes the seller is often a private individual and therefore 100% of the benefits will go directly to that person. In the situation where the seller (or resource owner) is a village, clan, Local Level Government (LLG), or another group of people, the benefits must be distributed to the entire group and therefore a BSDS should be created and followed.

Benefit sharing is an important element of a PES scheme because the sale of the ecosystem service is a quid pro quo transaction. Payments are based on conditions that specific actions are performed according to an agreement between the two parties.These performance-based payments are designed to incentivize conservation and provide for public goods and services.

If designed correctly, these payments are 'progressive incentives,' meaning that they build upon themselves so they are sustainable, they meet the needs of all stakeholders (international, national and local) and they do not create a dependency on the payment. The incentives must reach all stakeholders of the resource or the project will fail. A BSDS is designed to spread out the benefits to all stakeholders.

Conditions of performance-based payments is that they must be measurable and verifiable. Improvements to the environment are measured against known reference levels or starting points. The payments are also verifiable in terms of meeting social safeguard standards. If payments are not meeting social safeguards, society will reject them. If the poor and disenfranchised groups are excluded, or if the payments are not transparent, or equitable, then there will be no incentive for these groups to participate in the scheme. Benefits must reach the entire community from where the resources come. Several international examples show that the types of benefits vary and the payments themselves can vary in size, type, mode and management. Creating a BSDS policy will help ensure that the PES scheme will not fail due to internal conflicts with resource owners.

"A successful BSDS is created through an extensive stakeholder engagement process that listens to and incorporates the opinions of indigenous peoples, women and disenfranchised populations."

The safeguards agreed at the 2010 UN Climate Change Conference (also known as COP-16, or the Cancun Agreements) require 'respect for the knowledge and rights of indigenous peoples and local communities' as well as 'the full and effective participation of relevant stakeholders' so any method to create a BSDS that does not respect these intentions will be a target for criticism.

Establishing a BSDS must be tied with PNG's newly established Free, Prior and Informed Consent (FPIC) process. While the FPIC process is intended to ensure social safeguards, the act of informing populations of their benefits from forest conservation, and the decision-making procedures on how the benefits will be distributed, are obviously consistent with the principles of FPIC. The Cancun Agreements, combined with other decisions, resulted in a call for partner countries to establish safeguard information systems. Countries are asked to put in place systems to generate and share information on how these safeguards are being addressed and respected. PNG is at the early stages of building a web-based portal to share safeguard information.

Benefit distribution must be performed as if the benefits were a subsystem of Cancun's social safeguards. This will keep the newly created BSDS consistent with the internationally-recognized social safeguards. These safeguards are explicitly established in the Cancun Agreements and ask for:

- transparent and effective national forest governance structures, taking into account national legislation and sovereignty;

- the full and effective participation of relevant stakeholders, in particular, indigenous peoples and local communities;
- actions that are consistent with the conservation of natural forests and biological diversity, ensuring that the actions referred to in paragraph 70 of this decision are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits;
- actions that are supported by adequate and predictable financial and technology support, including support for capacity building;
- them to be implemented in the context of sustainable development consistent with Parties' national sustainable development needs and goals.

As CEPA begins to develop and support more PES schemes, they will need to have a supporting BSDS in place. This report will recommend that CEPA create a BSDS Framework policy to take a leadership role in ensuring international standards and social safeguards are met during the PES development process.

Green tree python, PNG © Hendra Su/ iStock

7. MAJOR CATEGORIES OF ENVIRONMENTAL SERVICES SOLD IN A PES SCHEME

Another major component of a PES scheme is the service that the environment is intended to provide. In economic terms, ES are referred to as non-exclusive, non-extractive public goods. This means that the services the environment provides cannot be owned by private interests and exclude others from enjoying the benefits. Once carbon is sequestered by trees, or water is filtered, or biodiversity is protected, all of the public benefits.

There are a wide variety of benefits derived from pubic goods, including aesthetic beauty, clean water and air, healthy ecosystems and recreation activities. A healthy environment may also support religious beliefs, cultural practices and improve mental health. Only some of these benefits can be monetized for financial gain, for example, ecotourism activities, or the selling of spring water. Only those benefits that are bought and sold in the market place are referred to as market values. Randall and Stoll (1983) suggest that market values are only a small portion of the total economic value of an environmental service.

Since only a fraction of the ES is measured in the market place many of the values of an ecosystem are not measured. If one tries to determine the value of an ES through market exchanges, then one will concentrate on a micro-choice in a field of macro-determinates. In other words,

> ***"The values of natural resources held by society are determined through a complex web of interdependent beliefs, principles, and standards (Crane, 1992)."***

When creating a PES system, a public good (ES) is actually being sold to a private entity. However, only a portion of the total value is being sold and although the exchange may create conditions for limited use, it does not result in exclusive rights to the purchaser. The benefits of the ES are still enjoyed by the public.

There are three major categories of ES sold in a PES scheme:

1. biodiversity and carbon offset credit schemes
2. watershed protection
3. aesthetic beauty and tourism.

As one can see, these are not mutually exclusive services. The provision of one service may be bundled with others.

See Table 7.1 for a summary description of ES types (See table 7.1 on page 20).

Freshly planted mangrove seedling, PNG © Nick Turner/ UNDP

BIODIVERSITY AND CARBON OFFSET CREDITS

Offset credits are mechanisms that regulators use to minimize the negative impacts of development. Environmental regulations established by government agencies, often in western countries, require polluters of the environment to 'offset' their pollution by conserving lands of equal or greater environmental value in another, often developing country, location. For example, if a coal burning plant emits 10 million metric tonnes (MMT) of carbon into the air annually, then regulators in that country may require the company to purchase 10MMT of carbon sequestration services from forest landowners to offset their pollution.

The market demand for carbon sequestration services is created by the regulations imposed on the industry. The exchange is regulated by third party verifiers, which the regulators use to approve the company's permit to operate. The offset can be for either carbon, as in the case of air polluters, or biodiversity, as in the case of land degradation such as logging.

The services provided by rainforests are complex, numerous, and interdependent. This is the nature of biodiversity and the reason most services are intangible and difficult to package for sale. Despite the challenges of commercializing nature, governments, international NGOs and private companies are paying for forest

conservation. Their motivations are different. Some are forced to purchase through regulations, others are responding to growing public sentiment, others are aware that the loss of biodiversity is a loss of national wealth. As the demand for offset credits starts to grow, landowners, community corporations and local governments are progressively becoming more savvy and active sellers of ES.

Biodiversity Trust Funds and Offset Credit Accounts are becoming preferred tools to facilitate exchanges. Other sources of funding include pooled investment funds, earmarked taxes, surcharges on retail sales and even voluntary donations tacked onto the sales of standardized products. In its own way, each mechanism seeks to cut market risks, overcome threshold effects and minimize transaction costs. Offset credit markets are still fledging. The demand for ES is wavering mainly due to its regulatory or voluntary sources, and the transaction costs associated with setting up and implementing trades is significant. As one might expect, these constraints are typically greater in poorer communities over developed countries.

Therefore, as these trust accounts are established and the market demand is developed, the designers of a PES programme should employ caution to ensure the programme is monitored well. They should ensure that populations are actually experiencing an increase in income, the community's assets are diversifying, and the project is truly creating a sustainable flow of funds. Some countries have opted to use international intermediaries to ensure the project operates smoothly. Costa Rica secures reforestation funds for biodiversity conservation from the GEF. In India, a national government intermediary for agrobiodiversity conservation payments was engaged to ensure the flow of direct payments and to monitor the programme.

LAND MANAGEMENT/WATERSHED PROTECTION SCHEMES

Watershed protection is an ES that largely benefits local populations. Unlike offset credits that are demanded by international entities, watershed protection is sought by domestic companies, national governments and local NGOs. A watershed is the area of land where all of the water that is under it, or drains off of it, goes to the same place. Typically, the outer edge of a watershed are mountain peaks and at the centre is a river.

In PNG many tribal groups and languages are also bounded by watersheds. The boundaries of a watershed are often convenient borders for land management and land use planning.

The protection of critical watersheds is traditionally the role of government, however, private companies, individual landholders, NGOs and communities are taking interest in providing watershed protection services. The buyers of these ES are hydroelectric companies, water utilities, irrigation companies, agricultural businesses and tourism operators. The protection may also provide the seller with additional benefits such as the sale of offset credits. In PNG the supply of watershed is abundant and the demand for their protection is low. If one watershed is depredated, another can be used.

Panoramic view of Rabaul Bay and Town © Alice Plate/ UNDP

Only those watersheds that are not substitutable present an economic justification for protection. An example would be a river where a hydroelectric plant is built. The electric company would have an economic interest in ensuring that only clean water flows through their turbines to prevent damage. The company might then negotiate with landowners to prevent forest degradation. However, in PNG the protection of watersheds is the role of government and the company will first seek this free option before it moves to more expensive private agreements. Therefore, demand is low in PNG for watershed protection.

Several issues arise when creating a PES scheme by selling watershed protection services. Watershed protection involves agreements with numerous landowners. When the protection is established, the benefits are non-exclusive. In other words, once the watershed is protected the benefits of this protection are enjoyed by all and is at risk to free riders. The hydroelectric company might pay the landowners to stop logging, but a tourism

operator can conduct birdwatching tours through pristine forests without having to pay for its protection. Whether or not free riders are a problem depends on the resource in question, land management techniques and the number of potential riders. Given the multiple agreements and the management issues involved, it is wise to use an intermediary to establish the agreement.

In their review of watershed protection schemes in Tanzania, Fisher et al. (2009) found:

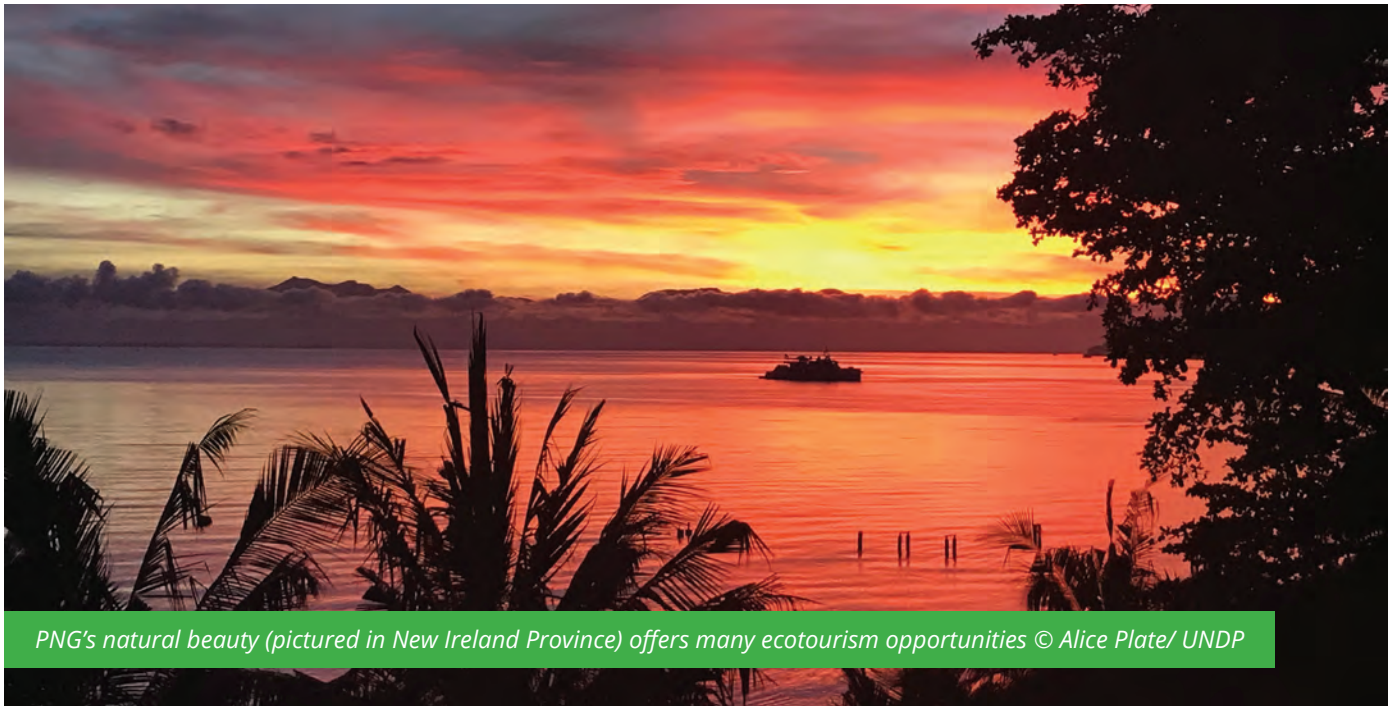
- "The size of the resource and knowledge of its boundary are both characteristics that can enable better management. Although scale is relative, typically the smaller the resource the easier it is to carry out management principles.
- Both the level to which ES buyers 'trust' the providers to deliver a service, and the level to which the providers 'trust' the PES scheme and its initiators have been shown to affect performance, implementation and legitimacy of PES.
- When the resource is in close proximity to most of the stakeholder groups, better management is enabled. The level of dependence on the resource can affect its management — the higher the level of dependence the more incentive to manage it properly."

AESTHETIC BEAUTY/RECREATION/TOURISM

Aesthetic beauty and the tourism that is derived from such beauty has been a marketable resource for centuries. In fact, there is evidence of organized leisure travel, travel infrastructure and sightseeing tours in ancient Greece and Rome. PNG is an exceptional destination for many international travellers. It offers a large supply of amazing beauty, natural wonders, vibrant cultures, leisure travel and adventure recreation. PNG offers some of the rarest travel experiences on earth.

Tour agencies would naturally resist paying for landscape beauty if they were not required to pay for it. They have traditionally used access to public lands and landscape beauty as free inputs to their business. As long as this occurs, opportunities for communities to be rewarded for the aesthetic beauty services lie in establishing themselves as marketable enterprises. However, protected area managers have rarely sought to capture consumers' willingness to pay. This situation is unsustainable, and in many locations supplies are threatened.

Efforts to establish a market for landscape beauty are long overdue. However, this requires specific skills to administer and manage complex international businesses. Intermediary organizations are needed to meet the demand for support in searching for, negotiating, and implementing deals. In PNG, opportunities exist to create more sophisticated tourism operations on protected areas and to capture the consumer's maximum willingness to pay through concession-based tourism, auctions and carefully designed entrance fees.



PNG's natural beauty (pictured in New Ireland Province) offers many ecotourism opportunities © Alice Plate/ UNDP

Table 7.1: Environmental Services

Environmental Service Type	Beneficiary Classification	Strength / Weakness and Lessons Learned
Biodiversity and Climate Protection e.g., conservation donors paying local people for setting aside protected areas.	Provides a public good: • Service benefits everyone (non-excludable). • Quality of service is not affected by the number of users (non-rival). • Service benefits are not spatially bound. Public goods are more suited to single-buyer markets (monopsony), which reduce transaction costs.	• Monetizing the value of biodiversity is difficult since most are intangible. • Growing public awareness of biodiversity benefits and threats of loss are the main drivers for public, private and non-profit sectors to purchase biodiversity conservation. • Most successful examples have used intermediaries to facilitate the exchange (e.g., Costa Rica secures reforestation funds for biodiversity conservation from GEF). • The use of trust funds and pooled investments are key elements of successful cases. • Product certifications such as Fair Trade or FSC are used as vehicles to raise revenue. • Payments for biodiversity credits still occur at a trial level. No significant markets have emerged and transaction costs associated with setting up and implementing trades are serious challenges for poor communities in developing countries.
Watershed Protection e.g., downstream water users paying upstream farmers for adopting land uses that limit deforestation, soil erosion, flooding risks, etc.	Provides a market good: • Service benefits are spatially bound. Market goods are generally more suited to multiple-buyer markets. However, since single-buyer markets can reduce transactions costs, many watershed schemes supply a single-buyer (e.g., a hydroelectric power provider).	• The government has traditionally protected watersheds. • Buyers of ES will resist and question why the government no longer provides this services. • Nonetheless, hydroelectric companies and environmental NGOs are increasingly growing impatient and finding value in purchasing watershed protection. • Benefits are primarily a non-exclusive, non-rival public good which is subject to free rider effects. • The use of intermediaries is essential given the large number of stakeholders. • The size of the watershed is directly proportional to the difficulty in managing the service over the long term.
Landscape Beauty e.g., tourism businesses and guide services paying a local community not to hunt in a forest being used for tourists' wildlife viewing	Provides a toll or club good: Toll or club goods are more suited to one-off payments, such as entrance fees. Service benefits are spatially bound.	• Tour operators typically use aesthetics, it is a free input to their business. • PA managers should learn to tap consumer's willingness to pay for aesthetic beauty. • Requires the creation of new institutional arrangements and the involvement of new stakeholders. • Requires payment from tour operators, will generate new demand from communities and private landowners seeking to compete with publicly owned protected areas. • At the same time, intermediary organisations are responding to the demand for support in searching for, negotiating, and implementing deals. • In high demand areas, there are opportunities for developing sophisticated payment mechanisms such as auctions or clearing-house mechanisms to gain the highest return on investment. • PA managers must learn new skills to establish their areas as marketable enterprises, which requires capacity building.
Bundled Services e.g.: ecotourism services being offered in a Protected Area that is also conserved by private institutions for biodiversity research	Reduce transaction and implementation costs.	• Combining services does not allow them to be sub-divided and sold individually, however, they offer a useful control on transaction costs. • Providing a range of ES options is more sophisticated and allows sellers to subdivide packages of services for sale to different purchasers. The result is likely to be a more efficient allocation of resources and higher returns to sellers. Yet, given the technical, informational and institutional requirements successfully marketing a suite of services to separate buyers is a remote possibility.

8. POLICY IMPLICATIONS OF PES

This section discusses six major policy considerations when establishing a PES programme. These issues are defined and discussed here to heighten the awareness of policy makers to the complexities of PES.

POLICY IMPLICATION ONE: THE TRUE ECONOMIC VALUE OF NATURAL RESOURCES

The entire premise of a PES scheme is grounded on the fact that an exchange of payment for service will take place. The amount of the payment must reflect the value of the service.

Perhaps due to the existence of carbon markets or attempts at economic valuation of biodiversity and ES, it is believed that entities who benefit from a service can and should pay the equivalent value of that service. This reasoning presents significant challenges that must be resolved before a PES scheme can be implemented.

Figure 8.1: Total economic value of natural resources

First, estimating the economic value of ES is often difficult, if not impossible. A global service such as carbon storage in forest ecosystems has never been evaluated, a situation that is unlikely to change. The value of a service depends on the number of beneficiaries taken into account, but the beneficiaries of ES are generally more dispersed and therefore less easily identified or mobilized than what a theoretical valuation may suggest. There are several layers of a resource valuation that may not be fully considered. This is especially true with option, existence and bequest values, which are rarely valued but often are the most valuable non-market components of a natural resource (Figure 8.1).

Second, the real contribution of biodiversity or other ecological services is often subject to the combination of impact of these services. The value of a highly memorable big game hunting experience may be credited more to the existence of small mammals, who rely on indigenous vegetation, which depends on an unknown species of insect for their germination. The value of one ES sold is dependent on the health of the interconnected ecosystems within which it lives. So in terms of public policy, what is being sold?

The difficulty in valuing an ecosystem leads many policymakers to rely on opportunity cost valuations to simplify the challenge. Opportunity cost is the cost of the next best option. It reflects the cost of the users to stop degrading or destroying the resource, or to manage it differently, thereby resulting in environmental improvements. This approach shifts from demand side management (obtaining services) to the supply side (sacrifice of revenue). The attraction to this policy perspective is the simplification of the calculation. However, several methodological problems exist with this approach including – the opportunity cost is an economic concept which may be simple to understand but is difficult to calculate.

The chosen calculation methods can greatly influence the results including the period of time, discounting rate, social or private costs, business mobility, capital costs and reinvestment opportunities in other areas, calculation perimeter and inclusion of downstream processing (Pirard, 2008). The perception of the opportunity costs by those who are sacrificing the loss is usually higher than those who are conducting the valuation.

In practice, opportunity cost valuations are very uncertain because stakeholders do not understand or believe in them. As a result, the transfer amount at stake in a PES is essentially the result of a negotiation and not an objective valuation. This means that disparities of power between buyer and sellers enters into the negotiation. Also critical is information, of which local landowners

usually have very little, resulting in a skewed economic evaluation. So what is originally thought to be simple and objective turns out to be a transaction largely driven by power and information.

POLICY IMPLICATION TWO: THE BUYER AND SELLERS

Local Buyers

Altruistic Buyers

Global Buyers

The types of buyers and sellers of ES will vary depending on their demand, supply, price tolerance, regulatory environment and many other variables. The pairing of buyers and sellers will be unique and site specific and the right matching will dictate the success of the programme. The range of interventions to create a successful programme will be based on site-specific variables. One variable that has large implications on policy is the size of the project. ES can be separated into two general sizes: local services vs. global services. Local services are also private exchanges while global services must be considered as public. These two major categories of ES have unique characteristics that require policy considerations.

Buyers

Accordingly, the size of the project will dictate the nature of the buyer. Payments may originate from three different types of buyers:

- local direct beneficiaries of the service (PES private deals between local landowners and private companies exchanging directly);
- public entities serving as representatives of groups of beneficiaries (PES public programs sponsored by subsidizing NGO's or aid organizations); or
- a global market (PES tied to the international carbon markets).

Where a service is of local or private utility, the buyer is limited, identifiable, and aims to maintain the benefit that results from the service. Assuming that the provider shares these characteristics, the two contracting parties may conduct negotiations to reach an agreement on the condition that in principle, the buyer has the financial means to offer payments that are at least equal to the opportunity costs of the provider. The intervention of the public authorities is then relevant only to enforce laws or to provide an institutional framework.

For global public goods such as climate, the entire world can be considered a buyer. Therefore, achieving an agreement on price cannot be immediately accomplished through negotiations between the two contracting parties. For this type of public good the value of the ES is difficult to estimate which leads to alternative forms of negotiation.

Sellers

The sellers of the ES have distinguishing characteristics that will change based on the nature of the service, the legitimacy of the PES programme, supporting policies and enforcement, and the sellers demand for cash. Therefore, the calculation of the payment amount will be settled with respect to these variables and creating unique seller categories should be subject to a detailed policy analysis.

Take for example three different seller groups: a village population in an isolated area; a population composed

Rural Landowners

Government Agencies

Private Corporations

of migrants, and; a private company in possession of an exploitation license. In these three situations the validity of the payments cannot be the same since the overarching rights of these populations, and corresponding regulations, will vary. In addition, the difficult question of land tenure rights will surface and influence the dialogue. One must remember that the opportunity costs between these groups directly correspond to the production of goods for self-sufficiency, to the generation of additional income, or to the pursuit of profits from the exploitation of a public resource.

In terms of public policy, the question of the effectiveness of the PES programme is raised in all three cases. Will landowners generally accept that compensation is paid when they have little or no alternatives? Is it legitimate for private corporations, some foreign owned, to secure the rights to land and then sell the conservation values?

Keeping in mind at all times that effective payments are those that result in an incentive to conserve natural resources, PES policies must be focused on the long-term goals and not the payment themselves. Consequently, PES payments are usually limited by the size of sites and by the opportunity costs of relatively poor populations in rural areas.

The calculation method for the compensation amount is the core of the negotiation. The production of subsistence goods does not pass through traditional commerce. A valuation of subsistence food using the

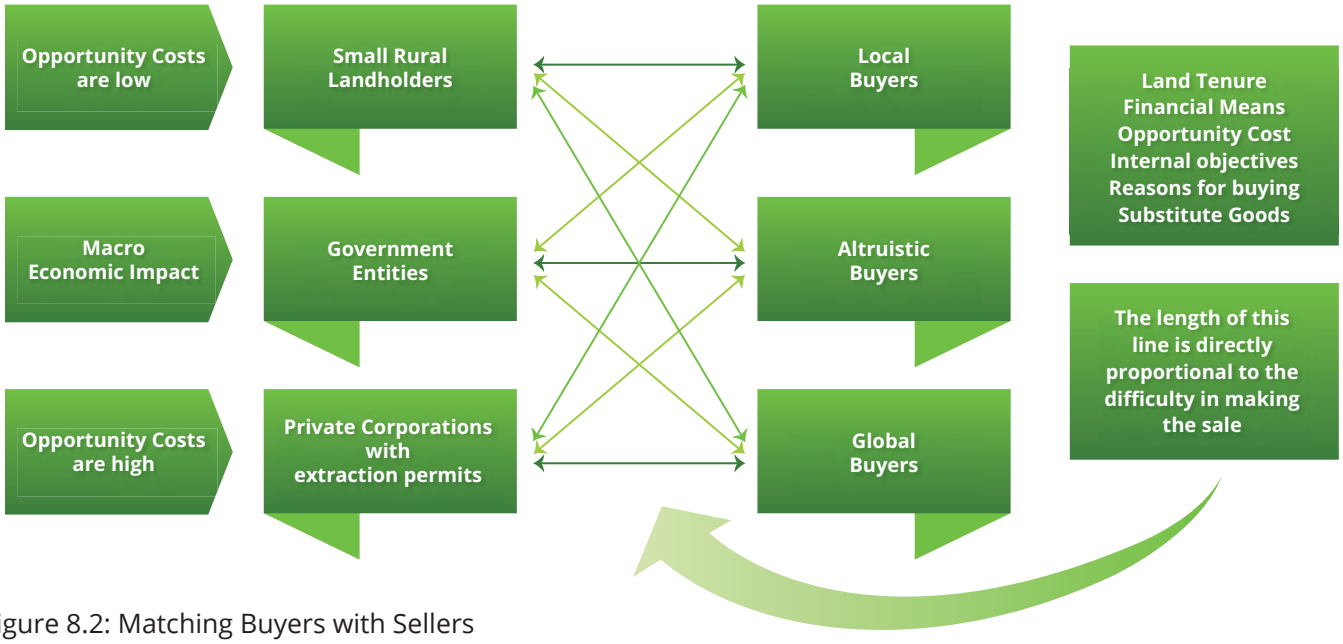


Figure 8.2: Matching Buyers with Sellers

conventional methods for calculating opportunity costs will yield very low values and result in PES payments that are too low to be effective. Therefore, national PES policies must intervene to consider the possibility of accounting for the cost of supplying substitute consumer goods, the valuation of unpaid work, and the weakness of capital costs due to the possible absence of economic alternatives.

