Bio-rights in theory and practice

A financing mechanism for linking poverty alleviation and environmental conservation

Pieter van Eijk and Ritesh Kumar, 2009

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Cover picture: Restored shrimp pond system in Pemalang, Central Java (Indonesia). Photo: Pieter van Eijk

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I. Summary

Bio-rights is an innovative financing mechanism for reconciling poverty alleviation and environmental conservation. By providing micro-credits for sustainable development, the approach enables local communities to refrain from unsustainable practices and be actively involved in environmental conservation and restoration. Micro-credits are converted into definitive payments upon successful delivery of conservation services at the end of a contracting period. Integrating market-driven instruments and more traditional conservation and development measures, Bio-rights offers a novel approach in which global stakeholders pay local communities to provide ecosystem services such as carbon sequestration, fresh water supply and biodiversity. Thus, the approach unites the conservation and development aspirations of NGOs, governments, the private sector and local communities alike. Projects in the field have demonstrated that Bio-rights can serve as a powerful tool that addresses the major environmental challenges of our age, including climate change and biodiversity loss. In the light of major efforts in relation to REDD development and the Millennium Development Goals, Bio-rights has the potential to translate global objectives into concrete action.

This report describes the rationale and theory behind Bio-rights and offers extensive guidance for implementing Bio-rights in the field. A detailed step-by-step description of activities indicates what needs to be done to successfully initiate and manage a project. A number of detailed case descriptions from Indonesia and Mali illustrate how these steps have been implemented in practice and the results that have been accomplished to date. The report is targeted at conservation and development practitioners interested in incorporating the approach into their work. It also aims to provide policymakers, donors and private-sector stakeholders interested in financing approaches with insights into the theory behind the approach as well as an overview of experiences from the field.

Part I. Theory and rationale
Rising population pressures, linked to decreased availability of land, have decreased development opportunities for rural communities throughout the developing world. Many of the rural poor are caught in a *'poverty trap'*: to meet short term livelihood needs they are forced to unsustainably exploit the natural environment. The exploitation itself leads to increased vulnerability and further constrains their development opportunities. There is an urgent need to address this negative spiral of increased poverty and severe environmental degradation in order to successfully meet the major conservation and development challenges of our age.

Many previous efforts to integrate poverty alleviation and environmental conservation have met with limited success. They have often had only marginal impact in promoting sustainability and there has been a persistent conflict between environmental integrity and development aspirations. Bio-rights offers a novel approach to linking conservation with development. The approach builds on lessons learned from these previous approaches and incorporates successful and established tools for conservation and development with promising (market-driven) financing instruments that have recently emerged.

Bio-rights can be seen as an incentive mechanism, not unlike systems for Payments for Environmental Services (PES). Based on three simple but powerful steps, the approach accomplishes community involvement in the preservation of environmental assets that are of global importance:

- Step 1. Local communities receive micro-credits to develop sustainable income generating activities.

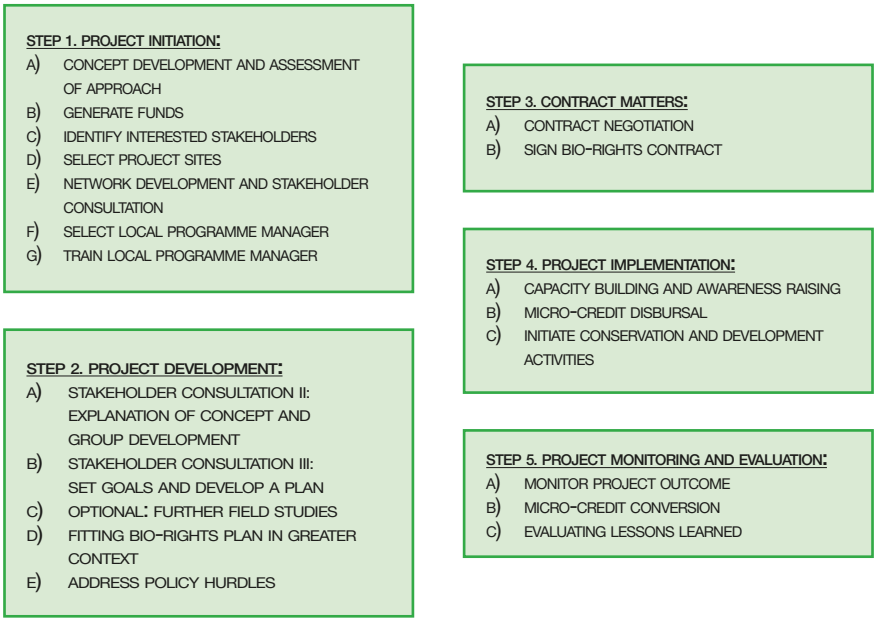
- Step 2. Communities repay their loan and the associated interest in the form of conservation services, such as reforestation, habitat protection and refraining from unsustainable land use practices.

- Step 3. Micro-credits are converted into definitive payments and subsequently into community-based revolving funds for sustainable development, once the conservation measures prove successful and sustainable.

Incentives for conservation are accompanied by intense capacity building for sustainable development, environmental conservation and group formation. This involves awareness raising about the importance of sustainable resource management in improving livelihoods, which in turn has a positive influence at different levels. At the field level, Bio-rights improves livelihoods and solves environmental issues that hamper sustainable community development. For global stakeholders, the mechanism ensures the future existence of environmental goods and services considered crucial for future generations or for the sustenance of long-term business objectives.

The Bio-rights approach was developed by Wetlands International, Alterra Green World Research (Wageningen University) and a number of partner organisations in the late 1990s. The approach was formulated as a response to complex social, environmental and economic issues encountered in the field, which proved to be difficult to solve through conventional natural resource management approaches. Following the success of initial pilots, the mechanism has

Figure 1. The main steps in Bio-rights implementation.



been further fine-tuned through a number of small- and medium-scale projects in South-east Asia and Africa by Wetlands International.

Part II. Implementing Bio-rights

A Bio-rights project can be roughly divided into 5 implementation phases within which there are, approximately 20 different sub-activities (see Figure 1). These are facilitated by a *'Bio-rights Project Manager'* who oversees the overall implementation process and represents the interests of the investing stakeholder. A *'Local Programme Manager'* - usually a local NGO - represents the local community (*'the seller'*) and is responsible for day-to-day project management. Implementation of the actual conservation and development activities is in the hands of the local community, with technical support provided by the Bio-rights Project Manager and the Local Programme Manager.

A Bio-rights project starts with the Project Initiation phase, which consists of fund raising, identification of conservation objectives and the preliminary selection of project sites. In this stage, stakeholder networks are also developed and local project management structures established. Next, in the phase of Project Development, through community negotiations the potential for signing a Bio-rights deal is assessed. If communities are interested, a concrete project implementation plan is established which is mainstreamed into regional policies during multi-stakeholder meetings. In the Contract Negotiation stage a contract is negotiated between the *'selling'* and *'buying'* parties. Contracts between the community and the investor are concluded in an official contract signing ceremony. Often government bodies are involved as formal signatories to the contract. The Project Implementation stage starts with extensive capacity building and awareness raising, to familiarise stakeholders with important conservation and development aspects, which is followed by the disbursal of micro-credits. Next, conservation and development activities are implemented, usually in parallel. The success of these conservation and development interventions is assessed in Project Monitoring and Evaluation stage. Conversion of micro-credits into definitive payments takes place on the basis of the conservation outcomes. Project evaluation activities are undertaken during the project, to ensure that it is optimally adapted to local site conditions, and after the project so as to draw lessons for future interventions. The duration of individual Bio-rights initiatives can vary significantly from short (3-4 years) projects that aim to support local communities in creating sustainable land and resource use practices, to long term (10+ years) projects in which Bio-rights is implemented as a Payments for Environmental Services-based approach.

Part III. Experiences from the field

Bio-rights started to be implemented approximately 10 years ago with small pilots targeted at mangrove rehabilitation and peatland restoration in Indonesia and water bird conservation in Mali. Since then, the approach has been significantly upscaled under Wetlands International's Green Coast project and the Wetlands and Poverty Reduction Programme (WPRP), in which several conservation, development and micro-credit institutions have become involved in implementing the approach. Currently, several thousand hectares of mangroves have been rehabilitated, as well as significant stretches of peat swamp forest habitat. Other ecosystems targeted under the approach include flood forests, sand dunes and lagoons. Improved ecosystem services have decreased vulnerability and increased incomes for more than 100,000 poor, wetland-dependent people living in and around the target areas. Several thousand community members have been directly involved as contract signatories. They used their micro-credits to develop a broad range of economic activities, including sustainable fisheries, poultry and goat breeding, farming and the development of small enterprises. Most projects have been successful in delivering conservation

and development benefits, although some pilots failed for various reasons, including weak local governance and limited capacity for Bio-rights implementation among Local Programme Managers.

In general, it can be concluded that Bio-rights is an effective means of accomplishing sustainable community-based conservation and development. As long as Bio-rights complements existing conservation and development approaches and as long as key implementation requirements are taken into account, the approach is likely to be successful. However, lack of technical conservation and development knowledge, inappropriate site selection and ineffective training and awareness raising could potentially hamper successful implementation.

More extensive investigation and piloting is needed to fully assess the potential of the approach and to further enhance its efficiency under different circumstances. Increased cooperation with scientists, development workers and the private sector will help to establish rigorous monitoring frameworks, incorporate multi-sectoral knowledge and ensure appropriate embedding in other processes that link conservation and development. Future developments will be documented and shared with relevant stakeholders through publications and web-based dissemination of experiences.

II. Acknowledgements

Numerous experts from various disciplines have worked extensively on the design and implementation of the Bio-rights approach. For almost a decade, practitioners have been piloting the approach in the field. In parallel, economists, ecologists and development experts have developed the mechanism's theoretical framework, based on rigorous analysis of previous field experiences, lengthy discussions on the root causes of poverty and environmental degradation, and on possible solutions. These painstaking efforts have culminated in the development of this report, the first detailed description of how Bio-rights operates in practice, including a synthesis of experiences from the field.

We thank Bakary Koné, Alue Dohong, Yus Rusila Noor, Nyoman Suriadiputra and Iwan Tricahyo Wibisono and all field staff involved in WPRP, Green Coast and earlier Bio-rights initiatives for their key role in piloting the approach in the field. They have helped to develop Bio-rights as a realistic tool, adjusted to local site conditions. The community groups in Pemalang, Aceh and in the Inner Niger Delta are thanked for their hospitality during field visits and for sharing their first-hand experiences on Bio-rights. We are grateful to Herbert Diemont and Marcel Silvius, who developed the theoretical concept of the approach and whose efforts linked the approach to global policies and the wider discussion on Payments for Environmental Services. Special thanks also go to Alex Kaat, Tunde Ojei, Marie Jose Vervest and Trevor Wickham for ensuring that Bio-rights was appropriately incorporated into the Green Coast project and the Wetlands and Poverty Reduction Programme. They provided extensive support for the evaluation of field experiences and facilitated the publication of this report. Henk Hoefsloot, Pieter Leenman, Mike Ounsted, Adrian Wood, Sander Carpaij, Susanna Tol and all the participants of the Bio-rights workshop, which was held in August 2008 in Jambi (Indonesia), are thanked for their constructive comments on an earlier version of this report. Several partner organisations, including CAMEC, CARE, Mitra Bahari, Oxfam Novib and WWF provided valuable expertise during development and implementation of the approach. We wish to thank Joshua Bishop for his technical input during the design of this document. Diana Simon, Ilana Kutzig and Caitlin Burton are thanked for facilitating arrangements Alcoa Fellowship Programme, as part of which this report has been developed. We are grateful to the Alcoa Foundation and the Dutch Ministry of Foreign Affairs (DGIS) for their financial support. IUCN is thanked for its facilitating role under the Alcoa Foundation Fellowship Programme.

III. Acronyms and glossary

Bio-rights Project Manager	National or international NGO representative(s), responsible for overall project management, concept design and negotiation with investing stakeholders
BPM	Bio-rights Project Manager
'Buyer'	Investing stakeholder, i.e., the buyer of an ecosystem service
CB-NRM	Community-based Natural Resource Management
CBO	Community-based Organisation
Conditionality	The principle that contract signatories should meet certain mutually agreed conditions at a certain stage of project implementation, before being eligible for receiving resources
CCFPI	Climate Change, Forests and Peatlands in Indonesia project
CIDA	Canadian International Development Agency
DGIS	Directoraat Generaal Internationale Samenwerking; development aid department of the Dutch Ministry of Foreign Affairs
Ecosystem services	The Millennium Ecosystem Assessment (2005) defines ecosystem services as "*the benefits people obtain from ecosystems"*
FSC	Forest Stewardship Council
ICDP	Integrated Conservation and Development Project
IPCC	International Panel on Climate Change
Leakage	The displacement or generation of a harmful practice as a result of a conservation measure in a certain locality
Local Programme Manager	Local NGO representative(s) responsible for on-the-ground project management, facilitation of local community actions and representation of community needs during contract negotiation
LPM	Local Programme Manager
MEA	Millennium Ecosystem Assessment
MDG	Millennium Development Goal
MSC	Marine Stewardship Council
NGO	Non-governmental Organisation
PES	Payments for Environmental Services
REDD	Reduced emissions from land degradation and deforestation
'Seller'	The owner of an ecosystem service, providing conservation services in return for a payment by an external stakeholder
VERs	Voluntary Emission Reductions
WI-IP	Wetlands International Indonesia Programme
WPRP	Wetlands and Poverty Reduction Programme

1. Introduction

NGOs in the conservation and development sector and governments alike have faced great difficulties in their efforts to reconcile conservation and development activities. Although the intricate linkage between poverty and environmental degradation is widely acknowledged, interactions between both fields have proved highly complex and difficult to conceptualise. As a result, past approaches to linking conservation and development, such as Integrated Conservation and Development Projects (ICDPs), have met with limited success. Considering these difficulties, many conservationists and development workers have called for innovative approaches that build on the lessons learnt from the past, avoiding the weaknesses of earlier initiatives. In parallel, there has been increased momentum for the development of market-driven instruments to aid conservation efforts. Such mechanisms internalise the economic value of ecosystem services into markets. This can generate significant funding for environmental conservation and allows for the development of trading systems in which resource users provide payments to resource owners in return for the sustained provision of certain goods and services.

The Bio-rights financial mechanism has been established by Wetlands International and Alterra (Wageningen University and Research Centre) in response to the above developments. Bio-rights provides micro-credits for sustainable development to local communities in return for community involvement in conservation. The loans are converted into definitive payments upon successful delivery of conservation services. The approach started as a small pilot scheme in coastal areas of central Java, involving poor fishermen in mangrove restoration in return for development support. Less than a decade later Bio-rights, has developed into a leading approach for reconciling conservation and development within Wetlands International's major programmes. Currently a range of other organisations, including conservation and development NGOs as well as a micro-credit institution, have started implementing the approach. Demand from the private sector for sustainable resource management is also increasing and a number of major global initiatives linking sustainable development and conservation are underway. While many innovative financing mechanisms so far only exist on paper, the Bio-rights approach has proven successful and efficient in the field. Thus, Bio-rights is well-positioned to become a leading tool for linking conservation and development.

1.1 Purpose of this report

This report provides an introduction to the theory behind the Bio-rights approach and familiarises the reader with the practical steps required to incorporate the mechanism into existing and future conservation and development initiatives. Case study descriptions provide experiences, the lessons learned and the challenges that remain to be addressed.

As a relatively novel approach, Bio-rights requires further piloting and extensive evaluation. This will provide the necessary insight to improve the approach and better judge its effectiveness in relation to other mechanisms and under different, site-specific, conditions. Anticipating these developments, this report should be considered a *'living'* document, open to further modification as new insights emerge. It is hoped that this report will challenge conservation and development practitioners, policymakers and investors to investigate and pilot the approach. Their experiences will provide vital contributions to the further development of Bio-rights as a tried and tested tool for linking conservation and development.

1.2. Reading guide

This report has been subdivided into three sections which reflect upon the Bio-rights approach from different angles and at different levels. The approach is introduced and placed in a context based on *i)* an analytical review of the Bio-rights approach; *ii)* a manual for implementers; and *iii)* a selection of case examples from the field. Thus, it attempts to meet the information requirements of the different stakeholder groups which this report aims to reach. The table below provides more detailed reading guidance for those interested to familiarise with the approach.

Part I. Analytical review of the Bio-rights approach	
Contents:	A description of the theory and rationale behind Bio-rights including an overview of where Bio-rights fits within the larger conservation and development context. One section specifically addresses how Bio-rights relates to other innovative financing approaches for conservation and development that are currently being implemented.
Target audience:	Policymakers, donors, corporate funders and representatives from conservation and development organisations; field practitioners aiming to gain general understanding of the approach and its wider context.
Objective:	This part aims to provide an overall theoretical overview. In a nutshell, it describes what Bio-rights is, why it has been developed and how it operates. It is essential reading for those who wish to acquire basic understanding of the approach, without getting into too much detail.

Part II. Manual for implementers	
Contents:	An extensive description of all the steps that need to be taken to successfully implement and complete a Bio-rights initiative. It includes information on a range of issues including project development, contract negotiation, project implementation, monitoring and evaluation, together with information on the role and responsibility of different stakeholders in the implementation process. Several annexed checklists provide crucial aspects to consider in relation to site selection, contract development and overall project implementation.
Target audience:	Field practitioners seeking to link conservation and development objectives through Bio-rights implementation.
Objective:	The manual aims to guide the reader through all the steps of project development and implementation that are necessary for success.

Part III. Examples from the field	
Contents:	Three case studies demonstrate how Bio-rights has been implemented in practice. Following the implementation steps identified in the manual (part II), the stages of project development, implementation and the outcomes are described for two Bio-rights projects on mangrove restoration in Indonesia and a project on water bird conservation in the inner Niger Delta in Mali respectively.
Target audience:	Field practitioners interested in how Bio-rights has been implemented in practice; policymakers, donors, corporate funders and representatives from conservation and development organisations interested in accomplishments to date.
Objective:	This part describes practical experiences and lessons drawn from the pilot schemes implemented so far.

Part I. Analytical review of the Bio-rights approach

Gunung Gede Pangrango National Park. Upperpart of a catchment in west Java, Indonesia.
Photo: Pieter van Eijk

2. Background and rationale

2.1 Problem formulation

In the developing world rural communities face increasingly constrained development options (UN, 2000). Traditional means of escaping poverty, such as migration to urban areas, have become a a less viable option over the last few years for a large proportion of the world's rural poor. At the same time, growing population densities, linked to decreased availability of land are compromising per capita revenues from farming and forestry. As a result, these traditional sources of income have become increasingly insufficient to support the livelihoods of many small-holder communities. These developments have forced many poor people to unsustainably use the environment in order to meet their short-term livelihood requirements. They are forced into a poverty trap: to fulfil short-term needs, they overexploit environmental resources, and this over-exploitation constrains long-term development opportunities and drives further degradation. This has a far-reaching impact on the livelihoods of the communities involved in unsustainable exploitation, as well as on stakeholders elsewhere who depend on the ecosystem services that are being degraded. Limited awareness among communities about the importance of ecosystem services for sustaining livelihoods exacerbates the harmful impact of this negative feedback loop on both livelihoods and the environment.

The wide-scale destruction of mangrove forests in West Africa clearly demonstrates the poverty trap. In many regions it is driven by the demand for fuel wood, which is often used in the production of salt. The salt - which is extracted by boiling seawater - provides a limited number of very poor communities with a very meagre income, barely sufficient to meet daily needs. At the same time, with the destruction of the mangroves, the salt producers unwittingly deteriorate the livelihood base of hundreds of thousands of people throughout the region. Similar patterns of environmental degradation occur in other areas, where short-term profits gained from unsustainable resource extraction are outweighed by disastrous long-term losses. Approximately 75 percent of the world's poorest people currently live in rural areas (Word Bank, 2006). Many of these are confronted with choices similar to those of the salt producers from

The poverty trap in Indonesia: poverty-driven illegal logging activities lead to large scale forest degradation and destroy the livelihood-base of forest dependent communities. Photos: Marcel Silvius (l) and Wim Giesen (r).

West Africa. This renders the poverty trap an influential root cause of environmental degradation, particularly in the developing world.

In recent years, recognition of the need for improved environmental conservation and natural resource management has been on the rise partly as a result of such influential publications as the Millennium Ecosystem Assessment (2005) and the IPCC 4th assessment reports (2007), among others, which highlight the direct economic benefits of ecosystem services to global economies, as well as the negative socio-economic impacts of environmental degradation. The recognised need for improved resource management has also been spurred by the physical impacts of environmental degradation on societies themselves, which have become increasingly visible in the last decade. Climate change, biodiversity loss and desertification are well known examples of environmental issues that all hit the headlines on a regular basis. So far, efforts to combat these major environmental hazards our age have met with limited success. One reason is that the poverty trap is insufficiently addressed as a root cause of environmental degradation in policies and plans formulated by governments, NGOs, the private sector and others involved in natural resource management and environmental conservation.

Restricted access to land and resources might be a necessity from a conservation perspective, but often constrains the development opportunities of local communities. Photo: Pieter van Eijk.

2.2 Linking poverty alleviation and nature conservation

The linkage between poverty and environmental degradation underlines the need to reconcile conservation and development. However, there also are various practical considerations that justify such integration. Traditional approaches to environmental conservation have been criticised for sometimes constraining the development opportunities of local communities. Limited access to land as a result of the establishment of protected areas or restricted access to resources resulting from fish or timber harvest quotas, are examples of measures that might be considered necessary from an environmental perspective but can be a burden on the livelihoods of the rural poor. Some restrictive conservation measures conflict with traditional community rights to land and resources, some of which have been in place in certain localities for hundreds of years. Such controversy is likely to increase as pressures on environmental resources - and measures to combat these - increase.

These conflicts between conservation and development have led to the perception of local communities as obstacles to conservation rather than as potential allies. The potential of working with communities as stewards of conservation remains undervalued. Too often local communities remain largely ignored in the development of natural resource management policies and plans, and community-development objectives are often poorly incorporated in conservation measures in the field. This is questionable from an ethical point of view and - particularly in densely populated areas - is unlikely to be sustainable. These considerations further strengthen the case for a better integration of approaches to poverty alleviation and nature conservation that address the poverty trap and turn local communities into an opportunity for, rather than a restriction to, environmental conservation.