For intermediate agencies, such as international NGOs representing rural poor, the capacity to invest in other places or sectors may exist, and the appropriate compensation would take into consideration this range of options. For private companies that have benefited from the granting of an exploitation license for a public resource, a classic calculation of opportunity costs may be equivalent to the payment of a rent that is actually only related to the willingness of the public authority that granted the license.

The nature of the buyers and sellers will have a large impact on the valuation of the resource and therefore whether or not a payment for ES will occur. Naturally, the matching of buyers to sellers must take place for a sale to occur. Figure 8.2 shows some of the policy considerations and trade perspectives of each group. From the perspective of rural landowners, their opportunity costs are generally low since they live on the land and have little other opportunities to forego. So they generally have little to lose with any type of sale and are therefore willing to sell for low values. If they negotiate with local buyers (straight across on the diagram) they probably communicate in the same language, within the same cultural norms, and each party's sources of information are probably verifiable and accurate. In other words, the playing field is fairly level between the two parties.

Contrast that with the same rural landowner trying to sell carbon credits to an international corporation. To sell carbon credits, one needs a high level of education and a solid understanding of the international carbon market. The corporation has ample resources to establish its trading position. It knows the price of carbon, third party verifiers and the carbon exchange platforms. The rural landowner knows almost nothing about the carbon market. In addition, there are high transaction costs and a long lead time needed to make a sale. The longer the distance between buyer and seller, the more difficult it will be to make the trade. It also increases the necessity of neutral third-party intermediaries to facilitate the negotiations and sale.

POLICY IMPLICATION THREE: TIME: LONG TERM VS. SHORT TERM

The allure of PES is rooted in its simplicity. A landowner can receive economic incentives, in the form of cash or in-kind payments, on the condition that they perform certain environmental improvements, or at least, cease and prevent further environmental destruction on their property. While the concept may be simple on paper, the reality is more complex. One element that creates complexity is time. The ultimate objective of PES is not

Figure 8.3: Long Term vs. Short Term Payments

to pay landowners, but to improve the environment, therefore a temporal disconnect grows between the PES instrument (payment) and the PES deliverable (environmental improvement) upon which the success of the PES programme is measured.

The payment instrument is intended to obtain immediate results, which meets the landowners' needs. However, the environment operates on a much longer time scale. As long as periodic payments are made they continue to remove an immediate threat to the environment, however little attention is paid to the underlying causes of the destruction. In fact, the payments may even postpone to another day the difficult political discussions on the root causes of environmental degradation.

At the time the contract is made, environmental conditions are measured and an agreement is made between buyer and seller that environmental degradation will not get worse from this baseline condition. The PES payment therefore becomes an instrument to delay any additional environmental degradation, but in theory does not actually remove the possibility of its occurrence. In other words, if payments are stopped the landowners are not contractually obligated to continue environmental protection. Payments to private landowners are short term and temporary solutions. Payments provide immediate protection but do not make changes to the cause of the problem in the first place. Unless the payment is made to make structural changes in environmental management, which generally requires large capital investments, the PES programme will always be a short-term approach.

Long term sustainable actions to environmental management require structural changes in policy, regulations, enforcement, infrastructure, human resources capacity, public facilities and government services. They may manifest as a WMA where provincial and national government adopted enforceable regulations, rangers patrol the area, landowners are allowed sustainable harvest of resources and are assisted by experts to market these resources, where the harvested products are stored in newly constructed public storage facilities and are transported to market on public roads. These-long term corrective actions require capital investments, which for the most part are public goods. However, PES payments are directed to private landowners. Therefore a gap, caused by time, grows between private short-term payments and public long-term solutions.

This situation can be regarded positively or negatively: on the one hand, it may be seen as a means to retain flexibility over time, allowing more satisfactory solutions to be found; on the other hand, it can be seen as an incomplete solution to the underlying problem. Neither the market nor government can ensure financial

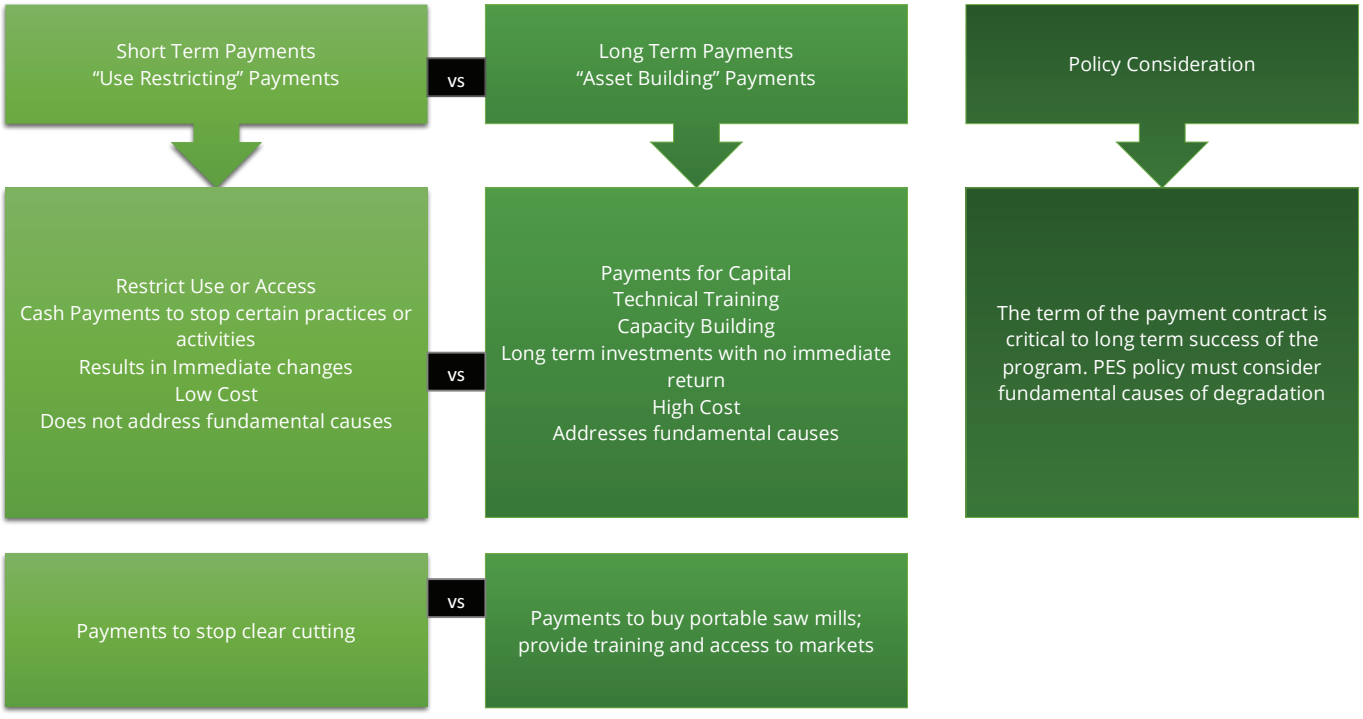


Figure 8.4: Use Restricting vs. Asset Building

sustainability of payments over the long term, but this is true in any society. The point here is that when government creates a PES policy is must be focused on the root causes of the degradations and be aware of the role PES will play in the solution.

Restricting Use vs. Building Assets

When creating a PES scheme, a distinction should be made between providers who are receiving money simply to stop unsustainable extraction of natural resources and those who receive payments for investing in alternative activities that foster long-term ecosystem improvements. These two temporal distinctions of PES are referred to as use-restricting and asset-building respectively .

The attraction of use-restricting PES lies in its simplicity and lower short-term costs compared to asset-building schemes. It is easier to give cash and monitor the cessation of logging in a tropical forest than to provide training, saw mills and road improvements for setting up tree nurseries or sustainable, family-owned forestry businesses. However, over the long term, use-restricting PES schemes ignore basic demand-side pressures. The delivery of ES by the providers may be effective at project level, however the demand for agricultural products, reliable electricity, construction materials and minerals must still be supplied.

Asset-building PES schemes have a higher probability of decreasing dependency on compensation and increasing self-reliance. The benefits of asset-building schemes over the long term are clear. However, in the short run, these schemes are more expensive as payments cover investment, construction and transaction costs, while meanwhile the landowners grow impatient with the approach . PES contracts that specify capital investments by the provider are more complex to monitor than deals that simply give cash to landowners for immediate results.

"The lesson learned here is that effective PES schemes are more costly, complex, and require more patience from the landowners than short term approaches."

Long-term approaches may need more on-the-ground presence from government or their intermediaries, which may come in the form of capacity building and training exercises, environmental education programmes and temporary employment programmes. Long-term approaches need something to bridge the time gap and allow the structural changes to take root and mature.

POLICY IMPLICATION FOUR: SCALE

PES schemes are designed to address specific environmental issues at a specific location. Therefore, scaling up one PES scheme into a national programme may or may not be successful. Take for example three different WMA's on New Britain Island, Pokili, Tavolo and Kavakuna. Each of these WMAs has a unique natural resource, land tenure arrangement, threats to degradation and political/economic pressures that require certain management practices. The management techniques used to conserve megapode habitat one hour outside of a large city accessible by road, will be different than the techniques used to conserve caves and the surrounding habitat accessible only through three days of boat trips and walking.

PES programmes that promote the extension of one case study to a national policy of PES through mere replication of the original concept must be regarded with caution. The belief that the proliferation of a PES scheme is a solution to the current problem of massive environmental degradation carries the risk of deflecting attention away from the political consequences that create unsustainable development paths.

This is especially true with use-restricting PES. National replication of a use-restricting PES scheme can have unintended and detrimental consequences to the national economy. How can the loss of productivity in an impoverished country be justified and what are the macro-economic repercussions of these scaled-up activities? Finally, national replication of a site-specific PES scheme will require proportionally larger amounts of payments, which typically do not have the same scalability.

POLICY IMPLICATION FIVE: LEGAL ISSUES

Issues surrounding the legality of PES begin to surface as PES becomes more prevalent around the globe. Some of these legal dilemmas are presented here to

enlighten policy makers as they consider crafting a PES programme for PNG.

First, developing countries are often working within highly dynamic political environments. Some are, at best, undergoing reconstruction and at worst, are in decline, with decentralized levels of administration that are not usually in a strong position to provide basic public services. In this context some PES programmes, usually the private, short-term agreements, can be used as a way for stakeholders to escape the control of public authorities or even buy their cooperation, as they become willing participants in the exchange.

PES may also come into direct conflict with certain internationally-recognized principles of environmental management. Most important to PES is the 'polluter pays' principle which, if not universal, has been promoted by the OECD since 1972, is an element of the Single European Act of 1986, and is commonly recognized in many developed countries. According to this fundamental principle of environmental policy, it is the buyer of the resource and not the seller of the ES that should bear the financial negative externalities . A use-restricting PES scheme may result in the seller bearing some negative externality (restricted access) unless agreeable compensation is made. Asset building schemes also have an element of risk that the land owner is negatively affected by the final agreement. In all cases, care should be taken to ensure this doesn't occur.

Another legal dilemma is that PES may have an ambiguous relationship with the law. In certain cases, which are sufficiently documented in the literature, providers are compensated for abandoning illegal practices. Indeed, in some situations it is unrealistic to consider mitigating the threat of environmental degradation without agreeing to negotiate with users that benefit from their de facto and illegal control of the resource. But where are the limits of pragmatism? At what point are illegal practices encouraged by offering payments to cease them? Is this creating a dangerous precedent?

Megapode eggs from mound building birds provide an income to locals, West New Britain, PNG © Damian Kean/ UNDP

POLICY IMPLICATION SIX: EFFICIENCY

Efficiency is achieving the greatest amount of output for the least costly amount of inputs. Efficiency is generally regarded by international practitioners as a laudable principle to uphold. In terms of PES, efficiency is greatest if ES are preserved in the long term, with the lowest possible usage of financial resources.

In this context it is clear that first focusing on major industrial stakeholders, whose decisions and practices have large negative impacts on sizeable areas of ES, would be efficient. This is most notable in transaction costs. The more stakeholders there are, the higher the costs of negotiating and implementing an agreement. Specifically, it is more efficient to negotiate with one large industrial polluter who controls hundreds of thousands of hectares of land than with thousands of small owners, whose titles are often informal and likely to be challenged by the State.

Following this logic, but in the absence of one large landowner, the emergence of intermediary stakeholders to represent numerous sellers may be seen as an efficient means to achieve the optimum while reducing transaction costs. Intermediaries, theoretically, can decrease the number of stakeholders involved. However, there are several failures in this approach. The intermediary will need to negotiate contracts with individual landowners nonetheless. In PNG, the issue of multiple contracts will be compounded not decreased because, according to customary law, the intermediary must also negotiate with all those non-owners who still have entitlements to the site. This is generally avoided when negotiating directly with multiple landowners. Past experience also shows that the intermediary is likely to negotiate directly with the public authority in a way that lacks transparency and will seek to generate a profit margin that will result in an increase in costs and leakage of capital outside the developing country . These issues represent a real risk for the PES programme that must be addressed in national PES policy.

Achieving efficiency in PES becomes more challenging as the market becomes more global. As markets increase, the polluter pays principle also becomes more difficult to achieve. This occurs because global markets generate multiple actors seeking opportunities. The global carbon markets are experiencing a surge of new activities in financial and environmental sectors. The target of transferring the cost of pollution on to its beneficiaries becomes blurred. These new environmental stakeholders are active mainly in the trading of global, non-local services. It is difficult to cite the polluter pays principle for negative environmental externalities that are distant and diffuse, unless one considers the State itself to become an intermediary between the representative global organizations and the polluter. This has significant policy implications in PNG, a state with little or no institutional capacity to manage global markets of unfamiliar commodities.

Pari village residents near Port Moresby at a rehabilitated mangrove project © Nick Turner/ UNDP

9. RELEVANT POLICIES OF PAPUA NEW GUINEA

PES AND LAND OWNERSHIP

This section discusses the relevant policies and laws in PNG that may support the establishment of PES programmes or that have been used in the past to support PES-like relationships with landowners. First is a general discussion of PES and land ownership. Policies regarding PES will need to incorporate how rights to land ownership are created in this country. The Constitution makes no specific reference to ownership of land or forest resources. Ownership is derived through a combination of Organic laws, Customary Law and the Underlying Law Act of 2000. Ownership rights of forest resources stem from these same laws.

A large body of case law and common law further solidify the rights and definitions of customary landowners. They effectively say that 'customary land tenure is corporate in nature. That is, ownership of customary land is vested in a community in which countless members are dead, living and yet unborn. Of direct relevance to PES is the consequence that this places restrictions on dealings in customary land, which may affect future members of the community, whose rights cannot be taken away or fettered.'

The customs that define customary law differ from clan to clan and must be established by reference to the custom itself. So long as the custom does not violate basic human rights, cause egregious harm or capital crime, or deface the norms of humanity then the custom shall remain law. Customary Law is defined to mean:

"the customs and usages of the indigenous inhabitants of the country existing in relation to the matter in question at the time when and the place in relation to which the matter arises, regardless of whether or not the custom or usage has existed from time immemorial."

Common law defines land ownership as all the resources from below the earth up to the heavens, subject to regulatory restrictions. The Mining Act imposes regulatory restrictions and prevents landowners from gaining the right of minerals in the ground. There is no similar restriction on the right of forest resources. Therefore, moving forward on PES policies in PNG, Customary Law will prevail on 97% of the forest resources. Hence, the practitioners of any PES programme must understand that the distribution of benefits and identification of beneficiaries will differ across the country with equal legal weight. Local customs will legally establish how beneficiaries are identified in each area, from where the values of these resources are derived.

NATIONAL CONSTITUTION

Equitable and sustainable use of the country's natural resources is well established in the National Constitution of PNG. Goal 2 of the Constitution states:

> ***"We declare our second goal to be for all citizens to have an equal opportunity to participate in, and benefit from, the development of our country."***

Goal 2 not only calls for transparency in governmental affairs but extends this principle to encourage full participation of all members of society in decision-making processes.

When it is read in concert with Goal 4, an unequivocal impression develops that the nation's wealth is to be distributed equitably for all Papua New Guineans. Goal 4 states, 'We declare our fourth goal to be for Papua New Guinea's natural resources and environment to be conserved and used for the collective benefits of us all, and be replenished for the benefit of future generations.' Goal 4 is unambiguous in its call for sustainable development: *"WE ACCORDINGLY CALL FOR: wise use to be made of our natural resources and the environment in and on the land or seabed, in the sea, under the land, and in the air, in the interests of our development and in trust for future generations; and (2) the conservation and replenishment, for the benefit of ourselves and posterity, of the environment and its sacred, scenic, and historical qualities..."*

Two central tenants of sustainable development, namely, intergenerational equity and the fair and equitable sharing of benefits, are solidified in the nation's constitution. Taken together, these two constitutional goals can be interpreted as a legal mandate to equitably share benefits derived from natural resources and that the procedures on how and what benefits shall be distributed, and to whom, shall be decided through extensive participation of stakeholders. A properly designed PES scheme must distribute benefits of the programme correctly. *"citizen participation in development and fair and equitable sharing of benefits from development are constitutional rights which can be enforced in a court of law."*

THE LAND ACT OF 1996

Section 132 provides that customary land is a form of collective land title vested communally in a clan or extended family and is governed by customary law. Customary land is unregistered, without surveyed boundaries. There are processes of acquisition under the Land Act 1996 which provides ways of acquiring customary land from traditional owners. These include leaseback systems whereby customary land is converted to a state lease for the purpose of agriculture or business. The Act allows customary land to be 'released' for development in a few specific situations, such as use of a Special Agricultural Business Lease (SABL), conversion to Registered Clan Land (see below), or conversion to freehold title under the Land (Tenure Conversion) Act.

A 2013 Commission of Inquiry into SABLs was highly critical of the administrative process used to grant them, and the PNG National Executive Council recently directed that the provisions of the Land Act 1996 relating to SABLs be repealed to prevent any more SABL dealings (12 June 2014, Decision No. 184/2014). This would suggest that SABLs are not a mechanism that could be used for biodiversity offsets or REDD+, etc.

THE ORGANIC LAW ON PROVINCIAL GOVERNMENTS AND LOCAL-LEVEL GOVERNMENTS OF 1995

An Organic Law is a Constitutional Law and like the Constitution itself, is supreme law in PNG that shall supersede any subsequent, conflicting laws. The Organic Law has several sections that support transparency and participatory government toward the creation of a PES scheme.

First, the law establishes LLGs and Ward Development Committees and calls for communication channels such as committee systems to report community meetings to the LLG via ward development committees. Each ward development committee comprises the elected member for the ward (who is the chairperson) and a maximum of five community representatives (two of whom must be women) as associate members. The function of the ward development committee is to serve as a 'consultative and advisory committee to the LLG.' There are over 6000 wards within the 313 LLGs across PNG.

Sections 98, 115 and 116 of the Law make it mandatory for the participation of stakeholders in the development of natural resources within their area. Section 98 defines 'Developer' and 'Natural Resources' and requires the developer to pay at least three levies for community, economic and infrastructure development. It further allows the Provincial Government to create additional levies as it sees fit. The developer is required to provide expertise and professional support as to the use of the levies. The section also states: 'All land owner benefits in the form of royalties, land owner premiums, compensation, and other assistance, established by law or in accordance with an agreement, shall be paid to the land owners less deduction only for nominal tax (if applicable) and any recoveries for the cost incurred by the National Government, Provincial Governments or Local-level Governments, as the case may be.' The levies are placed into a Trust Fund and 'controlled and administered in accordance with an Act of the Parliament.'

These last two provisions of Section 98 are double-edged swords. On one hand, the spirit of the law clearly provides for landowners to share in the benefits of development of natural resources in their area. On the other hand, Parliament will control the Trust Fund and is allowed to remove any taxes and other costs of administering the funds. There is no maximum amount allowed for administrative costs, which could result in almost nothing going to the landowners. A similar situation occurred in a private sector arrangement. Recent interviews with the leadership of the April Salumei REDD+ Holdings Ltd revealed that 98% of the revenue from recent carbon credit sales dedicated to local landowners went to administrative costs that included paying rent for the Chairmen to live in Port Moresby. This project was not administered by a Parliamentary-controlled Trust Fund but the funds were deposited into a private trust account.

The Organic Law provides for a provincial and LLG mediation and arbitration tribunal. This body was created to settle disputes between or within the three different spheres of government. Identifying existing conflict resolution mechanisms is important when creating a new PES scheme and the Organic Law may provide a legitimate conflict resolution mechanism.

Section 115 requires the National and Provincial Governments to liaise fully with the landowners in

relation to the development of the natural resources. Section 116 requires an Act of Parliament to establish the rules of engagement between all parties in the development. This section clearly strikes contrary to local control, decentralization and full participation of the all people involved. The law generally makes it difficult, if not impossible, for landowners to access their own funds.

FORESTRY ACT OF 1991

The Forestry Act is a fundamental piece of legislation that affects PES schemes derived from forest resources. The Act specifies that forest resources can be developed only in accordance to the National Forest Plan. Section 46 recognizes the right of landowners as the owners of the forest resources and stipulates in Section 56 that any development of forest resources on customary lands must be done through a Forest Management Agreement (FMA). Since 97% of forests are on customary lands, the government has no control over these resources and has no rights to development them, unless they are given permission to do so through an FMA.

The PNG Forest Authority (PNGFA) is the entity that implements forest policy and creates FMAs with the landowners. Since forest resources are owned communally under customary law, a PES scheme must include a registered entity to represent the owners and sign the FMA with the government. National Forest Policy requires that 'tenure over the resource must be made certain by title to the affected resource being vested in a Land Group or Groups as defined by the Land Groups Incorporation Act' or 'registered under customary land registration law.' The Policy allows one other option to sign an FMA when these two options are impractical. That is, to acquire, 'at least 75% of customary resource owners in each clan owning timber affected by the agreement must give their written assent to the Agreement.'

Field representatives of the PNGFA will work with resource owners and the Department of Lands, to help them establish Independent Land Group (ILGs) under the Land Groups Registration Act. The Provincial Forest Management Committee 'certifies that it is satisfied as the authenticity of the tenure over the resources' alleged by the Land Group and the groups' willingness to enter into such as agreement. Once an FMA is created between the ILG and the State, a detailed selection process for choosing the resource development is followed according to Strategy #6 of the National Forest Policy and the permit to develop the resource is granted. Revenue is generated from a group of royalties and levies that the PNGFA adopts and charges based on a case-by-case basis. The PNGFA is charged with striking a compromise between maximization of revenue to the national and provincial governments and maximization of benefits to resource owners. Funds are distributed first to the State for administration and then to the resource owners. Sufficient funds must be made available out of State revenue derived from the forestry subsector at all levels of the forest administration, to carry out effective forest management and regulations and monitoring of industry activities.

Once PES generates revenue, funds are allocated according to the above paragraph and any surplus revenue should, as a general rule, 'be applied for the benefit of the area from which it was derived and for the development of the province as a whole.' Two important principles seem to emerge from this policy. First, the government's cost of operating the administration of the forests takes precedent over resource owners. It would be entirely within this policy to apply all revenue derived from resource development to the government if there were no surplus revenue. While the author has heard of no cases where this occurred, it is important to note these priorities as it demonstrates a broader socio-political context within PNG.

Second, the policy clearly indicates that the surplus revenue should be used for the 'benefit of the area' from where the resources were derived. It then recognizes that the host province should also benefit. Nowhere does it recommend that revenue from the resources be distributed in cash to landowners. The policy implies that the beneficiaries are all people within the resource area plus the people of the province as a whole. A PES scheme must recognize this distribution policy to ensure effective incentives are being created.

THE OIL AND GAS ACT OF 1998

The Oil and Gas Act was rewritten in 1998 after much controversy around the Petroleum Act. The rewritten version actually improves upon the landowner rights provided in the Organic Act. Section 47 of the Oil and Gas Act requires the licensee to conduct a full-scale social mapping study and a full-scale landowner identification study of customary owners of the project area. After the landowners are identified, they are then able to participate in landowner forums that the developer is required to conduct. The forums are where an agreement is made on the distribution and form of benefits. Section 170 prepares the equitable sharing of the equity benefit and the royalty benefit amongst project area landowners and to future project area landowners. This Act, while still problematic in its implementation, provides for, on paper, greater participation and benefit sharing than other resource extraction laws.

THE MINING ACT OF 1992

The Mining Act declares that all rights to minerals in PNG are owned by the government. Section 6 further declares that the government may not be excluded from accessing any lands and waterbodies to explore these minerals. Although the mineral resources are clearly owned by the government, the Act still involves landowners for the access and development of the resources. Section 3 states that the Minister shall invite to a development forum such persons as he or she considers will fairly represent the views of '...the landholders....' Benefits are returned to the landowners in the form of compensation for loss of land. Royalties are also paid based on the terms in Section 148 of the Act. Payments are made in cash but also in terms of infrastructure development, economic development, and community and social development.

THE ENVIRONMENT ACT

The Environment Act was passed in 2000 and became enforceable in 2004. The Act states that its intentions are to promote the wise use of the country's natural resources for the benefit of the whole nation. Opportunities to create PES from natural resources are not directly stated in the Act. They are supported, nonetheless, at several points of intervention including:

- when environment codes and practices are developed for Level 1 activities
- where licenses on environmental activities are being considered
- where public hearings are held
- Environmental Impact Assessments are made.

During these points of intervention, evidence can be submitted and comments made on the issue of PES agreements among other issues. It is important to note that the actions permitted under the Environmental Act are only permissible after another piece of legislation allows for them. The Act in some way operates under the assumption that issues regarding PES are managed through that legislation and in this way the provisions of the Environment Act become a safety net or backstop to other enforceable legislation.

This Act aims to safeguard the environment and in particular provides for the definition of Level 2 and Level 3 activities (defined below), which may be subject to Environmental Impact Assessment. The Act specifies that the Environmental Impact Statement must adequately describe impacts and demonstrate that 'all reasonable steps will be taken to minimize environmental harm'. The Environmental Impact Statement may be accepted with conditions. The Act also requires developers to apply for a permit, which may also be issued subject to conditions. The Act also allows the government to require developers to prepare an 'Environmental Improvement Plan'.

The Environmental Regulation of 2000 supports and enforces the Environment Act of 2000 (Art 42) and defines Level 1, Level 2 and Level 3 activities. Level 2 and 3 activities (which may require Environmental Impact Assessment) include: petroleum exploration, mineral exploration and mining, manufacturing and chemical processes, forestry and production of timber products, aquaculture and agriculture, food processing and plan product processing, energy production, waste treatment, infrastructure and other activities. (Level 1 is all other activities).

CONSERVATION AREAS ACT OF 1978

Provides for the declaration of 'conservation areas' by the Head of State, which may then be subject to rules for protection, development, land use, management and control. Development or alteration of land use are restricted in accordance with the management plan and may be approved only after taking into account the impact or likely impact on the environment.

CEPA is the responsible entity for registering the declared area and ensuring its protection. CEPA is charged with preserving the environment and the nation's cultural treasure in accordance with the Goal 4 of the Constitution The Act establishes the National Conservation Council which is responsible for recommending to the Minister conservation actions and policies related to the protected area.

LAND GROUPS INCORPORATION ACT (CHAPTER 147)

The objective of this Act is to improve the process for creating and managing ILGs. ILGs are created to establish marketable rights derived from natural resources and their value-added products or other business ventures.

In 2009, Parliament established new requirements to improve the process by which ILGs are created and managed (the Land Groups Incorporation (Amendment) Act 2009). These changes came into force in 2012. The new Act creates a five-year transition period starting from 1 March 2012. During this period existing ILGs can choose to reapply for incorporation in accordance with the new provisions, failing which they will cease to exist in 2017 at the expiry of the five-year period (s. 22).

The Act, with its new amendments, now requires that:

- Members of the proposed ILG are not members of another ILG. The new Act prevents multiple memberships (s5(2)), where previously it was possible to become of member of more than one ILG;
- An application for an ILG must contain a list of all proposed members of the ILG and must include the original birth certificate (or a certified copy) of each person who claims membership of the group (s. 5(2) (c));
- Land boundaries be clearly identified. The ILG must also map all the land over which it claims ownership by providing a sketch of the boundaries of the land. The sketch must highlight any areas of dispute (s. 5(2) (e)). This is a significant improvement on the previous arrangements which did not require an ILG to identify its land boundaries, thus giving rise to many disputes.

Creating an ILG does not guarantee land ownership. Ownership is established when the ILG registers the customary land as Clan Land under the Land Registration (Amendment) Act 2009. This step is not required to establish an ILG. Registering land as Clan Land is voluntary. Establishing an ILG would be useful in documenting the beneficiaries, and if PNG created a PES policy that required documentation of ownership of land to distribute benefits, then this extra step would be necessary.

The new amendments now require additional administrative procedures. The Management Committee of each ILG must now:

- hold an Annual General Meeting each year;
- have between six to ten people on its Management Committee, at least two of whom must be women;
- have at least 60 percent of members in attendance at meetings to form a quorum in order for business to be transacted, with at least 10 percent present being of the other gender;
- keep bank accounts, which must be open to inspection at all times by the Registrar, the dispute settlement authority, or any ILG member;
- maintain an up-to-date register of its members;
- comply with a detailed Code of Conduct for members of the Management Committee, which expressly prohibits "self-dealings."

On 12 June 2014, the National Executive Council (Decision No. 184/2014) directed that responsibility for administering ILGs be transferred from the Department of Lands and Physical Planning to the Investment Promotion Authority (IPA), a statutory body that is responsible for promoting and facilitating investment in PNG (Investment Promotion Act 1992), stating, 'The reason for this decision to transfer responsibility is not clear but may be aimed at assisting landowners to cooperate more closely with government to enter into joint ventures for large scale agriculture developments. ILGs are likely to play an important role in PES implementation as they provide a mechanism for facilitating landowner consent and benefit-sharing. If responsibility is transferred to the IPA, adequate funding support will need to be provided to ensure the IPA has capacity to carry out its newly acquired responsibilities."

CONSERVATION AND ENVIRONMENT PROTECTION AUTHORITY ACT OF 2014

This Act makes provision for and is in respect of the Conservation and Environment Protection Authority which is charged, inter alia, with the conservation and protection of the environment in accordance with environmental conservation laws and policy. The Authority has the responsibility to impose and receive fees for the approval and issue of permits for activities likely to cause environmental change or harm within the meaning of the Environment Act 2000.

PAPUA NEW GUINEA MEDIUM TERM DEVELOPMENT PLAN 2016-2017

The country's Medium Term Development Plan 2 (MTDP2) establishes a series of development goals and strategies in all sectors of the economy. The MTDP is continuously updated. The previous plan (MTDP1, 2011 to 2015) was reviewed along with the most current and as there is a large degree of consistency between the two, only the latest version (MTDP2) is presented here.

The two primary drivers of this new economy is the sustainable development of PNG's natural resources (its strategic assets) and creating the enabling environment for a flourishing small and medium enterprise (SME) sector.

> ***"PNG combined with West Papua has the third largest rainforest in the world. This forest is a carbon sink, oxygen generator, and together with our reefs contains 8% of the world's biodiversity. It is also the home and garden to many of our people. In a world seeking climate stability and environmental protection, we need to seek an international financial mechanism to encourage us to preserve these forests. In addition, PNG needs to move to only allow onshore processing of logs as soon as possible."***
>
> ***"Small scale agriculture has been the mainstay of Papua New Guineans for centuries and remains that way for many people today. In an increasingly urban scenario, the Government is required to develop better systems to mobilize land, organise farmers, create nucleus estates, improve productivity, efficiency and also to encourage entrepreneurship and development of small to medium enterprises as vehicles for participation in this effort."***
>
> ***"Biodiversity, the environment and PNGs culture provide the basis for an education, research and tourism industry."***
>
> ***"The National Strategy for Responsible Sustainable Development (StaRS) sets out the underlying principles supporting the Government's intention to shift its development (operational) strategy from the current 'brown only' growth model, of resource extraction and export, to a more sustainable 'greener' economy."***

The Government will continue to encourage emerging

The two primary drivers of this new economy is the sustainable development of PNG's natural resources (its strategic assets) and creating the enabling environment for a ourishing small and medium enterprise (SME) sector.

SMEs under MTDP2. The key priority areas are:

- Continuing to improve SME access to markets and financial credit
- Encouraging and promoting SMEs to be internationally competitive
- Encouraging the operation of the informal economy and streamlining the transition process for SMEs from the informal to the formal economy
- Reducing the cost of doing business and streamlining the administrative processes ('removing red tape').

It is anticipated that as the world shifts, in terms of changing values, towards more sustainable use of natural resources, there will be an economic benefit for PNG. Natural capitals such as clean water/river systems, coastal beaches and marine life, forests and biodiversity, and cultural diversity are in abundance in PNG and will increase in value with government investment.

The priority areas for MTDP2 are:

- Banning the export of old growth logging
- Processing of logs and forest products within the country to generate income and employment
- Maintaining areas under forest cover through afforestation/reforestation
- Increasing the income of landowners through carbon trading
- Increasing areas under national parks and protected areas to protect biodiversity
- Increasing the number of eco-tourists per annum.

Key priority areas for MTDP2:

- Reviewing, developing and implementing a Sustainable Marine Resource plan
- Creating awareness on responsible management and use of fishery and marine resources
- Combating and monitoring of illegal unreported unregulated fishing
- Introducing a restricted licensing system
- Developing the human capital and institutional capacity for the National Fisheries Authority and related stakeholders of the fishery sector, e.g. Subnational governments
- Increasing teaching and researching of fishery
- 50% onshore processing of fisheries by 2017
- Development of recreational and eco/marine tourism (with Tourism Authority)
- Development of aqua culture and coastal fisheries
- Development of enabling support infrastructure.

MTDP2 Goal: 'Increase the number of international tourists and business travelers for cultural, environmental and economic benefits for Papua New Guineans. The tourism industry is still underdeveloped in PNG, but it has great potential to expand. The development of tourism industry has the potential for providing significant income and employment opportunities to Papua New Guineans. The MTDP2 aims at developing the tourism sector through the promotion of cultural and ecotourism as well as research on culture, biodiversity and medicinal plants.'

Mangrove seedling being assessed, PNG © Nick Turner/ UNDP

10. PROVINCIAL POLICIES

EAST NEW BRITAIN PROVINCIAL FOREST MANAGEMENT PLAN

The East New Britain (ENB) Provincial Forest Management Plan provides a wealth of information about the protected areas that are central to the CbFCCRM Project. Before stating specific policies, the Plan documents the vegetation and soil types of the Province's forests and documents the natural constraints of the protected areas in the Nakanai Range. The Plan states that these areas:

"consist of denudation landform type which is polygonal karsts. Karsts landforms are the result of the solution of limestone by rain, surface water and ground water and are characterized by the absence or poor development of a surface drainage network. The relieve range is from 100m-300m high. There is a high number of landslides happening in certain parts of this area. Deforestation in these areas will pose a major threat to the sustainability of the natural environment especially flora as well as the fresh water catchments areas. "

The Plan states that areas around Wide Bay in the Pomio District are restricted from raw log exports due to the presence of Kauri Pine. Logging in this area in the 1980s caused flooding and soil erosion. Since then, some regeneration has taken place but due to the lack of topsoil the trees regenerated much slower or failed completely.

Strategies of the ENB Provincial Forest Management Plan

Specific strategies within the ENB Provincial Forest Management Plan provide direct support to the CbFCCRM Project and need to be recognized here. They are as follows, taken directly from the Plan:

- "The ENBPG will need to make a formal request to PNGFA, through PFMC, NARI, NGOs and other stakeholders as well as direct Divisions of DPI, Planning & Research and Commerce & Industry to take the lead in encouraging the establishment of non-wood forest industries and ecotourism activities in relatively remote areas of the Baining and Nakanai Ranges, primarily in the Pomio and Gazelle Districts."
- "The ENBPG will need to approach NARI so that MARI must collaborate and work with DPI in conducting awareness campaign on non-forest products available to land owners in their respective areas where they could harvest and sell to tourists. Research information collected so far by NARI will have to be disseminated to the local population so that the best hybrid of tree crops would also be sold to tourists."
- "The ENBPG will need to direct the Divisions of Planning & Research and DPI to prepare instruments for the gazettal of the Lower Nakanai Forest Area (southern side) and the Baining Mountain Ranges as national Parks by the Office of Environment and Conservation (OEC). The management of the National park and Wildlife Management Areas will have to be transferred to the Provincial Administration so that it (PA) through DPI will effectively and efficiently manage them with adequate funds and staffing, as these may not be available from the National Government."
- "The ENBPG will need to direct the Division of Community Development and also make formal request to existing NGOs to mobilize people in forested areas into forming women's groups, Youth groups and church groups so as to collectively exploit their forest resources for their cultural and social activities. This will allow them to be technically and financially assisted by Commerce & Industry and/or NGOs in starting up projects like harvesting and marketing non-forest products. Setting up and managing eco-forestry/tourism activities in a sustainable manner that will be with the environment."
- "The ENBPG will need to direct the Tourism Bureau to encourage and maintain cultural and traditional activities in both forested and non-forested areas of the province where culture and traditions interact with the environment thus preserving, sustaining and maintaining the culture and traditions."
- "The ENBPG will need to direct the Tourism Bureau to aggressively promote and establish tourism related activities using the spectacular and bio-diverse forest areas to broaden the source of income from forest resources and the economic base of the province generally."

The strategies listed above directly support the development of PES schemes in ecotourism, handicrafts and other cultural livelihoods. In addition to these

strategies the Plan specifically calls for areas of the Nakanai Range to be established as a National Park. Setting this land aside as a Park would greatly increase the viability for creating PES schemes. The Plan states, in Section 2.3.1. National Parks:

"The Baining Range and Nakanai plateau areas are located in the hinterland of New Britain Island. These areas are unique and possess special biological values therefore should be protected from destructive development under the Forest Management concept. Parts of these areas are inaccessible hence will not be suitable for any agricultural activities. The proposed track from Wild Dog/Sigite Route to Wide Bay used by the Allied Forces during WWII is one of those areas to be established as parks. The purpose and objectives of establishing such parks would be;

- *To conserve the high Biodiversity of flora and fauna of these areas*
- *To use for researching into medicinal plants, ecology and taxonomy*
- *For educational purposes and*
- *For assisting people with planting materials"*

Other policies of the forest plan indirectly support PES schemes by helping establish a business environment where value-added forest products can be produced. While not all value-added forest products will support a PES scheme, there are some efforts that create incentives to conserve forest lands and those that do will support a PES. Indirect supporting policies include:

- "The Divisions of Planning & Research, DPI and Commerce & Industry will need to be directed to invite potential foreign investors to invest in downstream processing to process rejected and/or abandoned logs into value added products.'
- "Will need to task Commerce & Industry to invite potential foreign investors to invest in the timber industry especially in the establishment of a central processing complex (a sawmill, joinery and furniture shop) either at Takubar or Ulaveo and/or Kerevat to further process timber flitches/materials from the areas of East Pomio and Bitapaka LLGs, the Baining and Kerevat areas, Central/Inland, Mamusi/ West Pomio areas, as well as other parts of the New Guinea Islands Region."
- Business Development Officers and NFS Officers will need to do more regular visits to forest areas to discuss what business opportunities are available to landowners in their respective areas and how they could use their royalties for collective benefits of all in their communities.

East New Britain Provincial Strategic Development Plan 2011 – 2021

The East New Britain Strategic Development Plan specifies many actions and policies that would support a PES scheme. Whether they are supporting policies or tangible projects, they can be used as a foundation for promoting a PES scheme. The seven pillars of the Plan's vision support PES and are as follows:

1. Making Optimal Use of Available Resources,
2. Promoting Economic Development Through Primary and Secondary Processing
3. Encouraging Community Participation and Promoting Family Life
4. Making Rural Life More Attractive
5. Lessening Disparities
6. Improving the Effectiveness of Local-level Governments
7. Minimizing Law & Order Problems

The Plan establishes 24 key priorities of strategic significance. Several of them (highlighted in bold below) support conservation of the Province's natural resources and have the capability of helping establish a PES scheme. The Strategic Priorities include:

1. Re-orient and further develop the primary sectors to support an industrial, manufacturing and service sectors.
2. Establish furniture, fisheries and business industries using resource that are abundant in this province.
3. Develop balsa, coffee and spice industries in the periphery of the North East Gazelle to support industrialization.
4. Carry out feasibility studies into crops that can be downstream processed in ENB.
5. Facilitate the establishment of a cocoa processing facility in Kokopo.
6. Facilitate the development of the three (3) oil palm projects and mills in the province (Illi/Wawas, Memalo, Mukus/Melkoi)
7. Facilitate Fisheries Storage Facilities to assist in fisheries trans-shipment at Toboi.
8. Facilitate the Kabakaul Integrated Project to commence fish filleting.
9. Develop a Provincial Park and 4x District Botanical Gardens.

10. Carry out survey and investigation for possible international sea port sites (Including: Putput, Vudal, Vunapalading Bay and Kurakakaul as alternate international sea ports.
11. Support to establish Business Training and Credit Facilities to our people, using the Personal Viability (PV) concept.
12. Aggressively pursue Tourism Development through a comprehensive Tourism Development Model.
13. Build a self-reliant population by creating a policy environment for credit facilities to be granted to people who are members of respective cooperative societies and/or community associations.
14. Convert our Human Resource Base to be economically viable.
15. Reduce the public service manpower by 40% and outsource those functions that the private sector can undertake in a cost effective manner.
16. Convert excess arable land to be an economic factor of production rather than inheritance.
17. Design an insurance cover policy in order to improve health and change the health sector from being a service sector to that of an industry.
18. Design a strategy to immediately improve academic performance of grade 8, 10 and 12.
19. Facilitate the immediate gazettal of Kavakuna and Muruk Conservation area and the Nanuk and Talele islands management areas.
20. To have a functional autonomous government by 2021.
21. Import replacement of products that can be economically produced locally.
22. To make VCTs accessible to ENB population.
23. Facilitate the progress of the New Britain Highway.
24. Facilitate Geothermal Energy development in the province.

CEPA's main objective is to prevent further deterioration of existing protected areas. The Plan identifies four protected areas in ENB Province that are gazetted conservation areas including:

1. **Tavolo Wildlife Management Area** in the Melkoi LLG, Pomio District

2. **Kavakuna Cave** in Central/Inland Pomio LLG, Pomio District

3. **Talele Island Reserve Area** in Reimber/Livuan LLG, Gazelle District

4. **Nanuk Provincial Park/Recreational Area** in the Duke of York Island LLG, Kokopo District.

Two of these are Marines areas. In Section 1.14.1 of the Plan, it states 'In terms of formal protection on the New Britain, East New Britain Province has currently (3) three Gazetted Wildlife Management Areas namely Kavakuna (6,000 ha), Tavolo (2,000 ha) and Klampun (5200 ha). These are gazetted under the Fauna (Protection and Control) Act. Included are the (National) Parks, which are Nanuk Provincial Recreation Park (12 ha), and Talele Provincial Reserve Area (12 ha), which are gazetted under the National Parks Act. These are known as Marine Parks.'

In addition, the ENBPG is seeking national park status for the karst cave systems. 'Currently the Nakanai Conservation Project is going towards its legal recognition. This will also be a World Heritage Site due to its scenic importance through the Karst Cave Systems and unique biodiversity. Within the Nakanai Ranges are sinkholes that are known to contain water sources. They also have distinctive features that are rarely common.' Regardless of the exact number of protected areas, most have been negatively impacted by development and many are under serious threat (further explained below). Any PES scheme that is created on New Britain Island should first start with protecting the existing established conservation areas.

The Provincial Plan clearly documents the value of conserved areas and their contribution to local economy as preserved natural assets that can be sustainably managed for research, tourism, biodiversity and carbon offset credits. And in addition, to supporting traditional cultures and providing a secure location for food. The Christensen Research Institute and PNG National Museum and Art Galleries conducted surveys of the areas and found lands above 700 metres to be 'free of disturbance of any kind.' Their survey of ENB was inspiring:

"The ridges above approximately 1000 metres are considered masalaiples (spirit place) and are not hunted. The most impressive and best forest with the highest canopy and

largest trees occur on a ridge top at 200 metres. Aesthetically stated by researchers, the forest has the greatest potential for utilization in tourism. The forest contains an endemic species of birds (pygmy parrots, blythes hornbills), reptiles and amphibians, other vertebrates, plants, butterflies, moths and other insects of significance.'"

Provincial Government has shown a great concern for the future of these protected areas and states that 'Maintaining the biodiversity of the province is very crucial – there should be proper institutional and policy frameworks, strategies and mechanisms developed for management, protection, and conservation of the natural resources and mitigation of potentially harmful impacts resulting from project development activities.'

Capacity to protect these areas is limited. A PES scheme can help in this regard since it relies on the power of market forces to effect conservation, while patrolling and enforcing laws can be expensive. Currently, 50% of the protected areas are under-managed or not managed at all. 'About 80% of the coastal forest areas of New Britain have been logged or surrendered to agricultural development. The primary forests are shrinking into the inaccessible mountainous areas. If this trend continues, the island of New Britain will lose all the uniqueness of the island and the services it provides.'

DEVELOPMENT POLICIES OF THE EAST NEW BRITAIN STRATEGIC DEVELOPMENT PLAN 2011-2021

The following policies have been selected from the Plan due to their relevance to establishing a PES:

- **Increase local participation in the Forest Industry**
  The forest industry will be boosted with emphasis on local participation and encourage intensive reforestation programmes. Gradually the exportation of round logs will be phased out. Equally important will be the drive to conserve the indigenous flora and fauna of the Province of which many species are endangered (rare and cannot be found anywhere in the world).
- **Encourage local participation in commercial coastal and inland fisheries and marine resource development**
  Local people will be encouraged to improve subsistence artisanal fishing into commercial coastal and inland fisheries. This will be done through local fisherman mobilization and training in storage, processing and simple packaging for both local and international markets.
- **Goals of Commerce and Industry**
  To ensure the creation of a diversified and healthy economy characterized by strong manufacturing, tourism and service industries built upon strong agricultural, livestock, fisheries and forestry foundation of the Province.
- **Facilitate the provision of necessary infrastructures to promote local industries**
  In promoting a conducive environment for economic growth and encouraging local participation, there will be necessary infrastructure established within town vicinities to promote local industries such as incubating centers to accommodate small industries (such as shoe repair, cane furniture making etc.).
- **Develop stringent policy measures to increase and safeguard local participation in businesses**
  There is an urgent need to increase and safeguard local participation in business so that more local people can participate and benefit from growing the local economy.
- **Tourism Development Goal:** Promote Tourism as an alternative socio-economic activity that has the potential to assist and grow the local economy, improve living standards and reduce poverty without negatively impacting the cultures and the environment.
- **Strengthen Partnership and Strategic Alliance**
  There is need to strengthen the partnership and strategic alliance of all tourism stakeholders through improved coordination, networking and mobilization of all stakeholders. The tourism regulatory and policy framework will be developed to enhance quality tourism services.
- **Tourism Product and Facilities Development**
  With ENB renowned for its popular tourist destinations, there will be vigorous improvement and diversification in tourism products and facilities development. In terms of infrastructural development, there will be the establishment of the Provincial Arts and Crafts Centre, a Provincial Culture Centre and a Modern Museum. Develop

a strategic beautification plan to transform the airport and seaports as well as the towns and growth centres to be attractive and tourist-friendly. Pursue cruise ship tourism development which is currently the source of many tourists entering the Province.

- **Pursue tourism marketing strategies**
  In order to attract more tourists into the Province, tourism marketing strategies will be pursued vigorously. Promote and market ENB in source tourism markets overseas through the updating, maintenance and improvement of the current ENB Tourism website.
- **Capacity Building and Training**
  For an increased participation by local people there will be training in hospitality and tourism management at all levels.
- **Promote the Preservation and Protection of the New Britain Biodiversity**
  There are currently existing protected areas as well as cultural sites. These sites need to be managed and marketed in terms of ecotourism. The LLG laws have to be in place to protect these areas from outside exploitation and smuggling. The traditional values are to be protected as well as preserved for the future generations. There is need to develop directive guidelines on the disposal of garbage.

POMIO DISTRICT DEVELOPMENT PLAN

The District Development Plan of Pomio states clearly that conservation of natural resources is a top priority. They see conservation as a way to create a livelihood and preserve their traditional lifestyle. The Plan's conservation objectives are:

1. to create self-employment in rural areas,
2. to develop the natural conservation areas and
3. to promote the eco-tourism industry within the District.

The Plan identifies three major industries that it sees as offering prospects for rural livelihoods and which they seek to strengthen, fisheries, forestry and tourism.

Fisheries Sector

The three main objectives of the Fisheries Sector are as follows;

1. to enable local fishermen to acquire new fishing techniques and modified fishing gears to increase fish landing in the District
2. to enable fishermen to harvest and sell their marine resources to generate alternative sources of income to improve their livelihood in the District
- to enable the general communities to supplement protein to minimise malnutrition level in the District.

The Fisheries programme is helping local fishermen to improve their understanding in planning and management of fishing organizations, modify fishing methods and techniques and to enforce the National Fisheries Act (1998).

Forestry Sector

Pomio District would like to promote small scale, sustainable forestry. The European Union funded a five-year ecoforestry programme and the Plan identifies it as a model for future forestry development in the District. The programme was 'designed and tested to be an alternative to large- scale logging operations. The concept was basically adapted in the communities around the Island region of Papua New Guinea. Communities were assisted by the Programme (EU□IRECDP) to harvest their timber resources in a sustainable manner where future generations can also use the same forest for the same benefits."

The program's objectives include;

1. Manage small scale timber businesses on their own
2. Adapt sustainable forest management skills and know-how
3. Produce enough timber volume to meet overseas demand
4. Have cluster of sawmills under a resource-owners association.

Tourism Sector

The Plan states that the District's objectives in tourism are 'To promote tourism products and business in the district by identifying cultures, caves, beaches, reefs, war relics, and other tourist products, which can attract tourists to the district. Development of museums, parks and cultural centres is a part and parcel of the tourism industry development at the District.'

The District plan recognizes the importance of combining tourism products with physical improvements to enhance the complete tourism experience. They also recognize that there is much work to be done: 'Pomio District has a huge potential to go into the tourism industry. Unlike other parts of the country Pomio has a unique and diverse culture which can lure international tourists into the District. Despite this great diversity of tourism products in the District the tourism industry is still in its embryonic stage.'

The District has surveyed and identified many assets that can be leveraged to advance the tourism industry. They understand that developing tourism products, programmes and projects should be combined with physical structures and public space to ensure a complete tourism package is available to visitors. The following is a list of some internationally recognized key assets that the District would like to nurture for the tourism industry:

- Kavakuna Cave: The Kavakuna Cave is situated near Olaipun village in the Central Pomio. It is recognized as one of the biggest caves in the world.
- Klampun Wildlife Management Area: Klampun has been declared as a Wild Life Management area and is ideally situated in Klampun village at the East Pomio LLG.
- Tavolo Wildlife Management Area: The Tavolo Wild Life Management Area is surrounded by a beautiful Island that is full of birds which is an ideal tourist spot."

In addition, the District government seeks to expand existing WMAs to include Taulang, Muruk Cave, Nare Cave and Minye Cave.