2.3 Key requirements for reconciling sustainable development and environmental conservation

A framework for project implementation

Making the linkage between poverty alleviation and environmental conservation as a means to address the poverty trap requires a sound framework for project implementation. First of all, such a framework should provide local communities with the means to escape from the poverty trap, e.g., by supporting the development of sustainable economic activities as alternatives to practices that cause environmental degradation. It should also build on-the-ground technical knowledge and awareness of sustainable natural resource management as a basis for sustainable community development. At the same time, objectives for high-quality environmental conservation should not be compromised by the anticipated development actions. The framework should rigorously consider the key factors for success, including multi-stakeholder involvement, equity, conditionality and long-term sustainability. Most importantly it needs to build on the lessons learnt from earlier projects that - not always successfully - aimed to reconcile conservation and development. The Bio-rights approach is a framework that has demonstrated success in linking poverty alleviation and environmental conservation since its development about 10 years ago. This report describes the methods involved in implementing this approach.

Generating resources

Key to having a successful project is to have sufficient resources available for sustained funding of Bio-rights activities. The main means for helping local communities escape from the poverty

trap is to provide them with support for developing sustainable alternatives to harmful practices and this requires considerable financial resources. Traditional sources of funding such as bi- or multi-lateral aid can be applied, but to address the poverty trap on a global scale, much more (and longer-term) funding is needed. This can be accomplished by sourcing funding from those who benefit from the sustainable management of environmental resources. This includes a range of stakeholders including the global community as a whole, which has interest in, for example, mitigation of climate change and reduced air pollution, as well as more specific groups in the private sector which, for example, have interest in maintaining ecotourism values, timber stocks or clean fresh water supplies.

Internalising ecosystem services into markets

Different resource users often take the availability of certain ecosystem services for granted, without paying their actual price. This resulted in market failures, with environmental services being available at low cost in the short term, but degrading at a rapid pace, constraining their long-term availability. By internalising the cost of social and environmental aspects of natural resource management in global markets for ecosystem services, these market failures can be addressed. Appropriate pricing of ecosystem services would lead to the delivery of a significant source of finance, provided by resource users, which can be used to incentivise communities to manage their environment in a sustainable manner. This will not only contribute to addressing the needs for sustainable management within these communities themselves, but also those of the global community. Creating such a stream of finance that flows from global to local stakeholders can provide ample opportunities for both sustainable development and environmental conservation. To date attempts at addressing these market failures are still in their infancy. The extent to which markets pay the real prices of the sustained provision of ecosystems services will depend on global resource users, and particularly the private sector. Market mechanisms for climate change mitigation (including the trade in carbon credits from reforestation and REDD), are currently being developed and piloted at an increasing scale. These efforts provide an interesting test case for the development of adequate pricing systems for other services. Experiences gained under PES schemes and related mechanisms such as Bio-rights can help to optimise the channelling of cash flows to local resource providers. This is a critical step towards successfully establishing these new markets for ecosystem services.

3. The Bio-Rights Approach

3.1. Overall framework

Bio-rights is an innovative financial mechanism that addresses environmental degradation by providing (convertible) loans for sustainable development to local communities in return for their active involvement in the conservation and restoration of the natural environment. It serves as a payment scheme in which an investing party pays the local community (as the resource owner) for the provision of environmental services. As such, the approach addresses the poverty trap as a driving force behind rural poverty and environmental problems such as biodiversity loss, ecosystem degradation and climate change. The Bio-rights approach has been developed as a tool to complement existing conservation and development instruments and accommodate the growing need for market-based mechanisms that address complex issues related to environment, global economies and rural poverty.

The approach is based on the recognition that local communities, as rightful resource owners, often exploit the natural resources in their environment unsustainably in order to meet their short-term livelihood requirements, and that financial support has the potential to enable communities to adopt sustainable resource use practices and ensure the maintenance of critical ecosystem services for the global community (*see Box 1*).

Bio-rights schemes aim to accomplish the integration of these conservation and development objectives through three consecutive steps:

Step 1. Provision of micro-credits for sustainable development
Following agreement among relevant stakeholders upon the initiation of a Bio-rights initiative and after the formulation of a full project plan, Bio-rights implementation starts with the provision of micro-credits to local community groups. These micro-credits can be used for the development of all kinds of ecologically, socially and economically sustainable activities as alternatives to harmful practices that pose a threat to the environment. Examples include the initiation of (sustainable) agriculture, fisheries and forestry practices, ecotourism development or handicraft production. Other livelihood supporting activities such as the establishment of facilities for education or healthcare are also applicable.

Box 1. Bio-rights: from ownership to stewardship

Bio-rights is based on the recognition that local communities have rights to the natural resources in their immediate environment. Such rights are related to a broad range of ecosystem services such as biodiversity, habitats, water supply, flood mitigation, carbon storage and storm protection. By developing a *'rights trading mechanism'*, global stakeholders can buy these rights, ensuring sustained provision of certain ecosystem services without constraining the development needs of local communities. Hence the name Bio-rights. In many cases local communities demonstrate a clear willingness to sustainably manage local natural resources, but they are often unable to accomplish this objective given their short-term livelihood needs. Tradable *'Bio-rights'* schemes can help communities to accomplish their sustainable development objectives, at the same time ensuring successful conservation outcomes.

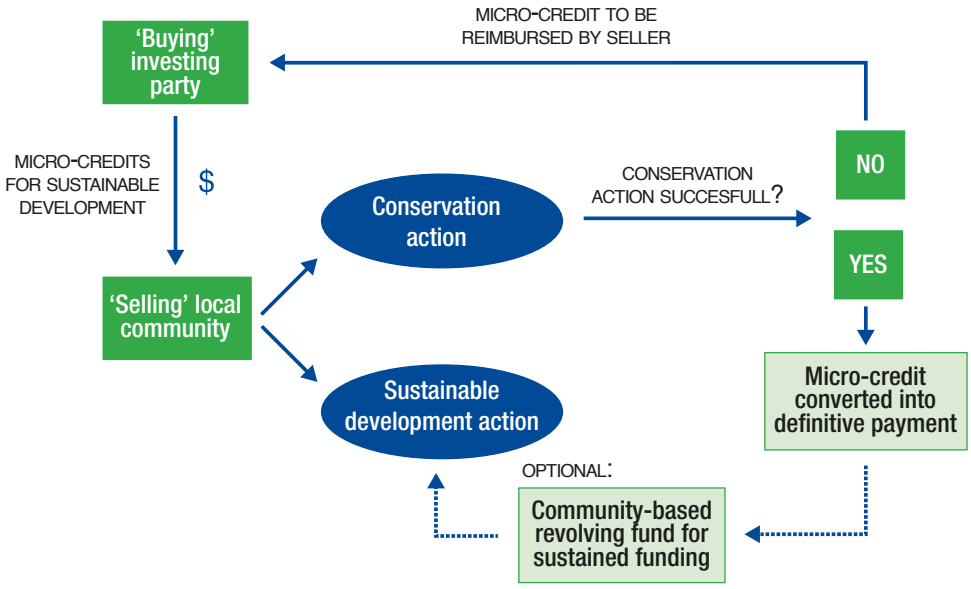
Community consultation, negotiation and contract signing in Kalimantan, Indonesia. Photos: Pieter van Eijk (l) and Yus Rusila Noor (r).

Micro-credits are usually disbursed at the group level rather than to individuals, to enhance cooperation among community members and create a feeling of project ownership within the group. In addition, by making the community-group responsible for individual behaviour, the risk of project failure is significantly mitigated. To ensure sustainability and the optimal usage of the micro-credits provided, beneficiaries receive active support on selected development activities. This includes technical training, study visits to other communities and interactive workshops to share ideas and plans.

Step 2. Implementation of environmental conservation and restoration activities
Local communities repay their micro-credits and associated interest in kind, in the form of an active contribution to the conservation of the environment. This can entail a wide range of activities including, for example, biodiversity and habitat conservation and ecosystem restoration, as well as the provision of specific services such as clean water and carbon sequestration. Community contributions can, depending on local conditions, restrict to refraining from unsustainable practices (e.g., hunting or deforestation), but can also include preservation of the environment against external impacts or active restoration of services that have been degraded in the past. Community obligations for conservation are formally registered in a multi-year contract and measurable indicators for success - e.g., seedling survival rates, degradation rates or a decrease in hunting pressure - are agreed upon and monitored. Participating communities have an obligation to assure that these preconditions are met. Capacity building and awareness raising activities provide participants with the required technical knowledge to successfully implement the agreed conservation measures and to reinforce insights into the importance of sustainable natural resource management in improving livelihoods.

Step 3. Conversion of micro-credits
Upon termination of a contractual period the micro-credits are converted into definitive payments, providing the conservation activities prove successful. If conservation measures do not meet certain predefined standards, the beneficiaries are required to repay part or all of the funding provided. For reforestation projects implemented in the past, for example, it was agreed that seedling survival rates exceeding 75 percent would result in the complete conversion of the micro-credits provided. If survival rates were lower, a relative proportion (related to the proportion of seedlings surviving) was to be reimbursed. Thus, conditionality - and high-quality conservation - is ensured.

Figure 2. Simple schematisation of the Bio-rights approach. In case of successful conservation or restoration of ecosystem services by the local community, micro-credits can be converted into one-off definitive payments. Alternatively communities might be requested to reimburse their loan in a community-based fund, which ensures sustained cash availability beyond the project implementation lifetime (dashed arrow).



A force majeure clause protects local communities against unexpected events such as natural disasters or civil unrest and places project risks in the hands of investing parties (the providers of financial resources). In some cases, a revolving fund is being developed as a means for the disbursal of the micro-credits: communities can borrow from this fund, but need to repay their loan at a given stage and with a small interest rate. Upon termination of the contractual period, this revolving fund is converted into a community-based savings scheme. The advantage in this approach is that cash remains in the community beyond the project lifetime, enabling community members to sustain and expand their sustainable development activities.

These steps of project implementation contribute to a win-win outcome of both environmental conservation and improved livelihoods. Local communities benefit from increased development opportunities as a result of micro-credit provision as well as from the natural capital provided by the ecosystem services that they have sustained and restored. Investors in Bio-rights receive the ecosystem services that they have paid for. This includes services that are important for the overall fulfilment of their daily needs (e.g. clean air, freshwater etc.) or business objectives (e.g., a sustainable supply of wood, ecotourism values). Thus, Bio-rights essentially operates as a business-deal between the local community as a *'selling'* partner and resource *'owner'*, and a regional, national or international *'buying'* partner who has interest in the preservation of these resources.

The sustainability of Bio-rights interventions is ensured through a strong emphasis on capacity building for sustainable natural resource management and awareness raising on the importance of ecosystems services for supporting livelihoods. This increases the recognition among local communities of the need for improved environmental management. As a means to escape the

Box 2. The history of Bio-rights

The Bio-rights approach was developed in the late 1990s by Wetlands International, Wageningen University and Research Centre (Alterra) and a number of other organisations. Supported by DGIS, Oxfam Novib and the British embassy, among others, it has been successfully piloted in Indonesia (Kalimantan, Java, Sumatra) and Mali (Inner Niger Delta). Bio-rights conservation actions conducted to date include rehabilitation of mangroves and other coastal ecosystems, peatland restoration and decreasing hunting pressure on migratory water birds. Development activities undertaken include sustainable agriculture and fisheries development, handicraft production and development of small enterprises. The approach has recently been scaled-up under Wetlands International's major programmes, including the Wetlands and Poverty Reduction Programme (WPRP) and the Green Coast tsunami response project, and have been actively shared with other conservation and development organisations. Efforts are currently underway to link the approach to large-scale climate change mitigation schemes such as REDD and the Global Peatland Fund, which aims to curb greenhouse gas emissions from peatland degradation. See chapter 7-10 for more information on experiences from the field.

poverty trap, Bio-rights can help to re-establish a sustainable balance between development and conservation. A single (several-year) Bio-rights initiative often suffices to accomplish this. However under certain circumstances, conservation and (local) development may remain in conflict with each other. For example, a forest area might be much more economically attractive if converted into crop land, no matter what alternative income generating activities are developed. Under these circumstances, continuous community payments (similar to those provided under PES schemes) might be required to ensure the long-term provision of certain ecosystem services.

3.2 Preconditions for successful implementation

The Bio-rights approach is not applicable under all circumstances. Successful implementation depends upon a range of site-specific socio-economic and environmental factors as well as on local governance structures and related policies.

The following site-specific factors are of particular relevance:

- Land tenure:
  Land and resource tenure issues are critical determinants of successful Bio-rights implementation. If local communities have formal property rights over land and resources, they are in the legal position to engage in a Bio-rights deal and can be held liable for the intervention's final outcome. Commonly however, local communities have no legal rights over land or ecosystem services, despite their dependence on these for sustaining their livelihoods. Involving such communities in a Bio-rights deal can be risky since, despite the local communities' good intentions in fulfilling requirements, the formal land owner (e.g. government or a private-sector stakeholder) might have other objectives that are in conflict with the Bio-rights deal. Objectives for forest conservation, for example, might be overruled by a land owner's plans for plantation development or timber exploitation. The only means of implementing Bio-rights under such conditions is to incorporate the formal land owner as a third-party in the contractual agreement. This reduces risk of conflicting objectives, while parties can be formally held liable in the case of violation of contractual agreements. Another option would be to negotiate a formal property rights provision for local communities as a starting point for Bio-rights implementation.

- Community support and social heterogeneity:
  Successful Bio-rights interventions require the full support of the communities involved. If a considerable proportion of the community opposes the contents of a contractual agreement, long-term sustainability is unlikely to be achieved. The extent to which agreement and support among individuals can be accomplished depends primarily upon the social and economic heterogeneity of the communities involved. In some communities there are large differences in the levels of wealth, education, awareness, and social status of different members, as well as different religions and ethnic backgrounds. The position of men and women to a great extent determines both the overall functioning of a community and the social position of individuals. These differences increase the likelihood of conflicting objectives for land and resource use within a community and thus significantly decrease the chances for successful Bio-rights implementation. Another important consideration for Bio-rights implementation relates to the motives for community involvement. Although financial incentives are an important motive for community involvement, these should not be the only reason to sign a Bio-rights deal. In order for the approach to be successful in the long term, communities should also express the intention to cooperate, around non-financial considerations such as, for example, the recognised need for improved natural resource management as a pillar for livelihood security.

- External factors:
  Communities do not always have full control over the land and resources they own, even if they might have formal property rights. Well-known examples are encroachment of

Social heterogeneity should be considered during project design and community consultation. Photo: Pieter van Eijk.

community land by large companies and harmful activities such as poaching, pollution and environmental degradation by outsiders. Community conflicts over ecosystem services are also commonly observed. These factors pose potentially significant threats to successful Bio-rights implementation, particularly in cases where local communities have insufficient power to curb external influences. Under certain conditions, support provided as part of the Bio-rights agreement can suffice to address these impacts. In other cases, external impacts, and therefore the risk of project failure, despite the good intentions of local communities, might be simply too large.

- Enabling political environment:
  Where possible, Bio-rights agreements need the approval of relevant government bodies at the national, regional or local level. To be successful they should comply with - and preferably be incorporated in - policy, plans and legislation. Failure to meet these criteria might cause conflict with, for example, land-use planning and resource allocation policies and therefore increase project risks. Political instability or failing governance - as a result of, for example, corruption - also increase the risks related to successful Bio-rights implementation.

At least as important as the above site-specific parameters, the way in which Bio-rights is implemented is a crucial determinant to success. Failure to consider specific organizational aspects of project implementation, without exception, affects a project's outcome. The following elements are of particular importance:

- Equality:
  Full involvement and consideration of all relevant stakeholder groups is crucial for successful Bio-rights implementation. Development opportunities for different groups within communities should be equal, and efforts should be made to adequately reach minority groups. The approach should be explicitly pro-poor and appropriately address gender equality. Bio-rights is a *'business-deal'*, implying that in the process of project development and contract negotiations, all stakeholders involved should have equal rights and opportunities to share their views, priorities and needs. At no stage should the approach become overly top-down as a result of certain measures being imposed on communities or community needs being ignored.

- Contracting - conditionality and sustainability:
  Bio-rights deals should always be conditional, i.e., micro-credits are only converted into definite payments once conservation measures prove successful. To ensure that all the parties involved agree with these requirements, a contract is signed which describes the rights and obligations of the different stakeholders involved. The contract should have a formal legal status to enable enforcement in case obligations are not met by one of the signatories. Aligning the contract with (local) legislation and policies and involving relevant officials in contract negotiation and signing can increase the chances for successful enforcement. Contracts also help to ensure the sustainability of project interventions. By incorporating details on the duration of a certain conservation action, long-term conditionality is ensured. Contracts can range from several years to more than a decade, the exact duration depending on local circumstances. Other means to ensure long-term sustainability include capacity building and awareness raising activities. These help the local communities and other involved stakeholders to accomplish sustainable development and build recognition of the importance of ecosystem services for supporting livelihoods.

- Complementarity:
  Bio-rights, if regarded purely as a financial mechanism, is not likely to be successful on its own. Rather it should be complementary to existing conservation and development strategies, such as capacity building, awareness raising, law-enforcement, micro-credit provision and the development of community-based savings schemes. Bio-rights builds on such current and past approaches and serves as an innovative solution to the major challenges that remain - in particular, by facilitating an integrative approach to conservation and development and by ensuring the involvement of local communities in environmental conservation. Both issues have recently emerged as major challenges to successful conservation in the developing world.

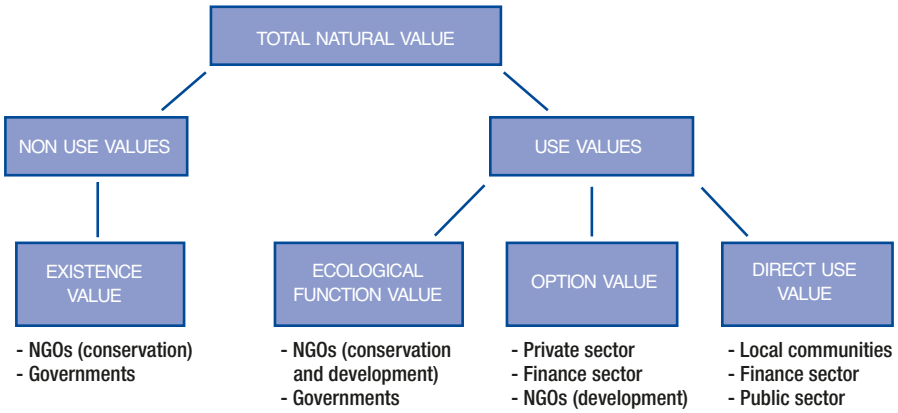
- Flexibility:
  Socio-economic and environmental conditions differ greatly between sites. This should be considered in project design. Accommodating the framework to local circumstances and community preferences will contribute to the success of projects. At the same time it should be ensured that the approach's key characteristics are maintained and that its major requirements are being well considered.

3.3 Priorities for implementation

If the above preconditions are fully taken into account, Bio-rights can be applicable under a wide variety of circumstances and can support a multitude of conservation and development objectives. Given the huge global challenges regarding conservation and development, some prioritisation is desirable to ensure a maximum return of capital invested, both from an environmental and a social perspective. First of all, to optimise conservation investments, the conservation value of a proposed project area should be assessed. This value should be high from an international, national or local perspective. An ecosystem may be prioritised according to different criteria: for example, a water purification company will value the purification and regulation properties of an intact watershed whereas an international conservation NGO might prioritise a project area based on its biodiversity or aesthetic values.

As Bio-rights also is a mechanism for alleviating poverty, it is preferable to implement the approach in an area with high poverty rates, where the socio-economic spin-off of the approach is likely to be the highest. The potential of an area to generate significant income through land cultivation (or conversion) should also be considered as part of the prioritisation process. This is purely an economic consideration: if degrading practices provide local communities with significant income, considerable payments need to be provided to cover lost opportunity costs and thus enable communities to convert to sustainable practices. On the other hand, if degrading practices only provide a meagre contribution to daily incomes (which often is the case), relatively small payments can accomplish considerable conservation gains. A last major consideration for site selection is the current level of threat (or anticipated future threats) to the natural resources that are to be protected. Obviously, areas under pressure are in more immediate need of conservation compared to areas that remain pristine. The final prioritisation of a project area depends on the combination of the above considerations. The specific needs of the investor, combined with environmental, social and economic site conditions determine the location in which the anticipated cost-benefit ratio will be optimal.

Figure 3. An example of different environmental values and their potential prioritisation by interest groups. The exact prioritisation of actors depends on individual or organisation specific objectives and on local site conditions. Adapted from: Edwards & Abivardi, 1998.



3.4 Actors involved

Nature provides a number of important services. The Millennium Ecosystem Assessment (2005) recognises provisioning, regulating, cultural and supporting services, which together make up the *'natural capital'* provided by nature. Other authors have created similar categorisations, distinguishing, the direct use, option, ecological function and existence values of nature (Edwards & Abivardi, 1998; see Figure 3). It is obvious that these values are prioritised differently by different groups of stakeholders. For local communities, the direct use value - the value related to the direct exploitation of resources such as timber, fish and other products - might be the most important. Governments might prioritise certain regulating services, whereas for others the aesthetic value of nature is considered of particular importance. Contradictory priorities and needs with regard to the exploitation and conservation of the environment can compromise different conservation and development objectives and lead to conflict among different stakeholder groups. The strength of the Bio-rights approach is that it converts such conflicts into opportunities by enabling local communities to refrain from unsustainable practices and to provide ecosystem services which are paid for by an external investing stakeholder. Thus, as a market-based financing scheme, Bio-rights is of potential use to all parties with an interest in the provision of ecosystem services (see Table 1).

Local communities, who often are the *'owners'* of certain ecosystem services are among the most crucial stakeholders in a Bio-rights scheme. In many areas they determine how resources are managed or exploited. At the same time, conservation needs and actions often have a direct impact on their daily lives. Community involvement and support therefore is a necessity for success. Local communities have a lot to gain through involvement in Bio-rights: first of all, they directly benefit from the provision of financial resources and technical support for sustainable development. This is a first important step towards escaping from the poverty trap. Secondly, improved environmental conditions contribute to enhanced livelihood security. Restoration of coastal ecosystems, for example, can lead to increased income from fisheries as well as decreased vulnerability to extreme events, such as storms and floods. As an additional benefit, Bio-rights helps communities to organise themselves and to raise their voices at local and regional policy development platforms. This increases equality among stakeholder groups and contributes to critical processes such as acquiring land tenure and resource rights.