The plan also recognizes the following locations, attractions and activities:

Bush Trekking

- Uvol to Hoskins
- Mamusi to Silanga
- Pomio to Bareman
- Nutuve to WideBay

Island Visits

- Kavovo
- Alice
- Kauvousu
- Moklon
- Matmat

War History

- Palmalmal Township
- Jacquinot Bay Airstrip
- Marana Village
- West Bain Jet Fighter

Water Falls

- Wara Kalap
- Matong Wara Kalap

Sandy Beaches

- Wara Kalap - Unung River
- Taulong
- Bintepuna - Bairaman
- Pisua
- Pelaumatomto - Tokelekena
- Other unnamed

Scuba Diving Spots

- Kauvousu Island
- Alice Island
- Matmat Island
- Moklon Island
- Tol Reefs

Fresh Water Bass Fishing Spots

- Begbeg River
- Iso River
- Tolo River
- Bairema River

Salt Water Fishing

- Tol Reefs
- Kavovo Island
- Alice Island

- Moklon Island
- Palmalmal Reef
- Pulpul Reef

Bird Watching

- Kavovo Island
- Mamba Wildlife Mngt Area
- Muruk Cave
- Kavakuna Cave
- Taulong WLMA
- Nare Cave

The plan recognizes strategic facilities and institutions as necessary to create tourism as a viable industry and states, "For Pomio District to achieve its tourism benchmarks then it must form the Pomio District Tourism Bureau which will enable it to become an affiliate of ENB Tourist Bureau and of other Regional and International Tourism Organizations in order to reap the benefits from such affiliations. The East New Britain Tourist Bureau has already become an affiliate to the World Tourism Organization. The District must budget and construct a district museum or a cultural center to preserve our cultural heritage and to store war relics for public display."

WEST NEW BRITAIN PROVINCIAL MANAGEMENT PLAN

The West New Britain (WNB) Provincial Forest Management Plan identifies existing protected areas and their reasons for protection. It also states that these areas are 'under threat to a certain extent.' The reason for the threat is not well specified in the plan but generally refers to encroachment from expanding human settlements. Four are terrestrial protected areas while the remaining 11 are marine areas. Protected areas are listed in Table 10.1 below.

The Plan states broad goals for these protected areas including: 'the maintenance of essential ecological processes and life support systems; the preservation of genetic and biological diversity; stimulation of the human intellect; and provision of social and economic opportunities through conservation and management.' The Plan specifically recognizes the Nakani and Whiteman Mountain Ranges as areas with critical habitat and rich biodiversity that deserve protection:

"The Whiteman Range and the Nakanai Mountains are two major areas considered by the WNBPG to be priorities for conservation protection. These areas have been identified

Table 10.1: Protected Areas in West New Britain Province

Name of Area		Area (ha)	Location	Reason to protect
1	Garu WMA	7,531	Talasea LLG	Protection of megapods
2	Pokili WMA	12,187	Hoskins LLG	Protection of megapods
3	Loroko	100	Hoskins LLG	National Park
4	Kurtavele	NA	Gloucester LLG	Bird Sanctuary
5	Patanga LLMA	NA	Talasea LLG	Marine ecosystems goods and services
6	Kilu LMMA	NA	Talasea LLG	Marine ecosystems goods and services
7	Kulungi LMMA	NA	Talasea LLG	Marine ecosystems goods and services
8	Papa Vula Baka LMMA	NA	Hoskins LLG	Marine ecosystems goods and services
9	Makasili LMMA	NA	Hoskins LLG	Marine ecosystems goods and services
10	Kasia LMMA	NA	Hoskins LLG	Marine ecosystems goods and services
11	Tarobi LMMA	NA	Cenaka LLG	Marine ecosystems goods and services
12	Ewasse LMMA	NA	East Nakanai LLG	Marine ecosystems goods and services
13	Bubu LMMA	NA	East Nakanai LLG	Marine ecosystems goods and services
14	Lolobau LMMA	NA	East Nakanai LLG	Marine ecosystems goods and services
15	Isuna Aua LMMA	NA	East Nakanai LLG	Marine ecosystems goods and services

on the PNG Conservation Needs Assessment map. The exact extent and nature of protection has yet to be determined. The Nakanai Mountains is listed under the tentative list of World Heritage for PNG. And as such the UNDP and DEC (Department of Environment and Conservation) with funding from GEF are implementing a project, which ends in 2018, aimed at promoting community-based conservation of parts of the areas while improving livelihoods."

The Plan also states that Lakes Namu and Hargy as well as many marine areas are also deserving of protection: 'The WNBPG wishes to protect its fauna and flora under declared biodiversity areas. With the assistance of DEC, UNDP, The Nature Conservancy and other relevant stakeholders, the following areas will be assessed and where appropriate be declared:

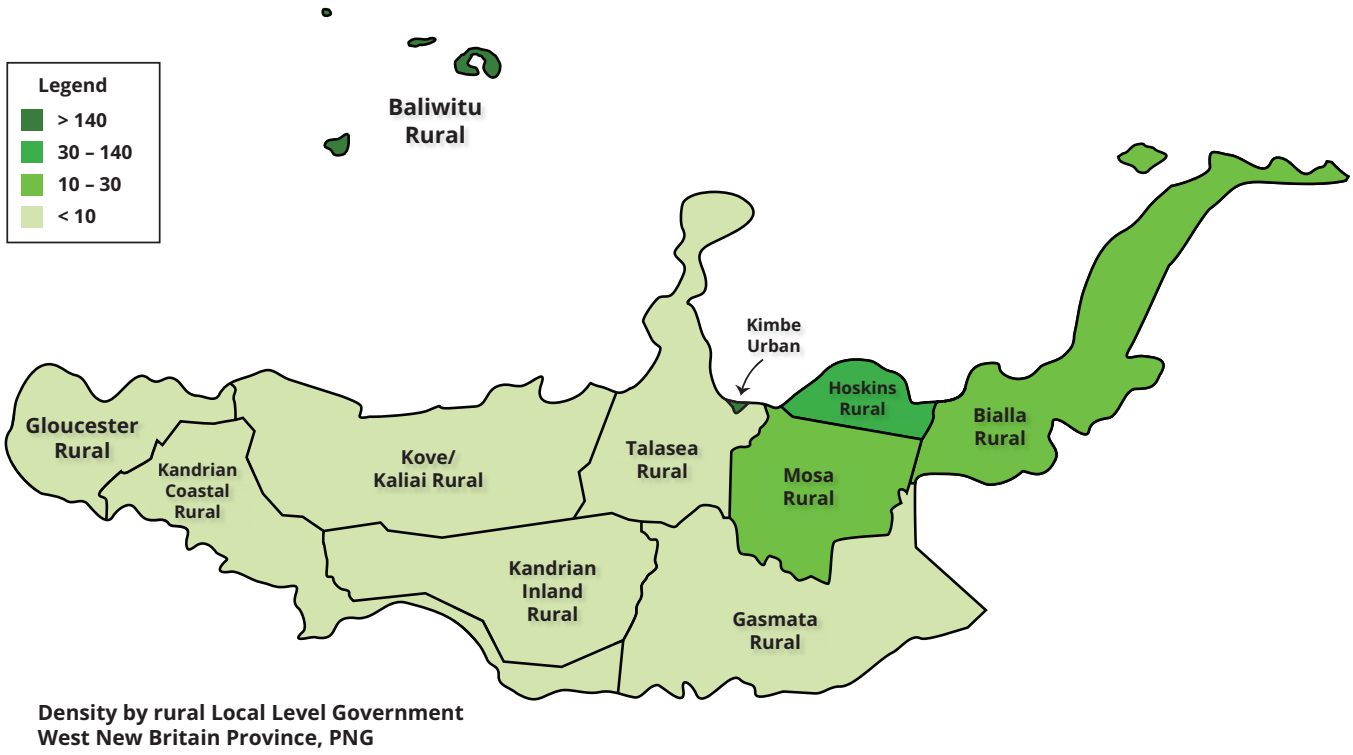
- Whiteman Range
- Nakanai Mountains
- Lake Namu (Wetland) – surrounding forest planned for oil palm
- Lake Hargy (Wetland)
- Mangrove Forests (Wetland)
- Any new locally managed marine areas (LMMAs) in the province.'

The West New Britain Integrated Provincial Development Plan 2012-2015

The latest Provincial Development Plan for WNB was available for consultant review. The Plan lists several actions that would support a PES type of project. They include the following:

- Establish fishers projects
- Facilitate fisheries trainings
- Raise awareness on sustainable use of environment
- Community ecoforestry projects
- Training on forestry
- Awareness on climate change
- Establish ecotourism projects
- Conduct relevant trainings on tourism and hospitality
- Facilitate entrepreneur training
- Establish youth and gender projects

Each action is accompanied with a baseline and target number of projects. There may be some merit in examining whether the funding for these projects can mutually support a local level PES project.



Map 10.1: West New Britain Province and LLGs

11. LOCAL LEVEL GOVERNMENT (LLG) POLICIES

Three LLG five-year plans, as listed below, were available for consultant review during the writing of this report. Each of these plans were reviewed with respect to creating a PES scheme and for overall conservation objectives consistent with the CbFCCRM Project.

CENTRAL INLAND POMIO LLG 5-YEAR PLAN

The Plan was reviewed for relevance to conservation and the objectives of the CbFCCRM Project. Several of the development strategies in this CIP Plan are consistent with higher level government plans and with the objectives of the Project. Of special note is their desired strategy to create a gazetted National Park in and around Kavakuna Cave. This goal is consistent at all levels of government policy, from the Provincial plan to District Plan and this LLG. The Plan's forestry strategies also called for 50% of the ritual areas to be protected and increases in community-based sustainable forestry. The tourism strategies seek to double the number of tourism-based employment by the year 2018 and increase the number of tourism operators to three. The Plan also calls for an increase in oil palm production by 10% which may have contradictory effects on conservation.

EAST POMIO LLG 5-YEAR PLAN

This Plan has a wide range of general strategies for development. Their economic development focus appears to be diversified job creation. The Plan addresses job creation strategies in forestry, livestock, crop management, fisheries, industrial development and tourism. Conservation efforts in this plan extend to awareness raising and LOC initiatives, project visitation and support. The Plan calls for training in entrepreneurship. The only mention of tourism development calls for the identification of tourism products to be developed. There is no specific call for preservation of land areas.

MELKOI LLG 5-YEAR PLAN

The Melkoi Plan clearly states the desire to conserve valuable natural resources. The community seeks to establish several new conservation areas and wildlife management areas, two ecotourism lodges, a Marine protected area and a Provincial Park. The Plan calls for two new tourism sites to be developed by 2018. They are also seeking to increase the number of tourist products, increase the number of tour operators and conduct a cultural mapping exercise. The community is also interested in large-scale reforestation.

A view of the volcano in Rabaul illustrates ecotourism potential, East New Britain Province, PNG © Alice Plate/ UNDP

12. POLICY GAP ANALYSIS

POLICY QUESTIONS

Based on a review of the major policy issues facing PES globally and an assessment of existing environmental policies in PNG, a series of fundamental questions emerge that help focus a policy analysis to determine if PNG is ready to implement PES. This policy gap analysis will use these questions, as listed below, as criteria to guide the inquiry and determine PNG's capability to structure a PES scheme:

1. What is the nature and extent of voluntary contracts between providers of ES and the buyer? A large disparity of power exists between the buyer, usually a wealthy entity with political and financial muscle, and the seller, usually impoverished landowners with little formal education. Who regulates these contracts and under what authority?
2. Agents, working on behalf of the sellers, often present themselves as professional negotiators and knowledgeable business people who, after being hired, claim to create favourable results on behalf of landowners. Should these agents be allowed to enter into the exchange and receive a commission? If so, who regulates them? Under what rules? How much commission should they receive and at what point do the economic incentives fail because the land owners did not receive their rightful percentage?
3. The value of natural resources is difficult to estimate. What role do economic valuations play in the exchange to ensure the ES are being sold at prices that reflect their true market value? Are some valuation procedures more appropriate than others? Should the government provide guidance on how these valuations should be conducted?
4. The type of buyer is closely related to the type of service that is provided. For instance, the rights to WMAs may be purchased by international NGOs while global carbon sequestration services may be purchased by industrial polluters. Both entities will have unique demand curves and price elasticities. In other words, the NGO's are likely purchasing on a voluntary basis, generating revenue through donations or grants, and may have some freedom in negotiating a price. The industrial company may be required to purchase the carbon credits by its regulating agency with internal funds. These two situations imply site-specific PES mechanisms and policies. Flexible and various policies are needed depending on the ES and the purchaser. Are national policies flexible enough to account for these differences?
5. As discussed in detail above, structural changes to environmental management are generally recognized as more sustainable over the long term yet more difficult to see rewards. Conversely, use of restricting strategies demonstrate changes quickly but generally do not addresses the root causes of the environmental degradation and may not be sustainable over the long term. Do national PES policies promote long-term and structural changes to environmental management or do they promote short term and immediate restriction of access and use of natural resources?

POLICY GAPS

The five major policy questions discussed above are summarised to form the assessment criteria of the analysis. They are then answered to form the basis of the gap analysis.

POLICY GAP ANALYSIS SUMMARY

A policy gap analysis is an investigation into the legal or regulatory framework that permits a government to implement a programme. The analysis for this project focused on the best available options for PES on New Britain Island and PNG's ability to implement a PES program. Because PES is a unique concept – a voluntary payment to landowners in exchange for a given environmental service – PNG is at the early stages of creating policies to support a national PES program. Significant policy gaps still exist that govern critical aspects of PES. There is no single government agency to oversee a PES exchange. A PES exchange would occur under no authority or set of regulations other than existing contract law, which may be too vague to assure integrity and legitimacy in the sale of ES. An unregulated market is often a benefit for one party and a risk for the other. PNG has no regulation over the size, quantity and type of exchanges; no means of authorizing third party agents, if the market demands such a position; no approved valuation methods for natural resources; and no procedures to account for different markets. PNG currently has a completely unregulated PES market, if one exists at all.

Table 11.1: Summary of 5 Major Policy Questions

Policy Criterion	PNG Policy Response	Policy Gap
Under what authority are PES contracts regulated?	Any PES contract signed today would be regulated by the body of relevant contract law established since independence. A review of business law within PNG is not conducted under this consultancy. The Office of Climate Change and Development (OCCD) adopted FPIC guidelines which directs PES-types of activities to be conducted with Free, Prior, and Informed Consent. Any private company must also be registered by the IPA. This registration only authorizes companies to legitimately conduct businesses. It does not provide any regulation over the type of business and activities the business performs.	There are no polices regulating the exchange of money for environmental services in PNG.
Are agents who represent sellers in a PES scheme regulated?	Representation of landowners is allowed by creating an ILG (Incorporated Landowners Group). The Chairman of an ILG becomes a representative of landowners. The Lands Group Incorporation Act (Chapter 147) allows for the creation of ILGs. Until recently the rules for creating an ILG were established by the Department of Lands and now by the IPA. Under the regulations of the IPA any entity or individual seeking to represent others in a business exchange must establish itself as a company and register in the IPA. Also regulating representation of Land Registration (Amendment) Act 2009. This Act allows the ILG to register Clan Land. The representative of the ILG then has the authority to conduct business affecting this land.	While representation of landowners is allowed their control is most often through at least two Acts, their authority is not well understood. The limits of what is under established by what the group of landowners agree to allow. The transactions that occur under the Chairman's discretion are not regulated, there are no government requirements for transparency and no rules over the limits of their authority.
What policy determines the correct value for resources sold in a PES contract	The valuation of products and services bought and sold in the market are often determined through standardized methods or commonly recognized international best practices. This is true for real estate, commodities, equities, insurance services and many other products and services. Payment for environmental services requires a service (and sometimes a product) to be bought and sold. PNG responds to this new service (ES) with no new valuation procedures.	PNG has no internationally accepted procedure for determining the value of ecosystem services.
Are national policies flexible enough to account for differences in buyers, sellers and Environmental Services?	PNG responds to multiple regulations with singular focus policies that govern different industries. The Forestry Act; the Mining Act; the Oil and Gas Act are examples of how the country responds to different industries. A policy that regulates the buying and selling of environmental services in PNG must recognize and accommodate a wide range of actors.	PNG has no policy to regulate the exchange of environmental services for payments.
Are PES policies aimed to promote structural changes to environmental management or short term restriction of access and use?	PNG adopted the Environment Act of 2000 and the Environment and Conservation Act of 2003. These laws aim to create long-term changes in management of natural resources. However, they have little strength over extractive policies of mining and forestry. The Conservation and Environmental Protection Authority Act of 2014 created CEPA, a structural change to how the environment will be managed. CEPA can regulate environmental impacts, impose penalties and generate revenue. This is a new realm for PNG and it is too early to determine how it will affect the environment.	The root causes of environmental degradation are not being addressed in PNG. The UN REDD programme is currently working with the National government to prepare the country as 'REDD ready' and Programme officials have identified this issue as a major challenge for PNG.

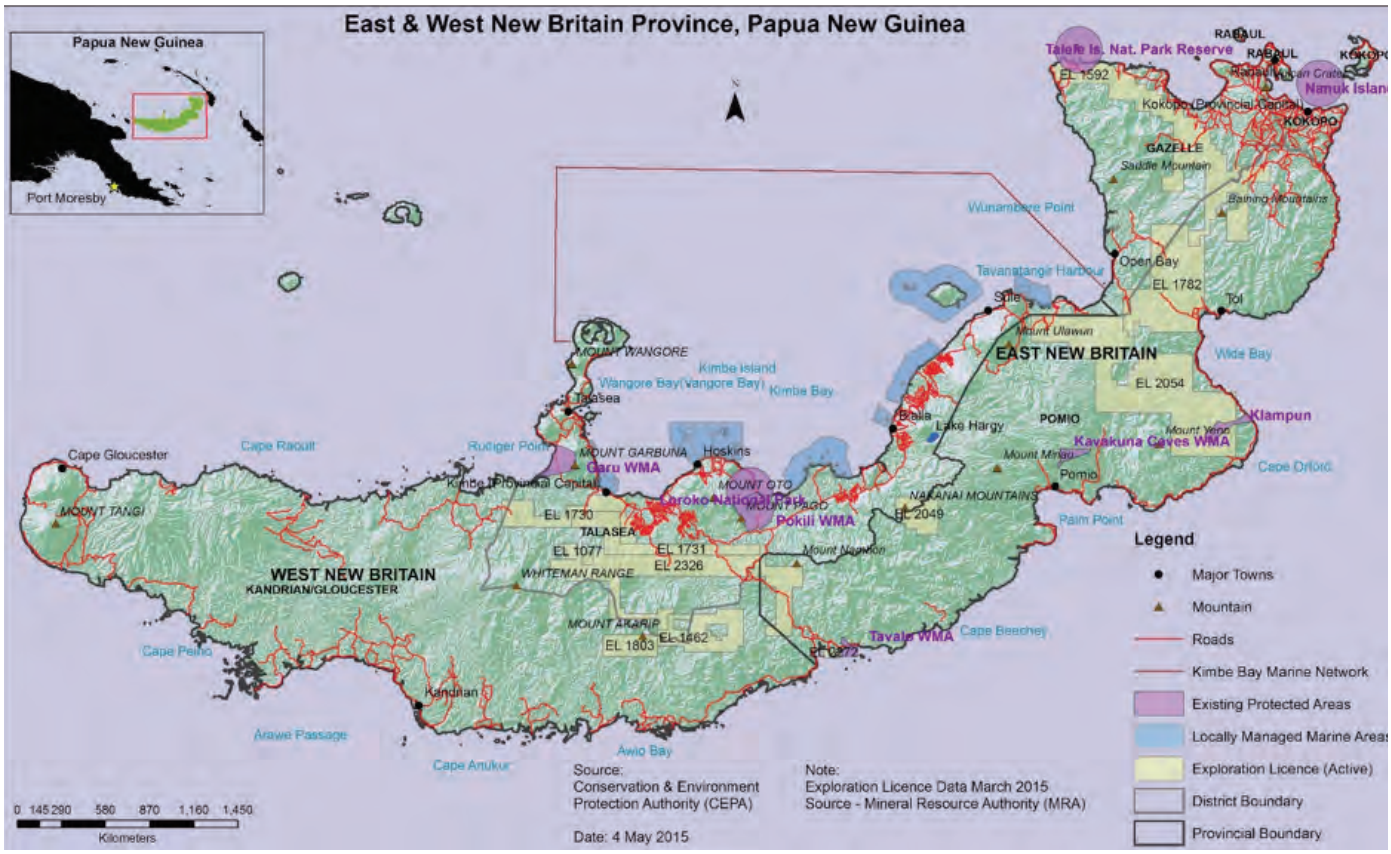
POLICY GAP ANALYSIS SUMMARY CONT'D

PES is a tool to achieve an end. The payment is not the end itself, but a means to achieve environmental protection and, specifically for the CbFCCRM programme, a means to preserve, protect and expand WMAs on New Britain Island. It is currently unclear how a PES scheme will serve these ends since an overarching PES policy strategy is not articulated.

Significant policy challenges still must be addressed to create an effective PES programme. The valuation methods of natural resources must be conducted consistently and legitimately against internationally recognized criteria. Without this, market confidence will deteriorate and the life of the PES programme will be short. Buyers and sellers of ES must be authorized within the national PES programme like any other business entity or occupation. The time scale on which the PES programme is structured will need to be integrated into a national environmental conservation strategy. The geographic and administrative scale of a PES programme must be compatible with national economic development strategies. Finally, a PES programme must not create perverse incentives where the programme results in rent-seeking behavior, or worse, generate a flow of payments to stop illegal activities.

Policy makers will need to exercise vigilance in avoiding the pitfalls of an ill-conceived PES programme. A programme for New Britain Island must be tailored to the unique socio-cultural and natural environment of the Island, yet still be grounded in national policy that provides legitimacy and confidence to the market. Other deliverables of this project will help identify the economic activities that are most feasible on the Island, and from there a custom-designed PES programme can be created.

This final report provides a foundation of knowledge on creating a PES scheme and recommendations for moving forward. We learned that a PES scheme has several challenges stemming from it being so new. There are many aspects of a PES scheme that need to be understood. We also know that a PES scheme must be uniquely designed for each resource and location in question. The PES envisioned for New Britain Island is one that will support the CbFCCRM Project and establish economic incentives to move the national system of protected areas on the road toward sustainability. There are many variables that will ultimately decide whether or not a PES scheme will be successful. The most influential of them all will be the creativity of the designers to custom fit the right scheme to the right socio-cultural, political and economic situation.



Map 12.1: New Britain Island Conservation Areas

13. OPTIONS AND OPPORTUNITIES

INTRODUCTION

New Britain Island offers to the world some of the richest biodiversity, densest forest, and most spectacular natural beauty on earth. This Island has so many valuable natural assets that they are still not all discovered. Between 2008 and 2009 a team of scientists with Conservation International documented more than 100 new species of animals in the region and still very little is known about the plants, fresh water fish, mammals, and insects of the Island. Any visitor, standing in the forest and looking out toward the sea, will know intuitively that this is a very special place. Over 60 species of animals can only be found on New Britain Island. Visitors could walk through virgin rainforest where trees are a century old and the ground is so spongy with decomposed matter that it feels like you are walking on a mattress.

A string of active and ancient volcanoes forms the Island's backbone. Its global tectonic location makes it highly active both seismically and volcanically. The land bursts from sea level to 2000 metres in a kilometre.

Nakanai Mountains, PNG © Alvarez Photography

Trekking is so challenging that it may take five days to walk what a hawk can fly in 30 minutes. The mountains are formed from deposits of limestone and volcanic ash which were easily eroded by massive rainfalls over the last 200,000 years, creating deep ravines and gorges. Rain fell in such heavy volumes that it created massive sinkholes large enough to fit a jumbo jet.

No other place in the world has such a large concentration of these mega-dolines than in the Nakanai Mountains. These enormous implosions of earth can only be fully seen and appreciated from the air. They trap surface water flows and send them straight into the earth before reaching the sea miles away, creating some of the largest and most powerful

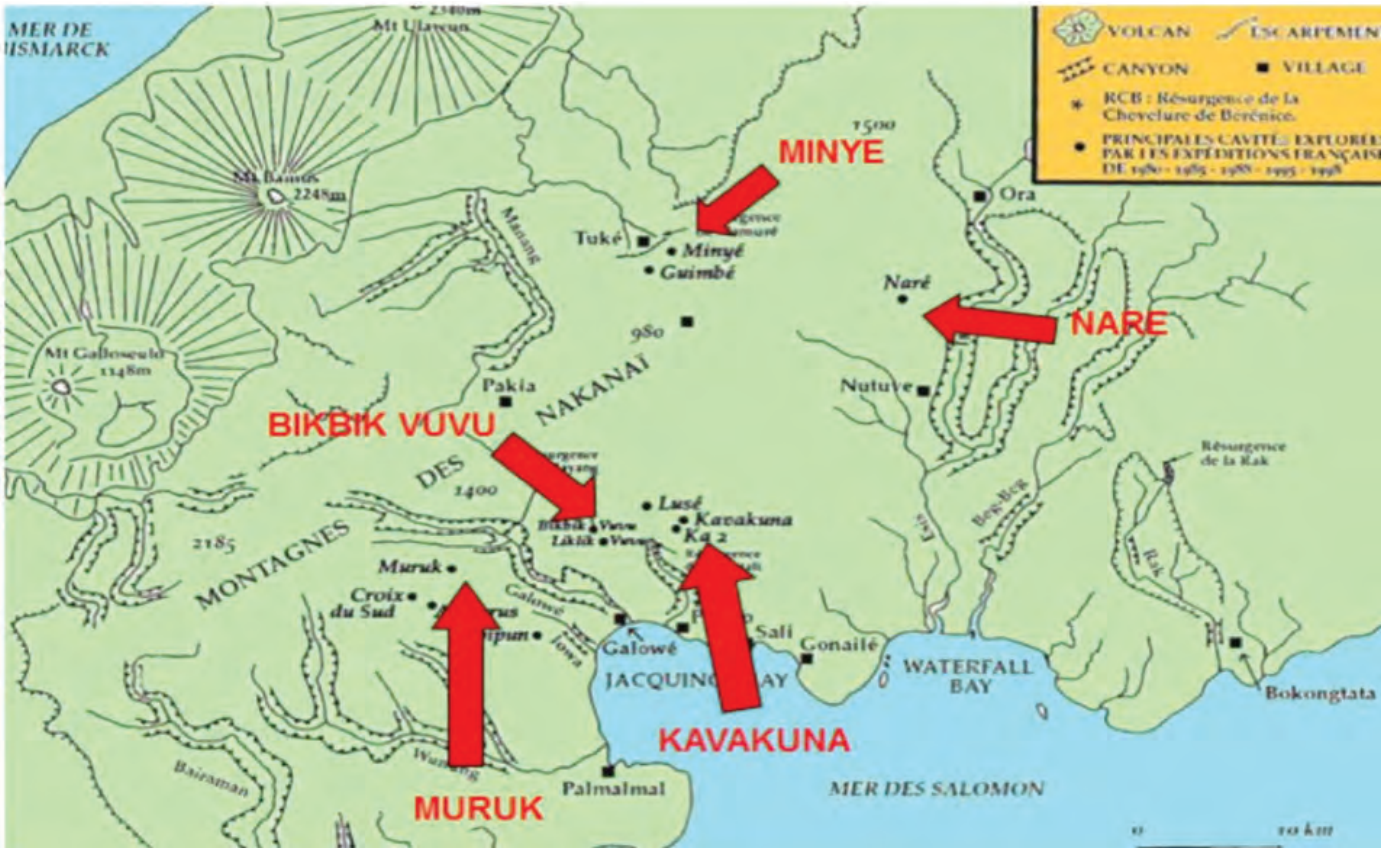


Figure 13.1 Network of Mega-dolines in Nakanai Mountains

underground rivers in the world. The rivers in these caves are so fierce that anyone exploring them must wear special ear protection to endure the noise. Once inside, an explorer is a guest to one of the largest cave rooms in the world, so large that the tallest building in PNG can fit inside this room twice, standing on top of each other. There are waterfalls inside these caves 40 metres tall.

This network of five massive sinkholes – Kavakuna, Muruk, BikBik Vuvu, Nare and Minye – is spread throughout most of the Nakanai Mountain range. Some cave explorers have suspected that they are connected and 11 major scientific expeditions have provided supporting but inconclusive evidence. The presence of this network of caves is so rare that they 'could well qualify as a stand-alone World Heritage nomination.

The oceans surrounding New Britain Island are equally amazing. Experienced recreational divers from across the globe find the Bismarck and Solomon Seas to be best in the world. The seas are part of the Coral Triangle and have dense concentrations of coral reaching over 500 species that give life support to 945 species of reef fish. The seas are teeming with fish. Local fisher folk can commonly catch dozens of mackerel, tuna and jacks with no bait. Schools of dolphins chase boats and turtles can be seen through clear blue waters 10 metres down. A PES scheme is designed to protect these valuable resources and counter the actions that threaten their long-term sustainability. This section reviews the options and opportunities for creating a PES based on these assets but first, we must review the threats to these resources.

Palm Oil Plantation in East New Britain © Nick Turner/ UNDP

THREATS

From the top of a mountain in Pomio District one can see a landscape denuded by logging and industrial agriculture. A forest floor once thick with micro-organisms is now eroded to the sea, threating coral reefs and its marine life and exposing a limestone surface that will never regain the soil cover. The loss is permanent in any timescale other than geologic. The land where agro-industry entered is traversed by nearly a million kilometres of dirt roads. Taking off from the airport in Kimbe, one will see oil palm plantations as far as the eye can see. The industry brings social destruction too as it imports labour not supplied locally, and their families, many of whom remain unemployed.

A PES scheme should provide livelihoods that are based on the natural assets of the Island. Yet these assets are disappearing. The amazingly ugly and the amazingly beautiful coexist on the same small island separated by mountain ridges. With increases in technology, human greed, political corruption, economic persuasion and global demand for cheap resources, the mountain ridges of New Britain are becoming porous borders and the last robust healthy ecosystems are being threatened and destroyed forever.

Even the Protected Areas on the island are not safe. Four WMAs, Garu, Klampun, Poliki, and Tavalo comprise more than 99% of the total protected lands. Since 1972 all but Klampun have been logged and only around 40% of their original rainforest remained in 2002 . Poliki WMA, located at the foot of Mt. Pago, has lost all of its original rainforest (~7.5 km2). The entire WMA, which includes extensive hot springs that are used by the megapode Megapodius eremita to incubate eggs, is now covered in secondary forest or clearings.

"New Britain could very well become the first place in PNG to lose species to extinction. It is clear that logging (with ever decreasing fallow periods), forest conversion to oil palm and other land clearance activities have reduced the lowland rain forest on this island to a fraction of its previous expanse. Much of what remains is included in existing or proposed

logging concessions or SABLs. New Britain is clearly PNG's greatest conservation concern. "

A new report on the condition of the biodiversity on the Island states the 'New Britain Island supports a large and highly endemic biota that is in conservation peril .'. During the past 12 years over 10,000 hectares of primary forest has been lost; since 1972 more than three quarters of forest that is accessible to commercial logging has been lost or degraded, with more than 90% of what remains allocated to logging concessions. Compared to 1972, less than 30% of New Britain's primary forest remains, concentrated mainly at higher elevations and in areas of karst. Several species are on the International Union for Conservation of Nature's Red List (often regarded as the International Endangered Species List). Birds on the Red List face the greatest threats because the protected areas are simply too small, and too highly disturbed to harbor more than a few individuals of any of the protected birds. Ironically, birdwatching offers some of the highest return on investments in the ecotourism industry.

The report concludes that 'New Britain could very well become the first place in Papua New Guinea to lose species to extinction. It is clear that logging (with ever decreasing fallow periods), forest conversion to oil palm and other land clearance activities have reduced the lowland rain forest on this island to a fraction of its previous expanse. Much of what remains is included in existing or proposed logging concessions or Special Agricultural Business Leases (SABL). New Britain is clearly Papua New Guinea's greatest conservation concern."

SOCIO-ECONOMICS

A study of the socio-economics of New Britain Island is helpful in determining the options and opportunities for finding the right PES scheme. A successful PES scheme, as we have learned previously, is one that uses the power of economic incentives to make conservation preferable over extraction of natural resources. CEPA is seeking to apply a PES scheme on New Britain Island for the purpose of shielding existing protected areas from further encroachment, to conserve existing virgin rainforest and rare natural assets, and to create incentives for establishing new protected areas. A review of the socio-economic environment in which PES schemes might be built helps identify the choices landowners now make in their daily economy and sheds light on the type and size of incentives that might be necessary to influence a choice toward conservation. The purpose of this section of the report is to help policy makers understand the impacts of different land use choices. While a detailed socio-economic study is not part of the scope, the charge here is to study and document the socio-economics of forestry/oil palm operations in comparison to potential PES alternatives to help inform policy choices.

The fight for the survival of the rainforest on New Britain Island is clearly a faceoff between extraction industries, namely logging and oil palm, vs existing conservation efforts. Current conservation efforts are comprised of CEPA and its responsibilities, international and domestic NGOs, and the will of individual landowners. These efforts often act independently of each other, they are not synchronized with a coherent strategic plan and may even have competing interests at times. On the other hand, logging and oil palm often work in a coordinated progression. Logging permits are often granted with oil palm industries entering the parcel after the logs are cleared.

These industries are also supported by institutional backing from development banks (i.e. World Bank, the Government of Australia's Department of Foreign Affairs and Trade, and the Asian Development Bank) who loan these industries money under the auspices of helping rural landowners gain a piece of a growing international market. For example, the World Bank (IDA) recently lent PNG USD27 million to implement the Smallholder Agricultural Development Project. The objective of the project is to 'increase, in a sustainable manner, the level of involvement of targeted communities in their local development through increasing oil palm revenue and local participation. ' No mention is made that PNG must also support the project with USD41.3 million dollars[2] whether or not the project is truly sustainable. Project funding at this massive scale is encouraging smallholders to grown oil palm trees while underfunded and uncoordinated conservation efforts can barely afford to educate smallholders about the opportunity costs of doing so.

Economic activities are often categorized into two overarching sectors, formal and informal. The formal sector is defended as employment measured through wages and salaries. These workers have a formal relationship with an employer and are responsible for meeting specified expectations.

[2](USD7.3M from local communities; USD15.9M from local sources of borrowing country; USD18.1M from the borrower)

The informal sector is made up of people without a formal relationship to an employer. Technically they are considered unemployed, however they are making a living. They provide for the household needs through a wide variety of activities which may include subsistence farming, roadside sales, temporary labour, transportation services and sales of arts and handicrafts. They eat what they grow or gather and they sell their surplus. This may be their only source of income or it may supplement a formal sector wage. The informal sector is also referred to as the subsistence sector or simply subsistence living. In countries with high (formal) unemployment, there will be a high percentage of people in the informal sector. PNG has a large and strong informal economic sector.

The strength of the informal sector in PNG is fueled by the availability of land on which to grow crops, seas from which to gather, and water, which is copious throughout the country. Because 97% of the land in PNG is still customarily owned by families or clans, people have the resources to grow food. The land tenure system in PNG gives people basic food and shelter, a social identity and protects them from wide swings in imported food prices (of which many items are less healthy). For the most part, PNG is not plagued with widespread hunger or homelessness which is largely a result of the informal sector taking advantage of their land resources and abundant water. Where this is not true is in the urban areas, where rural dwellers left their customary land in search of formal employment.

Without land resources to live a subsistence lifestyle, these same people would be taxing the social services system of the government. Regardless of how little the country may have to contribute to social programmes, a large population of malnourished and homeless would demand a government response. In this sense, the informal sector is saving the government unquantified sums of resources (human, financial, and physical) by avoiding these problems and it is access to land that makes this possible. When logging and oil palm activities eliminate the option to use land for subsistence, there are two hidden costs that are generally not recognized: 1) the government is burdened by additional costs of either providing additional social services or by dealing with a population that is declining in human development measures; 2) the landowner is now less well-off by being forced to purchase food and building materials that would otherwise have cost nothing except labour.

Subsistence living is an example of one of the freest markets in a capitalistic society. It requires no subsidies to production, the price is set purely by market transactions, there is no publicly funded infrastructure built solely to support the industry, and there are no government interventions[3] in the market place.

On the other hand, monoculture production, such as oil palm, requires expensive fertilizers and chemicals which are paid for by the landowner. A crop of oil palm will eliminate the ability to grow many other foods, unlike copra, coffee or cocoa which are compatible with growing garden foods for household consumption . In economic terms, the loss of this ability to grow other

Table 13.1 Comparison of incomes between formal and informal sectors

Formal Sector	Ave. Weekly Earnings	Informal Sector	Ave. Weekly Earnings
Ramu Sugar basic wage, Madang	42	Family subsistence Production (per 7 people Kina equivalent)	258
RD Tuna factory basic wage, Madang	34	Informal sector business, Central Prov.	158
Ramu Nickel Construction, Madang	50	Informal Sector Business, ENB .	124
Village Oil Palm/LSS oil Palm, Oro	60/107	Informal Sector Business, Morobe .	130
Mama Lus Frut, WNB	29/49	Informal Sector Business, Western Highland.	138
Chicken factory workers, Marobe	102	Roadside Sellers, Madang	286 [138]
Private store workers, Kokopo	445	Roadside Sellers, Morobe	285 [144]
Papindo Store workers, Kokopo	100	Roadside Sellers, Eastern Highlands	230 [230]
National Minimum wage (3.20k/hr)	128	Roadside Sellers, ENB	198 [144]
Leasing Family land to Oil Palm company (K20-100/yr)	2		

Source: Anderson, T 2015 . Collected from eight secondary sources between 2002 and 2011

[3]Actually, very minimal, but some regulations occur in the form of controls over public market places and public health.

crops is called an opportunity cost. One estimate on the opportunity cost of the loss of productive land to oil palm is 17,000 PNG Kina (PGK)per hectare . Oil palm values are often measured in terms of export markets yet domestic cash crops like betel nut and peanuts often bring higher returns without chemical inputs .

Many projects that advance a PES scheme will often (not always) fall within the informal sector. Collection and sales of non-timber forest products, fisheries activities and handicraft sales are certainly in the informal sector. The sale of carbon credits requires no action on the part of the landowners other than to receive income (or in-kind benefits) in exchange for not disturbing the forests. This is also within the informal sector since there is no formal employment. Likewise, for watershed protection schemes. Ecotourism is a mix of both sectors; an independent guest lodge owner is informally employed by himself but the business may support full-time employees. Since a PES scheme is often in the informal sector, it is important to carefully compare the formal vs. informal economic sectors.

Table 13.1 (on page 51) displays the research of several studies over the last decade that documented incomes from both sectors. The table shows, on line 1 of the informal column, the weekly average value of food produced by families in their gardens. If the average family wasn't able to produce this amount of food for personal consumption due to loss of land to oil palm, then the figure represents the opportunity cost of lost food production per week.

At this rate the annual value is PGK13,416, slightly lower than the PGK17,000 figure presented above. The difference is likely explained by different methodologies and/or the inclusion of a different basket of consumables. The opportunity cost can vary widely because the value of domestic crops, like most commodities, can vary widely. The landowner growing crops can vary the production quantity and variety of his output based on market dynamic, weather, cost of seeds and other factors. Maintaining this flexibility provides the landowner with valuable insurance that is not possible with oil palm, which ties up the land for many years .

Selling produce only provides a small income to landholders in PNG © Alice Plate/ UNDP

Table 13.2 Kimbe Market Vegetable Prices, July 11, 2015

Item	Quantity	Price range (PGK)
Roots and Tubers		
Sweet potato (kaukau)	Heap	5.00
Taro	Bundle	10.00-20.00
Taro (Singapore)	Heap	1.00-5.00
Banana (green)	Bunch	7.00-20.00
Banana (green)	Hand	1.00-4.00
Yams		
Cassava	single	1.00
Green vegetables		
Aibika	Bundle	1.00
Choko	Bundle	50t
kangkong	Bundle	50t
tulip	Bundle	1.00
pakchoi	Bundle	2.00
Pumpkin tips	Bundle	50t
Water crest	Bundle	50t
fern	Bundle	50t
aupa	Bundle	1.00

Table 13.2 Kimbe Market Vegetable Prices, July 11, 2015 Cont'd

Item	Quantity	Price range (PGK)
karakap	Bundle	70t
Spring onion	Bundle	30t-60t
Chillie (large)	single	10t-20t
Capsicum	single	10t-20t
tomato	single	20t-30t
Long beans	single	70t-1.00
Egg plant	single	1.00
Bitter melon	single	1.00
Choko fruit	single	40t
ginger	single	20t-1.00
Fruits		
Banana (ripe)	hand	1.00-2.00
cucumber	single	30t-1.00
Water melon	single	4.00-20.00
guava	single	1.00
Mustard (piper fruit)	single	10t-50t
Mustard (piper fruit)	single	1.00
pumpkin	single	5.00
Pawpaw (papaya)	single	2.00-3.00
pineapple	single	2.00-6.00
Mango	single	1.00
Nuts		
peanut	bunch	1.00-2.00
galip	Wrap and heap	1.00-2.00
Betel nut	single	20t-30t
coconut	green	50t-1.00
coconut	dry	30t-50t
okari	Heap (4)	50t
Others		
Sugarcane	single	50t-1.00
sago	bag	6.00
seaweed	wrap	5.00
Lime (powder)	Parcel (small)	50t-2.00
Lime (powder)	Parcel (larger)	5.00
Source: CEPA staff primary data collection		

Private store workers in Kokopo is the only formal sector employment that pays better than the informal sector. In all other cases the informal sector paid better than wage employment. The national minimum wage is a fraction of what a roadside seller could earn. This may be a contributing factor to the high unemployment rate in PNG. Informal workers are recorded as unemployed regardless of how much money they make per year or whether informal employment is the smarter choice.

A recent site visit to Baia village in West New Britain illustrates this point. Interviews with several villagers showed that they quit their jobs at the local eco-tourist fishing lodge to concentrate their working hours on growing produce for local markets. The irony is that the local market was a logging camp, the very industry that is lobbying to take their land away. Landowners who sell their rights to logging or monoculture interests have lost their ability to produce their own food and building materials. A site visit to the village of Tavolo revealed this exact scenario. Neighbouring clans are encroaching on Tavolo's property because they lost their rights to cultivate and harvest.

Data on current food prices for a wide variety of common garden crops was collected by CEPA staff in July 2015 (see table 13.2 above). These prices are used as the basis to determine the value of the food that landowners would have to buy if they lost their land to logging or oil palm. By applying these prices to annual food purchases one can determine the value of this lost opportunity. Quantities of food purchases are taken from previous studies and assumed purchases are for an average family of two adults and four-five children. The study shows that approximately three kilograms (kg) of tubers and half a kg of greens are consumed for breakfast; two kg of fruit and coconuts are consumed at lunch and an evening meal consists of 3.75kg of a variety of tubers, roots, greens, vegetables and fruit. By taking the average weight of each product and multiplying it by the daily quantity consumed and then multiplying that by the cost of the food items, we arrive at the average cost per meal (tables 13.3 and 13.4).

The results of this calculation using 2015 food prices in Kimbe show that an average family purchases approximately PGK48.72 of food per day, which is equivalent to PGK17,782 per year. A separate study in 2011 showed that an average family's daily food consumption cost between PGK29 and PGK52 per day or between PGK10,767 and PGK18,980 per year which helps confirm these numbers as reasonable. This figure of PGK17,782 represents the value of what they saved by growing their own food on land not leased to logging or oil palm businesses.

In addition to this saving is real income from the sale of the surplus food grown and sold at the market by the family. The average weekly earnings from a roadside seller in ENB Province was PGK198, or PGK39.6 per day or PGK10,296 per year, which is about 154 percent of the amount of the 2011 weekly minimum wage. It is also important to note that these wages were earned in an average of only 3.4 days and 89% of the vendors were women . By contrast, a minimum wage worker at an oil palm plantation would earn only PGK25.6 per day or PGK128Kina in a five-day week.

For a different perspective on the same issue, one can look at the revenue difference per hectare between growing oil palm vs. gardening for a combination of subsistence and market sales. The World Bank's Smallholder Agricultural Development Project is a five-year, USD$68M effort to encourage production of oil palm on customary land in Oro and WNB Provinces. The Bank's publication on this project states:

"Papua New Guinea's oil palm industry, while representing only one percent of global production, contributes substantially to rural incomes in the country. At current prices, oil palm provides smallholders with very favorable returns on their land and labor (K2,793/ha and K130/day worked), compared to other cash crops such as cocoa (K1,136/ha and K21/day worked) and coffee (K2,058/ha and K13/day worked). The industry is second only to the public service in terms of formal employment, with around 16,000 people working for the six milling companies. Approximately 18,500 smallholders supply the mills with fruit."

The only comparison made here is with coffee and cocoa; there are no comparisons to higher return crops like betel nut and peanuts. Oil palm growers are earning K2,793/ha/year which is the equivalent of K53.7/ha/week. A separate oil palm industry report also uses the

Table 13.3 Estimated diet for average family of 4-5 children and two adults

Estimated Diet for average family of 4-5 children and two adults	
Morning	Cooking Banana (3kg); Greens (.5kg)
Lunch	Fruit (pawpaw, pineapple, banana 2kg); Coconut
Evening	Taro(.5kg) Cooking Banana (1.5kg) tomato (.25kg); onion (.25kg) carrots .25kg); chille, ginger
Source: Anderson T. 2015. "Land and Livelihoods in Papua New Guinea." Australian Scholarly. Melbourne	

Table 13.4 Average cost per meal for a household of 4-5 children and 2 adults

Cost/Meal (PGK)				
Breakfast	**Lunch**	**Evening**	**Ave. Daily Cost of Food**	**Ave. Annual Cost of Food**
8.50	7.02	33.20	48.73	17,782

same number . If a landowner doesn't produce any oil palm but rather leases his land to an oil palm company, the revenue to the landowner is K75/ha/year in royalty payments . On the other hand, a 2011 study shows that the per hectare revenue from selling produce in the local market is between K10,000 and K25,000 per year . The return on investment from growing and selling garden produce is between three and eight times more lucrative per hectare than growing oil palm. This doesn't include the annual savings of K17,782 that landowners receive by growing their own food.

Other market dynamics also make farming for subsistence and market sales more attractive. The price of oil palm is controlled by international commodity markets over which the landowner is far removed and has no control. Once the oil palm is planted the landowner is committed to these market forces for decades. Vegetable growers can adjust annually to changes in domestic market demands and price swings. Export commodities have a long series of middle agents that are necessary for the sale including transportation, cooperative administration, wholesalers, agents, and distributors. Each need a percent of the value of the product and the more links in this value chain, the less is available for the primary producer.

Garden sales often occur on the roadside within walking distance to the fields from which they came and are sold by the same farmers who produced them. At worst, the value chain would extend to the nearest urban area and the products are sold by other family members. Oil palm trees are incompatible with companion planting while other cash crops like cocoa, coffee, coconut, peanuts and betel nut can be cultivated side-by-side with garden vegetables. This greatly reduces the opportunity cost associated with oil palm. So while these other cash crops may return less per hectare in relative terms to oil palm, they are worth more when integrated into a diverse portfolio of agricultural crops on a smallholder plot.

Food security is another important consideration is this analysis. Security is a risk management business. When a smallholder allocates his land to oil palm he or she is forgoing the ability to produce about K17,000 worth of food per year and exposing him/herself to risk. K17,000 worth of food is the equivalent of approximately 4434kg of food in weight. The World Bank estimates there are approximately 18,500 smallholder oil palm producers in the above-mentioned project in WNB and Oro provinces alone. This means that the country is forfeiting the production of 82 million kg of food every year which must now be replaced by some other source.

"PNG is forfeiting the production of 82 million kg of food every year which must now be replaced by some other source. At current market prices, the cost of this food is approximately K315 million. This figure represents the value of the risk that the government is exposing itself to so that those same farmers can earn K2793/ha per year."

At current market prices, the cost of this food is approximately K315 million. This figure represents the value of the risk that the government is exposing itself to so that those same farmers can earn K2793/ha, per year. Smallholder plots are between two and four hectares. Using the average of 3/ha per smallholder plot, this oil palm producer will earn K8,379 per year which isn't close to the K17,000 needed to feed an average size family. This places pressure on the oil palm producer to find other land to plant garden food because he/she can't afford to buy his entire diet. This creates land conflicts between clans, encroachment on protected areas and other unauthorised or illegal uses of land. It then becomes the government's responsibility to resolve these conflicts at great political and economic risk, the value of which cannot be calculated here.

In addition to these risks, the loss of productive land caused by climate change shouldn't be ignored in this analysis. For each hectare of productive land lost for environmental reasons the loss is the same as the foregone food production mentioned above (K17,000) except that there is no offsetting income from oil palm. As fertile lands are lost to rising seas, the competition for land will intensify even more.

What does all of this mean in terms of creating viable PES schemes? As previously stated, a PES scheme is designed to use free market forces to create incentives for the landowner to choose conservation over extractive industries. It does not rely on command-and-control regulations that require enforcement to protect land. Rather, it relies on economics and the logic of making the preferable choice.

"What has been demonstrated above is that the logical economic choice for landowners is to use their land for a combination of subsistence gardening and informal employment through the sales of garden food, building materials, compatible cash crops, and meat."

If this is the logical choice, then why are tens of thousands of landowners choosing to forfeit food security and accept lower incomes by leasing their land away or growing oil palm? Perhaps they are not well informed? However, if they know food prices they should know their best choice. Or were they misled? Perhaps the price of oil palm dropped since starting their plantation and now they are stuck in a 20-year lease with a monoculture that is nutrient-greedy and incompatible with other crops. Perhaps there is pressure from government or clan leaders to grow oil palm for whatever reason. This is all speculation; this report cannot delve into the reasons why landowners are making the choice to grow oil palm as it is well beyond the scope to do so. However, these questions should be investigated in detail in subsequent reports.

We don't know why landowners are taking a lesser economic option. What we do know is that international financial institutions like the World Bank and Asian Development Bank have a long history of funding oil palm development in PNG (table 13.5) amounting to at least USD161 million over the last three decades. We know that many of these internationally-supported projects pay for construction of privately owned mills and processing plants. We know that these mills are a monopsony and independently set the price for the oil palm kernels. We know that these internationally funded projects pay for road construction which the government uses to promote development, and possibly advance a political agenda. We know that these projects are funded by loans, not grants, which the PNG government must pay back in foreign currency and that exported crops like oil palm import foreign currency.

Regardless of the reason why landowners take the least preferable option, or the accuracy of these speculations, we can see with the benefit of hindsight that massive amounts of financial pressure is exerted toward the development of oil palm (and logging). We also know that conservation has no such equivalent financial backing.

The financial dichotomy between conservation and extraction is like a David vs. Goliath contest. Extraction industries are powerful and well-coordinated and have the financial backing of international banks. Conservation efforts, on the other hand, are poorly funded. The draw toward extraction is so strong that it even overrides logical choices. How can conservation beat that? What type of PES scheme is strong enough to overcome these

Table 13.5 International Funding for Oil Palm Development in PNG

Oil Palm Development in PNG			
Institution	**Start Date**	**Project**	**Loan (m$USD)**
World Bank	1983	Agriculture Support Services	14.1
World Bank	1984	West Sepik Provincial Development project	9.7
World Bank	1985	Nucleus Estate and Smallholder Project	27.6
World Bank	1985	Agricultural Credit Project	18.8
World Bank	1992	Oro Oil Palm Development Project	27
ADB	1995	Agricultural Research and Extension Project	22.11
ADB	1999-04	Small Holder Support Services pilot Project	7.6
ADB	2000	Agro-Industry Development	.5
ADB	2002	Preparing Agriculture and Rural Development Project	1
ADB	2002-04	Nucleus Agro-Enterprises Technical Assistance Program	5.8
World Bank	2007-12	Small Holder Agriculture Development	27.5
Total	**29 years**	**11 projects**	**161.7**

mega-forces? A single PES project will never be strong enough to lure landowners toward conservation at such a rate that it would save an entire rainforest. Maybe a handful of landowners or a couple of villages will pound the conservation drum and earn a living through sustainably-harvested forest products.

"Those implementing the recommendations of this report should fully appreciate that they must create a counterweight of equal magnitude to that of the extraction industries. If it took three decades to build up the extraction industry, the implementers should expect to take this long to build a counter balance."

While there are examples of this occurring now the destruction continues nonetheless – and at a much faster rate than conservation. Conservationists in PNG must learn to appreciate that they are fighting a long history of extraction and they are battling entire economic sectors. The sectors are made up of multi-million dollar industries that include tens of thousands of jobs and many stakeholders with a lot to gain. The industries are entrenched in the global economy and institutionalised in national government policies and regulations. In order to create a successful PES scheme, it must be grounded in an equally large industry.