Table 1. Reasons for being involved in Bio-rights initiatives among civil society, government and private-sector stakeholders.

	Direct income for development	Provision of environmental goods and services	Producing *'green'* products (FSC, MSC etc.)	Meeting obligations	Linking to multi-sectoral policies and plans	New tool for conservation and development	Corporate Social Responsibility	Macro-economic development	Increased stability and improved markets
Local communities	X	X							X
Conservation and development NGOs		X			X	X			
Governmental bodies		X		X	X	X		X	
Corporate sector		X	X	X			X		X
Finance sector		X		X			X	X	X

Through its focus on environment and poverty, Bio-rights can contribute significantly to achieving the objectives of both conservation and development NGOs. The approach can contribute to solving complex issues such as forest degradation or climate change, which require a multidisciplinary approach to address the socio-economic drivers of environmental degradation. Integrated Conservation and Development Projects (ICDPs), which were intensely piloted towards the end of the 20th century, have met with limited success in their efforts to reconcile conservation and development (Mc Shane & Wells, 2004). Learning from the weaknesses and strengths of ICDPs, Bio-rights introduces a number of innovative aspects that, over the last decade, have demonstrated success in targeting conservation and development in a consolidated way. Recent global policies regarding conservation and development increasingly require a multidisciplinary approach. Many of the objectives formulated under the United Nations Millennium Declaration (2005), for example, require integration of poverty alleviation and environmental conservation. This particularly applies to the objectives of accomplishing environmental sustainability (MDG 7) and eradicating poverty and hunger (MDG 1).

The objectives of local, national and international governmental bodies are very similar to those of NGOs. In addition to environmental conservation and direct on-the-ground poverty alleviation, Bio-rights can also enhance economic performance at a national level through improved production of goods, improved markets for products and sustained ecosystem services, all of which contribute to macro-level economic development.

Many stakeholders in the corporate and finance sector have a direct interest in the sustained provision of specific ecosystem services. An ecotourism company, for example, depends on nature's aesthetic values and the fisheries sector relies entirely on the availability of fisheries resources. By investing in Bio-rights, private-sector stakeholders can ensure that specific

services are maintained and restored. The approach can also contribute to accomplishing Corporate Social Responsibility objectives, which have become increasingly important in the private sector's day-to-day business. Bio-rights might also serve as a tool for complying with regulations on, for example, climate change, habitat degradation or water pollution. The positive social impacts of Bio-rights benefit the private sector as well. Improved livelihoods, enhanced community organisation and increased social and political stability can also - indirectly - contribute to a substantial improvement of economic markets.

3.5 Organisational structure

Bio-rights essentially functions as a business deal between a buying partner with specific interests in the maintenance or restoration of certain ecosystem services and the local community as a selling partner who provides these services in return for support for sustainable development. To enable successful contract negotiation and project implementation, a firm but

Figure 4. Framework for Bio-rights implementation. Potential buyers are depicted within dashed line.

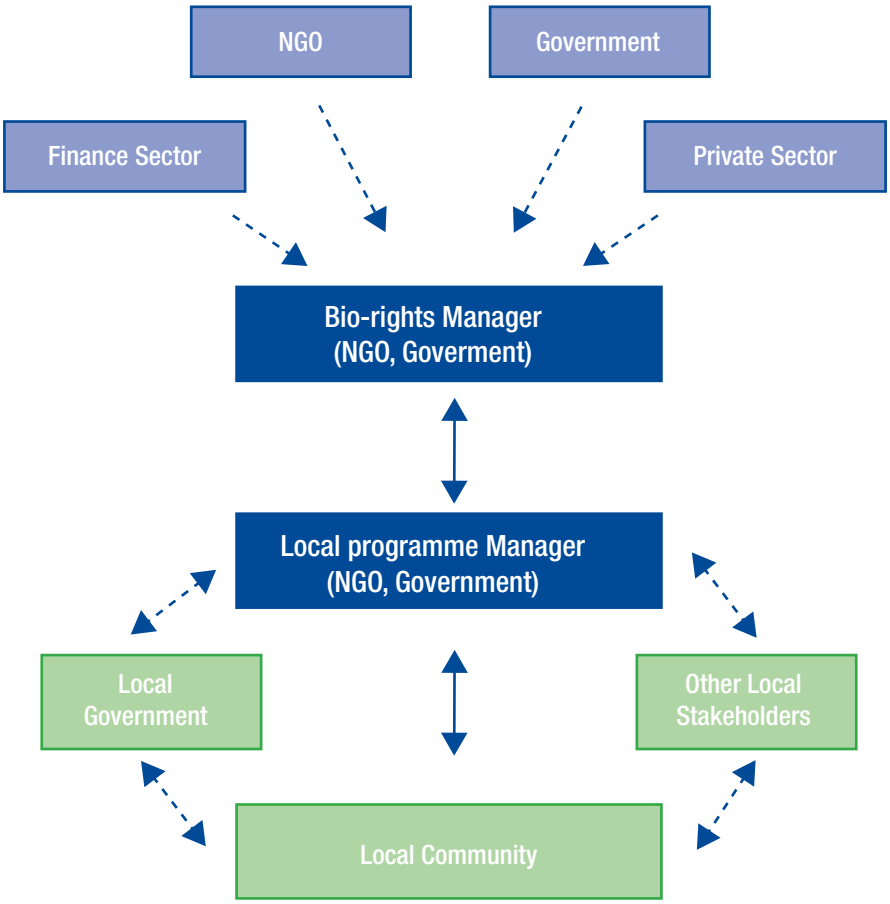


Table 2. Main responsibilities of Bio-rights manager (l) and Local Programme Manager (r) in project implementation.

Bio-rights Project Manager	Local Programme Manager
Attracting buyers and generating project funding	Network development and facilitation of contract negotiations
Assessing and selecting potential project sites	Capacity building and awareness raising, provision of technical support
Appointing Local Programme Manager	Monitoring and evaluating project activities
Representation of the buying party	Representing the local community
Overall project management	Liaising with local stakeholders
Ensuring fulfilment and enforcement of contractual obligations	Day-to-day project implementation

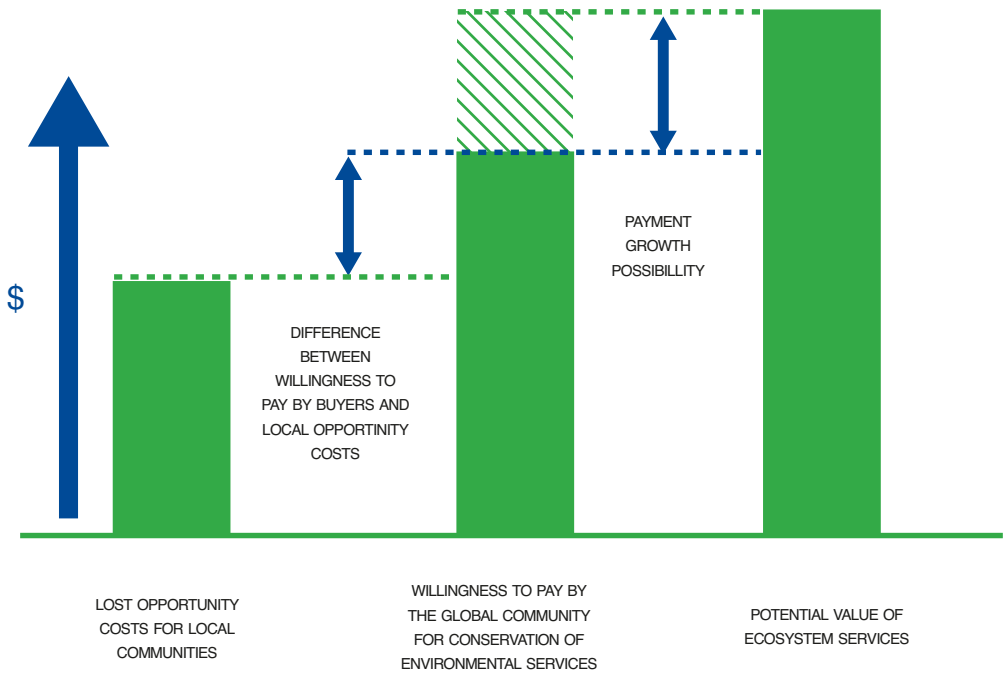
simple organisational framework has been developed (see Figure 4). This framework ensures full consideration of important criteria such as equality among stakeholder groups, conditionality and permanence. It is built around a limited number of key actors responsible for project development and day-to-day implementation. Equality is considered of particular importance, not only from an ethical perspective, but also from a practical point of view: a top-down approach is not likely to render the desired conservation and development outcomes. The mainstreaming of Bio-rights with local policies and the priorities of other stakeholders is facilitated, as much as possible, through establishing active linkages with, for example, local government bodies, interest groups and the corporate sector.

Two key actors play a crucial role in Bio-rights implementation: the Bio-rights Project Manager and the Local Programme Manager (Table 2). The Bio-rights Project Manager usually is a representative of a governmental institution or NGO. In small-scale projects this task is fulfilled by an individual, whereas larger projects might require a project coordination team. Sometimes the Bio-rights Project Manager is the buying partner itself, for example, in cases where an NGO pays for the provision of certain ecosystem services. More commonly however, the Bio-rights Project Manager is an intermediary between an investing party (e.g. a company or donor agency) and the local community (and associated representatives). An important task of the Bio-rights Project Manager is to oversee overall project progress and facilitate project development. This entails generating interest and funding among investors (in cases where the Bio-rights Project Manager is not the buying party himself), selecting appropriate project locations and ensuring fulfilment of contract obligations. The Bio-rights Project Manager also serves as a *'buying party representative'*, by ensuring that investors' needs are well communicated to local communities and incorporated within the project design and contract formulation. Thus, the Project Manager takes responsibility for ensuring that a buying party gets what it paid for. The Local Programme Manager usually is a local NGO or CBO with strong working experience in the region and extensive knowledge of local ecological and socio-economic conditions. Its main task is to guide day-to-day Bio-rights implementation by building capacity and raising awareness among local communities, ensuring timely implementation of project activities and monitoring and evaluating project proceedings. Thus, it ensures that project objectives and contractual obligations are met. The Local Programme Manager also acts as a community representative, by communicating local needs and priorities to other stakeholders in the process of project development and contract negotiation and during actual implementation of conservation and development activities. To ensure mainstreaming of Bio-rights in local policies and plans, the Local Programme Manager also liaises with other relevant local stakeholders throughout the project.

The local communities and the investors themselves also have a significant role to play in ensuring smooth project implementation. Local communities are crucial determinants of success, given their direct involvement in the implementation of actual conservation measures and development activities. Besides relying on the Local Programme Manager as a facilitator and representative, local communities are also directly involved in project development and contract negotiations. This is enabled, for example, through community consultations, which serve as an important tool to incorporate local needs, to fit projects with local socio-economic conditions and to ensure that local (traditional) knowledge is incorporated into project design. Similarly, stakeholder consultations provide the buying party with ample opportunities to be involved in project development and contract negotiation.

The consultations also enable local government agencies and other local actors to be involved. Initially, these consultations should involve all relevant stakeholders, including the Bio-rights Project Manager and buying parties. Once projects are being implemented and local support is ensured, most contacts with local stakeholders are maintained by the Local Programme Manager.

Figure 5. Relationship between opportunity costs for Bio-rights implementation, willingness to pay by global buyers and the potential value of ecosystem services. Adapted from Mulder (2004).



3.6 Costs

The total costs for implementing Bio-rights consist of three distinct elements: *i)* lost opportunity costs, *ii)* implementation costs and *iii)* overhead expenditures. A significant proportion of the budget is spent on incentivising local communities to develop sustainable alternatives to harmful practices. To accomplish this, the payment should at least cover lost opportunity costs and potential use costs, i.e., the income that would have been generated in the short term in the absence of conservation measures (the business as usual scenario). These costs differ greatly among locations. In densely populated areas with a high potential to generate significant income, lost opportunity costs are likely to be high, whereas in many poor regions with low population densities they are often low. Opportunity costs should be realistic and preferably be calculated based on the perception of the local community itself, rather than on world-market values or potential values which have not yet been internalised in existing markets or which only exist on global markets. The total monetary value of a tiger, for example, based on (world) market prices and aesthetic considerations, might be (very) much higher compared to the local value it would represent to local communities. If payments to communities were linked to such a potential global valuation, they may well be excessive from a local perspective, and insufficiently attractive to external buyers. However, by appraising goods from a community perspective, a fair and affordable payment scheme can be ensured which meets the requirements of the local community and in line with the *'willingness to pay'* of the buying party (see Figure 5). Stakeholder consultations and baseline inventories can help to establish an accurate estimate of lost opportunity costs. As Bio-rights also aims to improve livelihoods, payments to local communities should not just match the lost opportunity costs in relation to the business-as-usual scenario, but preferably also provide additional funding that will help communities to make a fundamental improvement in their local economy. The extent of additional funding needed depends on local socio-economic conditions and specific community needs as expressed during the project development phase.

Funding should be made available as well for the costs related to the actual conservation measures. In the case of community-based patrolling, for example, fuel and transport costs should be covered. For reforestation activities, costs related to nursery development, seed and seedling procurement, and sometimes also protective measures, should be considered. The exact implementation costs within a Bio-rights initiative depend on the selection of specific conservation measures. If local communities receive payments for refraining from environmental degradation, these costs are usually low. If communities are involved in the actual restoration of entire ecosystems, they can be much higher.

A small proportion of the overall project budget is allocated for overhead costs. These cover the human and financial resources required by the Bio-rights Project Manager in the process of project development, contract negotiation and project management. Similarly, the overhead budget pays the Local Programme Manager, who is hired by the Bio-rights Project Manager.

3.7 Project sustainability

As described previously, various mechanisms are put in place to ensure the long-term sustainability of Bio-rights interventions, including conditionality (through contractual agreements), stakeholder equality, policy alignment and capacity building. One particularly important means for accomplishing sustainability is awareness-raising among communities, emphasising the

importance of sound environmental management for livelihood sustenance. Under certain circumstances this awareness - combined with some initial financial support - is enough to address the poverty trap and accomplish long-term sustainability. Sometimes however, when unsustainable exploitation and associated land conversion remain commercially more attractive than maintaining existing resources, continuous funding is needed to ensure that communities keep managing their environment in a sustainable way. In these cases it is an absolute necessity that continuous cash flows are secured, for example, by making a linkage with other mechanisms such as tradable credit or labelling schemes or by establishing a trust fund. More details are provided in Chapter 4.

Another way of maximising project outcome and accomplishing long-term sustainability is to incorporate financial mechanisms that ensure long-term community access to funding for sustainable development. This can be arranged, for example, through the development of a revolving fund, which is managed by the community involved. Instead of converting micro-credits into a definitive payment upon delivery of success, it can be agreed that communities reimburse their loan into an internally managed revolving fund. This revolving fund can, in turn, be used to provide additional loans to individual community members based on sustainability conditions that were predefined in the Bio-rights contract. This approach ensures the continuity of sustainability criteria and development opportunities for local communities beyond the defined contractual period and enhances the maintenance and expansion of well-organised community groups.

3.8 Contracting and contract enforcement

Contracts are a key tool for ensuring conditionality (of payments) and, associated with that, long-term sustainability. They register the practicalities of an agreed project intervention and include the rights and obligations of both the buying and selling parties. Sometimes a third stakeholder needs to be incorporated in the contract - particularly when local communities don't have formal rights over land or resources. In this case, the rights and obligations of the formal land owner should also be included in the contract, including an expression of explicit support for the proposed Bio-rights intervention. Failure to acquire formal support from the official land owner (and to register this in a contract), significantly increases project risks at a later stage, as their land and resource management objectives might be in conflict with the undertaken interventions. Contracts are the end product of an intensive process of discussion and consultation in which all relevant stakeholders are involved. Care should be taken to ensure that contract negotiations are based upon the full equality of different stakeholder groups.

A sound Bio-rights contract should at least incorporate the following issues:

- *Services delivered by the local community:* detailed description of the specific ecosystem services that are to be delivered by the selling party, including, where applicable, the quantity and duration of service delivery. The contract should specify and describe the different measures undertaken to accomplish service provision.
- *Resources provided by the buying party:* detailed description of financial and non-financial support provided to the local community by the buying party. Details of financial support should include the quantity and mode of disbursement (number of instalments, duration of funding, etc.). Non-financial support might include the provision of goods and non-material services, such as technical training and awareness-raising.

- *Development activities undertaken:* detailed description of development activities undertaken under the project. Specification of sustainability criteria related to the use of the financial resources provided.
- *Miscellaneous obligations:* other obligations for the buying and selling parties not described above. These will differ among individual projects but could include obligations to provide or attend training and capacity building activities, monitoring and evaluation requirements, etc. They also include agreements between stakeholders on strategies to curb potential side effects such as leakage and increased immigration.
- *Third parties*: Description of the roles and obligations of any third parties (including formal land owners) included in the contract.
- *Conditions for micro-credit conversion:* Details on the monitoring and evaluation of the project interventions and on success indicators that will be used to determine whether contractual obligations have been met. Description of different scenarios for project outcomes, identifying when micro-credits are fully converted into definitive payments, under which circumstances only part of a micro-credit is converted and when full reimbursement of a micro-credit is required.
- *Description of participants and project area:* Details on (the number of) participants involved in the initiative and on how individual community beneficiaries relate to each other. Information should be provided as to the extent to which group members are responsible for each other's activities and at what scale micro-credits are disbursed (e.g., at the individual, group or village level). Data on the delineation of the area in which project interventions are to be undertaken.
- *Liability:* Description of options if one of the parties involved does not fulfil project obligations. Including details on project termination and (legal) enforcement in case of violation of the terms and conditions.
- *Force majeure clause:* details on rights and obligations in case of unexpected events such as natural disasters, political unrest or war.
- *Contract duration*

The exact status of a Bio-rights contract depends to a great extent on the governance situation in the project location. In areas with poor governance, contracts have a rather weak status. In this case, building trust and building on governance structures within communities are likely to be far more effective than relying solely on formal law enforcement. In other areas contractual agreements might be much more readily enforceable. Irrespective of the, the local governance situation, efforts should always be made to ensure that contracts have, as much as possible, a formal status and that project activities are formally endorsed by the relevant (local), governmental agencies.

3.9 Contract duration

The appropriate duration of a Bio-rights initiative is highly site-specific. If communities themselves are direct beneficiaries of improved ecosystem conditions, a short-term (several year) project might suffice to ensure ecosystem service provision. Once communities have escaped from the poverty trap and awareness of, and technical capacity for sustainable resource management has been raised, there is no need for further funding. If the provision of certain ecosystem services does not sufficiently benefit the communities themselves, a permanent incentive mechanism is needed to ensure the provision of sustained services. In this case, as with Payment for Environmental Services (PES) approaches, continuous project implementation under renewable contracts is required.

Box 3. Towards a Bio-rights fund

The conservation and development communities face several complex challenges, including accomplishing the United Nations Millennium Development Goals by 2015 and addressing global climate change and biodiversity loss. It is increasingly recognised that there is a need for market-driven instruments that can generate the resources required to accomplish these objectives as well as the importance of involving local communities in environmental conservation. Based on these developments, there is a growing interest in innovative financing mechanisms that effectively channel global funding for conservation and development to people on the ground. Bio-rights may well prove to be a promising approach to accomplish this. Individual projects have demonstrated Bio-rights' ability to deliver a range of social, economic and environmental benefits that are in line with the win-win objectives of the global community. Making the leap from implementing individual projects to developing a single, coordinated Bio-rights fund might help to target major conservation and development challenges even more effectively. A single fund would enable effective dissemination of funding to project areas where the conservation and development outcomes are likely to be optimal. Similarly, a centrally coordinated fund would have the advantages of reduced overhead costs, improved transfer of knowledge among individual initiatives and an alignment of actions on the ground. In contrast to individual projects, which usually have funding available only for a short timeframe, a Bio-rights fund might provide sustained funding to specific areas in need of constant support. This is an important criterion for market-based payment schemes to be successful.

3.10 Loan disbursement and verification

Micro-credits are usually provided at the community group level, each group consisting of, on average, 20-50 people. Disbursing loans to groups, rather than to individuals, ensures that group participants motivate each other and take responsibility for each other's actions. In addition, a group-level approach facilitates successful community consultations and efficient capacity building and awareness raising activities. Usually, loans are provided through a single payment at the beginning of a project. Sometimes, however, loan disbursal in several instalments throughout the project might be more desirable, particularly in cases where the project risks are high. Verification of project outcomes - and subsequent conversion of micro-credits - takes place through the field monitoring of project activities. Specific contractual agreements on ecosystem service delivery serve as a reference in this process, with indicators for success being described in the contract and their nature being dependent on the agreed conservation measures. Examples of such indicators might include seedling survival rates within reforestation projects, or the number of dams constructed in drainage canals within peatland restoration projects. For large-scale conservation and restoration initiatives, modern techniques such as remote sensing and GIS can help to measure and quantify success.

Where possible, verification of project outcomes takes place through joint monitoring by the Local Programme Manager and the local community itself. Involving the community in the monitoring process ensures project transparency and enhances environmental awareness among participants. The Bio-rights Project Manager oversees the project monitoring process to make sure that conservation requirements are met. Where applicable, external auditors might also be involved. This might be particularly relevant for large-scale projects that need to comply with international standards such as reforestation and REDD activities under voluntary or compliance carbon markets.

3.11 Bio-rights and policy

Successful Bio-rights implementation depends very much on the local, national and international policy and governance environment. It is important that the specific conservation and development objectives of a Bio-rights initiative match those of local or national governments. This helps to avoid project failure due to conflicting interests. Land use planning policies and plans, particularly, should be taken into account. Secondly, there should be an enabling policy environment in place that is supportive of the specific framework under which Bio-rights operates. Recognition of community rights over land and resources is very important, as this is a key determinant for increased community interest in conservation and facilitates the development of community contracts. As Bio-rights aims to work as much as possible through community consultations based upon the equality of stakeholder groups, local policies should preferably also be in favour of community involvement in policy development and planning processes. In some areas such an enabling environment is already in place, but often there is an urgent need to advocate for rights provision and increased community participation. The development of multi-sectoral working groups within governments to address this issue and the initiation of schemes to develop community-based natural resource management (CB-NRM; see Chapter 4) can help to accomplish this. This can be undertaken in advance of, or in parallel with Bio-rights implementation.

Besides the need for a (local) policy framework that fits with the specific community-based approaches adopted under Bio-rights, there also is a need to build national and international support for the concept of providing payments for environmental services. First of all, appropriate pricing of environmental goods and services needs to be established, particularly through the development of regulations that should be set by national governments and international conventions. Secondly, the rights of local communities over ecosystem services and their role in environmental conservation should be recognised. These two factors will enable the establishment of large-scale global payment mechanisms to channel international finance for conservation to local communities in return for the provision of ecosystem services. The REDD mechanism which is likely to be piloted at a large-scale in the coming years, might be a good test case for such a payment scheme, provided that the role of local communities is sufficiently recognised (see Chapter 4).

3.12 Project scales

Bio-rights projects can be implemented at various scales, ranging from small-scale initiatives targeted at very specific community groups, to major programmes, focusing on the entire population of a certain area. Irrespective of the anticipated scale of a proposed project, success depends on adopting a community-level approach, targeting uniform community groups of a limited size. For large-scale initiatives this implies a need for division into many small sub-projects through, for example the creation of a small-grant programme involving a large number of local NGOs or CBOs which adopt the role of Local Programme Managers. If this is the case, a single Bio-rights Project Manager will liaise with a large number of Local Programme Managers, establishing individual contracts with the local communities.

3.13 Challenges and constraints

Various challenges and constraints, commonly encountered in other conservation and development initiatives, are also applicable to the Bio-rights approach. These should be taken into account and actively addressed during the site selection, project development and implementation phases to avoid complications or even project failure. Leakage is one of the most prominent constraints in conservation initiatives: how to prevent, for example, conservation activities targeted at a forest area or a coral reef from merely displacing environmental degradation to another nearby location? Local socio-economic and environmental site conditions are the most important drivers of leakage. The geographic location of certain high-value natural areas, as well as the ease with which certain practices that lead to degradation can be transferred from one place to another, strongly influence the extent to which leakage occurs. This in turn is influenced by certain community characteristics, such as the extent to which they are sedentary, as well as the level of poverty and awareness. Leakage can also be market driven. If demand for certain products (for example, fish or timber) is high, the reduction of resource extraction through a conservation initiative might lead to increased market prices and thus increased exploitation elsewhere, even in locations far away from the conservation action. These constraints should be considered when selecting of project sites where Bio-rights may be implemented. In addition, the specific design of a Bio-rights intervention might in itself help curb leakage risks. Adjusting the scale of an initiative can ensure that entire high-value conservation areas are protected, instead of targeting only minor sections. This significantly reduces local leakage risks. Similarly, leakage issues can be incorporated into community contracts, for example, by explicitly stating that certain bans on resource exploitation and environmental degradation also apply to areas outside project locations (and ensuring that these are enforced). Leakage risks linked to (global) market demands cannot be so easily mitigated within a single project intervention. Instead, active advocacy will be required to influence policies, change regulations and raise awareness among the relevant stakeholders.

Another risk is related to immigration into a project area. If a Bio-rights intervention turns into a great development success, people's improved livelihoods can act as a magnet to poor communities from surrounding areas and lead to renewed pressures on environmental resources, and further environmental degradation. Local socio-economic conditions such as population density, poverty levels and, in particular, land ownership are critical determinants of immigration risks. Project and contract design can help to address this issue by developing strategies with local communities in the project area to avoid increased human pressure on their land.

Local communities can potentially use their earnings from development initiatives implemented under Bio-rights for unsustainable practices such as land conversion or overexploitation of resources. This poses a serious risk for long-term project sustainability, and this needs to be taken into consideration. One way to mitigate this risk is to make sure that Bio-rights is embedded in a wider framework of conservation and development activities. By ensuring that strict law enforcement is in place, illegal activities can be halted. Community-based environmental resource management structures can ensure the mainstreaming of conservation activities with local development needs. By placing a strong focus on awareness-raising activities, communities can be made aware of the implications of unsustainable practices on local livelihoods. Thus, an optimal balance can be created between top-down enforcement of formal legislation, bottom-up involvement of local communities in policy development and conservation, and facilitation by third parties such as development and conservation NGOs. In this wider framework, Bio-rights is no more than a tool that links community development with conservation and brings various stakeholders together.

4. Bio-rights in the wider conservation and development portfolio

This report has often reiterated that Bio-rights is not a stand-alone approach, but one element within a package of measures required to successfully accomplish conservation and development. Understanding the process required, the linkages to ongoing activities in the regions and the options for tailoring Bio-rights to local site conditions is key to successful project implementation. Those implementing Bio-rights projects are unlikely to be successful unless they appreciate and understand critical aspects in the wider realm of conservation and development. This requires expertise in a broad range of fields, extensive experience with on-the-ground project implementation and eagerness to draw lessons from the past (*also see box 8; 'Learning from the ICDP experience'*). This chapter provides some insight into how Bio-rights fits into the bigger conservation and sustainable development picture.

4.1 The process

Bio-rights requires more than just an innovative financing approach complemented by capacity building and awareness raising activities. To optimise success, the approach should be embedded in a broader context that, among others, considers local policies, national-level legislation, ownership rights and the organisation of stakeholders.

4.1.1 Linking to policies

Bio-rights initiatives are linked to policy in various ways. To a great extent, policies determine what can be accomplished by means of Bio-rights. They determine the potential role of local communities in natural resource management as well as the involvement of other relevant local stakeholders in project implementation. They also determine the legal boundaries of what kind of interventions are allowed. Thus, policies either do or do not provide an enabling environment for Bio-rights projects. On the other hand, Bio-rights can serve as a tool to translate policies into practice. Operationalisation of policies is considered a major challenge in many countries. Thus, it is very important for Bio-rights and policy development to take place in parallel with each other. Bio-rights project developers need to provide input into policy processes, while it should be ensured that policymakers endorse proposed projects and provide input into their design.

4.1.2 Tenure rights

The securing of tenure rights to land and resources is a critical aspect of Bio-rights implementation. Although not necessarily a precondition for a successful project *(see Chapter 3.1.2)*, where local communities have secure land tenure, this can significantly help to accomplish success. Most importantly, it ensures that local communities have full responsibility for meeting the conservation requirements stet out in the contractual agreement, which makes it less likely that a third party will negatively interfere with project success. Tenure rights provision might also increase wise stewardship of land and resources since communities are more likely to implement long-term sustainable practices on land that is their own. A risk of granting rights to resources is that long-term management strategies might be difficult to predict or influence. Assessing - and acting on - the pros and cons of rights provision should form an integral part of Bio-rights development and involvement in policy processes.

4.1.3 Law enforcement

Involving communities in natural resource management linked to provision of incentives to support changes in unsustainable land use practices is just one means of accomplishing environmental conservation. The opposite approach, strict law enforcement, is also a potentially powerful tool. The applicability of these approaches depends on local site conditions and project objectives. Community-based conservation and top down law-enforcement are not necessarily mutually exclusive. A potentially very powerful approach would be to incentivize local communities to refrain from unsustainable or illegal resource exploitation by means of Bio-rights, while simultaneously ensuring strict enforcement of contractual obligations. This can usually be accomplished by involving government officials - e.g., staff of a government conservation agency or park authority - or, alternatively, by making community members responsible for the enforcement of formal regulations. Law-enforcement can also be applied to prevent outsiders from committing illegal acts in an area in which Bio-rights is implemented.

4.1.4 Organising groups

Communities are usually diverse, consisting of individuals with very different socio-economic backgrounds, incomes religious beliefs, education levels and professional backgrounds. Often there is inequality between male and female group members. Limited organisation and coordination within and between groups often impedes community development and limits a community's potential to be involved in local decision making processes. This also is often a source of conflict. Considering its importance for ensuring successful conservation and development, group formation and the full support of those with weak voices is an important process that has to run in advance of and parallel to Bio-rights implementation.

4.2 Aligning to existing approaches

Several approaches that are advocated globally have significant potential for linkage to Bio-rights. In many cases, Bio-rights can help to meet the challenge of efficiently channelling financial benefits to local communities to ensure the sustainable use of resources. This section summarises a number of concrete linkages that could be established.

4.2.1 Tapping into global markets

In recent years, regional, national and international markets have developed for the provision of a range of ecosystem services. Most of these markets, including those targeted at watershed services and biodiversity conservation, remain small scale and in early stages of development. Others, including, for example, the carbon market, have become comparatively well established and are rapidly expanding. Most interesting in this respect are the discussions on establishing a system for Reducing Emissions from Deforestation and Land Degradation (REDD). While activities targeted at reducing deforestation occur on a small scale through the voluntary carbon market, a multibillion market might emerge if REDD is incorporated into post-2012 compliance markets.

A major challenge for these markets is to ensure that financial resources are optimally used to accomplish the desired conservation objectives while ensuring that payments are provided to the right stakeholders. For REDD, for example, it would be desirable to ensure that financial resources are provided to communities and park managers, who bear direct responsibility for forest conservation, rather than ending up in the pockets of corrupt government officials. Bio-rights could potentially serve as a very powerful tool to make REDD and other global payment

Global markets for ecosystem services are rapidly developing, such as REDD schemes for avoided carbon emissions. Photo: Wim Giesen.

schemes operational. The approach allows for effective channelling of funding to the ground level, while avoiding bureaucratic hurdles and ensuring sound community involvement in decision making. Adopting a Bio-rights approach, rather than sticking to largely funding-based approaches such as Payments for Environmental Services (PES), would incorporate a strong emphasis on awareness raising and on-the-ground training of local community groups and NGOs. This will likely significantly enhance the sustainability of investments. While the payments address possible trade-offs between conservation and development, the focus on training and awareness raising will create long-term understanding of the importance of sound environmental management among local people.

4.2.2 Community-based Natural Resource Management (CB-NRM)

Worldwide, efforts are being made to ensure greater involvement of local communities in the development and implementation of policies for the management of natural resources in their surroundings. This is considered desirable from an ethical perspective, but also to ensure that policies are adequately transferred from paper into practice. Over the years, various institutions gained experience with involving local communities in the process of consultation and policy development. Translating these policies into practice, with the sustained involvement of local communities, however, has so far lagged behind. Assuming availability of funding, Bio-rights could serve as a promising means to implement policy plans and shape local perceptions to favor sustainability.

4.2.3 Community-based savings schemes

Oxfam and several other development organisations have made significant investments to establish community-based savings schemes in which local community groups use their own income to generate savings to fund development activities. These projects focus on establishing groups, building capacity for managing financial resources and implementing development initiatives. The skills built through these schemes - such as skills in the distribution of tasks, taking independent action and designing development plans, for example - could greatly contribute to success for Bio-rights implementation. Meanwhile, payments provided for conservation and restoration activities could significantly augment the savings process. Savings schemes and Bio-rights could be implemented in parallel to each other, or consecutively, starting with a savings scheme (to build relevant capacity) followed by a Bio-rights intervention.

4.2.3 Ecotourism

Many park managers allocate a certain fraction of the revenue from tourism for communities living in or around a protected area. Often such payments are provided in cash. In some cases this may result in payments being used in a socially, economically or ecologically unsustainable manner, for example to purchase materials (such as chainsaws, fishing nets, etc.) that enable overexploitation of natural resources. By disbursing community payments as part of a Bio-rights deal, such risks could be significantly mitigated. Park managers and local communities would be able to agree on sustainability criteria, while creating a platform that enables local communities to be involved the management of their surroundings. This allows park management to be better adjusted to local aspirations and needs, and enables conflict resolution. Thus Bio-rights could help to transform the relationship between park management and local communities from being strictly financial to a more durable cooperative relationship that allows for participative management of protected areas.

4.2.4 Labelling

Demand for products with sustainability labels is on the rise. In recent years such labels have developed for a range of goods including timber, fish, palm oil and coffee. To ensure compliance with labelling requirements, production chains often require considerable reform of a large number of social and environmental aspects. In cases where local communities are involved in the use or cultivation of a certain product, Bio-rights might be well suited to guide this process. The revenue from sales of labelled products can be passed on to local communities by means of Bio-rights to cover the costs of modifying production processes and sustaining new ways of working. Likewise, the approach can help to accomplish the high level of organisation and skills usually required to fulfill labelling requirements.

4.3 Adapting Bio-rights

The typical Bio-rights approach as highlighted in this report consists of a several-year contract, followed by micro-credit conversion and, in some cases, the subsequent establishment of a community-based revolving fund. Obviously, under certain conditions a slightly modified funding structure might be desirable. Below, two alternative approaches are described: the PES-type approach and the micro-credit approach.

4.3.1 The PES-approach

Bio-rights is most commonly presented as a mechanism that helps local communities escape from the poverty trap. This is based on the assumption that a sustainable balance between conservation and development can be accomplished through the temporary provision of funding. Field pilots have demonstrated that in many cases it is indeed possible to trigger such a transition. However, this is by no means always true. Sometimes the most attractive option will still be to convert an intact natural area into intensive agriculture, no matter what changes in land use practices are established. In other cases, trade-offs between conservation and development will place strong pressure on a project's outcome. In this case, temporary funding will be insufficient to ensure long-term sustainability. Rather, there is a need for continuous compensation for the opportunity costs lost because of a conservation measure. A Bio-rights project can accommodate this by developing a renewable contract system. Instead of a one-term contract, new contracts should be offered to the respective groups to provide continuity when a Bio-rights deal expires. Obviously this is only possible if long-term project funding is available. In this way a system similar to Payments for Environmental Services is established, while the key characteristics of Bio-rights (convertible micro-credits and a focus on training and awareness raising) are maintained.

4.3.2 The micro-credit approach

For many communities in rural areas it is very difficult to gain access to micro-credit schemes. This is because of the perceived risk among lending institutions regarding lending to the poorest of the poor. High poverty, vulnerability to extreme events and low education levels are all factors that make micro-credit institutions disinclined to lend to these groups. Meanwhile, poor communities in rural areas do have an instrumental role to play in sustainable natural resource management. An alternative means of Bio-rights implementation might be to bring together the need for these communities' involvement in environmental conservation and the their needs for micro-credits. This can be accomplished if the Bio-rights project covers the risk of lending money to vulnerable communities in target areas, a risk normally born by the micro-credit institutions. In other words, a given Bio-rights project could offer communities access to micro-credits in return for their involvement in certain conservation or restoration actions. In theory, this approach could serve as a cost-effective means of accomplishing significant conservation objectives, as there is no need to convert the credits into definitive payments upon termination of a contractual period. The only costs relate to management of the project, administration of the micro-credits and covering unexpected loss of capital in case community members are not able to repay loans. Obviously the applicability of this approach depends largely on the local need for micro-credits and the willingness to undertake conservation efforts in return for access to lending.

5. Bio-rights in relation to other financial mechanisms for conservation and development

This chapter provides an analysis of Bio-rights in the overall perspective of other financial mechanisms used in the conservation and the development sectors. Three mechanisms are reviewed: *i)* Integrated Conservation and Development Projects (ICDPs), *ii)* Payments for Ecosystem Services (PES) mechanisms and *iii)* micro-finance schemes. The first part of the chapter describes the overall rationale behind conservation finance approaches and presents a brief overview of three financing mechanisms and lessons learned during their implementation. The second part of the chapter describes how Bio-rights relates to these mechanisms. It provides an overview of the applicability of Bio-rights to other instruments and describes what can be learned from practical field experiences with the different financing mechanisms to ensure successful Bio-rights implementation.

5.1 The basis for use of financing mechanisms

The fact that ecosystem services form the basis of human wellbeing is well expounded in literature and practice. And yet in 2005 the World Resources Institute's Millennium Ecosystem Assessment revealed that more than two thirds of global ecosystem services were in decline and that the *"benefits reaped from our engineering of the planet have been achieved by running down on natural capital"* (Millennium Ecosystem Assessment, 2005). Efforts to reverse these trends have been equally daunting. As one estimate puts it, as much as US$ 20 billion is raised from public finance and private philanthropy for global conservation activities - much of the money being used to maintain over 100,000 protected areas covering 12% of the world's land surface (Bishop *et al.*, 2008). Ironically, as economies grow, ecosystems continue to degrade, posing an immense challenge for policy and decision making in both conservation and development sectors.

The linkage between ecosystem services and human wellbeing forms the basis for an economic perspective on environmental policy. Based on the values[1] people hold for their environment, important repercussions for ecosystem services could be achieved just by making the link between the economy and environment more explicit. Markets serve as the key economic institutions to ensure resource allocation through the invisible hands of demand and supply. However, markets fail to emerge for most of the ecosystem services primarily as they acquire the nature of positive externalities or public goods[2] (Cornes & Sandler, 1996). This could form the central justification for government intervention making the public sector responsible for the provision of the ecosystem services. However, governments have their own failings, in terms

[1] Value is defined by the Millennium Ecosystem Assessment (2003) as the *"contribution of an action or object to user specified goals, objectives or conditions"*. The value of ecosystems can be interpreted differently within the perspectives of economic, ecological and sociological sciences. While the economic perspective stresses the exchange value of these services, the ecological focus is on the importance of the ecosystem in maintaining ecosystem health and resilience in order to provide the services (Bingham *et al.*, 1995) and sociologists emphasise measures of moral assessments as part of value (Barry & Oelschlaeger, 1995).

While certain ecosystem services, such as fish (l), have a distinct monetary value, other services - such as protection against storms (r) - have not been internalised into formal markets. Photos: Pieter van Eijk

of inefficient bureaucracies, misaligned incentives, imperfect knowledge and rent seeking. This then calls for market-based approaches that aim to alter the incentives facing the providers of ecosystem services. Experience has shown that well designed market-based instruments can achieve environmental goals at less cost than conventional *"command and control"* approaches, while creating positive incentives for continual innovation and improvement (Stavins, 2000). This is where the genesis of financing mechanisms as a part of the policy mix should be understood. Increased emphasis on financing mechanisms within conservation and development sectors is a part of the policy shift that recognizes the success of markets to induce changes in individual and institutional behaviour in a cost effective manner. Various multilateral conservation agreements, for example, recognise incentive systems as potentially powerful policy tools. Article 11 of the Convention on Biological Diversity calls on parties to *"as far as possible and as appropriate, adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity"*. Similar emphasis is present in the decisions of the Ramsar Convention on Wetlands, Convention on Desertification and others. Also, national and regional policies increasingly consider incentive instruments as a tool to improve conservation effectiveness.

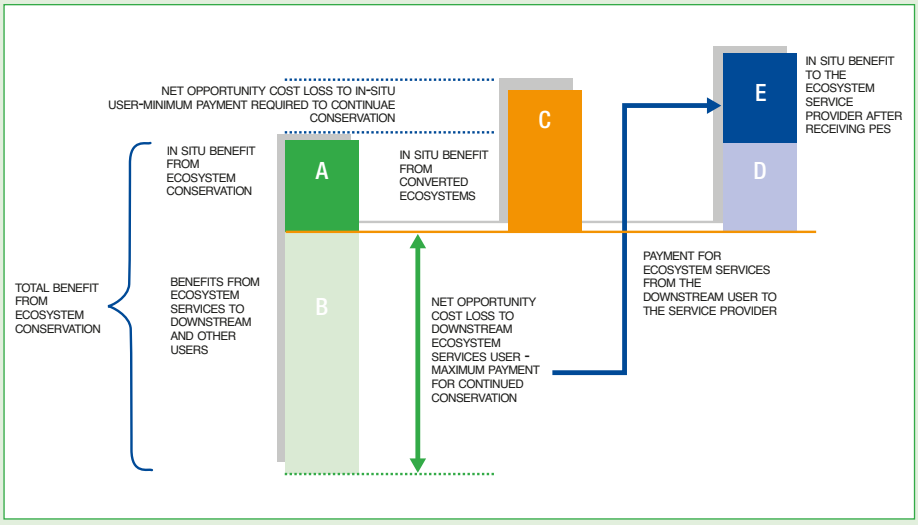
However, recent developments in institutional economics have challenged the long held perception that markets are an optimal resource allocation mechanism, and instead place markets within a multitude of institutional arrangements and hierarchies that guide decision making and resource allocation (North, 1990; Williamson, 1985; Stiglitz, 1986). Thus, market-based financial systems should not be assumed as to be *"silver bullets"* that will fix all the problems of environmental degradation; instead they should be seen as part of a range of

[2] A good is public to varying degrees, depending on the extent to which it exhibits rivalry and excludability characteristics. When a good is non-rivalrous, one person's use is not affected by the other person's use. So the supply of the good cannot be controlled and therefore the willingness to produce it decreases. When a good is non-excludable, it implies that there is no means of preventing people from using it, creating a problem of supply and therefore its under provision. These characteristics lead to market failure because markets, by themselves, are unable to provide the optimal level of good. When non-excludability and non-rivalry exist, they undermine the formation of markets since beneficiaries of the goods or services have no incentive to pay the suppliers, and eventually everyone wishes to *"free ride"*.

Box 4. The logic of Payments for Ecosystem services

The overall economic benefit arising from conservation of a particular ecosystem is presented by the bar on the extreme left. Bars A and B show the income derived by people living in and close to the ecosystem (A) and further away (B). This recognises that benefits are distributed unevenly from place to place. For example, in the case of a wetland ecosystem, the local benefits (A) could be availability of drinking water, fisheries, and valuable plants, while people living further away would benefit from flood mitigation, sediment retention and other regulatory services (B). The local user may then see a potential source of income (C) from ecosystem conversion - say, draining the wetland for agriculture and residential purposes. Even though the overall economic benefit from the converted ecosystem (C) is less than the overall benefit before conversion (A+B), the local user faces an opportunity cost in terms of lost benefits if he or she chooses not to convert the land, represented by the difference between bars A and C. To a rational local user, a payment of this difference constitutes a minimum incentive to maintain the ecosystem. A rational downstream user, can pay an amount equivalent to the income stream at stake if the land is converted (B). This induces the ex-situ user and an ecosystem service buyer to enter into a contract for continued provision of the services, by providing a payment (E) to to the local person or ecosystem services provider. The total income stream to the ecosystem services provider (bar D plus E) thus is more than that of a converted ecosystem (C), making conservation viable. The system thus internalizes what would otherwise be an externality (Pagiola and Platais, 2007).

Figure 6. The logic of Payment for Ecosystem Services. Adapted from: Pagiola and Platais, 2007.



conservation-development options available to the decision maker and policy planner. This reference position is critical to rationally appreciate the role of financial mechanisms in the overall conservation-development debate.

5.2 Financing mechanisms within the Conservation - Development Sector

Three financing approaches have been identified as particularly closely linked to Bio-rights in terms of their objectives and approaches: *i)* Integrated Conservation and Development Projects (ICDPs), *ii)* Payments for Ecosystem Services (PES) mechanisms, and *iii)* microfinance schemes. Their characteristics and implementation experiences are described in more detail below.