A successful PES scheme is not one PES scheme. It is a network of programmes, projects and policies that work in concert to move an entire agenda of conservation. Those implementing the recommendations of this report should fully appreciate that they must create a counterweight of equal magnitude to that of the extraction industries. If it took three decades to build up the extraction industry, the implementers should expect to take this long to build a counter balance. The counter balance must be in an industry that employs large numbers of people, has a growing international demand, engages customary landowners, and imports foreign currency from the sales of their product. A recommended counterweight is discussed in Chapter 14.

When choosing a PES option, the implementers must keep in mind that the end goal is not to create a PES scheme – it is to conserve land. Many PES schemes may look successful on the surface. Landowners may agree to conserve forest in exchange for some form of benefits and everyone is in agreement. A third party evaluator may review the project and confirm that payments are made and agreements are upheld.

However, no one asks what effect the scheme is having on the overall ecosystem. Are forests being cleared directly outside the borders of this PES scheme? Is this scheme enticing neighbours to join in? Is the project replicable? The field work on this report involved 57 interviews and site visits, six months of desktop research, and

Table 13.6: Summary of PES options

Offset Credits: Biodiversity/Carbon	Land Management/Watershed Protection	Aesthetic Beauty/ Recreation/Tourism
		
1. Requires Baselines and Additionality 2. Global Market 3. Growing Demand/High Values 4. New & Untested Market 5. Imports foreign currency 6. Low employment required to operates 7. High Transaction & Market Entry Costs	1. Local to Local Market 2. Simple/ Low transaction Costs 3. Requires little capacity building 4. Low Demand 5. Substitution Effects –buyer has other options 6. Does not import foreign currency	1. Global Market 2. High Supply in PNG 3. Global Demand is Growing 4. High Values/Market Prices 5. Imports foreign currency 6. Large number of employees 7. Well Established Market 8. Requires Significant Capacity Building

analysed as many options as possible. The best options are compiled into three general categories of PES. The following section summarises the best options for PES on New Britain Island.

SUMMARY OF PES OPTIONS AND OPPORTUNITIES

After studying national and international case studies of PES programmes, analysing the policy framework in PNG to enable PES schemes, and visiting many potential PES locations in East and West New Britain Provinces, this section of the report will move into a set of recommendations to implement PES on New Britain Island. Before recommending specific PES options, a summary of what has been learned is presented here.

ES sold in PES schemes can be summarised into three major categories: offset credits for biodiversity or carbon; land management services most commonly implemented as protection or conservation of entire watersheds, and; aesthetic beauty, which is an essential input into recreation and tourism businesses.

Offset Credits for Biodiversity or Carbon

Offset credits are the most complicated of all PES schemes requiring an understanding of international markets, a large amount of start-up capital and a high degree of technical knowledge in biodiversity or carbon storage. They also offer great promise by tapping into a long-term global trend. International offset markets are large and growing in demand. As the issue of global warming transitions from a scientific debate on its validity to a global response, the need to find market-based approaches becomes greater.

The market for buying biodiversity or carbon credits is being created by governments that are forcing firms to offset their negative impacts of production. Global carbon markets are growing rapidly. From 2005 to 2011, the World Bank reported that the global carbon market grew from USD $1.1B to $176B. The biodiversity offset market is approximately between USD$2.2B and $4.0B in 72 established or newly emerging mitigation programmes and 1100 mitigation banks. The current condition of the carbon markets can be described as multifaceted, diverse and uncoordinated. Biodiversity markets are similar. In general, there are four major groups of carbon markets:

1. **Kyoto Protocol Mechanisms:** These include InternationalEmissionsTrading;JointImplementation; and Clean Development Mechanisms. All three stem from Conference of Parties meetings from Kyoto to Durban and are created to allow signatories of industrialised countries to create their own domestic alternative to reducing emissions.
2. **Emission Trading Schemes (ETS):** Also known as 'Cap and Trade Systems,' these markets are created by government regulations. Currently there are 40 national and 20 sub-national governments that are putting a price on carbon and engaged in ETS. In 2015, the global value of ETS carbon is estimated at USD $50B.
3. **Domestic Offset schemes:** Similar to ETS but are limited within a country. Some countries prefer to see their offsets occur on their soil. The State of California, USA, established an independent mechanism apart from the country where selected polluters are required to offset within the State of California.
4. **Voluntary Carbon Markets:** These are voluntary purchases of carbon credits by altruistic buyers who are seeking to offset their personal impact on the climate. For example, a consumer purchasing an airline ticket has the option to pay an additional percentage of the purchase price that represents his or her contribution to carbon emission from flying on the plane.

PNG must be prepared to operate within different mechanisms if it wants to compete in global offset markets. The challenges with these PES schemes is that they require extensive knowledge of how to enter and operate within these markets. The use of intermediary experts will be required, at least in the short run.

Establishing an inventory of sellable credits is also expensive. PNG's only operating carbon credit market is the April Salumei REDD+ scheme. This project took over five years and at least USD$1M to get to the point where the first credits can be sold. During this set-up phase, the project owner must create a baseline environmental condition. From the baseline, the project must prove that the purchase of offset credits is creating an improvement to the environment in addition to what would have occurred if the scheme was not established. This requirement of additional improvement is called additionality and it must be proven to give the offset credit any value.

Land Management and Watershed Protection Schemes

These PES schemes typically supply domestic demand for conservation. The buyer is often a local company with an interest in maintaining a specific area in its natural environment. For example, a hydroelectric company seeking to prevent eroded soil from passing through its turbines may pay a group of landowners to not perform land practices (logging, agriculture) that would result in soil erosion. A travel and tourism company may do the same to improve fishing, bird watching and trekking. In fact, the two industries may combine efforts and contribute toward the same purchase if their objectives are compatible.

What is convenient about these PES schemes is that they are simple, do not need a lot of capacity building and therefore, can be easily negotiated and sold between local buyers and sellers under local language, laws and customs. In PNG a hydroelectric company or tourist operation may be managed by people who live and work in the same community as the landowners. They may even speak the same tribal language. Intermediaries are not necessary. Enforcement of these local agreements is easier than international contracts.

While local land management PES schemes offer simple solutions for conservation, there is little local demand for these programmes in PNG. Even though they are simple, the purchase would have to be a justifiable business expense. The buyer would have to prove to his constituents and investors that paying local landowners for changing their land uses would make sense to their business. In PNG, conservation of land is a public service and electricity production is a government sanctioned oligopoly. These are not for-profit enterprises.

The Conservation Areas Act of 1978 and the Environmental and Conservation Law of 2003 allow the government to establish conservation areas for the public good. Is it justifiable to allow certain private landowners to profit from creating necessary public goods? Or is the PNG government more justified for restricting specified land use practices on private customary land? Any company, public or private, would first seek the free option before spending money. In this case, the electricity company would seek assistance from government regulations before paying for conservation on a watershed scale. In addition, there are not very many hydroelectric plants in PNG. Therefore, there is both a low supply and low demand for these types of PES schemes.

Aesthetic Beauty/Recreation and Tourism

Tourism PES schemes offer great promise but not without policy and management hurdles. In PNG there is an overabundance of tourism opportunities, especially adventure-based tourism and ecotourism. The tourism market is global and growing. International tourism travel grew by 100% to 1.2 billion arrivals in the last 15 years. Tourism is one of the few industries that imports foreign currency without having to export natural capital or other forms of national wealth. Unlike offset credits, tourism has been a marketable service for centuries and it is an industry that is understood by many.

Since tourism is an established market, there is a certain level of expectation that tourists bring. When a tourist buys a 5-star hotel room he or she knows what this means as tourism businesses worldwide operate on the same rating systems. Tourism businesses in PNG must know that they are competing globally and find ways to improve their market niche. The number of international arrivals to PNG is only 2% of the total number in neighbouring Indonesia. However, PNG's natural resources are, in many places, far more impressive than its neighbours'. PNG has the potential to compete but currently does not have the capacity.

Private tourism businesses could benefit from government conservation programmes. Conservation and tourism are natural allies and have compatible goals. However, the government and private sector have different internal operating procedures and this gap must be bridged in order for the two to cooperate. Tourism is a private sector enterprise and therefore, government assistance in the form of established conservation areas must be accessible to all businesses and support the general economic development goals of the country. By allowing tour operators to work in conservation areas, the government must assure that it does not become a subsidy for one business. This would add additional government regulations, management procedures and workload to an already constrained staff.

Tour operators also have many options. For example, if birdwatching becomes limited in one area, they can move to others. In PNG there is a very large supply of amazing natural attractions. A tri-party PES agreement between government, landowners and tour operators is needed to keep businesses in the same area, long-term protection for the ecosystem, and a consistent supply of revenue to landowners.

In order for a PES scheme to be successful it must have a marketable service, willing buyers and the capability to sell the service. All three of these elements of the exchange must be present. Each PES scheme will have varying amounts of each of these elements. Figure 13.2 below is constructed to summarise a comparison between the three PES schemes. Based on the author's observations and field research the quantity of each of the three elements are estimated and placed in a column. The grey section on top represents the buyers (demand), the bottom blue section is the amount of marketable ES that PNG has to sell (supply), and the middle orange section is the capability of PNG resource owners to sell the service.

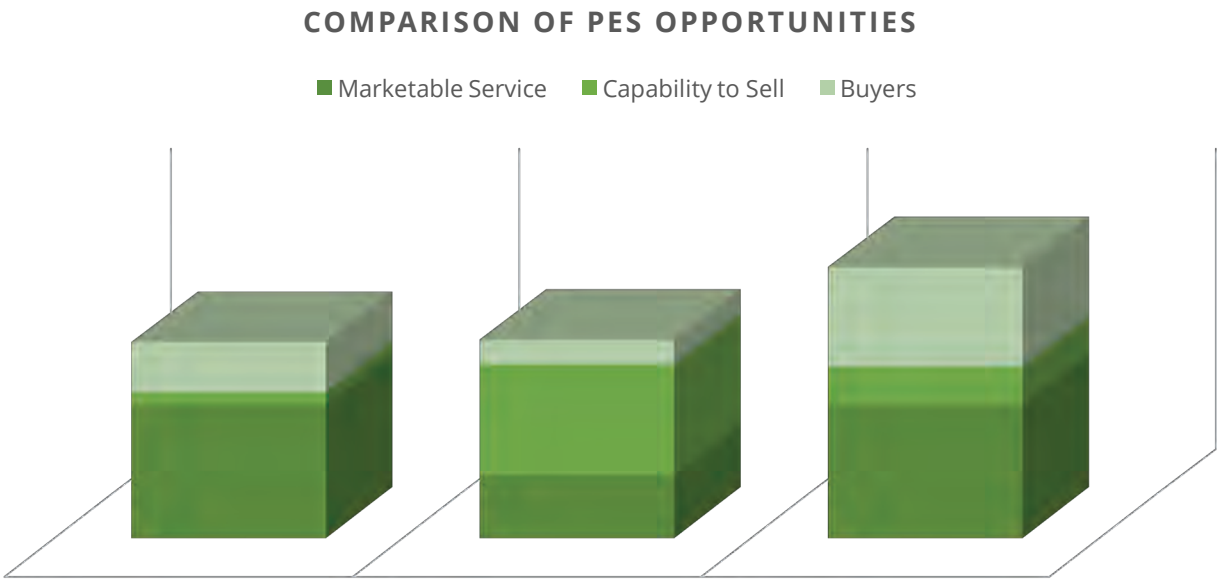
Offset Credits: On a per-acre basis, New Britain Island has some of the world's highest concentrations of biodiversity and stored carbon. Supply is not a constraint. Because the markets are new, volatile and confusing even to those with experience, PNG's capability to sell this service is low. The world demand for offset credits is strong and growing. Demand is a limiting factor but not a major constraint.

Watershed Protection: While there are countless numbers of watersheds on New Britain Island, there are a limited number of watersheds with the infrastructure or corporate presence, like a hydroelectric or water utility company, where a PES scheme would operate. The capability to sell these services is the largest among all three options because it is a local-seller-to-local-buyer exchange and both parties are knowledgeable of the market. There is low demand for these services mainly because the buyer can substitute payments for less costly government regulations to achieve the same service.

Ecotourism: There is an overabundant supply of ecotourism opportunities on New Britain Island. Not only the supply, but the quality of diving, snorkeling, fishing, birdwatching, trekking, caving exploring, secluded beaches and wild rainforests are second to none. The demand for these experiences is large, well-established, global and growing. There are few constraints on either the supply or demand side of the ledger. However, the capability to sell ecotourism is PNG's greatest challenge. The country has a marked reputation, landowner issues, low-quality tourist infrastructure and a level of hospitality that often misses tourists' expectations.

After comparing the three major PES categories, ecotourism emerges as the industry with the greatest opportunities for PES. Ecotourism, or tourism in general, is a global industry that offers the best potential to create a counterweight to extraction. It is a large global industry with a large number of employees and stakeholders who form a powerful lobby. There is a large supply and demand for these services, tourism is compatible with the PES/conservation paradigm, and it is the option that offers the lowest risk to steady, long-term importation of foreign currency, an essential component to sustainable economic development. Nonetheless, the constraints to creating ecotourism on New Britain Island, as previously mentioned, are large and they must be addressed in a comprehensive strategy for ecotourism promotion.

Figure 13.2: Comparison of PES Opportunities



Spinner dolphins swimming underwater, PNG © Shin Okamoto/ Shutterstock

14. RECOMMENDATIONS

INTERNATIONAL TRAVEL AND TOURISM: A COUNTER WEIGHT TO EXTRACTION INDUSTRIES

The previous chapter discussed how the extraction industries of oil palm and logging are entrenched in the global economy and in order to stop any destruction they cause, an equally strong economic force must be harnessed to counter balance their drive. International travel and tourism in general, and ecotourism in particular, is an industry that can carry such weight. Since PNG has such astounding natural beauty, an international visitor becomes both a tourist and an ecotourist. Definitions aside, the two overlap and distinguishing them from each other is futile, therefore, they are used interchangeably here.

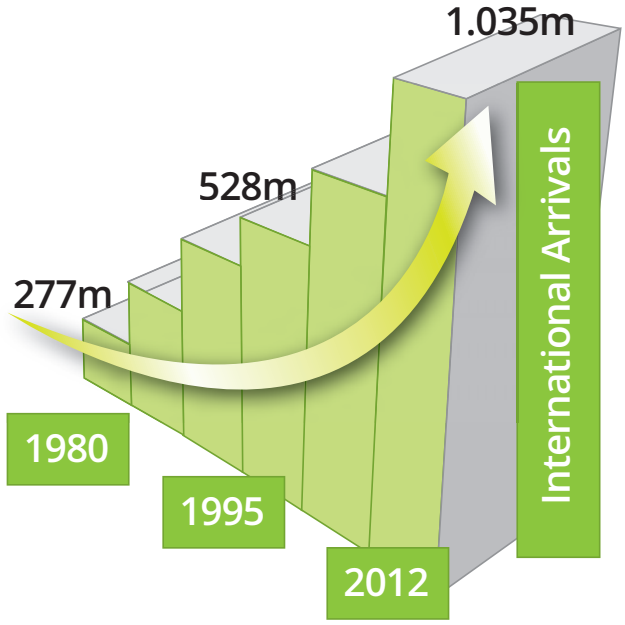


Figure 14.1: Growth in International Arrivals Worldwide

TTourism and ecotourism have great potential to counter balance the forces of extraction industries. Tourism has numerous benefits that make it worth pursuing. It is an economic activity that goes beyond conservation and helps alleviate poverty by creating jobs. Poverty alleviation is the first Millennium Development Goal. Promoting gender equity and creating a sustainable environment are Goals #3 and #7 respectively. The world's numerous aid organizations are keen on addressing multiple goals with one strategy and ecotourism has this potential. Tourism is a growing international market and is rising fastest in developing countries, with international arrivals worldwide doubling in the last 15 years.

Developing countries have a comparative advantage over developed countries because they have greater amounts of biodiversity, undisturbed nature, more exotic cultures, and usually better weather than developed countries. PNG certainly fits this definition. Ecotourism is labour-intensive and labour is less expensive in developing countries. Ecotourism has a high female participation rate and employs a wide diversity of skill sets, from manual labour to entertainment to computer marketing to management. The industry can be environmentally friendly, i.e., it has the potential to produce little pollution. It promotes micro-enterprises and home-based businesses, traditional lifestyles and cultures. It can also import valuable foreign currency without exporting any of the country's national wealth.

Another reason that PNG should seek more ecotourism is because it appears to be losing market share to neighbouring countries. Regaining lost market share is easier than capturing new markets. Annual arrivals in low and middle-income countries rose by 72% between 2005 and 2010 while PNG's arrivals grew by only 50% over the same period. The Tourism Master Plan for PNG also confirms that the country is not keeping pace with its neighbours. In looking at one tourism activity alone, there are 120,000 SCUBA divers in the Pacific region but PNG captured only 6000, or 0.5%. Yet, interviews with experienced divers will reveal that the marine life off the coast of PNG is some of the best in the world. They are not avoiding PNG because of the resource; they are avoiding PNG because of the tourism structure in the country (infrastructure, travel services, marketing ability, level of service). In simple terms, they are getting a better deal someplace else.

Multiple economic development benefits occur from promoting the tourism industry. Tourism has a supply chain that reverberates positive economic impacts through a wide range of local industries. When the traveller books travel and accommodation, spends money on entertainment, food and beverages and visits destinations, he or she will demand services from hotel owners, car rental companies, restaurants, museums, travel agencies, guide services, banks, security companies and call centres. The traveller affects large and small companies alike. Tourism has a high rate of female employment and employs people of all ages and abilities. Tourism demands a wide range of skills from artists, concierges, chefs, web technicians, cleaners,

construction, management, financial experts, servers, marketing experts, farmers, retail merchants and government employees. Tourism touches nearly every aspect of a community's economy (see Figure 14.2).

LOCAL TOURISM DATA

To fully understand the extent of the market, a comprehensive collection of existing tourism data must be undertaken. Interviews with Tourism Authority representatives revealed that little specific data on New Britain Island tourism is available through any agency. Demand-side data such as visitor profiles, tourist preferences, length of stay, point of origin and purpose of travel is not collected. Also, supply-side data such as tourist accommodation, providers, facilities, activities and infrastructure is not known. It was beyond the scope of this research work to collect extensive primary data on a single industry such as tourism.

However, to understand the preliminary level of feasibility to expand the tourism market, which is strongly recommended, the CEPA research team on this project started to create an initial database on tourism supply. This database is incomplete but should be used as a template moving forward to collect a thorough inventory of tourism supply and demand data.

The preliminary data shows that a vast majority (approximately 80%) of travellers are business travellers and about 20% are leisure travellers. Holiday travellers have very few choices for comfortable accommodation, which is something international tourists typically seek. Between East and West New Britain Provinces there are about six hotels that reach international standards, with a combined total of 94 rooms in WNB and approximately the same in ENB (data collection not completed). The data on total number of visitors to the hotels, their lengths of stay and party size is inconclusive so the picture on the market demand for tourism facilities is not clear. Additional research is recommended. (Recommendation #8).

Recommendation 1: Establish the Ecotourism Leadership Council

Implementing this plan will require the cooperation of several government agencies, NGOs and private sector stakeholders. The recommendations listed below demand a lot of work and will need to be shaped and refined by the combined experiences from many different viewpoints. This is the role of the Ecotourism Leadership Council. Establishing a separate entity with the responsibility to implement this plan will ensure follow-through, evaluation and feedback. An Ecotourism Leadership Council should be established to oversee the formation of a new counterweight industry to offset

Figure 14.2: Tourism Supply Chains

the pressures from extraction industries. They are responsible for effecting the long-term and short-term goals in this plan, as well as initiating new actions and writing and advocating for appropriate national policies.

It is recommended that the Council be formed under joint authority from CEPA and the Tourism Authority from which three or five members will form an Executive Committee. The Executive Committee will then appoint the remaining members from public, private and non-profit sectors. The first orders of business will be to establish bylaws on participation and decision-making and write an annual work plan. The Council will approve these recommendations, refine them with yet unforeseen details, set the implementation schedule, and build the necessary public support. Therefore, this recommendation is the top priority and should be completed before the remaining recommendations below.

Recommendation 2: Develop a "Strategic Implementation Plan" for Ecotourism

This recommendation is called a *strategic implementation* of ecotourism because it is designed to make structural changes to public institutions and infrastructure that will sustain tourism over the long term. At the same time, it is designed to provide short-term benefits to generate interest and economic incentives. It is not merely a plan and not only a project; it is both, combined into a long-term programme. The overarching goal of this recommendation is to:

1. Demonstrate benefits of ecotourism in the short term through targeted pilot projects (quick wins)
2. Raise awareness of the economic contribution ecotourism provides versus other major industries on New Britain Island
3. Develop a long-term strategic plan to sustainable tourism activities throughout the Island
4. Build cooperation between government ministries through the construction of tourism infrastructure
5. Build cooperation with local NGO's for building human resource capacity in the tourism sector

This work will build on past lessons learned to create ecotourism on New Britain Island and make corrective actions. It will also learn from international examples of PES projects and address the pitfalls of PES designs as previously explained including time scale, size, replicability and efficiency. This will be an asset-building PES scheme that will use site-specific interventions designed to generate immediate interests and sustain it over the long term. It is both strategic and implementable – it will create structural changes to policies, programmes and capital to sustain ecotourism, but work may start immediately with practical and physical improvements to the tourism industry on New Britain Island.

The Ecotourism Leadership Council will lead this project. Their charge will be to ensure that the Plan will meet mutual goals. Because the Plan is a long-term strategy and one that hasn't been tried before in PNG, we suggest implementing this programme using Adaptive Management Planning Theory. Adaptive Management Planning is a systematic process for continually improving policies and practices by learning from the outcomes of operational and sometimes experimental projects. More traditional planning theory, Rational-Comprehensive Planning Theory, uses linear thinking by defining the problem, collecting data, analysing and interpreting the data and then making decisions for future actions. Most of the plans we know of in PNG, including the National Tourism Master Plan 2007-2017, are written using this approach.

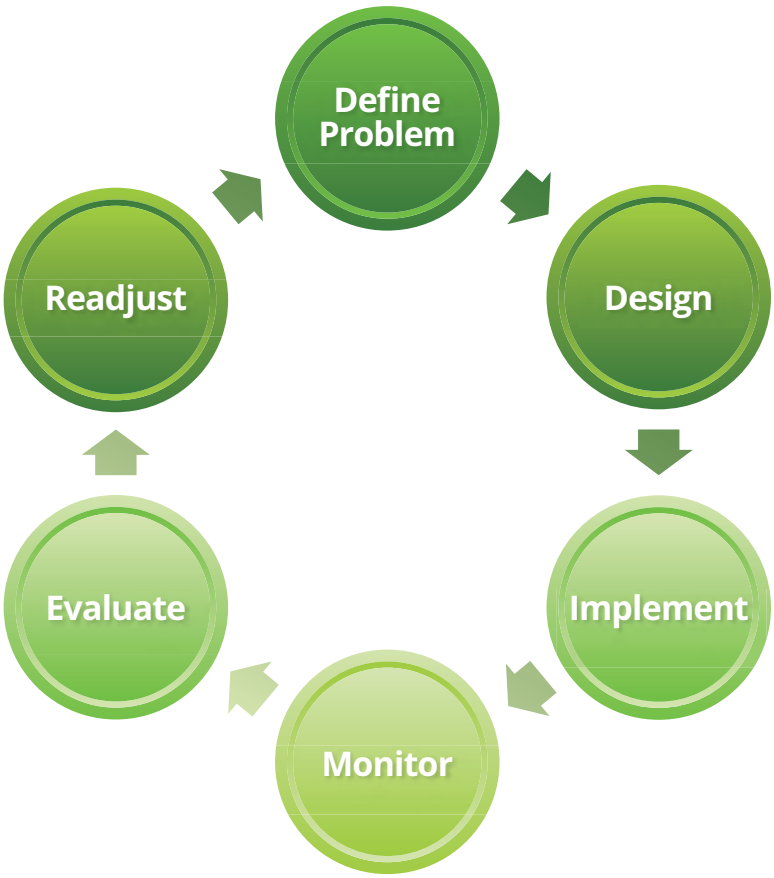
Conversely, Adaptive Management uses cyclical thinking, or systems thinking, that relies heavily on monitoring the results of short-term projects to design long-term strategies. It is most appropriate where there are many unknown variables, high unpredictability or risk, and unstable policies or institutional structures. Adaptive Management is often used in conservation and managing natural resources and its use can be traced back to the early 1900s in developed counties and further back to the Yap people of Micronesia, who used it to manage mangroves and coastal environments.

"Adaptive Management uses cyclical thinking, or systems thinking, that relies heavily on monitoring the results of short-term projects to design long-term strategies. It is most appropriate where there are many unknown variables, high unpredictability or risk, and unstable policies or institutional structures."

The Adaptive Management process will be used to develop long-term solutions to sustainable ecotourism development on New Britain Island. The process involves a six-step cycle:

1. **Problem Assessment:** Identify and carefully articulate conservation goals and objectives; list key uncertainties; identify measurable indicators and spatial/temporal limitation; state the operational paradigm (business model for ecotourism); articulate hypotheses to be tested or expected outcomes of the business; clearly state assumptions; conceptualise lessons learned and how they will be helpful; involve all stakeholders and relevant key experts in the process.
2. **Project Design:** Define project vision, scope and targeted outcomes; develop strategies; create operational plan; predict outcomes; develop data collection and management plan; create multi-year budgets and timeline; create milestones and key performance indicators; create monitoring protocol.
3. **Implementation:** Create short-term work plan; implement strategies and design; initiate monitoring data collection protocols.
4. **Monitoring:** Complete baseline monitoring; collect data as designed; implement monitoring protocol as designed.
5. **Evaluation:** Analyse collected data; compare monitoring results against objectives, assumptions, hypotheses and paradigm; document gaps between expectations and outcomes; identify reasons why outcomes did not reach expectations; convene stakeholders to document results and share knowledge; use stakeholders to find consensus on reasons why outcomes did not meet expectations; build consensus on appropriate responses.
6. **Readjustment:** Revisit and agree on project objectives (adjust if necessary); create new responses designed to close the gap between outcomes and objectives; develop new scope of work and targeted outcomes; create new operational plan; adjust data collection protocol as needed; adjust milestones and key performance indicators; create new monitoring protocol; involve all stakeholders and relevant key experts in the process; and implement new strategy and monitoring as designed.