5.2.1 Integrated Conservation and Development Projects

The emergence of ICDPs in the 1980s was a response to the increased recognition of the interconnectedness of community livelihoods and biodiversity, and therefore the ineffectiveness of conservation initiatives that did not have the effective participation of local communities ICDP has been defined as *"an approach to management and conservation of natural resources in areas of significant biodiversity value that aims to reconcile the biodiversity conservation and socio-economic development interests of multiple stakeholders at local, regional, national and international levels"* (Franks *et al.*, 2004). The attractiveness of ICDPs lies in their potential to contribute to three core objectives of the sustainable development agenda: more effective biodiversity conservation, increased local community participation in conservation and development, and economic development for the rural poor (Wells *et al.*, 2004).

Typically, an ICDP involves assistance to ventures that yield commercial output and ecosystem protection as joint products (Ferraro & Simpson, 2003). Project activities include providing rural communities with alternatives to environmentally damaging activities, creating livelihood opportunities through environmentally benign activities such as ecotourism, micro-enterprise development based on adding value to natural products and, more recently, investments in rural infrastructure to improve quality of life. Programme design is based on the logic that, if faced with higher prices for their eco-friendly products, or cheaper inputs, individuals would demand greater areas of intact ecosystems, thereby indirectly protecting ecosystems and their constituent services (Ibid, 2003).

The evidence, however, indicates that ICDPs have failed to meet expectations in terms of conservation and development outcomes (for example, refer to Stocking & Perkins, 1992; Barrett & Arcese, 1995; Sanjayan *et al.*, 1997; Brown, 1998). A review of implementations by Wells & McShane (2004) indicates the following reasons:

- Projects are implemented with insufficient time, funds and scale to be able to address the behaviour that damages biodiversity;
- Assumptions that biodiversity conservation and livelihoods will always go hand-in-hand fail to address the tradeoffs involved due to the interests and claims of multiple stakeholders;
- Projects have an inappropriate focus on the activities of local people, with limited influence over large-scale developmental activities that have the potential to trigger large-scale habitat degradation;
- There is limited stakeholder engagement;
- There is disproportionate emphasis on detailed planning at the expense of implementation;
- Projects focus on activities rather than impacts.

The body of literature on ICDPs points out that, while the concept of integrating conservation and development goals remains valid, it is the implementation that has failed in several respects. Therefore, future ICDP-related interventions need to be developed with greater adaptability, with

tangible conservation targets, and with partnerships that are able to address issues at multiple scales.

5.2.2 Payment for Ecosystem Services

PES has attracted increasing interest as a mechanism for translating the external, non-market values of the environment into real financial incentives for local actors to provide services (Engel *et al.*, 2008). Recently, there have been increasing attempts to define rigid characteristics for PES, including the following definition proposed by Wunder (2005):

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

The logic of PES is shown in Box 4.

PES has been applied in a wide range of circumstances. Ravnborg *et al*. (2007) identify 167 PES cases based on hydrological services, biodiversity conservation, carbon sequestration and landscape beauty. Landel-Mills & Porras (2002), in their global review, mention 287 cases of the application of PES. However, Wunder (2008) emphasises that there are no more than a couple of dozen cases that satisfy all the five criteria suggested in the definition.

The range of ecosystem services vary from specific services to *'bundled-up'* situations, wherein a particular service renders more than one ecosystem service. The Los Negros scheme in Bolivia focuses on watershed and biodiversity protection wherein the Pampagranade Municipality pays Santa Rosa farmers for forest and páramo (a neotropical wetland type) conservation (Asquith *et al*., 2008). Vittel, a France-based water company pays the dairy farmers in a spring catchment to maintain a form of land use that enables sustained supply of high quality mineral water (Perrot-Maître, 2006). The Government of China initiated the Sloping Land Conversion Programme focussing on watershed protection, wherein the central government pays rural households to take cropland out of production and for afforestation (Bennet, 2008).

While PES schemes can be distinguished from each other in various ways, a useful basis is to delineate PES programmes that are user-financed (in which service buyers are the actual service users) and those that are government-financed (wherein government buys the service on behalf of the end users). User-financed programmes are voluntary for the seller as well as the buyer, whereas government-financed programmes are mostly voluntary only on the provider side (Engels *et al*., 2008). Government-financed programmes are generally larger scale, for example the Sloping Land Conservation Programme covers 12 million hectares (Bennet, 2008). Bulte *et al*. (2008) propose a functional classification of PES schemes separating programmes that pay for pollution control, conservation of natural resources and ecosystems from those aimed at general or public good environmental amenities.

Despite an overwhelming emphasis on PES, there have been relatively few attempts to assess their effectiveness and efficiency. Two recent attempts - Wunder *et a*l. (2008) based on a review of 14 case studies and Bulte *et al*. (2008) based on 10 cases - have the following insights to offer on various aspects of PES implementation:

- Impacts on environmental service generation: PES programs in general have a high rate of attracting potential providers of ecosystem services. However, payments are rarely tied to measured units, but to proxies. There is very limited evidence of additional conservation benefits created by the PES projects, though this can be attributed to lack of monitoring design. Many questions have also been asked about the permanence of the benefits of PES programmes, particularly after the payments stop coming. Absence of an adequate monitoring framework has also limited measurement of the extent of leakage. There has also been evidence of the generation of perverse incentives due to implementation of PES programmes (Tattenbach *et al.*, 2006).

- Distributional impacts: Conceptually, PES programmes were not intended to be an instrument for poverty alleviation, but for natural resource management. It is often assumed that ecosystem services are derived from areas with a predominantly poor population, or that have a relatively higher incidence of poverty. This remains an untested hypothesis to date. In an analysis of highland Guatemala, Pagiola *et al.* (2007) do not find any correlation between ecosystem services provision and incidence of poverty. In most of the cases that are said to have attempted to integrate poverty alleviation goals, these were not the major policy objectives but add-ons introduced due to political pressure or to ensure greater acceptability. In terms of implementation, there has been hardly any complementarity between the objectives, but instead the poverty reduction objective has competed with the overall objective of ecosystem services provision.

Available evidence on the participation of poor people in PES programmes has been mixed. Cases from Costa Rica have a bias in terms of participation from well-off households, whereas others have a greater proportion of poor people involved. However, key factors that influence households' decisions to participate in PES programme include *i)* factors that affect eligibility to participate; *ii)* factors that affect desire to participate; *iii)* factors that affect ability to participate; and *iv)* competitiveness in terms of transaction costs. Some of the key conclusions that emerge are:

- In cases of user-financed programmes, poor service providers were able to access the programme and become ecosystem services sellers. This happened in spite of the fact that none of the programmes had intentionally used poverty targeting mechanisms. These results are also consistent, to a large degree, with the government-financed PES schemes.
- Transaction costs are likely to be a much greater obstacle for poor households than their own limitations. High transaction costs associated with dealing with many small-scale ecosystem service providers as opposed to few large-scale providers work against the poor. Thus, the participation of the poor may require shifting (part of) the unavoidable transaction costs from the buyers to the sellers and investigating options such as registering communities as groups.
- The extent to which poor people actually benefit from participation in PES programmes is very poorly documented. As long as participation is voluntary, there is a presumption that the participants were at least not worse off than in a situation without PES. In the case of non-voluntary participation such presumptions cannot be made.
- There is little evidence that large benefits result from implementation of PES programmes. PES probably delivers small gains over the opportunity costs. However, even small pecuniary gains could be significant when people have limited opportunities for supplementing their incomes. In several situations, non-pecuniary gains could also be anticipated, with relatively higher societal impacts. In Kalimantan for example, PES has induced more secure property rights. In Costa Rica and Bolivia, PES contracts helped increase tenure security.

In general, the two reviews conclude that poverty alleviation objectives within PES may come at a cost to achieving environmental objectives, and in most situations be counter-productive to the overall success of the scheme, undermining the basis for a *quid pro quo* deal between service users and service providers. Poverty cannot be used as a fundamental criterion for service provision; instead, the focus is on the ability to provide the service. An increased focus on poverty is likely to increase programme costs and makeexternal financial necessary.

5.2.3 Micro-finance[3]

Unlike the above two instruments, micro-finance has an upfront focus on poverty. Poverty is conventionally interpreted as a lack of access to the assets necessary for a higher standard of income or welfare, such assets could include be (e.g., access to education, safe drinking water and sanitation), natural (e.g., access to land, forests, wetland services), physical (infrastructure), social (networks) or financial (credit, banking, etc.). Lack of access to credit is explained by the absence of collateral that the poor can provide, forcing them to rely on moneylenders, who often charge very high interest rates, forcing people further into poverty. Micro-finance aims to help people escape this spiral through a wide variety of innovative measures, such as group lending, regular saving schemes, establishment of close linkages between poor clients and credit institutions and the like. Micro-finance as a tool for poverty alleviation works on separate premises for different categories of the poor[4]. For the destitute, enhancing access to credit enables people to finance production activities that allow income growth. For the transitory poor, micro-finance provides an opportunity for *'consumption levelling'* by providing credit in times of need or even generating savings opportunities. Thus, micro-finance becomes an important tool for poverty alleviation.

Though micro-finance has a long history, dating back to a seventeenth-century Irish bank, modern micro-finance has its roots in Bangladesh in the 1970s. Muhammad Yunus' experimental research into providing credit to the poor led to the establishment of the world-famous micro-finance institution, the Grameen Bank. In Bolivia, Banco-Sol was developed to address the needs of the urban poor in the informal sector. In recent times, there is an increasing trend of conventional banks expanding their operations to include micro-finance. Bank Dangang Bali (Indonesia), ICICI Bank (India) and Banco del Dessarrollo (Chile) are among several to have included micro-finance within their core business strategies.

Unlike the two other instruments, micro-finance has been subject to some rigorous effectiveness assessments. Hume & Mosley (1996) in their assessment covering Indonesia, India and Bangladesh, observed an increase in incomes of borrowers, with a relatively higher growth for the relatively better off. MkNelly *et al.* (1996) records positive benefits in Thai villages. Khandekar (1998) and Pitt & Khandekar (1998) in an assessment of Grameen Bank, report reduced poverty within the micro-finance targeted villages, an increase in consumption and changes in attitudes. Chen & Snodgrass (2001) have recorded an increase in average income of the participants of India's SEWA Bank micro-finance programmes. However, not all the studies conclude

[3] Micro-finance and micro-credit are often used interchangeably, but essentially have different meanings. Micro-credit refers to a small loan made to a low-income person, often without collateral. Micro-finance refers to a whole range of financial services, including loans, saving, insurance and other products.

[4] Poverty has its own heterogeneity (Montgomery & Weiss, 2005). Broadly, we can distinguish between long-term or 'chronic poor' and those who fall into poverty as a result of adverse shocks (transitory poor). Within the chronic poor, one group is those who are so physically and socially disadvantaged that they would remain poor without welfare support (destitute category); another is those who are poor because of lack of access to assets and opportunities. Furthermore, within the non-destitute category, we can distinguish in terms of depth of poverty, i.e., the distance from the poverty line. People significantly below the poverty line form the *'core poor'*.

that micro-finance is able to reach the core poor. Amin *et al.* (2003) in their assessment of Bangladesh's Grameen Bank, BRAC and ASA observe that the programmes are successful at reaching the poor but the vulnerable poor are effectively excluded from membership. Coleman (2004) in assessing village banks in Thailand reports that the programmes reach relatively wealthier communities rather than the poor. Duong & Izumida (2002) in their study of Vietnam indicate that the poor have difficulties in accessing credit facilities. MkNelly & Dunford (1999) in their assessments from Bolivia observe no evidence of improved household food security or nutritional status due to micro-finance programmes. In general, in terms of cost effectiveness, there is evidence of high transaction costs involved in the design and implementation of micro-credit programmes (Montgomery & Weiss, 2005).

5.3 Bio-rights in comparison to ICDPs, PES and micro-finance

5.3.1 Overall similarities and differences

Bio-rights as a financing mechanism bears a high degree of similarity to the three mechanisms described in the previous section. It has joint conservation-development objectives as in ICDPs. It is an attempt to create an ecosystem service market as in PES. And lastly, it is a micro-finance based incentive mechanism. Despite these commonalities, Bio-rights has a number of distinct features:

- Conservation targeting: Bio-rights attempts to make conservation a viable option by linking it to an incentive in the form of micro-finance. However, unlike PES, the conservation action does not necessarily need to have a utilitarian basis in the form of a service provider and a buyer. Since the incentive funds in some cases are sourced from a third party, i.e., the donor, a decoupling of the demand and supply chain becomes possible at least in the short to medium term. This widens the range of circumstances under which Bio-rights might be applicable; for example, in the case of a forest regeneration scheme, there would not need to be a downstream community benefitting from watershed functions.

- Poverty targeting: Bio-rights provides the flexibility to integrate poverty targeting, similar to micro-finance and, to a limited degree, ICDPs. Being micro-finance based, the application of Bio-rights is driven to areas where there is a demand for credit. People in these areas do often have no access to regular micro-credit schemes. Also, this is unlike PES, wherein the focus is on ecosystem service provision, and there is limited evidence of an overlap between poverty incidence and ecosystem services generation.

- Conditionality: Bio-rights finance is conditional on the achievement of a certain conservation target. Other conditions could be introduced to ensure the socio-economic and environmental sustainability of enterprises supported through micro-finance. Weak conditionality has often been identified as one of weaknesses of ICDPs, wherein incentives are delivered upfront on the premise that they will create demand for conservation. However, there is a high degree of likelihood that livelihood activities will continue to put pressure on natural resources or, in the worst situations be completely de-linked from the main conservation objective. Thus, the introduction of conditionality, both environmental as well as socio-economic, within Bio-rights improves implementation targeting.

5.3.2 Which mechanism to choose?

No generalisations can be made as to which approach is most suitable for accomplishing conservation and sustainable development in a given situation. Selection of an appropriate mechanism largely depends on the professional judgement of the project implementer, based on local site conditions, investor requirements, community perceptions and specific project objectives. Obviously, personal experiences and familiarity with different conservation and development approaches also play an important role. Moreover, it is important to realise that all of the above mechanisms can be implemented in a flexible manner, and have certain elements in common. This makes it difficult to classify the approaches as being entirely 'different' and to consider one approach applicable while completely rejecting another. Rather, judgment is needed as to which elements are required for successful project implementation under given site conditions. This is likely to result in a combination of several financing and non-financing approaches that will jointly deliver optimal success. The financing mechanisms described in this chapter should therefore not be considered as the whole solution to a problem, but instead as among a range of tools required.

5.4 Lessons learnt and emerging best practice

The review of the literature on financing mechanisms reveals some important lessons, which need to be considered and incorporated into the implementation of Bio-rights projects:

Management of transaction costs: Within any scheme, transaction costs occur primarily to address the information needs and logistical requirements of programme implementation. Typically, a PES programme has transaction costs in the form of opportunity costs of forgone benefits; implementation costs of making and maintaining land use changes; and costs of programme development and implementation, including capacity building, monitoring and evaluation. Transaction costs for a micro-credit scheme involve time costs to the poor for participation in group meetings costs of skill upgrading, maintenance of offices where applicable and other costs. A Bio-rights programme would face higher transaction costs than a micro-credit programme as it would also involve monitoring of conservation impacts. Inadequate coverage of the transaction costs has been identified as a potential deterrent to active participation in conservation-development programmes.

Key challenges for a project manager in relation to transaction costs are to ensure: *i*) that they are fully accounted for; *ii*) that they are covered and *iii)* that they are kept as low as possible. The third element deserves special attention because of Bio-rights' upfront focus on poverty alleviation. Some of the specific means for reducing transaction costs are collective contracting and investing in local capacities for the devolution and decentralization of core management operations.

- Mitigation of leakage: Leakages refer to situations where environmentally damaging activities are merely displaced rather than reduced. At a local level, this would mean that degrading activities are shifted outside the project area. At a broader level, restrictions on land use can lead to degradation elsewhere, for example, preventing conversion of forests to cropland at a wetland basin scale leads to increase in food prices, enhancing potential returns from forest clearing in other areas. Leakages are most likely to take place when the size of the intervention is sub-optimal in scale compared to the problem being addressed: for example, if the Bio-rights project is designed to address the unsustainable harvest of fish from a particular wetland, but covers only part of the wetland or some of the fisher communities.

In principle, controlling leakage at multiple scales is practically impossible. However, at local scales, the scope of the project should be comprehensive enough to address the root cause of resource degradation.

- Stakeholder targeting and participation: Effective stakeholder targeting and participation are crucial for the success of any conservation - development intervention. Historically, insufficient stakeholder engagement has been identified as one of the major reasons for ICDP failure. In PES programmes, stakeholder participation has been relatively more successful. Some of the key factors that have determined stakeholder participation in these programmes have been eligibility, desire, ability and competitiveness (Wunder *et al.*, 2008). It is noteworthy that conditions on eligibility and ability most often reduce inclusion of the poor as stakeholders. *'Ability'* specifically links the design to resource use and asset tenureship. Thus the poor with no access to land are directly excluded from the design when the ability to change land use becomes a criterion for inclusion in a programme. Successful implementation of Bio-rights therefore should be based on a detailed mapping of stakeholders and resource linkages, ensuring their effective participation. This could also be used to determine the overall scale of the programme, the most effective being the one in which all or most of the stakeholders are included and able to benefit.

- Visible additionality: One of the key challenges of the ecosystem linked financial mechanism remains the visibility of results. *'Additionality'* here refers to the change over the baseline condition brought about by the initiative. Bio-rights projects need to create visible impacts in at least two contexts: ecological and socioeconomic. Most of the conservation-development projects suffer from *'missing baselines'*, making it difficult to establish the degree of change created by the project. In PES projects, it has been common to link conservation additionality to proxies, rather than to a specific ecosystem condition, function or process. Thus, improved protection downstream is assumed to have occurred when the number of trees has increased, rather than when measurable changes in hydrography have occurred. The case has been similar with ICDPs. Absence of visible results not only reduces the attractiveness of the programme, it might also create problems in securing additional or complimentary resources for the overall programme. Successful implementation of Bio-rights, therefore, mandates design and implementation of a rigorous monitoring and evaluation programme that creates a baseline before the project, and also provides opportunities for mid-term adaptation and lesson learning. Investing in local capabilities for monitoring and evaluation also has additional benefits in terms of reduced transaction costs.

- Avoid creating perverse incentives: Weak project planning can actually create perverse incentives that increase resource degradation rather than the reverse. This has happened on several occasions. For example, if logging becomes the primary criterion for selecting participants for an incentive programme, there is a possibility of increased logging to seek membership to the scheme. There is sporadic evidence of such incidents in practice (for example see Tattenbach *et al.*, 2006). Mechanisms to address such situations have to be location- and case-specific. They range from careful contract design to a sequence of incentive systems based on market chains, and at times even creation of avenues for regulatory systems to operate.

In conclusion, a review of implementation experiences indicates that achieving conservation and development outcomes through Bio-rights implementation implicitly involves the integration of several elements. The first and fundamental premise is that degradation drivers must be addressed at multiple scales among a multitude of stakeholders and conflicting interests. An important element for programme success is to link conservation objectives to relatively tangible conservation benefit flows. Adequate care is required to address leakage, perverse incentives, and social and financial inefficiencies. Emphasis on comprehensive monitoring strategies would help to assess the degree of additionality created through programme implementation. Keeping transaction costs low is another challenge, which could be addressed by innovative approaches such as group-level contracting. A fundamental investment would be to create Bio-rights as a process rather than as projects in order to generate the necessary scale and amplitude required to achieve conservation - development outcomes.

Part II. Manual for implementers

Bio-rights group performing post-tsunami mangrove rehabilitation works in Aceh, Indonesia.
Photo: Jane Madgwick.

6. Implementing Bio-rights

6.1 Introduction

This section describes how Bio-rights can be implemented in the field. It provides a practical step-by-step description to help conservation and development practitioners get started with the approach. The approach is described based on the five major elements of project implementation, i.e., *i)* project initiation, *ii)* project development, *iii)* contract negotiation, *iv)* practical implementation and *v)* project monitoring and evaluation. Within these five major steps, more than 20 individual sub-sections provide detailed guidance on specific aspects of the implementation process. The different implementation steps are described in chronological order. Some steps can, if site conditions allow, be implemented in parallel to each other, to increase efficiency and speed up the - sometimes lengthy - process of project initiation and development. A summary of the different implementation steps is provided in Annex 5.

The steps described in this chapter provide general guidance to project implementers. All key factors for success, which have emerged after nearly a decade of piloting the approach, have been included. It is strongly recommended to take these into account when implementing the mechanism. On the other hand, one should also realise that the specific socio-economic and environmental issues in individual locations do require a tailored, site-specific approach. Therefore implementers are recommended to adapt the mechanism as much as possible to local site conditions. This should be done in advance of the project, but also during project implementation to accommodate unexpected developments. In addition, it is important to realise that Bio-rights is unlikely to be successful by itself. Rather, it should be part of a larger framework of conservation and development activities, and preferably also be aligned with regional policies and plans *(see chapter 4)*. Our objective is to share the approach with as many relevant stakeholders as possible in civil society, governments and the private sector. The approach and its name are therefore free for everyone to use, provided that the approach's key characteristics are respected. This is to ensure that future communications on Bio-rights relate to the specific framework described in this report, rather than Bio-rights becoming a general term for a wider family of mechanisms related to Payments for Environmental Services (PES). Future Bio-rights implementers are invited to share their experiences and findings with the authors of this paper as well as with a wider audience through the web-based dissemination of experiences and lessons learned[5].

The practical implementation steps mentioned below are described from the perspective of an NGO or government body in the role of the Bio-rights Project Manager. Some of these steps are implemented by the Bio-rights Manager, others are delegated to the Local Programme Manager who is responsible for day-to-day Bio-rights implementation. Obviously, other stakeholders, such as the corporate sector or community groups themselves, can also take the initiative to initiate Bio-rights. Although this might slightly change the roles of different stakeholders in the implementation process, this does not affect the different steps needed for successful implementation that are identified in this chapter.

The division of roles performed within the implementation process by the Bio-rights Manager and the Local Programme Manager is described in Annex 5. It should be noted that exact roles and responsibilities depend on the specific experiences of the organisations involved, and that

[5] E.g. by submitting case experiences to *www.wetlands.org*.

no generalisations can be made about who is responsible for each specific action. A Local Programme Manager with limited project evaluation experience, for example, should not be made responsible for project monitoring, but rather undertake this jointly with the Bio-rights Manager. Similarly, if the Bio-rights Manager has a limited local network, it might be better to leave stakeholder engagement to the Local Programme Manager. No matter how tasks are distributed, it is of the utmost importance to ensure that the Bio-rights Manager and the Local Programme Manager have sound communication skills. They will need to share details on project developments, unexpected problems and support needs, as well as ensure full clarity on the exact responsibilities of each partner involved.

6.2 Step 1. Project initiation

Step 1A. Concept development and assessment of appropriate approach
Each project starts with the development of an overall concept plan. Such a concept can be developed by the implementing organisation itself, based on internal needs, or alternatively it can be developed at the request of a third party, such as a private sector or government stakeholder. One of the first steps in developing a concept idea is to identify appropriate approaches for project implementation. In the context of this report, the main question to be answered is whether Bio-rights is an appropriate mechanism for accomplishing the anticipated conservation and development objectives. If so, the ways in which Bio-rights might be incorporated into other planned or ongoing approaches should be identified. This includes assessing potential linkages with global trading mechanisms for ecosystem services (e.g., carbon or water related) or labelling schemes (e.g., FSC, MSC, RSPO), integration into policy processes and adjustment to existing initiatives in the proposed project area. If Bio-rights is not likely to be successful, it should be judged which other mechanisms (e.g. PES, traditional micro-credit schemes, establishment of protected areas, CB-NRM) would be better suited instead for accomplishing project goals.

Annex 1 provides guidance on the overall judgement of the applicability of Bio-rights in the anticipated project. Assuming that the approach proves appropriate, this forms the starting point of the different implementation steps described below. It should be noted that the full potential of Bio-rights can only be judged after implementation of steps 1B to 2A, which involve consultation of relevant stakeholders (including the local community) and a rigorous assessment of socio-economic and environmental site conditions. This means that the final decision to go ahead with Bio-rights (or alternatively to opt for another approach), will only take place after completion of a number of implementation steps.

Step 1B. Generate funds
Following the development of an overall Bio-rights concept plan, the next step is to generate the financial resources required for project development and implementation. Some project developers might have financial resources available internally but, more commonly, external funding will be required from a *'buying party'* interested in the restoration or conservation of the ecosystem service. Potential sources of funding include i) *'traditional'* donors, ii) the private sector and iii) (local) governmental agencies. To bilateral and multilateral donors, Bio-rights might be attractive as an innovative alternative to traditional approaches for addressing socio-economic and environmental problems, in line with objectives stated, for example, in the United Nations Millennium Declaration and under convention agreements. For private sector stakeholders and governmental bodies Bio-rights could serve as a means to meet their obligations and ensure the sustained provision of ecosystems services, such as, for example, the maintenance of clean

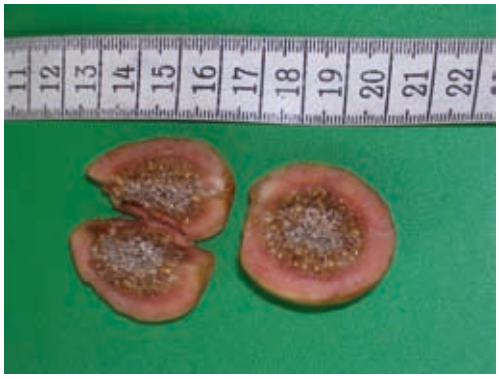
drinking water supplies, carbon sequestration, flood protection and the conservation of existence and option values. Revolving funds that generate income from tourism (e.g., park fees, wildlife watching, eco-lodges, scuba-diving, etc.) can also serve as an important source for funding, particularly when the explicit intention of a given ecotourism scheme is to directly channel profits to nearby communities. More details on different motives for stakeholder groups to be involved in Bio-rights are provided in chapter 3.1.4. Exact means of generating funding are not described in this report. The web site of the Conservation Finance Alliance provides a wealth of information on generating funds and resources for conservation in its Conservation Finance Guide (hosted at *www.conservationfinance.org*).

Step 1C. Identification of other interested stakeholders
Conservation and development plans developed under step 1A are often linked closely to those of other organisations. A thorough assessment of overlap in objectives and approaches and of options for cooperation is recommended. The development of partnerships increases the potential to generate additional project funding by tapping into the donor-networks of partner organisations. More importantly, involving stakeholders from various disciplines enables the matching of complementary experiences and skills. Conservation organisations, for example, often face difficulties in incorporating development activities into their conservation efforts; and, vice versa, the development sector struggles to incorporate environmental aspects into its work. Previous experiences have shown that this can be addressed by developing consortia of conservation and development organisations, with each organisation contributing its specific experiences to the network. Given Bio-rights' multidisciplinary approach, it is an absolute necessity to integrate conservation and development capacity from the onset of project development.

Discussion with potential partner organisations can also help to shape the larger context in which Bio-rights is implemented. For example, by working with micro-credit institutions, labelling schemes or National Park managers, linkages to other financing mechanisms can be assessed and general conservation and development approaches can be established.

Step 1D. Selection of project sites
Once overall plans have been formulated and funding is secured, an appropriate location for project implementation needs to be selected. This site (or several sites in the case of larger-scale initiatives) should match all the relevant preconditions for successful project implementation. Also, the return on investment in terms of conservation and development outcomes should be as high as possible. The selection of an appropriate overall target region is largely based on expert judgement by project developers. In some cases it is determined by the requirements of the buying party. Often such a selection has already taken place in the concept development phase (step 1A). Specific project sites within a greater region are usually identified through a desk study, followed by a rapid inventory in the field. The desk study enables the establishment of a shortlist of potential sites, based on remote sensing data and literature information. The field inventory allows for the collection of additional environmental and socio-economic data in the short-listed sites and an assessment of local perceptions in relation to Bio-rights. Data collection is usually performed by a small team of conservation and development experts. Table 3. summarises the main aspects that need to be included in the inventories.

Field inventories are a critical part of the site selection process. Photos: Daniel Blanco (l) and Pieter van Eijk (r).



The data collected by the research teams provides the basis for assessing the suitability of potential project sites. The basic Decision Support System, provided in Annex 2A, can be used as a tool in this critical phase of project development. It provides guidance on a range of key considerations related to environmental and socio-economic aspects, as well as to the specific *'enabling environment'* required to make Bio-rights a success. The data collected during the inventories, will to a great extent, direct the decision-making processes, but inevitably many subjective decisions also have to be made. This includes assessing the acceptability of any project risks and estimating the extent to which local stakeholders will be supportive of the

Table 3. Key data that need to be collected as part of a rapid inventory for the selection of Bio-rights project sites (Step 1D).

Ecological data	Socio-economic data
- Quantification of ecosystem services provided by the area; particular focus on resources and services to be protected under the proposed intervention. - Past degradation of ecosystem services; anticipated current and future threats. - Options for conservation and restoration of ecosystem services. - General site characteristics: ecosystem types, geology, climate and biodiversity (including quantification of populations of rare and threatened species). - Disaster risks: past and anticipated future impacts of floods, storms, diseases, climate change, etc. - Landscape level characterisation of target areas (i.e., to assess relative importance of ecosystem services of proposed project site in greater context and to estimate leakage risks.) - Connectivity of services with other areas.	- Land and resource ownership - Community heterogeneity: presence of conflicts within and outside community, distribution of wealth, ethnic and religious composition, etc. - Main income generating activities. - Existing (traditional) approaches to natural resource management. - Role of local community in management and degradation of natural resources. - External impacts: use of resources by other communities, encroachment by private sector, etc. - General characteristics: income, vulnerability, education and awareness, demographic characteristics. - Local communities in the greater economic context: assessment of economic relations with external parties. - Local governance structure.

Stakeholder consultation in Indonesia. Photo: Pieter van Eijk.

anticipated project. Thus this assessment requires a combination of straightforward interpretation of basic data and more complex expert judgement based on a combination of various socio-economic and environmental parameters.

Following the selection of sites that meet the basic criteria for Bio-rights implementation, a prioritisation of sites should be made based on those most likely to be successful from an environmental, social and economic perspective and the expected willingness among community members to participate. In other words, the cost-benefit ratio should be optimal, between resources invested, ecosystem services provided and socio-economic benefits derived for the local community. The different considerations for site-prioritisation are highly subjective and depend on the specific priorities of project implementers and buyers as well as willingness to take risks. Annex 2B summarises a number of questions that can help in the prioritisation process. Project developers can use these (and other) questions to select a limited number of parameters which can be used to develop a scoring system. By allocating a different *'weight'* to parameters of different importance and making a division in different classes of importance (e.g., 1 = not important to 5 = very important), a cumulative score for each site identifies those likely to provide the highest potential overall benefits.

Step 1E. Network development and stakeholder consultation (I)
Once one or more potential project sites have been identified a local network of relevant actors needs to be developed as a first step towards stakeholder consultation and joint project development. This includes local communities as potential sellers, local NGOs, governmental agencies, the private sector and other stakeholders active within or in the direct surroundings of the proposed project location. Through both individual and joint meetings the Bio-rights Project Manager informs these groups of the proposed activities (how Bio-rights works and what specifically is intended to be accomplished). This helps to further assess whether there is sufficient support for the approach among the key actors, or whether there are conflicting objectives that are likely to prevent successful project implementation. Similarly, these meetings are a first step towards establishing a means of incorporating the proposed Bio-rights intervention in regional policies and plans. Based on the initial networking process, a selection of three classes of stakeholders can be made, i.e. i) those that need to be involved in further project development as part of the *'core'* project team, ii) those that are less directly involved in project development and implementation, but need to be kept informed and iii) those that are not related to project development and implementation whatsoever.

Step 1F. Selection of the Local Programme Manager
Following definitive selection of a project site, a Local Programme Manager needs to be selected. The Local Programme Manager is responsible for the management of field activities and plays an important role in project development. Also, this actor operates as a liaison for the local community, representing their needs during project negotiation and providing technical support to field activities. The Local Programme Manager can be appointed from the local NGO network established under step 1E, or alternatively can be selected through a tendering process. Previous experiences have shown that the selection of an appropriate local NGO as the Local Programme Manager is a key determinant of success.

NGOs should comply with the following preconditions in order to be considered for this role:

- A clear track record: transparency on finances, project management and past activities.
- Proven experience with both socio-economic development and environmental conservation initiatives and with overall project management.
- Strong working experience in the region: extensive insights into local site conditions, excellent relationships with local communities and a large local stakeholder network. Given these preconditions, it is recommended to appoint a local, NGO or CBO as the Local Programme Manager, rather than a national organisation.
- Willingness to extensively work within communities: previous experiences have demonstrated that through having a continuous presence in the community (as opposed to intermittent visits to the project site), the Local Programme Manager is considerably more effective in on-the-ground project management and ensuring overall success.
- Ability to represent community needs.
- Flexible in terms of project approaches, being able to adapt quickly to unexpected developments.

In practice, local capacities for managing community-based conservation and development projects differ widely among regions and among individual organisations. Some local organisations are capable of undertaking the role of Local Programme Manager without much additional support. Others need extensive training by the Bio-rights Project Manager in advance of project implementation, as well as supervision throughout the course of the project. The

extent of the support and supervision needed should be well assessed in advance of project implementation to minimise the risk of complications. The roles and obligations of the Local Programme Manager and the Bio-rights Project Manager should be established in a contract.

Step 1G. Training of the Local Programme Manager
Depending on the level of experience of the appointed Local Programme Manager, training should be provided that explains in detail the practical and theoretical aspects of the Bio-rights approach. It should be sufficiently rigorous to enable the Local Programme Manager to support overall project implementation and manage field activities. The training should also clarify the responsibilities and the means of cooperation between different actors. This report can be used as a basis for the development of such a training module.

6.3 Step 2. Project development

Step 2A. Stakeholder consultation (II): explanation of concept and group development
Following the first general round of stakeholder consultations under step 1E, the Bio-rights Project Manager and the Local Programme Manager initiate a number of additional workshop-meetings, targeted at developing initial project ideas and building a firm basis for project development. The first consultation round, under step 1E, aims to acquire an overall impression of the potential for successful project implementation by quickly scanning community perceptions about implementing a Bio-rights project. The second consultation round more thoroughly investigates whether local communities are prepared to participate in developing a project. This step aims to establish an intention among all relevant stakeholders to cooperate in the full design of a project plan, and linked to that, the development of a formal Bio-rights contract (step 3A). Thus, this is a first step towards the development of a concrete project. The consultations in the second round are specifically oriented towards the communities themselves, but also involve other stakeholders closely related to the proposed project, such as local government or private sector representatives. This round aims to make sure that all stakeholders understand the concept well and focuses on the participants sharing their requirements, expectations and concerns . The consultation workshops also are the starting point for an extensive trust-building process among communities, the Bio-rights Project Manager and the Local Programme Manager that extends throughout the project development phase.

Box 5. Group formation

Bio-rights contracts are nearly always signed at the group level, rather than with individuals. This increases efficiency of project implementation, reduces overhead costs and contributes to project sustainability *(also see chapter 3.1.8)*. Group size typically ranges between 20-50 people. Depending on local circumstances, including socio-economic and environmental conditions and anticipated project scale however, it is also possible to arrange smaller (e.g. household-level) or larger (e.g. village-level) groups.

Village group discussion in the Inner Niger Delta, Mali. Photo: Pieter van Eijk.

The consultation meetings also serve as a means to organise community members with each other. This is accomplished by discussing individual ideas and concerns regarding Bio-rights implementation and by facilitating the development of a shared vision among the group. Ultimately this results in the formation of one or more community groups, through which the Bio-rights project will be further developed and implemented. The Local Programme Manager is responsible for facilitating consultation and the formation of community groups. In this process it is essential to ensure that all the voices within a community are represented and that the equality of individual members within a group is fully taken into account. The consultation process should therefore be explicitly pro-poor and have a focus on gender equality. The number of consultations required is strongly site dependent. If community groups are already in place and consensus on Bio-rights matters is easily achieved within the community, two or three meetings might suffice. However, if groups still have to be formed, if there is disagreement among individual community members and if trust among stakeholder groups is lacking, a more extensive consultation process might be required before developing a concrete plan.

Step 2B. Stakeholder consultation (III): setting goals and plan development
A third round of consultation meetings informs the onset of detailed project planning. This process is facilitated by the Local Programme Manager and involves the local community as the selling party and the Bio-rights Project Manager as a representative of the buyer. Sometimes, a third party also participates in project development. Government, for example, needs to be involved in cases where local communities are not the formal owners of land and resources; the private-sector might be a crucial partner if the proposed interventions are likely to impact the activities of others.

Table 4. Objectives of stakeholder consultations under steps 2A and 2B. Note that stakeholder consultations under step 2B are targeted at the community groups developed under step 2A.

Stakeholder consultation II (Step 2A)	Stakeholder consultation III (Step 2B)
- Full familiarisation of all relevant stakeholders with Bio-rights. - Sharing of requirements, concerns and ideas regarding project development. - Establishment of intent for cooperation on Bio-rights development. - Trust building among stakeholders and familiarisation with the priorities and needs of individual groups. - Formation of a shared vision among individual participants regarding their involvement in project development and implementation. - Development of one or more groups (depending on project scale) for Bio-rights implementation.	- Development of practical plans for conservation measures. - Establishing lost opportunity costs and the design of development activities in response to community needs and local site conditions. - Setting payment conditions: number, timing and mode of payments. - Setting conditions for project monitoring and micro-credit conversion. - Setting project duration and establishing the project area. - Identifying and minimising project risks. - Project design: establishing timelines for project implementation and designing awareness-raising activities and trainings.

Rather than working with all community members in a given region, project development takes place with the group(s) established under step 2A. It is assumed that these groups are able to represent the perceptions, aspirations and constraints of the wider community (e.g., at the village or district level). As in the previous consultation round, the number of meetings required for the establishment of project goals and detailed planning will differ between projects. This will depend strongly on the level of trust among stakeholders, differences in their objectives and the socio-economic and ecological site conditions. The following issues need to be discussed and negotiated in this consultation process:

- **Needs of the buying party:** the conservation needs of the buying party should be communicated and practical plans should be developed as to how certain ecosystem services can be sustained or restored. Conservation needs should be clearly quantified, e.g., by expressing proposed conservation measures in terms of area of land to be protected or restored, the number of trees to be planted or the required rate of reduction of certain harmful activities. The exact role of the local community in the conservation of these services should be clearly described. Community contributions can range from refraining from unsustainable activities (by adopting alternative income generating activities), decreasing the impact of harmful activities (by modifying harmful practices) and addressing damage caused in the past (by restoring ecosystems), to preventing and restoring harmful activities inflicted by others (through ecosystem conservation and restoration). The Bio-rights Project Manager and the Local Programme Manager usually suggest specific conservation and restoration activities. Where possible, it is best if these are incorporated or aligned with traditional community approaches to conservation. This is important, as maintaining and reviving community approaches to natural resource management and linking conservation actions to day-to-day community activities has been found to significantly increase long-term project sustainability. Examples of effective traditional community approaches to conservation include local regulations established by community natural resource management committees, and indigenous ecosystem techniques using local techniques

for seed selection, nursery development and seedling tending. Also, agreement should be reached on the physical location of the conservation actions. These can take place on community land itself, but also in surrounding areas, for example, by involving local communities in the patrolling and restoration of nearby national parks and reserves.

- **Needs of the local community:** as part of the consultation, the Bio-rights Project Manager and the Local Programme Manager, together with the local community, first of all determine the lost opportunity costs for the community resulting from the proposed conservation activities. These can be identified by mapping out the income generating activities that will be affected by these conservation measures and calculating the associated financial losses. Often the community consultations and the rapid assessment performed under step 1D will have provided sufficient insight into the lost opportunity costs, although additional field surveys might be required to make a more accurate estimate. Once exact lost opportunity costs have been calculated, concrete alternative development activities should be identified. The income generated from these activities should be at least equal to (and preferably exceed) the lost opportunity costs to ensure that communities are able to participate without a negative short- or long-term impact on their livelihoods. It is up to the community groups themselves to identify which development activities they wish to undertake in return for their involvement in conservation. Where needed, the Bio-rights Project Manager and the Local Programme Manager can help the community in the selection of appropriate activities. They might, for example, suggest income-generating activities that have proved successful elsewhere or alternatively invite other community groups to share their experiences. Also, they facilitate the overall decision-making process. The Bio-rights Project Manager and the Local Programme Manager are responsible for making sure that the selected development activities are sustainable and don't conflict with conservation objectives.

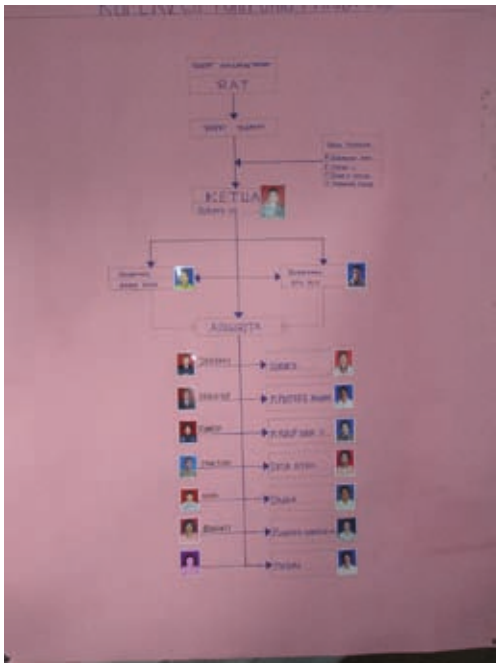
- **Payment conditions:** the next step is to agree on how the micro-credits will be disbursed. This is an important step as both project risks and outcomes are largely determined by the characteristics of the chosen payments scheme. A single payment at the start of a project optimises development opportunities for the community involved and provides a strong incentive for the delivery of successful conservation measures. However, this could also be risky, particularly under weak governance conditions where it is hard to enforce contractual obligations. Similarly, when there are uncertainties with regard to the dedication and involvement of the community groups and if the different stakeholders are not yet sufficiently familiar with each other, a one-off payment might bring significant project risks. Such risks can be reduced by disbursing the micro-credits in various instalments throughout the course of the project, similar to payments provided under Payments for Environmental Services (PES) schemes. In this case, payments are provided at certain landmarks in the project, e.g., when specific conservation obligations have been met. The disadvantage of this approach is that communities don't have access to part of the financial resources during a considerable part of the project implementation period. This could negatively affect both the conservation and development outcome of the project. Rigorous judgement of site conditions should help to decide what kind of payment scheme is appropriate. The mode of payment should also be determined. Often this is in-kind, through direct procurement of the materials needed for the anticipated development activities by the Local Programme Manager, which in turn are provided to the community involved. Alternatively, local communities can be given responsibility for the procurement of these materials themselves. In this case, they are provided with cash payments that cover the respective costs. The latter approach should only be adopted when it is sufficiently clear that the communities

involved will indeed allocate the payments provided for implementing the agreed activities. The setting of payment conditions is largely in the hands of the Bio-rights Project Manager and the Local Programme Manager, as the means of micro-credit disbursal, to a great extent, determines the financial risks that are born by the buyer. It is important, however, to make sure that local communities also have the opportunity to express their views on this issue. This increases project ownership and helps to ensure an optimal balance between minimising project risks and optimising community development opportunities.

- **Monitoring and evaluation:** communities, together with the Local Programme Manager and the Bio-rights Project Manager, should agree on how conservation activities are to be evaluated and the conditions on which micro-credits are converted into definitive payments. This entails reaching agreement on i) the role of various actors in project monitoring, ii) the frequency and timing of project monitoring activities and iii) indicators for success. It is recommended that communities are involved in the monitoring process. This helps to optimise transparency regarding micro-credit conversion, and also serves as an effective awareness raising tool: if local communities actively record the ecosystem services and associated benefits that result from conservation efforts, they are more likely to be willing to sustain these in the long term, beyond the lifetime of the project. The selection of specific indicators for success is highly project-specific. Care should be taken to ensure that these are measurable and in line with the selected conservation objectives. Examples of measurable indicators include the degree of illegal logging or hunting, rate of land conversion, number of community patrolling operations and survival rates of replanted trees. Besides setting the specific conditions upon which micro-credit conversion takes place, the consequences of not meeting conservation targets also need to be agreed upon. These can range from full repayment of the loan, to partial reimbursement if some (but insufficient) conservation gains have been made.