Figure 14.3: Six Stages of the Adaptive Management Process



The Ecotourism Leadership Council will develop two five-year strategic plans using an Adaptive Management Systems approach. Each phase will include four implementation components. These are the four focal areas that, when combined, result in structural changes to the tourism economy for long-term sustainable growth while simultaneously providing short-term economic incentives. The four focal areas are:

Planning

- Complete enhanced integrated framework plan that combines conservation with economic development
- Strengthen direct and indirect economic linkages with conservation
- Create "Tourism Business Standards" and competency tests
- Prepare capital improvement plans
- Plan to strengthen supporting businesses
- Establish formal inter-governmental relationships for ecotourism development
- Comparison of economic impacts of tourism to other industries

Marketing

- Strategic marketing plan for the entire island
- International marketing through Tourism Authority
- Tour reconnaissance
- Websites for individual guest houses and accommodations
- Strategic marketing plan for guest houses
- Marketing of tours
- Collateral and brochures

Capacity Building

- Capacity building for conservation area enforcement
- Certification systems for tourism promotion, business and finance, planning, product development
- Curriculum development and training in customer service; food and beverage; total quality management
- Training for government officials; Tourism Authority; tourism information assistance
- Tour guide certification programme

Physical Planning

- Established "no-development zones" for conserved areas
- Infrastructure for conserved areas protection
- Public infrastructure improvement plans
- Transportation system upgrades: water, road, air
- Telecommunication plan
- Public spaces, parks
- Guest house upgrades
- Rural tourism facilities

Ecotourism has been successful in some places including Nusa Island Retreat in Kavieng © Alice Plate/ UNDP

Each of the four focal areas will go through an Adaptive Management process. They will identify specific interventions that will serve a dual function: first, they will provide short-term economic incentives to landowners and second, they will provide data to be monitored through the Adaptive Management process to create a long-term asset-building PES scheme. For example, in the Marketing focal area, experts will help guest house owners and tour operators to market their products and services to an international audience. At the same time, they will also design and build a web-based booking and reservation system and marketing platform for the Provincial Tourism Authority to own and operate.

In the Capacity Building focal area, hospitality service training will be provided to individual businesses while government institutions will build specialised curriculum, certification programmes, licensing procedures, and supporting policies and regulations to permanently instill them into government institutions. Likewise, Physical Development and Planning focal areas will have short and long-term implementation actions. The actual interventions used should be decided after a series of consensus-building stakeholder workshops. Even though the actions should be decided through a participatory process, compatible short-term projects to support ecotourism development have been recommended. These are quick-win projects designed to support the long-term goals of building the counterweight to extraction industries, but also to generate critical grass-roots support.

Recommendation 3: Implement Quick Win Projects

Quick Win 1: Rehabilitate three guest lodges in Palmalmal

Palmalmal should serve as the central hub for ecotourism in Pomio District. There are currently three guest houses in Palmalmal, as shown below. They serve as lodging for locals transiting through, government workers on site visits and very occasionally, the hardy international visitor. The lodges are not up to international standards nor do they meet the average expectations of an ecotourist. The author stayed at one of these guest lodges for several nights and thoroughly enjoyed the visit, and also toured the other lodges. However, he also knows that the tourism market would not support the lodges' long-term viability at this level of hospitality.

Each lodge has different circumstances, target markets and rehabilitation needs. However, each of them should be upgraded to at least include the following:

- flush toilets
- private bathing facilities with warm water
- mosquito-proof rooms (without the use of chemicals)
- improved mattresses
- ample drinking water
- exchange of diesel generators for solar electricity to reduce noise, smell and fuel costs
- sitting areas with comfortable furniture
- electrical upgrades
- landscaping and beautification
- structural improvements as necessary.

These improvements should be completed within the first year of implementation.

Quick Win 2: Guest lodge service improvement and marketing

In addition to upgrading the lodges, the owners need hospitality training. The intention here is to educate the owners on what visitors will expect. Training should include sessions on:

- meeting and greeting
- professionalism
- room cleaning
- laundry
- linens and towels
- the ecotourism market
- tours and service
- reservations and marketing
- service recovery tactics
- body language
- communication styles
- stress management
- reading customer's satisfaction levels
- self-improvement

Quick Win 3: Development of hiking tours

Walking, hiking and trekking tours are in high demand from ecotourists. Tourists are looking to experience the rainforest, see exotic vegetation, birds and animals and importantly, learn about this environment. There are numerous tours that can be developed but they must be educational and fun. Two types of treks are

recommended here. The first type are long treks that traverse the Island over several nights, visiting villages and sleeping in bush camps along the way. This is a one-way trek where the traveller arrives at a hotel at the other end and moves on to other destinations. The second type is a day-hike or even a walk. They are round trip tours, visiting unique natural features, villages or for wildlife watching, and return to their point of origin.

Each trek will need to be developed with a unique marketing purpose and designed to feature special themes. Some are long and difficult treks, some feature World War 2 history, others are more cultural and natural history focused.

Quick Win 4: Create a Sport Fishing Tour

The waters around New Britain Island are rich with some of the best sport fishing in the world. An angler in the open ocean can expect to find blue and black marlin, sailfish and dogtooth tuna, yellowfin and skipjack tuna, mahi mahi, Spanish mackerel, barracoota, coral trout mangrove jack, trevally, sharks and all manner of reef fish. Fresh water rivers, which are easily accessible by ocean, give the most experienced angler a challenge. The tiger fish is a challenge unlike any other. The black bass and spot tail bass are only found in PNG and they attract anglers from all over the world.

Currently there are very few sport fishing facilities. Baia Fishing Lodge in WNB is the only commercially operating sport fishing lodge catering to international guests for fresh water species on the Island. ENB has none. The Ecotourism Leadership Council should work with local fisher people and experienced international fishing guides to identify excellent sport fishing locations, seasons, environmental limitations, anticipate market expectations, and other details necessary to create a sport fishing package and a marketing strategy.

Quick Win 5: Develop a cultural tour package with remote villages in Pomio District

Many ecotourists simply want to learn about the culture they are visiting and experience local culture from an authentic perspective. They want to eat local food, visit families, observe village life, learn a few phases in the local language, sleep in a traditional house, and some even want to participate in farming, fishing, hunting and gathering. A cultural tour package should be created that identifies the villages and contact people, the activities, menu, accommodations and cost.

Quick Win 6: Create a tour guide association

All tourists coming to Pomio for tours of any type will need a guide. A tour guide association is needed to give visitors some comfort in knowing that a tour guiding service is organized, professional and trained. The guides should be trained in their area of specialty. The Association should establish connections with all tour operators, travel agents, hotels and travel industry professionals in PNG. The process of establishing the Association should be facilitated by the Ecotourism Leadership Council. The central hub for the Association should be anchored in Pomio with a branch office in Kokopo. The longer-term goal here is that a curious and adventurous traveller can arrive in Pomio by boat by their own means, and know that upon arrival there is a tour guide office to inquire about activities and there are three guest houses available for accommodation. Pomio will eventually become a 'destination'; a place to just show up and starting enjoying PNG.

Figure 14.4: Potential long and short treks

Different Treks	
Long Treks	**Return hikes or day trips**
1. Uvol to Hoskins	1. Kavakuna Cave
2. Open Bay to Tol	2. Muruk Cave
3. Pomio-Minye Cave-Lake Hargy to Bialla	3. Gallowe Gorge and River
4. Pomio to Bareman	4. Waterfall Bay/ Nutuve
5. Mamusi to Silanga	5. Village/Cultural tours
6. Nutuve to Wide Bay	6. Day hikes from Pomio,
	7. Birdwatching tours

Quick Win 7: Develop a marketing relationship with hoteliers in Kokopo, Kimbe, Port Moresby

The extensive product development proposed in Quick Wins 1-6 will be for nothing if there is no marketing component. Travellers must learn that there is a remote and exotic place on the south side of New Britain Island that offers some of the most unique opportunities for a visitor.

Marketing through existing hoteliers is the most efficient first steps in early marketing and advertising. The established hotels in Kokopo, Kimbe and Port Moresby are thoroughly integrated into PNG's travel and tourism industry. They are spending large sums to attract visitors and any new entrants into the tourism industry should take advantage of this work. They generate the market for these new products. Therefore, a direct business-to-business marketing and sales connection should be established with these hotels. Once the tours are established, marketing material should be created to promote them. Printed materials, videos and websites should be created and presented to hotel operators. Business relationships should be established so that the hotelier can offer these new tours to their customers.

Recommendation 4: Create the New Britain Island Ecotourism Network with Palmalmal as the Hub

A handful of unrelated tourism activities will not be successful in creating a sustainable market demand, nor will it create a large enough industry to serve as a counterweight to the extraction industries. Instead, all of the activities listed in the Quick Wins above, as well as the longer-term ecotourism facilities, must be connected and associated with each other in a professionally coordinated ecotourism network (see Figure 14.5).

A network of ecotourism means that a visitor participating in any one of the activities or staying at any of the guest lodges feels that they are part of a wider connected network. They are comfortable knowing that they can hop on the ferry and move to another location and know that the service will be similar, the guides will be equally trained and professional, and that any one of the experiences will be as enjoyable as the last. Even though ecotourists are adventurous travellers, they still want to know they are welcome. If they arrive and see the same brand label, the same guide uniforms, and similar lodging they will take comfort in knowing their expectations.

Successful ecotourism ventures like Rotokas Tourism run by Junias Repiriri in Bougainville are operating
© Nick Turner/ UNDP

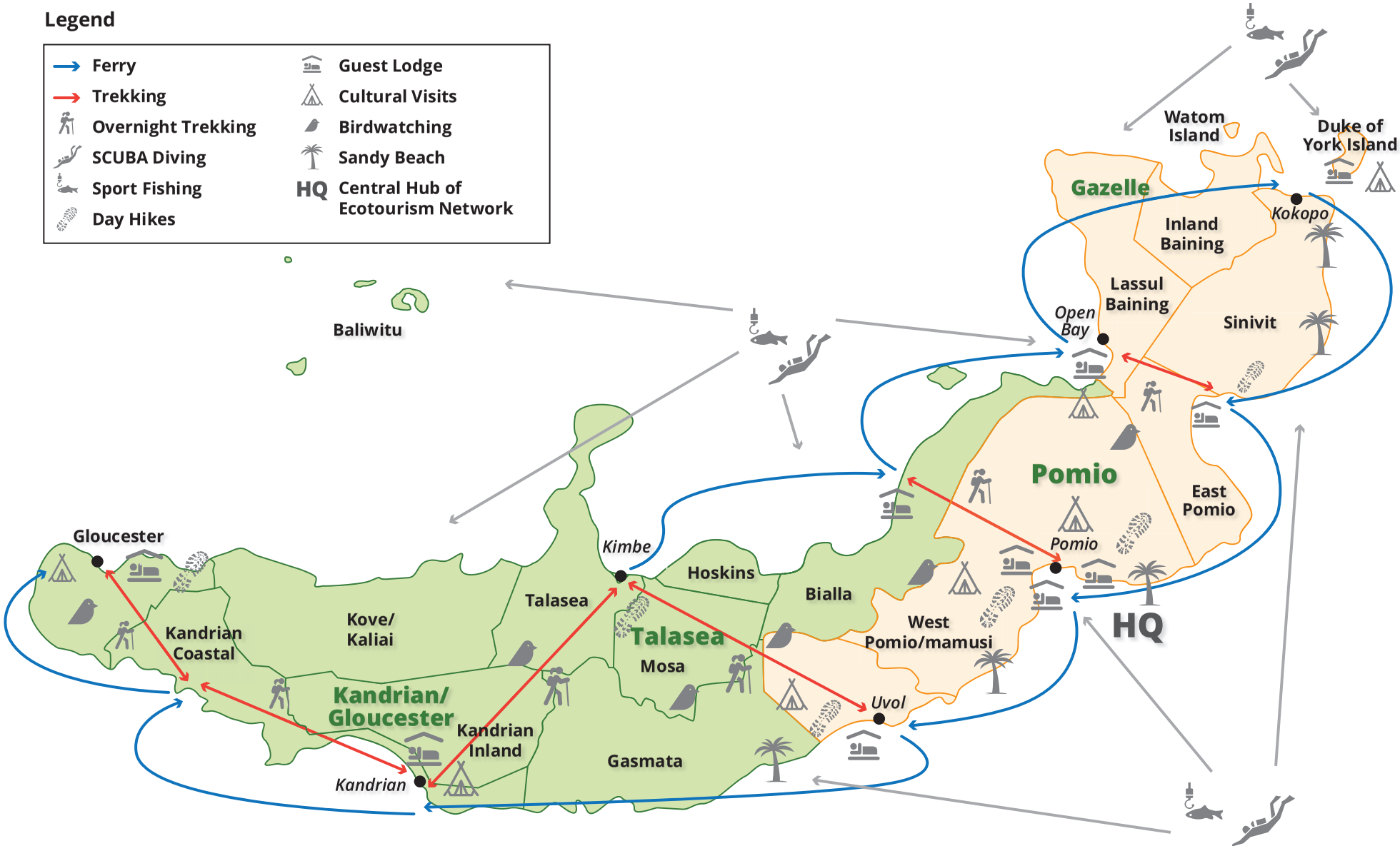


Figure 14.5: New Britain Island's Ecotourism Network

Being part of a network also means that all of the guides and lodges are communicating with each other. Each location is connected by telecommunications, transportation and land trails. This way, a guest in one location can make last minute reservations at another place if they choose to stay. It also gives the traveller a sense of security in case of emergency. Telecommunications, either through cell phones or short-wave radios, should be established between the guest lodges. Palmalmal will serve as the central hub for all activities and accommodation.

Recommendation 5: Create an Integrated Framework Plan that combines ecotourism with conservation.

During the implementation of Recommendation 1, there is a risk of forgetting the overall objectives of the CbFCCRM project – forest and marine conservation. Recommendation 2 calls for an Integrated Framework Plan (IFP) in the planning focal area, but this recommendation elaborates on the importance of an IFP. Ecotourism is not a panacea for conservation on New Britain Island, or anywhere. While it will provide the greatest impact toward a PES-driven conservation project on the island, it will not complete the entire picture. Conservation on New Britain Island will require multiple tools and techniques coordinated through a comprehensive strategy. An IFP recognizes the importance of this coordination and serves as a guide to practitioners in the field on how to integrate ecotourism with other compatible forms of sustainable livelihoods.

An IFP is not a site-specific plan but rather, it gives overarching policy guidance on how to combine forest or marine conservation with a PES-driven ecotourism scheme. It will direct the practitioner on how to create a comprehensive land-use plan for the resource area. It is a guide on community participation processes. It will instruct on how to use an asset-based community development planning process to identify and leverage local capital assets for the dual purposes of conservation and sustainable economic development. The IFP is a resource guide on how to create a sustainable development plan for a local community, with a special emphasis on combining ecotourism with other compatible forms of economic development.

Ecotourism is compatible with selective logging, harvesting of tree nuts and medicinal plants, sustainable fisheries and agricultural-tourism. The integration of ecotourism with these other economic activities is mutually beneficial. Each can benefit from the other in terms of marketing, generating customers, training and building assets. The IFP is a document that helps coordinate the integration of these activities. It is recommended that the IFP be created early in the implementation process so that it remains part of all stages of development. The IFP will serve multiple purposes and will be a valuable tool in any community planning process.

Recommendation 6: Formalize existing "PES-like" arrangements in to actual PES schemes

During the country mission, the author visited several locations where community development and livelihood activities were performing in a similar manner as a PES scheme. In other words, the activities are employing people in sustainable natural resource-based industries. They are not PES schemes because they don't meet the definition of PES. They are not geographically specific, there is no quid pro quo to conserve land, no 'target payment', no ES actually being bought, and no conditionality is present.

The objective of this research is to identify options and opportunities for PES schemes. The objective of the entire CbFCCRM project is to conserve existing protected areas on New Britain Island, not necessarily to create a PES for its own sake. Some of the PES-like arrangements visited by the author had potential opportunities to create a PES scheme under the definition of PES but may have little effect on conserving land. Other actions may conserve land but are not PES. They are discussed here to illuminate the reader on the existing efforts and what can be done to make them more like a PES scheme. The author presents these cases with a large caveat to the reader – no PES scheme will be strong enough to protect the remaining valuable undisturbed rainforest on New Britain Island unless those schemes are part of an entire industry that acts as a counterweight to the extraction sector. The most important action that CEPA can do is work toward the long-term goal of creating a counter-balancing industry.

That said, the following case studies are presented in the hope that they may be part of this goal.

OISKA: OISKA is a vocational training centre in ENB Province that educates approximately 100 students

per year. Training includes rice and vegetable farming, forestry, animal husbandry, and the making of products including soap, coffee, oils, chocolate and herbs. OISKA has a strong conservation component and integrates sustainability in all of their work. They currently don't have a PES scheme nor, after meeting with them, know much about PES. However, they can be a valuable resource to CEPA as PES schemes are developed around the Island. Their processing centre can be used to develop products, their classrooms and teachers can be used for training on non-timber forest products, they can offer storage space and they can act as a central distribution centre for products. OISKA can play a valuable role in the value chain of PES schemes and CEPA should develop a relationship with them for this purpose.

VSA (Volunteer Services Associates): The VAS is an international aid organization currently providing training to many people around the Island. They recently created a hospitality training course in which the author was a guest speaker and observed the training. This training is greatly needed to help build PNG's tourism market and to create a counterweight to extraction industries. CEPA should develop a working relationship with VSA to provide hospitality and marketing training to the numerous small producers mentioned in Recommendation 3, Quick Wins. During the implementation of this Plan there will be many newly formed businesses in the travel and tourism industry that need training. The VSA has the ability to deploy volunteers in villages throughout the Island to serve as ecotourism educators, community facilitators and business mentors. The author interviewed the Director and the Programme Manager of VSA and the deployment of volunteers in this role is possible.

Pokili WMA: The Pokili WMA has two unique features that may attract tourists: hot springs and the megapode. Megapodes and hot springs have a symbiotic relationship. The megapode females bury their eggs where there is volcanic activity and use the heat from the earth to incubate their offspring. They are an evasive species and are heard flying away more often than are seen. Their eggs are harvested by local villagers and provide a valuable source of protein. Wildlife authorities have imposed harvest controls to limit any damage to the sustainability of the species.

The hot springs are a natural feature that attract curious tourists. The hot springs at Pokili are extremely hot, beyond boiling point at some locations, and are filled with minerals, emit strong odors and can be dangerous. They are also not especially pleasing to the eye and are in a very remote location, taking all day on difficult roads to reach.

In addition to these challenges the Pokili WMA has no remaining virgin forest. All of it has been logged and secondary forest is now regenerating. Creating an ecotourism destination in Pokili would have difficult challenges. While there is the potential for cultural tours and birdwatching, after the author met with representatives of the ruling clans in the area it appears that a lack of a desire to conserve the land is the biggest hurdle. Extensive awareness raising and training on conservation ethics is needed in Pokili. It is also clear from the meetings that in exchange for conservation the villagers will expect large sums of money, likely more than tourist visits will provide.

An agreement with an electricity provider may offer the right incentive for conservation. This scheme would fall under the second category of PES mentioned in Chapter 13, Watershed or Landscape Protection schemes. In this case a geothermal electricity producer would, after determining the technical feasibility and possibility of producing electricity, pay the resource owners for the right to generate electricity (performance payment). In exchange the landowners throughout the WMA would agree to specific conditions of conservation (target payment).

Whether or not it is technically feasible to produce electricity is unknown at this point but investigations are being made by a utility provider. CEPA should become involved in the feasibility study as an interested party in the negotiations. As the authority over development in the WMA, CEPA should assert conditions on the development that result in permanent protection for the WMA and a revenue stream for the landowners to create an incentive. In this case, a BSDS would be necessary to ensure transparent, efficient and equitable distribution of revenue.

Live and Learn: Live and Learn is an international NGO dedicated to conservation. They are currently working in villages throughout the Whiteman Range. Interviews with officials from Live and Learn revealed that they are attempting to establish a PES or PES-like schemes. They are mostly concerned with creating alternative livelihoods; creating a PES scheme in the true definition

is not their primary importance. They are currently at a preliminary stage in their work, which involves taking resource inventories and meeting with villagers to determine their future goals and needs. No additional information was available to determine the resource being sold, buyers and sellers, and the conservation conditions attached.

Nonetheless, a carbon credit scheme offers potential for this area. A carbon credit scheme needs to demonstrate additionality and considering the threats to the area, this is possible. It is also a possibility because Live and Learn can serve as the necessary human resource required by such a project. Facilitators living in, or often visiting, the areas where the carbon is sold is necessary for a carbon credit scheme in PNG, and Live and Learn can provide this rare and valuable asset. CEPA should work with Live and Learn to expand on the feasibility of a carbon credit scheme in Whiteman Range. CEPA should also find a private developer in the business of selling carbon credits to become a partner in this process. Selling carbon credit is a highly complex business with many international regulations and high startup costs. An experienced developer knowledgeable of this industry can provide the capital and become a critical player in this scheme.

Tavolo and Forcert: Forcert is an international NGO with a mission of forest conservation who has worked in many villages on New Britain Island for over 10 years. It is very active in Tavolo Village, helping in several areas including technical training on sustainable harvesting of timber using portable sawmills, land use planning, support for delineating the WMA, and raising awareness on the economic benefits of conservation.

Recently Forcert teamed up with the OCCD and paid (or will soon pay) the Village of Tavolo a certain amount of money to continue preserving and protecting the existing WMA. The author met with the leader of Forcert and expressed his opinion that this is setting a dangerous precedent because this is not a PES scheme. This is a one-off payment for past performance. There is no ES being sold that becomes a valuable asset to the purchaser. This is not a market transaction. It is more like a reward payment and every neighbouring village who learns about this and is doing the same will rightfully ask for the same. CEPA should monitor this situation closely and work toward converting this into a PES scheme. This will require visiting the village often, monitoring the reaction, interviewing villagers to learn about their expectations from this payment and to see if a BSDS is being implemented on the payment.

Aside from this, Tavolo has the potential to create a PES scheme in the ecotourism industry. The guest lodge at Tavolo is comfortable although needs some upgrades. There are numerous activities including island hopping, river running, trekking, sport fishing, bird watching and cultural exchanges. Tavolo is difficult to reach so it should be integrated into a larger ecotourism package of treks. The Ecotourism Leadership Council should work with the village and other tour operators to identify the right package to include Tavolo.

Ecotourism Businesses: The author visited several hotels that offer ecotourism on New Britain Island including Walindi Resort, Liamo Hotel, Kokopo Beach Bungalow Resort and Rapopo Plantation Resort. Each hotel has its own tourism packages and most include trekking, sport fishing, cultural tours, birdwatching and dolphin watching, with two offering diving. The hotels will work to accommodate the customer's needs, that is, if they don't provide a tour that a customer is looking for they will seek other tour providers to subcontract and offer the trip.

Each of the hotels currently pay a resource fee to the landowner, which is an essential element to a PES. Interviews with the owners of Walindi Resort revealed that they pay 11 different types of resource fees to 11 different landowner groups. The typical fee is K20 per head and K20 for the village. Last year Walindi paid over K10,000 in resource fees.

The ecotourism industry on New Britain Island is at an early stage. The essential components, like resource fees, are established, and the general business environment of ecotourism is known. All of this presents great opportunities to expand on existing packages into resource areas, like Kavakuna, that are still distant for travellers. This is also recommended above in Quick Win 7. Existing ecotourism businesses should have their marketing supported by government and resources like protected areas should be open to ecotourism establishments without fees.

Recommendation 7: Establish regular transportation link between Kokopo and Pomio/Palmalmal

The government should operate, or consign to operate, a high-speed water ferry between Kokopo and Palmalmal. The ferry should have the ability to reach Palmalmal in three to four hours and be able to circle the island in 24 -36 hours. The ferry should be purchased with international aid as part of a larger ecotourism initiative. The ferry service should be established as a concession with CEPA serving as the Authority over the operator. This is a public-private partnership, with the capital being purchased by government through international aid and the operations and maintenance the responsibility of the operator under a license argument with CEPA. CEPA should hire a temporary business consultant to create the business model, develop the details of the partnership and arrange for the purchase of the ferry.

In addition to the ferry, regular air service should be established between Kokopo and Jacquinot Bay airfield in Palmalmal.

A swimming pig nosed turtle, PNG © Nicholas Toh/ Shutterstock

Recommendation 8: Objective Analysis of the Economic Impacts of Tourism versus other Major Industries on New Britain Island

This recommendation addresses the awareness-raising objectives of the CbFCCRM programme. Increasing knowledge and information about the economic options on New Britain Island is critical in making the right public policy decisions. Currently, little is known about the economic impacts of tourism or other major industries. While some information on oil palm and logging was obtained through interviews with industry representatives during the course of this work, objective analysis of facts and data were not provided or available.

Likewise, little is known about the tourism industry. There is no source of economic data for tourism such as number of visitors, lodging rooms, visitation rates to key sites and participation rates in select recreation activities. The economic contribution from any of these industries to the Provincial and National GDP is not well understood. How can economic development decisions be made without an understanding of the benefits and costs of those decisions?

To improve economic decision making, it is recommended that an objective, defensible and comprehensive analysis be conducted that compares the tourism industry with two other major industries on New Britain Island, oil palm and logging. The analysis will result in a comparison of economic benefits and costs of these three industries. The reason they are compared against each other is because these industries are mutually exclusive. If forest is removed, it eliminates tourism opportunities in that area. If forests are conserved for tourism, it would eliminate revenue from logging and oil palm production.