- **Project area and duration:** all stakeholders involved in project development jointly determine the geographical boundaries of the proposed project. Delineation will be , dependent on a number of considerations, such as community ownership of land, the project scale and the proposed conservation objectives. Similarly, the proposed duration of the project should be discussed. This will depend strongly on local site conditions: if the proposed conservation activities are also economically attractive in the long-term for the communities involved, a several-year intervention usually suffices. In this case, it is a matter of covering the costs of converting towards a sustainable land use system while raising awareness on the importance of sound management of environmental resources (see chapter 4.3). Sometimes, however, land conversion (e.g., for agriculture) will remain economically more attractive for in-situ users than the benefits delivered by the ecosystem services that are being conserved. In this case, long-term (renewable) Bio-rights contracts should be established to ensure sustained conservation. Obviously, in the latter case, a project can be developed only if long-term financial resources are available in advance. In cases of short-term (several-year) initiatives, discussion is recommended on future approaches to conservation and development in the target area beyond the project implementation period. Obviously, it is difficult (if not impossible) to define binding long-term obligations in a short-term contract. However, establishing an informal intention among the community for the continuity of the sustainable development and conservation activities creates a framework for community-based natural resource management that can take place without external support. This significantly increases long-term sustainability.

Critical aspects of project development: establishment of roles and responsibilities of group members (l) and mapping of project locations (r). Photo: Pieter van Eijk.



- **Project risks:** risks of project failure can be significantly reduced by identifying those factors that pose a threat to the project meeting its conservation and development objectives. These include, risks related to immigration, leakage, external impacts and unsustainable development. Once these risks have been identified and clarified to all stakeholders involved, strategies should be developed that can reduce these risks. This can entail the development of specific regulations that should be taken into account by the communities involved (e.g., to avoid leakage caused by the displacement of unsustainable community activities outside the project area) as well as identification of additional conservation measures (e.g., to curb harmful external impacts). Ways of minimising risks related to extreme events, such as storms, floods and droughts should also be identified. A force majeure clause, which identifies rights and obligations in the case of such unexpected events, should be developed and agreed upon by all relevant stakeholders.

- **Project design:** finally, the specific design of a project should be discussed and agreed by all stakeholders. This includes reaching consensus on when specific conservation and development activities are to be undertaken as well as on specific obligations for both the community and the Local Programme Manager regarding awareness-raising activities and the provision of technical trainings. Also, ways in which the planned activities can be linked to other activities and policies within the region should be identified (see step 2D).

Box 6. Bio-rights Manager and Local Programme Manager: level of independence

The Local Programme Manager, has a key role to play as a facilitator in project development and as a project manager during implementation of activities in the field. Capacity for facilitating and managing Bio-rights projects differs strongly among local NGOs in different regions and has been found to be a key determinant of project success. It is the responsibility of the Bio-rights Project Manager to select the Local Programme Manager from the best candidates available and to provide appropriate training on Bio-rights implementation (and sometimes also on general conservation and development approaches). However, despite rigorous recruitment procedures and extensive trainings, the extent to which a Local Programme Manager is able to operate independently will vary from place to place. In the ideal case, the Local Programme Manager can take full responsibility for facilitating project development and managing implementation. More often, however, Local Programme Managers need additional directions from the Bio-rights Project Manager in their day-to-day facilitation and management tasks. It is up to the Bio-rights Project Manager to ensure that the Local Programme Manager receives the appropriate back-up at the right moments. In practice this could mean that the Bio-rights Project Manager needs to closely follow the different steps undertaken by the Local Programme Manager and that some facilitation and management activities are undertaken jointly. The different tasks allocated to the Local Program meManager in this report, thus, are also relevant to Bio-rights Project Managers.

Step 2C. Further field studies

In parallel with plan development, further field inventories should be performed, where needed, to complement the information collected during the rapid inventories under step 1D. This data can help to make conservation and development objectives more specific and to establish a proper baseline on which project progress and overall achievements can be assessed. The inventory team should consist of the same conservation and development experts involved in step 1D, but could also include community group members and local government officials. This will improve access to local community knowledge and maximises the involvement of all the stakeholders in project development.

Step 2D. Fitting a Bio-rights plan into the wider context

The concrete project plan developed under step 2B, is more likely to be successful if it is integrated with other conservation and development activities within the project area. The Local Programme Manager and the Bio-rights Project Manager are responsible for identifying and assessing existing initiatives involving local communities, NGOs and governments. Together with the local community they discuss potential linkages with other initiatives that could strengthen the project, discussing for example whether it is possible to connect the project plan to any practical activities ongoing in the field. Examples of such cooperation might include joint protection of a conservation area (e.g., working together with national park staff), restoration of degraded habitats (e.g., by working with another NGO active within the region) or cooperating with local micro-credit institutions. Likewise, a linkage can often be made with local policies: for example, by aligning Bio-rights with existing legislation or getting the approach incorporated into new policies and plans. The active involvement of local government in Bio-rights development can significantly help to reduce project risks. This can be accomplished by creating interest and enthusiasm for the proposed initiative among local officials. Equally tapping into local governance frameworks can help ensure strict enforcement of the contractual agreements. This is beneficial from the perspectives of both the local community and the buying party.

Step 2E. Overcome policy hurdles

It is of the utmost importance to make sure that the project plan does not conflict with local policies otherwise the implementation of the plan may be hampered by bureaucratic hurdles. The Local Programme Manager is responsible for involving government in project development (step 2A-2C) and informing parties indirectly involved in project development of the content and progress of the proposed project. If any obstructions emerge, these need to be resolved in advance of contract negotiation and project implementation. Examples of the types of interventions that might be required before proceeding further include: negotiation of community rights over land and resources, enhanced community involvement in policy development or even modification of policies, spatial plans and legislation. One effective way of ensuring efficient integration of Bio-rights into local policies and of addressing policy hurdles is to involve relevant government agencies as formal partners in the project development and the signing of the contract.

Bio-rights contract, signed with community group in Kalimantan, Indonesia. Photo: Pieter van Eijk.

Box 7. Top-down or not?

A key characteristic of the Bio-rights approach is that it tries, as much as possible, to incorporate community development objectives and local approaches and priorities into the conservation objectives of a buying party. The approach is organised as a *'business-deal'* that reconciles priorities and needs based on equality among stakeholders. However, the fact that the business deal is made between a relatively rich and often powerful organisation and a generally poor community with few development options and often with a weak voice, brings along the risk of the approach becoming too much top down. It is the task of the intermediary actors (the Local Program Manager and the Bio-rights Project Manager) to ensure that the rights and needs of the selling party are recognised and acknowledged and that under no circumstance are conditions imposed upon them. Obviously, this does not mean that one of the parties involved can't come up with certain demands or preconditions, but these should be discussed and negotiated in a fair and open process. In their roles as facilitators, the Local Program Manager and the Bio-rights Project Manager are also responsible for ensuring equality among different groups within a community, by facilitating the creation of broad support and a shared vision with regard to the anticipated Bio-rights initiative.

6.4 Step 3. Contract development

Step 3A. Contract negotiation
The project plan developed under step 2B forms the basis for a formal contract. Contract development is facilitated by the Local Programme Manager, who is responsible for ensuring that all the details described within the project plan are incorporated within the contract. Similarly the Local Programme Manager should make sure that all parties involved in project development have an equal opportunity to participate in and contribute to the final negotiation process. The contract should comply with local legislative structures to make sure that contractual agreements can be effectively enforced if one of the contract signatories fails to meet its obligations. Sometimes, under weak governance conditions, contract enforcement through government is unlikely to be successful. If this is the case, an attempt should be made to link the Bio-rights contract to existing community regulations and enforcement structures, e.g., by including agreed-upon objectives and obligations under the Bio-rights contract in local bylaws. Under these conditions, building trust among stakeholders and a shared commitment to succeed is, an absolute requirement to reduce project risks as much as possible.

As described above, the precise format of a Bio-rights contract is highly site-specific. Nonetheless, each contract should contain a number of elements concerning the implementation of specific conservation and development activities, obligations with regard to capacity building and awareness-raising, the number of people involved, the project area and duration and measures required to minimise project risks. See Annex 4 for a checklist. More information is provided in chapter 3.1.8.

Step 3B. Signing of the Bio-rights contract
A formal contract signing ceremony, organised by the Local Programme Manager, marks the next step towards project implementation. The participation of the local government in this important event is highly recommended, whether or not the government is formally involved as a signatory to the contract. It is also possible to provide local government with a facilitating role, for example, by organising the ceremony in a government building or asking an official to act as a host or observer. A range of other stakeholders should also be invited to attend the contract

signing. This will contribute to increasing the project's regional momentum and visibility. A formal festivity also increases dedication to the project among contract signatories and enhances trust-building among the full range of stakeholders directly or indirectly involved in the project.

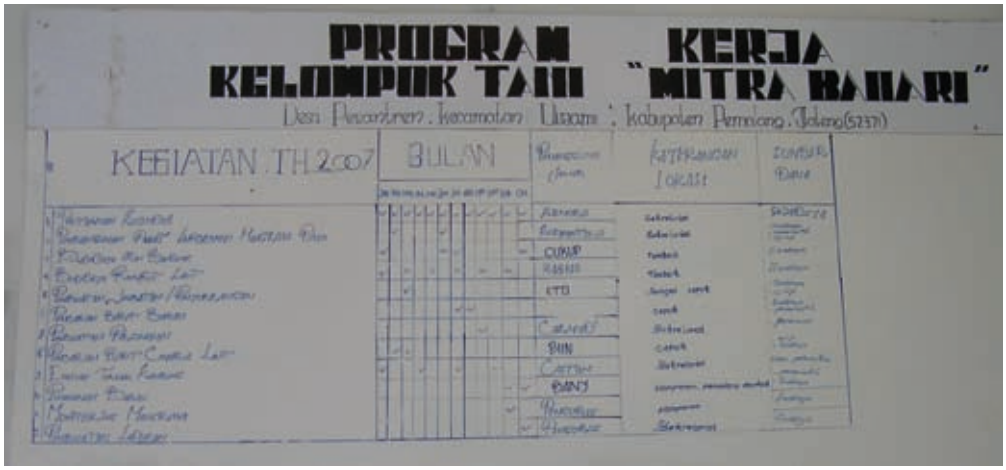
6.5 Step 4. Project implementation

Step 4A. Capacity building and awareness raising
As the next step, the Local Programme Manager organises various capacity building activities targeted at the respective community group(s). These trainings build relevant skills in technical aspects of environmental conservation and restoration, as well as in the implementation of sustainable income generating activities. The exact content of the technical trainings will have been earlier agreed on with the local community. In parallel to the technical trainings, awareness raising activities are organised to develop insights into the importance of sustainable natural resource management for local livelihoods. Communities might themselves organise activities to inform the Bio-rights Project Manager and the Local Programme Manager about the traditional development and conservation knowledge that they possess. This is particularly relevant if community knowledge and approaches form an integral part of the overall project design. Capacity building and awareness raising is usually the most intense at an early stage of project implementation, but can also take place later in the project, parallel to the field activities. The Local Programme Manager is responsible for monitoring the progress of conservation and development activities and for responding to unexpected knowledge gaps by organising additional training activities.

The Local Programme Manager is responsible for identifying the most appropriate means of training and awareness-raising given the local site conditions. Examples of practical approaches include organising group discussions, providing presentations and developing on-the-ground, experiential learning-by-doing training courses. Community exchange programmes have also proved to be an effective approach to building capacity and awareness-raising. These can be organised either by arranging study tours to other areas (e.g., where previous Bio-rights projects have been implemented) or by inviting communities from elsewhere to share their conservation and development experiences.

Bio-rights trainees (l) and awareness raising activities (r). Photos: Pieter van Eijk (l) and Yus Rusila Noor (r).

Example of a tabulated work plan developed by the Bio-rights community in Pesantren Village, Java (Indonesia). It contains information on (from left to right) planned activities, timing, the individuals responsible and the locations of the actions.



Step 4B. Issuing micro-credits
Next, the Local Programme Manager disburses micro-credits to the local community to enable the communities to embark upon initiating sustainable development activities. Depending on the contractual agreement, this may either be a one-off payment or the first of a series of payments that will be provided throughout the project. Payments can be in cash or in kind, for example, through the procurement of materials needed to begin development activities.

Step 4C. Initiating conservation and development activities
The scheduling of conservation and development activities in different phases of the project depends on the nature of the planned measures and on local site conditions (availability of labour force, environmental conditions, etc.). Usually an attempt is made to implement conservation and development activities in parallel with one other and to begin both sets of activities as early as possible in the implementation phase, directly after capacity building and the disbursal of micro-credits. The Local Programme Manager is responsible for facilitating the community's work. Community-planning meetings help to refine the overall project implementation plan, developed under step 2B. These meetings are held on a regular basis (e.g., once every two weeks, and more often in the beginning) in order to develop concrete week-to-week work plans and to delegate tasks among individual participants. It is preferable to organise such group sessions at a fixed location (e.g., a village centre or the house of the village leader), with access to appropriate materials to document the outcome of discussions, for example, by means of tabulated activity plans and maps. The Local Programme Manager is also responsible for providing the materials needed for the planned conservation activities and for providing technical support in the field once these measures are initiated.

Box 8. Avoiding the mistakes of Integrated Conservation and Development Projects (ICDPs)

ICDPs have been implemented by conservationists on a large scale since the 1980s as a means to address the multiple challenges of conservation and development. Many of these projects are currently considered a failure, notwithstanding the fact that the rationale behind ICDPs still stands. In an extensive review paper, Wells & McShane (2004) explain why ICDPs did not manage to live up to the expectations. They provide an extensive overview of lessons that can be drawn from past field experiences. Many of these are relevant for a wider group of approaches to conservation and sustainable development, and therefore also apply to Bio-rights. The following issues mentioned in the review are of particular importance in this respect. Careful consideration will significantly reduce project risks and help to avoid the pitfalls that were experienced by others in the past:

- Many ICDPs relied on the assumption that careful planning and cooperation would lead to win-win outcomes from both a conservation and development perspective. In reality, there might be significant trade-offs that constrain achievement of *'win-win'* solutions. These should be carefully mapped out in advance of project implementation and, where needed, financing should be allocated to ensure that appropriate compensation is provided to cover lost opportunity costs and resolve (future) conflicts.

- Local communities have in many cases been considered the foremost root cause of environmental degradation. In some cases, other activities such as road construction, plantation development and commercial logging proved more important drivers of degradation. Where this is the case, a purely community-oriented approach is unlikely to deliver successful conservation outcomes.

- ICDPs have often disproportionately emphasized detailed project planning, while insufficiently allowing for flexibility during the implementation process. Project implementers often proved incapable of adjusting to unexpected circumstances and of allocating sufficient resources to deviate from project plans. Lack of flexibility and appropriate tailoring of project activities to local site conditions has significantly impacted the overall effectiveness of ICDPs.

- Many projects have a short implementation period, ranging typically between two and five years. Often this is far from sufficient to build the necessary level of trust among stakeholders, to appropriately involve local communities in project development and to ensure community involvement in regional policy processes. This has considerable consequences for long-term sustainability, as community involvement is not likely to be maintained without appropriate local capacity and decision making structures in place.

- Many ICDPs tend to focus too much on activities rather than on the anticipated impacts of interventions. This has often resulted in a gradual but inevitable deviation from project objectives, lack of flexibility and misunderstanding among stakeholders.

- Often too much emphasis was placed on site-specific actions to target local problems. There has been insufficient recognition that many conservation challenges can only be addressed within a broader spatial, temporal and political context. For local community-based interventions to be successful in the long-term, there is a strong need to ensure integration within this broader context, involving, among others, multi-sectoral planning, policy influencing and law enforcement.

6.6 Step 5. Project monitoring and evaluation

Step 5A. Monitoring progress and project outcomes
Monitoring and evaluation, take place at different stages of the project and is an integral part of Bio-rights implementation. Continuous project monitoring helps to optimally align project activities to local circumstances and to respond to unexpected problems. Thus it is an important tool for the Local Programme Manager to ensure that individual actions are undertaken in a timely manner and that final project objectives are accomplished. If micro-credits are disbursed in several instalments, the continuous monitoring process can help to assess the intermediate landmarks and accomplishments, on which payments are provided. Final project monitoring enables the assessment of the overall success of the project and, most importantly, is the basis for the conversion of the micro-credits into definitive payments.

Monitoring activities are managed by the Local Programme Manager and overseen by the Bio-rights Project Manager on behalf of the buying party. For large-scale initiatives (e.g., a CDM reforestation project or a labelling project implemented through Bio-rights) external auditors might be required. This is particularly relevant when a project needs to comply with international regulations or standards. External audits are costly, however, so use of monitoring capacity within the project team is recommended wherever possible (or alternatively by recruiting local staff). The local community should be involved in the monitoring activities as much as possible, as this enhances awareness about sustainable resource management and helps provide insights into the progress of project activities. The best means of facilitating this is by organising joint sessions in the field, in which local communities and project staff jointly monitor project process and outcomes.

The primary objective of monitoring activities is to assess the project's conservation activities, ensure that conservation objectives are being, or have been, met and to assess whether the micro-credits can be converted into definitive payments. Monitoring of socio-economic activities is also very important, to optimize local development options and to ensure that the development activities conform to sustainability criteria. Aspects related to overall project process - such as cooperation, project management and meeting targets - are also monitored to judge whether any improvements need to be made that will enhance the project's efficiency and improve cooperation among parties.

Step 5B. Micro-credit conversion
The project monitoring outcome is used as the basis for the conversion of the micro-credits into definitive payments. This takes place towards the end of the implementation period as defined in the contractual agreement. Usually this is anywhere between three and ten years after the start of the project. If conservation objectives have not been met, all or part of the micro-credits (depending on the agreements about service delivery set out in the contract) has to be returned by the community. The obligations surrounding such a reimbursement should have been specified in the contract. If contractual agreements are violated, formal steps can be taken where needed, e.g., by bringing any conflicts to the court or by requesting government intervention. The chosen approach will greatly depend upon existing local governance structures and the specific design of the project. In either situation it is highly recommended to first try to resolve conflicts internally.

Any micro-credits repaid by a certain community as a result of failure to meet conservation obligations can be reinvested in other Bio-rights projects that have proved successful in delivering

Box 9. Ten tips for successful Bio-rights implementation

Following almost a decade of piloting the Bio-rights approach (see chapter 7-10), a number of issues have emerged as critical factors for success. Below are 10 key considerations that will help you to implement Bio-rights successfully:

1. **Understand the approach…**
   Failure to understand the pitfalls of Bio-rights implementation and to recognise the key requirements for success significantly affects the approach's outcome. Sound knowledge of all aspects related to project development and implementation, and of the different implementation steps to take, is therefore of critical importance. That said, implementers should make sure that the approach is at all times implemented flexibly and well aligned to local site conditions.

2. **Ensure sound site selection…**
   Socio-economic, environmental and political conditions determine the suitability of a project site for Bio-rights implementation. Only through a rigorous site selection process - including field inventories and stakeholder consultations - can it be determined which sites are suitable and where cost-benefit rates are likely to be optimal.

3. **Bring together the right conservation and development knowledge…**
   Conservation organisations often lack the technical knowledge to incorporate development activities in their work. Vice versa, the same is true of the development sector. Rather than starting a process of trial and error, joint implementation of activities with partners from different sectors is recommended to ensure the availability of the right skills.

4. **Think of long-term sustainability…**
   Bio-rights activities might be successful in the short term, during project implementation, but real success is only accomplished when conservation and development outcomes are sustained. This requires developing strategies for long-term sustainability, including identification of long-term conservation funding, ensuring awareness and capacity for sustainable resource management and enhancing sustainable development opportunities for communities beyond the lifetime of the project.

5. **Assure appropriate awareness raising and capacity building…**
   An incentive mechanism in itself is not sufficient for addressing the poverty trap. Complementary capacity building and awareness raising activities are an absolute necessity for ensuring that communities are aware of the importance of ecosystem services for supporting livelihoods and have the skills to engage in sustainable natural resource management.

6. **Link to policies…**
   Community-based conservation actions are of limited value if they don't match formal policies, particularly in cases where communities do not formally own land and resources. Mainstreaming Bio-rights into existing and newly emerging policies is an essential key for success.

7. **Monitor your work…**
   Monitoring and evaluation during project implementation is essential to ensure adjustment to unexpected events. As Bio-rights is a relatively new approach, noting the lessons learned is of critical importance to help improve future initiatives.

8. **Involve all stakeholders…**
   Ensuring the representation of all the relevant stakeholders during project development and accommodating their needs and aspirations will help to avoid conflicts of interests during project implementation.

9. **Build trust within the community and among other stakeholders involved….**
   Trust and mutual respect between stakeholders are key ingredients to success. Invest in good relationships and allocate sufficient time for accomplishing this.

10. **Be there for the community…**
    The more closely the local community is supported throughout the project's lifetime, the higher the chances that the project objectives will be achieved. Where possible, Local Programme Managers should have a permanent presence in the area.

conservation services. Earlier projects have shown that this approach is an appropriate way to stimulate healthy competition between community groups in order to accomplish maximum conservation outcomes, thus increasing the opportunity to be involved in additional conservation activities.

Step 5C. Evaluating lessons learned
After projects are completed they should be evaluated to see what lessons about project implementation can be learned. These evaluations should inform the implementation of future Bio-rights projects in the field and help further refine the Bio-rights framework itself. Quantified information on conservation and development outcomes is of particular importance. Such data is crucial for calculating the return on the investment, as well as for making more effective comparisons between the costs and benefits of Bio-rights and other conservation and development approaches. The environmental and socio-economic information collected during the inventory under step 1D (and the additional data collected in consecutive stages) provides a critical baseline for assessing project outcomes. Ideally, evaluation of project sites should continue in the years following project finalisation, so as to assess the long-term outcome of the Bio-rights interventions.

Table 5. Project duration for different implementation steps.

Implementation step	Average duration
Step 1. Project initiation	3-6 months
Step 2. Project development	2-4 months
Step 3. Contract development	1-2 months
Step 4. Project implementation	2->10 years *
Step 5. Project monitoring and evaluation	1-2 months **

* Depending on the nature of the project: short for community-based natural resource management activities; long for PES-based approaches.