Not all areas are appropriate for tourism, nor necessary to meet demand. Likewise, oil palm and logging cannot occur in all locations. In order to achieve an efficient allocation of resources, a comprehensive understanding of the costs and benefits of these decisions is necessary. The analysis should include:

- Comparison of wages in each industry
- Number of people employed by age, gender, skill,
- Direct, indirect and induced economic impacts of the industry (how much money is recirculated in the local economy?)
- Number and types of jobs created in the supply chain
- Opportunity costs at provincial level
- Opportunity costs created in household incomes
- Impacts on socio-economics and households
- Economic impacts of land use changes
- Impacts on national and provincial GDP
- Contributions toward national economic development goals
- Business output; businesses profit
- Value chain analysis
- Property value impacts

Recommendation 9: Market Feasibility Study of Corporate Conservation

Corporations from various sectors have an interest in conserving forest land for a wide range of reasons. These include the pharmaceutical industry, academic institutions and carbon offset suppliers.[4] This recommendation involves conducting a detailed market analysis and feasibility study of current and forecasted demand from these industries for forest conservation. Each industry will have different motivations, market constraints, regulations, policies and economic incentives. The size of the market and the competitive atmosphere that PNG would enter must be analysed to determine if New Britain Island would have an advantage. A general profile of each market is provided here.

Carbon Offset Origination Markets

Carbon offset markets are established by two sources. The first involves private companies emitting pollution that are required to offset their environmental damage create what is referred to as the 'compliance market'. The second source is those corporations who are not required to offset their pollution but choose to do so for a variety of public relations, risk management and possibly altruistic reasons. Voluntary buyers are larger in number, but compliance buyers purchase a larger total of carbon.

Companies from both groups may choose to set up an 'origination' offset programme. Offset origination is when a forest is surveyed, analysed for carbon stock, accredited through third-party verification, and sold as a carbon sequestration service. Companies may either sell the credits to others or use them to offset their own emissions. Voluntary offsetting has driven investments in emissions reductions to the tune of USD $4B over the past decade and over 100 companies originated carbon offsets in over 100,000 projects in 2013. It is uncertain whether PNG is the home to any of these projects, even though their potential to establish marketable origination offset projects is great.

There are international examples of business models that are based on the origination of carbon offsets that can serve as examples of potential PES options. The Livelihood Fund was created by a consortium of corporations, investors, and international environmental NGOs for the purpose of creating carbon offsets. They are an originator of offsets and sell their credits to investors who receive carbon credits with high social impact in return for their financial contributions. They are a major voluntary investor in carbon offsets, with a portfolio of international projects that have sequestered 10Mt of carbon. Starbucks is currently working with 260 farmers in coffee-producing communities in Chiapas, Mexico to protect threatened forestland. This project will allow farmers to produce and sell carbon offsets for additional income. These business models represent an untapped market for PES projects on New Britain Island and should be explored.

Pharmaceutical Industry

Annual sales of medicines exceed USD $200B and most of the active ingredients are made from natural products or chemicals produced by organisms. In recognizing these facts, many in the conservation world place considerable emphasis on a case for conserving biodiversity. The argument was that since only a small fraction of the chemicals made by plants or microbes has been fully assessed for useful biological activity, there was commercial value in retaining biodiversity to reserve the option of discovering more valuable chemical compounds in the future. For example, Balick and Mendelsohn estimated that annual revenues of USD$16–$61/ha was possible by exploiting the pharmaceutical value of medicinal plants.

In the 1990s the idea of bio-prospecting came to fruition and with it came the numerous debates of bio-piracy and the exploitation of indigenous rights and knowledge. The attraction of conserving rainforest using private sector profits was so strong that institutions, NGOs and trade associations were created. The UN Convention on Biological Diversity was established in 1992 and created numerous articles to prevent exploitation of indigenous peoples. In 1991, Merck joined forces with the National Institute for Biodiversity for bioprospecting in Costa Rica. Eli Lilly and Shaman Pharmaceuticals started the same. In 1995, The National Cancer Institute started screening 40,000 natural extracts for anticancer activity.

By the end of the 1990s the excitement of bioprospecting hit reality. Several major pharmaceutical companies either eliminated or scaled down their natural product screening programmes and a survey of companies involved in bioprospecting concluded that no major

[4]Other industries may also be interested in conservation but this recommendation is limited to these. The entertainment industry may also be worth exploring.

pharmaceutical company had found investment in bioprospecting especially rewarding.

Today, the largest pharmaceutical companies are reexamining current R&D practices and, in some cases, considering a radical overhaul of their R&D processes. Only 13 medicines derived from natural products were approved in the United States between 2005 and 2007 and FDA approvals of new drugs reached a 24-year low in 2007. Only three in ten new products generated revenues equal to, or greater than, the average pharmaceutical industry R&D costs. As the pharmaceutical industry reduces its revenue and discoveries from bioprospecting, the royalty streams from natural product-derived pharmaceuticals are becoming too uncertain to be included in the valuation of biodiversity.

So where does this lead us in creating PES options for New Britain Island? While the bubble has popped on bioprospecting, the opportunities for biological research are still alive and well. Market interest in preserving areas of undamaged rainforest for scientific discovery is still strong. The industry is reforming and creating partnerships with long-term research institutions. Novartis has developed collaborations with academic institutions in China and Thailand. AstraZeneca had a long connection with Griffith University in Queensland, Australia and continues today with the Eskitis Institute. Small, specialised companies involved in bioprospecting include MerLion Pharmaceuticals in Singapore and Sequoia Sciences in St Louis, Missouri. Rutgers University hosts a relatively new initiative: the Global Institute for BioExploration, GIBEX. This is an international network that aims to promote successful drug discovery from biodiversity through developing pharmacological screening methods that can be readily transferred to groups in partner countries.

International Cooperative Biodiversity Groups (ICBG) were created to bridge the gap between pharmaceutical companies, research institutions and developing countries. They have coordinated several biological research projects throughout the world. ICBG programmes involve academic universities, such as Rutgers in New Jersey and Strathclyde in Scotland, and commercial companies with projects in developing countries. Their work is already in PNG and other projects in Costa Rica, Fiji, Indonesia, Madagascar, Panama, the Philippines, and Vietnam and Laos.

Before embarking on a PES scheme based on biological research, the market must be understood in great detail. It is clear that the market in biological research is in dynamic times. This is due to its young age. It went from euphoric optimism based on little more than speculation and evolved into a calmer, more specialised version of itself. PNG already has one example of an ICBG project from which it can learn. It is recommended here that a feasibility analysis be completed to determine the niche PNG would have within this global market.

Recommendation 10: Establish a National Biodiversity Offset Policy that Identifies Key Protection Areas on New Britain Island.

A Biodiversity Offset Policy can be used to generate revenue to financially support the payment side of a PES scheme. Long-term conservation of protected areas on the Island can be funded through a national biodiversity offset programme. A comprehensive national biodiversity policy should be created to enable CEPA to regulate and monitor development from conceptual planning to implementation.

Through an Environmental Impact Analysis process, CEPA could determine the economic impacts of environmental degradation and levy development fees in proportional value, to offset those impacts by purchasing development rights on Key Protection Areas previously identified in the same policy. The National Biodiversity Offset Policy would include the following essential elements:

- Establish national conservation goals and objectives
- Create a mitigation hierarchy that determines offset limitations, threshold levels for specified development and the mitigation responses
- Establish Critical Biodiversity Protection Areas and other valuable areas for targeted conservation efforts
- Creation of a species database that supports a like-for-like biodiversity offset program
- Address the issues of baseline conditions and additionality[5]

[5]The author does not support the use of additionality measures in PNG and considers them environmentally and economically inefficient, technically unnecessary, and institutionally inappropriate for a domestic offset program.

- Amend CEPA's current rules on Environmental Impact Analysis to support the new biodiversity offset policy including data collection, biodiversity assessment procedures, mitigation responses, and payment methods
- Create a Biodiversity Trust Fund to receive mitigation deposits and to pay for development rights
- A monitoring and enforcement system
- Establish a BSDS.

Recommendation 11: Create a National PES Policy Framework

PNG is at the early stages of creating policies to support a national PES programme. Significant policy gaps still exist that would facilitate the establishment of such a programme. Currently no regulations exist that govern critical aspects of PES. There is no single governmental agency to oversee a PES exchange. A PES exchange would occur under no authority or set of regulations other than existing contract law, which may be too vague to assure integrity and legitimacy in the sale of ES. An unregulated market is often a benefit for one party and a risk for the other. The party with more information, financial muscle and political leverage will gain an unjustified advantage.

Government regulation over free markets has existed since Adam Smith proposed a capitalistic system for the United States in 1776. Government intervention in free markets assures a fair playing field and allows the market to determine a price that is representative of the value of the product or service sold. PNG has no regulation over the size, quantity and type of exchanges; no means of authorizing third party agents, if the market demands such a position; no approved valuation methods for natural resources; and no procedures to account for different markets. PNG currently has a completely unregulated PES market, if one exists at all.

PES is a tool to achieve an end. The payment is not the end itself, but a means to achieve environmental protection and specifically for the CbFCCRM programme, a means to preserve, protect and expand WMAs on New Britain Island. It is currently unclear how a PES scheme will serve these ends since an overarching PES policy strategy is not articulated.

Figure 14.6: Location of three WMAs on New Britain Island

It is recommended that a National PES Policy Framework be created to fill the policy gaps previously identified. Several significant policy challenges should be addressed in the policy framework to create an effective PES programme. The major issues include but are not limited to:

- The valuation methods of natural resources must be conducted consistently and legitimately against internationally recognized criteria. Without this, market confidence will deteriorate and the life of the PES programme will be short.
- Buyers and sellers of ES must be authorized within the national PES programme like any other business entity or occupation.
- The time scale on which the PES programme is structured will need to be integrated into a national environmental conservation strategy.
- The geographic and administrative scale of a PES programme must be compatible with national economic development strategies.
- A PES programme must not create perverse incentives where the programme results in rent-seeking behaviour, or worse, generate a flow of payments to stop illegal activities.
- Finally, caution is needed to avoid inefficiency in the name of reducing transactions costs.

A national PES Policy Framework Committee should be established to fully identify all PES policy issues. They should direct the policy debate and oversee the drafting of the PES policy for delivery to the PNG National Executive Council.

Recommendation 12: Create a Benefit Sharing Distribution System Policy for PES schemes

Whenever a PES scheme is proposed where payments are made to an entire community, there will need to be a BSDS in place to dictate how the benefits will be distributed. While some PES schemes are between private buyers and sellers, others are based on communal resources. A BSDS is designed to reduce conflict at the village level. A correctly constructed BSDS will be built at the village level using the opinions of the local resource owners, who will identify a flexible rules-based system that suits them. They will address land tenure issues, ownership of resources, the type of benefits, the allocation system, and the process for identifying beneficiaries. A correctly constructed BSDS must be custom built to address the specific resource being sold. The BSDS for carbon sales will be different than for ecotourism. Issues of transparency, efficiency, conflict resolution, equity will differ because the resources are different and the local level governance structures are different.

CEPA should not create a detailed BSDS and expect that one size will fit all. This is a common mistake. Instead, CEPA should create a BSDS policy framework that will direct villages or LLGs on how to adopt a local level BSDS. A BSDS framework policy would ensure that the resulting policy developed at the village level still meets the Cancun Agreements and other international standards for social safeguards. CEPA's framework policy for BSDS will ensure that each policy includes at a minimum:

- transparearency and inclusiveness in decision making
- a financial mechanism that is accountable using international accounting practices
- independent oversight
- a distribution mechanism that is gender sensitive, equitable, effective, efficient and transparent
- institutional capacity to implement the policy
- a conflict resolution system that fairly addresses grievances without bias or conflicts of interest.

Importantly, all of the above must be built on the legal structure of PNG.

15. COSTING

Table 15.1: 5 Year Budget for Proposed Plan

Name	Cost Item	Cost per (USD)			Qty	Cost/ Mo.	Total (yr.)	
		Month	Day	Item			USD	Kina (@2.96:1)
Recommendation 1: EcoTourism Leadership Council								
Assumptions: Monthly meetings; travel costs are paid by gov't; consultant assistance is required	Professional Facilitator		700		5	3500	42000	124320
	Meeting venue			200	2	400	4800	14208
	Travel/Accom/Per Diem	450			11	4950	59400	175824
	Clerical	100			1	100	1200	3552
	Logistical	100			1	100	1200	3552
Recommendation 2: Strategic Implementation Plan								
Component A: Planning	Consultants (2)		1400		20	28000	336000	994560
Assumptions: One year Planning process with 1 international and 1 national consultant; numerous visitations with stakeholders	Stakeholder engagements		100		20	2000	24000	71040
	Data Collection and analysis	400			12	4800	57600	170496
	Consensus Building		500		5	2500	30000	88800
	Meeting venue			200	5	1000	12000	35520
	Clerical		100		20	2000	24000	71040
Component B: Marketing	Volunteer/Consultant (1)	280			7	1960	23520	69619.2
Assumptions: Volunteer/ Consultant from international NGO (VSO?) stationed in each village with guest house (7 villages 10 guest houses) see Figure 14.4 Ecotourism Network; one web site features all companies with individual pages; $8000 total cost; tour reconn=cost of materials, supplies, mapping; Marketing collateral= $1000 for each guest house; relationship building = travel costs and meals for meetings	Web Site development			8000	1		8000	23680
	Tour reconnaissance			500	12		6000	17760
	Marketing Collateral			1000	10		10000	29600
	Relationship Building			500	8		4000	11840
Component C: Capacity Building	Volunteer/Consultant (1)	0						0
Assumption: The same volunteer/consultants from Component B above are used to conduct this component. Training are held in village (no cost). One annual workshop is held in Kokopo	Meeting venue			500		1	500	1480
	Clerical			200		1	200	592
	Travel/Accom/Per Diem			100		7	700	2072
	Logistical			50		1	50	148
							0	0
Component D: Physical Planning	Consultants (2)		1400		300		420000	1243200
	Capital Improvement Plan			20000	1		20000	59200
Assumptions: Some Plans are completed by other gov't agencies. Plans completed over 3 years.	Data Collection and analysis			50000	1		50000	148000

Name	Cost Item	Cost per (USD)			Qty	Cost/ Mo.	Total (yr.)	
Consultants used to coordinate existing plans and fill gaps where needed. Consultants =$600/day	Engineering Studies			200000	1		200000	592000
	Public Infrastructure Plan& Budget			40000	1		40000	118400
	Telecommunication Plan& Budget			30000	1		30000	88800
	Public Spaces Plan& Budget			25000	1		25000	74000
	Transportation Plan& Budget			50000	1		50000	148000
	Tourism Facilities &Budget			25000	1		25000	74000
	Consolidated Capital Budget			40000	1		40000	118400
Recommendation 3: Implement Quick Wins								
QW1: Rehab Guest lodges	Structural Improvements			20000	1		20000	59200
Assumptions: Each lodge will have different rehab needs. Costs are general. Solar system based on American prices	Plumbing			8000	1		8000	23680
	Solar System & Electrical			25000	1		25000	74000
	Landscaping			5000	1		5000	14800
	Furniture			4000	1		4000	11840
QW2: Service Improvements	Hospitality Trainers		450		150		67500	199800
Assumptions: Training is 2 days per month x every 8 weeks for each of the 10 guest lodges (plus prep)	Linens and Towels			2500	10		25000	74000
	Reservations equipment			2000	10		20000	59200
	Housekeeping supplies			500	10		5000	14800
QW3: Trekking Tours	Product development		450		130		58500	173160
Assumptions: All tour operators receive product development, marketing, and hospitality training. Trainers=$450/day; 13 treks; 10 days of training each	Marketing Collateral			1000	1		1000	2960
	Training		450		13		5850	17316
								0
								0
QW4: Sport Fishing Tours	Product development		450		15		6750	19980
5 tours x 3 days training	Marketing Collateral			1000	1		1000	2960
	Training		450		5		2250	6660
QW5: Cultural Tour	Product development				4		1800	5328
4 tours x 3 days of training	Marketing Collateral			1000	1		1000	2960
	Training		450		5		2250	6660
QW6: Guide Association	Facilitator/consultant		450		7	3150	37800	111888
Assumptions: 9 to12-month process. Meeting facilitation needed (Ave 7days/mo). Rules, bylaws, mission statement, annual work plan; training for professional tour guides	Meeting venue			500	12		6000	17760
	Clerical			200	12		2400	7104
	Travel/Accom/Per Diem			100	12		1200	3552
	Logistcal			500	1		500	1480
	Logo Development			2000	1		2000	5920
	Uniforms			200	20		4000	11840
	Web Site/Marketing			3000	1		3000	8880
QW7: Marketing Relationship	Travel/Accom/Per Diem			100	12		1200	3552
Recommendation 4: Create the New Britain Island Ecotourism Network and Hub								

Name	Cost Item	Cost per (USD)			Qty	Cost/ Mo.	Total (yr.)	
	Facilitator/consultant		450		5	2250	27000	79920
Assumptions: Costs for creating an office. Capacity building done by volunteers	Office space Palmalmal	100				100	1200	3552
	Furniture			500	1		500	1480
	short wave radios/cell phones			500	7		3500	10360
Recommendation 5: Integrated Framework Plan								
	Consultant		700		70		49000	145040
	Data Collection and analysis			4000	1		4000	11840
	Meeting venue		500		4		2000	5920
	Clerical		400		1		400	1184
	Travel/Accom/Per Diem		5000		1		5000	14800
Recommendation 6: Formalize PES-like arrangements								
Assumptions: There is a wide range of actions that need work as described in the report. Costs shown here are for meeting facilitations, market research, general logistical support and other feasibilities studies	OISKA			5000	1		5000	14800
	VSA			5000	1		5000	14800
	Pokili WMA			5000	1		5000	14800
	Live and Learn			5000	1		5000	14800
	Tavolo.Forcert			5000	1		5000	14800
	Ecotourism Businesses			5000	1		5000	14800
Recommendation 7: Improve Transportation Links								
Assumptions: Consultant for business arrangement, legal costs, contracts. O&M costs on contractor.	Business Consultant		700		300		210000	621600
	Ferry purchase			5000 000	1		5000 000	14800000
Recommendation 8: Economic Impacts of Tourism								
A comprehensive unbiased analysis	Consultant		700		75		52500	155400
	Travel/Accom/Per Diem		250		25		6250	18500
Recommendation 9: Corporate Conservation								
Market feasibility studies for offset markets and pharmaceuticals	Consultant		700		60		42000	124320
	Travel/Accom/Per Diem		250		25		6250	18500
Recommendation 10: Biodiversity Offset Policy								
	Consultant		700		60			
	Travel/Accom/Per Diem		250		25			
	Meeting venue		500		4			
Recommendation 11: National PES Policy Framework								
	Consultant		700		70			
	Travel/Accom/Per Diem		250		25			
	Meeting venue		500		4			
Recommendation 12: BSDS Policy								
	Consultant		700		55		38500	113960
	Travel/Accom/Per Diem		250		25		6250	18500
	Meeting venue		500		4		2000	5920
Total							**$7,457,020**	**22,072,779**

Table 15.2: 5-Year Schedule with Annual Budget

		Completion Percentage Rate and Cost per Year									
SubTotals (1 Year)		Yr. 1%	Yr. 1 cost	Yr. 2 %	Yr. 2 cost	Yr.3%	Yr. 3 cost	Yr. 4%	Yr. 4 cost	Yr. 5%	Yr. 5 cost
EcoTourism Leadership Council	$108,600	100%	$108,600								
Strategic Implementation Plan											
Component A: Planning	$483,600	50%		50%	$241,800						
Component B: Marketing	$51,520	100%		100%	$51,520	100%	$51,520	100%	$51,520	100%	$51,520
Component C: Capacity Building	$1,450	100%		100%	$1,450	100%	$1,450	100%	$1,450	100%	$1,450
Component D: Physical Planning	$900,000			25%	$225,000	25%	$225,000	25%	$225,000	25%	$225,000
Implement Quick Wins											
QW1: Rehab Guest lodges	$62,000	100%	$62,000							100%	$62,000
QW2: Service Improvements	$117,500	100%	$117,500							100%	$117,500
QW3: Trekking Tours	$65,350	100%	$65,350							100%	$65,350
QW4: Sport Fishing Tours	$10,000	100%	$10,000							100%	$10,000
QW5: Cultural Tour	$5,050	100%	$5,050							100%	$5,050
QW6: Guide Association	$58,100	100%	$58,100							100%	$58,100
QW7: Marketing Relationship	$1,200	50%	$600	50%	$600					50%	$600
Ecotourism Network &Hub	$32,200	25%	$8,050	25%	$8,050	25%	$8,050	25%	$8,050	25%	$8,050
Integrated Framework Plan	$60,400			50%	$30,200	50%	$30,200				
Formalize PES-like arrangements	$30,000	25%	$7,500	25%	$7,500	25%	$7,500	25%	$7,500	25%	$7,500
Improve Transportation Links	$5,210,000			50%	$2,605,000	50%	$2,605,000				
Economic Impacts of Tourism	$58,750			50%	$29,375	50%	$29,375				
Corporate Conservation	$48,250			25%	$12,063	25%	$12,063	25%	$12,063	25%	$12,063
Biodiversity Offset Policy	$50,250			50%	$25,125	50%	$25,125				
National PES policy Framework	$57,250					50%	$28,625	50%	$28,625		
BSDS Policy	$46,750					50%	$23,375	50%	$23,375		
Annual Total			**$737,520**		**$3,237,683**		**$3,047,283**		**$357,583**		**$624,183**
5-year Total											**$8,004,250**
Recurring Costs											

16. CONCLUSIONS

The overriding objective of this research project was to identify PES options for New Britain Island that have the highest probability of success. We learned that in the face of extreme pressure from the extraction industries (logging/oil palm), a few PES projects won't meet the goals of this Project, which is to conserve valuable protected areas. Instead, conservation will be successful if there is an equally large amount of pressure to conserve land and this will most likely come from the ecotourism industry.

We also learned that all PES activities can be categorized into one of three types: carbon or biodiversity offset schemes; watershed protection/land management agreements, and; aesthetic beauty/ecotourism schemes. Each of these options was studied in detail using literature reviews, policy analysis, extensive site visits, and numerous interviews with local businesses, government officials and non-profit institutions. The applicability of these options to New Britain Island was judged by reviewing the supply of resources and ES for sale, the global demand for these services, and the institutional capacity in PNG to sell them. Then these criteria were viewed in light of the overall project objective – to conserve land in the face of large scale environmental threats. The result was that ecotourism offers the greatest untapped potential to generate revenue and to offset these threats. The others had either capacity challenges (offset) or a low level of demand (watershed protection).

PES is a tool for conservation that relies on economic incentives for its success. PES is therefore governed by both realms, conservation and economic development. One of the basic tenants of sustainable economic development states that a community should first rely on its existing local assets to build a unique niche. Local assets for economic development, also referred to as capital assets, come in three forms: physical capital (infrastructure, buildings, public facilities, etc.), social capital (government institutions, NGOs, skill sets of individuals) and natural capital (natural resources). Efficient and effective sustainable economic development strategies will first strengthen existing assets and use them to generate revenue. In other words, it is best to pick the low hanging fruit first. Ecotourism is the low hanging fruit for New Britain Island.

New Britain Island has some of the greatest tourist opportunities in PNG. The national government recognized this by recently naming ENB Province as the national hub for tourism. The marine life around the island is internationally recognized as offering some of the best diving experiences in the world. There are peaceful beaches and exciting rivers. The island is home to the deepest caves in the Southern hemisphere, uncharted river gorges, huge waterfalls, and designated UN World Heritage sites. It is rich with World War II history and traditional culture. From rugged mountain treks to deep sea diving, the island has the greatest diversity of tourist experiences in the country. These are the economic development assets upon which a PES-based conservation scheme should be built.

Ecotourism offers the greatest opportunities for a successful PES scheme because it has the greatest amount of valuable capital assets. The challenge is that they are still unrefined. This study recommends that the capital assets for ecotourism should be strengthened to achieve the dual purpose of conservation and sustainable economic development. The recommendations provide a detailed path to strengthen all three forms of capital assets: physical infrastructure, institutional capacity, and natural resource conservation. However, ecotourism is not a panacea. Therefore, the recommendations also provide a strategy to integrate ecotourism with other forms of sustainable community development through an Integrated Framework Plan. While ecotourism offers the greatest untapped potential, it is never a good idea to place all efforts and resources into one strategy. Sustainable development is based on a correctly balanced portfolio of implementation strategies and the IFP is designed to guide each community toward this correct balance.

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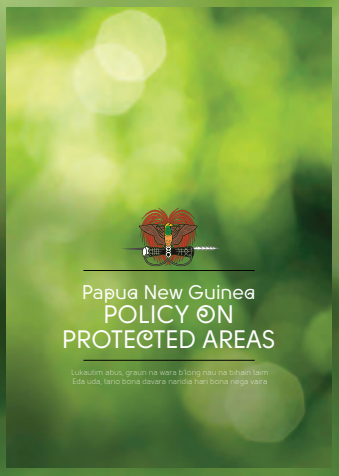

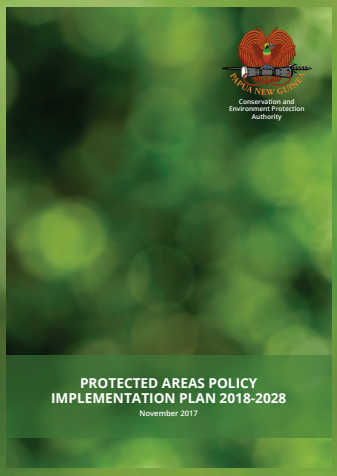

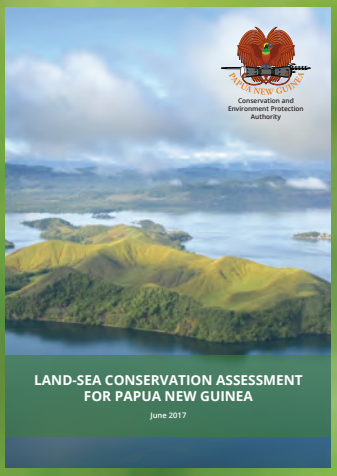

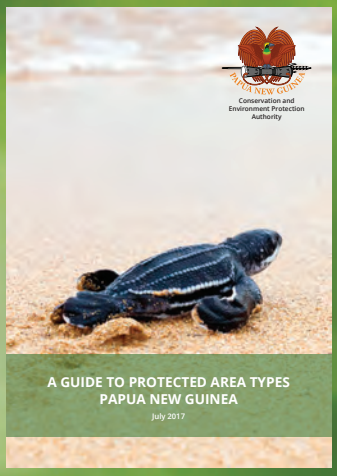

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