** Ongoing monitoring also takes place throughout the project implementation.

6.7 Project duration

The average duration of a Bio-rights intervention largely depends on local site conditions and the objectives of the project. In cases where Bio-rights operates as a mechanism to help local communities convert from unsustainable land and resource use into sustainable development, a short 3-4 year intervention might suffice. However, where Bio-rights is implemented as an alternative means of Payments for Environmental Services, permanent or renewable contracts should be signed which are in place for 10 years or more. The duration of individual implementation steps largely depends on site-specific factors including: previous implementation experiences in the region that can be built on, the existence of effective community groups, the local governance context, community perceptions, the availability of baseline information and the socio-economic complexity. Table 5 identifies the average duration of the five main phases of project implementation. Please note that, depending on the local context, different steps might be implemented in parallel to optimise the efficiency of operations.

Part III.
Examples from the field

Bio-rights group member proudly showing recently planted flood forest tree in the Inner Niger Delta, Mali. Photo: Pieter van Eijk.

7. Bio-rights 1998-2008

Over the last decade, Bio-rights has transformed from a very small-scale pilot initiative into a major tool for reconciling poverty alleviation and nature conservation and has come to occupy a central role within Wetlands International's conservation and development programme. The initial Bio-rights initiatives were taken in cooperation with local NGOs in Central Java, in response to the difficulties that they were faced in reconciling local conservation and development objectives. By starting small and working extensively with local communities, a mechanism has been developed which promotes the needs and ambitions of local communities without comprising conservation objectives. Special efforts were made to avoid many of the mistakes made under Integrated Conservation and Development Projects (ICDPs) in the 1980s (*see box 8*). This was accomplished by ensuring the availability of the right development experience, by allowing sufficient time for long-term implementation and by ensuring appropriate alignment between conservation objectives, local community needs and site conditions.

7.1 Bio-rights history

The first Bio-rights project was implemented in 1998 in the coastal district of Pemalang, Java (Indonesia) when a deal was made with a small group of fishpond owners for the re-greening of their land. In return for planting tens of thousands of mangroves, the project supported a range of sustainable development activities. Now, 10 years later, the Pesantren community is thriving, continuously improving the management of their land and expanding their re-greening activities on a voluntary basis. On a similar scale, the CIDA funded CCFPI project adopted the Bio-rights approach for working with local Dayak communities to restore degraded peatlands in Kalimantan (Indonesia). Large-scale peatland rehabilitation started by using local knowledge about how to block drainage canals, which significantly reduced the burning and desiccation of peat deposits. This has led to an estimated 5 million tonnes of avoided CO_2 emissions. Bio-rights activities in Mali initially focused on women's groups, which were involved in the harvesting and trade of tens of thousands of migratory water birds. These birds have a high conservation value in Europe, but only are of limited economic value in Mali's local markets. By providing alternatives to poaching and by training community members as wetland guards, Wetlands International, with local NGOs and governmental agencies, succeeded in greatly reducing hunting pressure in the inner Niger Delta. In subsequent projects in the region, local communities have received development support to for restore flood forests and flood plain grasslands.

The success of these pilots has led to the up-scaling of the approach. Under the Green Coast tsunami response project, Bio-rights has been used as a tool for involving local communities in restoring coastal areas that were battered by the 2004 tsunami. In Aceh Darussalam province, Sumatra (Indonesia), no less than 70 Bio-rights projects were implemented through a small grants scheme. Similarly, Bio-rights has played a major role in the Central Kalimantan Peatland Project (CKPP) and the Wetlands and Poverty Reduction Programme (WPRP).

Community-based restoration of degraded peatlands in Kalimantan, Indonesia has led to significant avoided emissions of carbon dioxide and contributed to biodiversity conservation. Photos: Yus Rusila Noor.

7.2 Plans for the future

Both within and outside of Wetlands International, there is growing interest in Bio-rights and the approach is likely to be implemented in various other countries in the near term. Future initiatives will further explore financing opportunities from private sector stakeholders. For example, payments for the provision of watershed services are currently being discussed with a hydropower company in India, as part of an integrated water resource management initiative. In Indonesia, efforts are being made to sell avoided carbon emissions from peatland restoration initiatives as Voluntary Emission Reductions (VERs) on the voluntarily carbon market. The revenues generated will be channelled, through Bio-rights, directly to the local communities involved in restoration. A Global Peatland Fund is currently being established as a major fundraising body and as an effective governance structure for the disbursal of payments. This diversification of approaches and project locations is intended to further strengthen Bio-rights implementation and provide increased insights into its applicability under different conditions.

7.3 Outlook

Despite the rapid evolution of the approach and the many lessons learned from previous experiences, there are still many challenges ahead. So far, most funding for Bio-rights implementation has been derived from multilateral donors. Real up-scaling can only successfully take place if future Bio-rights initiatives manage to tap into corporate funding, e.g., for avoided carbon emissions under REDD, or payments for watershed services. Another major challenge is to strengthen linkages with other conservation and development approaches, such as generic micro-credit schemes or sustainability labels for commodities. In this report Bio-rights is presented largely as a tool for jointly promoting the sustainable management of areas of high conservation value areas and sustainable community-development. However, it should be clear that Bio-rights might also prove of value in areas with limited conservation values,. For example the approach could be used to help transform degraded *'wastelands'* into economically viable and sustainably managed agricultural systems. In this case, Bio-rights would be used to restore and maximise the potential of ecosystem services to sustainably support the livelihoods of local people, rather than for specific conservation objectives.

All these different applications, angles and objectives require extensive piloting and evaluation in order to understand the full potential of the approach and to enable smooth incorporation of Bio-rights into existing conservation and development programmes. Implementing Bio-rights has proved a constant learning curve. Critical issues, such as risk mitigation and long-term sustainability, can only be addressed by adapting to the latest developments and learning from mistakes made in the past. A better quantification of project outcomes is desirable to support this process. The capacities of local NGOs in the role of Local Programme Managers, as well as the skills of the Bio-rights Project Managers, have proven to be critical to successfully implementing Bio-rights. It is therefore of the utmost importance that lessons learned are transferred among participants and that capacity is built in key aspects of Bio-rights implementation. The following chapters illustrate how Bio-rights has been implemented in practice and the lessons that can be learned from previous initiatives[6].

[6] Currently efforts are underway to quantify these experiences in more detail. Results will be made available online at *www.wetlands.org*.

8. Case I. Mangrove restoration on Java, Indonesia

The project in brief:

Objective: *Restoring biodiversity and the ecological functioning of mangroves; improving livelihoods through developing a sustainable fisheries system for poor coastal communities.* **Where?** The coastal areas of Pemalang District, Central Java (Indonesia). **Implemented by:** Wetlands International - Indonesia Programme, in collaboration with Mitra Bahari and several local community-based organisations. **Funded by:** Royal Netherlands Embassy. **Implementation period:** 1998-2005. **Budget:** € 25,000. **Main accomplishments:** Creation of a mangrove belt and regreening of existing fishponds on 50 hectares of community land, leading to the revival of mangrove-related biodiversity and functioning. Subsequently the community has voluntarily replanted more mangroves. A threefold increase in the incomes of approximately 200 people as a result of sustainable development activities and the restoration of mangroves and the goods and services they provide. A significant decrease in vulnerability to erosion and storm damage. Replication of replanting activities elsewhere, without external incentives.

8.1 Introduction

In the early 1980s, aquaculture development significantly expanded throughout the coastal areas of Southeast Asia, in response to increasing worldwide demand for tropical shrimps. Huge expanses of mangrove habitat were converted into intensely managed aquaculture systems, which had low environmental values and generated high levels of pollution from fertilisers, pesticides and antibiotics. The mangrove systems in Pemalang district in central Java, entirely disappeared within a few years. Unaware of the great importance of mangrove systems as providers of goods - such as fish, crustaceans and shellfish - and as protectors against erosion and storm damage, local communities agreed to lease their land to external investors. These investors hired the community groups to clear the mangroves and construct and maintain the pond systems. Both land lease payments and daily wages were extremely low. In the first years after pond construction, shrimp cultivation delivered huge profits, of which only a tiny fraction reached the local community. In subsequent years diseases, such as white spot syndrome virus, reduced production to virtually zero, with even indigenous shrimp species becoming nearly eliminated. As a consequence the investors left the area, leaving the communities in great poverty and lacking financial or natural capital. The mangrove degradation also caused extreme erosion, which led to the loss of an approximately 200 m wide stretch of valuable community land, and regular flooding during storm surges and exceptionally high tides. This prevented any further efforts to successfully cultivate shrimps or milk fish in the degraded ponds and increased the vulnerability of local villagers who were often confronted with seawater entering their houses up to one kilometre inland.

Recognising these challenges a local NGO, Mitra Bahari, facilitated by the Wetlands International Indonesia Programme (WI-IP) and the Pemalang District Forestry Agency, started several small-scale activities targeted at re-greening the area. In this pilot phase, many challenges were faced, particularly with regard to developing appropriate techniques for planting and tending seedlings.

Degraded shrimp pond in Aceh, Indonesia. Photo: Pieter van Eijk.

In 1998 Wetlands International further strengthened these efforts by implementing its first-ever Bio-rights initiative, targeted at a group of just five people, through the provision of a loan equivalent to €50. In subsequent years activities have been up-scaled to seven groups each with 40 individuals. Since then, communities have started to maintain and restore mangroves on their land on a voluntary basis, without any additional external incentives. Communities in the surrounding areas have started to replicate the approach. Pemalang now serves as a best-practice site, demonstrating the merits of community involvement in environmental conservation to a broad audience of regional, national and international visitors.

8.2 Project initiation

In the late 1990s Wetlands International organised a major mangrove restoration programme throughout Indonesia. Small grants of several thousand euros each were provided to local NGOs throughout the country to promote replanting activities. The coastal restoration works drew the attention of the Dutch Embassy, which pledged approximately €25,000 for additional restoration works. Some of this funding was used to expand the ongoing Bio-rights project in the Pemalang district in Central Java. The approach was adopted because of the recognition of the difficulties faced by previous projects in involving local communities in mangrove restoration activities: In these former projects communities were often only interested in being involved in planting if

a wage were offered, while in subsequent years they showed little interest in maintaining and protecting the seedlings. This unsustainable situation led Wetlands International to consider new approaches that would ensure the longer-term involvement of local communities in restoration works, as well as increased community ownership and awareness.

Wetlands International identified a coastal area in central Java, experiencing high levels of degradation and associated problems related to poverty and vulnerability as a promising region for piloting Bio-rights. Two years earlier, local partner NGOs and government agencies had initiated several small-scale regreening activities in this area with local villagers. It was decided to build upon these achievements and develop rehabilitation activities that contained a specific component related to developing sustainable livelihoods. Previous projects in the area had helped to build trust between local community members and NGOs and a momentum for additional replanting activities. As a result, only a few meetings were required to get the local community and other local stakeholders involved in the initiative. Mitra Bahari, a local NGO, which was involved in the earlier rehabilitation initiatives, was appointed as the Local Programme Manager. Several trainings were organised for local partner organisations to familiarise them with the Bio-rights concept, but as the approach existed only on paper, many elements still had to be developed. Thus, Mitra Bahari played an important role in the shaping of Bio-rights as it is now.

8.3 Project development

Following the recruitment of Mitra Bahari as the Local Programme Manager, various community meetings were organised to develop a concrete project plan. An important step within this process was the formation of individual community groups. These groups would operate as the primary implementers of restoration activities and the recipients of associated micro-credits. Bio-rights started at a very small scale, working with one group of just five people, but six more groups were rapidly formed. The number of people involved increased in the course of the project to a total of 40 individuals per group. Several years after project implementation, these groups still exist and have developed into corporations, formally registered under Indonesian law. Already in an early stage community members have established a distinct distribution of tasks within the groups. A group leader, directly advised by the local village head, supervises

Bio-rights conservation activities in Pemalang, Java: silvo-fisheries system (l) and beach forest, forming a protective belt (r). Photos: Pieter van Eijk

overall activities. A finance manager and secretary manage financial and organisational matters, while other group members are responsible for the preparation of planting activities, managing development initiatives, ensuring the integrity of conservation actions and even managing public relations.

Concrete project plans were developed at the group level. All the groups agreed to focus their conservation activities on rehabilitating mangroves and beach trees. Species planned for replanting included *Rhizophora mucronata*, *R. apiculata*, *Avicennia sp*., *Hibiscus tiliaceus*, *Terminalia cattapa*, *Callophyllum innophyllum* and *Casuarina maritima.* To maintain the functionality of the aquaculture system, on which local communities had become very dependent after the disappearance of the mangroves, it was decided not to replant the entire pond area. Instead it was agreed to restrict planting activities to the edges of the ponds and plant a limited number of trees in the middle. As such a *'silvo-fisheries'* system was developed, integrating the aquaculture functions of the ponds with the ecosystem services provided by the replanted mangroves. Plans were made to fully restore the mangrove forest along a 50-100 metre wide stretch of shrimp ponds at the sea's edge, so as to develop a buffer zone, protecting against erosion and storm damage. Beach trees were planted on elevated patches of sandy soil along the coastline.

The selection of appropriate development activities, which would be supported in return for the conservation services provided by the community, emerged from an intensive process of community discussions and capacity building. The community groups initially identified their own development needs and potential concrete actions that could meet these needs. The involved NGOs and local governments also suggested a number of options that had proved successful elsewhere, including crab-breeding, seaweed farming and production of shrimp paste (terasi). Several of these activities were introduced, piloted and discussed during extensive community workshops. This process led each group to identify a number of development activities that they would to like to experiment with. The Local Programme Manager was responsible for ensuring the sustainability of these activities. Efforts were also made to encourage activities directly linked to the mangrove services that were restored under the conservation component. Given the good working relationship with the Local Programme Manager and the extensive contacts with local communities, it was deemed appropriate to provide micro-credits through one-off instalments at the start of project implementation. The Bio-rights deals initially spanned a contractual period of 2-3 years, but some of these were extended once the interventions proved successful.

As the conservation activities entirely focused on reforestation, the selected indicators for success related to the number of seedlings planted and their survival rate after planting. It was agreed that survival rates in excess of 75% after three years would lead to conversion of micro-credits into definitive payments. Lower survival rates would require reimbursement of part or all of the micro-credit, the proportion to be returned being related to the proportion of surviving seedlings.

8.4 Contract development

Bio-rights contracts were signed with the respective community groups, village heads and other community leaders. Representatives of national government agencies were also involved, to ensure mainstreaming of the project with national initiatives aimed at increasing the sustainable management of coastal resources and to create a sense of national ownership over the project. Efforts were made to increase the visibility of the project by attracting regional and national media attention.

Box 10. The failed case of Indramayu. What went wrong?

Parallel to the Bio-rights projects in Pemalang, approximately 150 kilometres to the west, a small-scale Bio-rights project was implemented in Indramayu district. The project site was located on a narrow strip of degraded and abandoned shrimp ponds, situated between the sea and the highway that connects Jakarta and Surabaya. The project was very similar to the activities in Pemalang, in that it involved intense capacity building, awareness raising and technical support. High-level government officials provided explicit support for the planned initiative and local communities enthusiastically engaged in implementation. The project was formally launched with the official presentation of a mangroves monument in the replanting site, followed by the planting of a mangrove belt, covering approximately 2 hectares. Initially, despite major difficulties with erosion and storms damaging the seedlings, the rehabilitation was successful, with the quick formation of a dense and well-growing mangrove stand. Yet more recently, several years after ending of the project, more than half of the mangroves were clear-felled and replaced by small seaside restaurants and shops. The monument has been damaged and is covered with graffiti. Garbage is covering the area. Large numbers of visitors visit the muddy shoreline, which has, once again, become severely affected by erosion. A concrete sea

Tourism development in the former Bio-rights site in Indramayu. Photos: Pieter van Eijk.

8.5 Project implementation

The initial awareness-raising and training activities initiated during the project development phase were intensified during the early stage of project implementation. These trainings, organised by the Local Programme Manager and Wetlands International (as the Bio-rights Project Manager), focused on building capacity to successful implement the development activities initiated under the project. The group members had already undergone intensive training on, and acquired experience with, the technical aspects of mangrove rehabilitation. Therefore the environmental training component, rather than building environmental rehabilitation skills, focused on awareness raising, aiming to generate fuller insights into the relationship between mangrove-related ecosystem services and community livelihoods.

Community groups organised regular meetings (initially every week, later twice a month) to plan their conservation and development activities, to distribute tasks and responsibilities among individuals and to reflect on previous activities. The Local Programme Manager facilitated this process. The agreed conservation and development initiatives were implemented in parallel. In

defence has been built by government to avoid damage to housing and the nearby highway. In contrast, the mangroves that remain are in good condition, harbouring many birds, fish and crustaceans. The developments in Indramayu raise a number of intriguing questions. What went wrong? Why did the project in Indramayu fail to deliver long-term sustainability, whereas the Pemalang cases managed to do so? What differences explain failure in one site and success in the other?

A close look at local site conditions, explains a number of differences. The land in Indramayu, is government owned. This means that local communities have no full ownership over resources and land use. The project tried to address this issue by incorporating local government in project implementation. Initially, this worked very well, with officials becoming involved and endorsing the project. Over time, however, the governance proved too weak to ensure sustained government support to project activities. When new government officials were appointed, aspirations with regard to the use of the project area changed. Some officials were supportive of large-scale coastal infrastructure development activities, including the development of restaurant and recreation facilities in the replanting site. Some of these activities were undertaken by community members who were initially involved in project implementation. Mostly, however, investors from outside reclaimed the area, without no intervention from the relevant government bodies. A driving force in degradation of the area was the economic value of the land. Initially very low (after the collapse of shrimp production), land values have risen sharply over time, in line with increasing tourism development. Growing numbers of people visit the North coasts of Java for recreational purposes, particularly on weekends. This has contributed to an increased demand for associated facilities. As a result, alternative uses for the land targeted under the project have just become too attractive to compete with the project's conservation objectives. The only means of sustaining the replanting sites would have been strict enforcement of the project's conservation plan by government (which hasn't happened) or the provision of continued payments to compete with the opportunity costs of other activities such as infrastructure development. In the absence of either mechanism, site conditions have proved just too extreme to allow for a sustainable Bio-rights project in the area.

total, 150,000 mangrove seedlings were planted, covering approximately 50 hectares of land. Mangrove seedlings were also planted along the edges and in the centre of shrimp ponds, following the silvo-fisheries approach (discussed above), at a density of approximately 1.200 seedlings per hectare. The coastal belt, protecting inland aquaculture systems and villages against the sea, was planted at a density of 5.000 seedlings per hectare. Following the technical trainings, the community groups adopted a range of development activities, with support from the Local Programme Manager and several other organisations involved in the project.

Flexibility was maintained as much as possible in this process, recognising the need to continuously adjust development activities to local site conditions and community needs. For example, chicken farming activities were quickly abandoned after it was realised that they were not attractive from an economic perspective. Prices for chicken meat and eggs were too low and projected to further decrease in the future. As a result it was decided to develop goat farming activities instead. In the course of the project, community groups regularly assessed development activities and, where needed, improved techniques. The secretary of each community group documented both conservation and development outcomes on a bimonthly basis, so as to ensure full insight into the progress of different activities. This has improved

the planning skills of community members and increased awareness of the direct and indirect results of the conservation and development activities. Bio-rights activities started small, with only several people involved. In subsequent years, additional groups were formed and new Bio-rights deals were established. As a result, between 1998 and 2005, several different Bio-rights projects were in different stages of implementation at any given point. This facilitated the adjustment of new Bio-rights initiatives to lessons learnt from other projects ongoing in the same area. Besides the ongoing Bio-rights activities in Pesantren village, the approach has also been introduced in other nearby communities.

8.6 Project outcomes

Monitoring activities performed by the local community and the Local Programme Manager, demonstrated seedling survival rates well above 75 percent upon termination of the contractual period, leading to conversion of all micro-credits into definitive payments. All the Bio-rights projects in this area were completed several years ago and as a result - although exact quantification of long-term project results is still underway - a comprehensive description of the long-term conservation and development outcomes can be provided.

Approximately 10 years after the planting of the first seedlings, the mangroves have grown into impressive trees, reaching a height of 4-8 metres. Beach trees have generally grown at an even faster rate, with many trees exceeding 10 metres. The protective buffer has developed into a dense stretch of forest, with seedling recruitment taking place naturally. The silvo-fisheries system has also developed successfully: the trees provide shade to parts of the ponds and the leaves deposited in the water enhance the soil substrate. The community performs regular maintenance works, including thinning of trees and pruning of rhizophores, to adjust the system to their needs. In just a few years the coastal area has benefited significantly from the enhanced ecosystem conditions. The number of commercially attractive fish species has increased from 2 to 6. Shrimp and crab populations have recovered from near-extinction. The coastal belt is home to a wealth of birds, many of which have disappeared elsewhere in Java as a result of pesticide use and bird trapping practices. Rehabilitation has also contributed to the restoration of geo-hydrological balances in the region: sediments deposited within the mangrove buffer provide protection against high tides, battering waves and associated erosion. Submersion of ponds and settlements during storms and exceptional floods no longer occurs and land accretion is now slowly taking place. Newly formed sandbars and mudflats are being planted with trees, which in turn enables further accretion of land.

Local communities have benefited in a variety of ways from the revival of mangrove-related ecosystem services. The reappearance of commercially attractive fish species increases and diversifies their incomes. Similarly, crab and shrimp harvests have increased, although stocks are not as high as in the first years of intense shrimp production. Initially, the community suffered great difficulties with harvesting the shrimps, as the numerous mangrove trees prevented the full exploitation of the pond system. New and more efficient methods of harvesting are now being developed, e.g., by replacing nets with ingenious trap systems. Although considered a nuisance by the local community, the difficulties experienced with harvesting the shrimps and fish probably make an important contribution to sustainability, as the carrying capacity of the pond systems is less likely to be damaged by intense exploitation. The mangroves also provide important timber resources, such as poles for construction purposes, with smaller branches serving as fuel wood for cooking. Part of the wood is derived after thinning of the seedlings, 6-8

years after planting. Sometimes all the mangroves within a certain area are felled in a certain area, followed by replanting with new seedlings. The coastal belt is maintained entirely intact and managed as a coastal reserve. Part of the fodder required for the goat farming is derived from the mangroves. Branches with fresh leaves are regularly chopped off and provided to the goats. Their manure is applied to the ponds as a natural fertiliser. Thus the ecological cycle is once more complete. Small-scale bird catching activities for the cage bird industry supplement the income generated from fishing and farming activities, although it is not known if this is performed in a sustainable manner. Following the restoration measures, community groups have noted a significant decrease in the incidence of shrimp disease, which has contributed to increased harvests and enabled the development of a system with limited use of chemicals.

The mitigation of flooding risk and the reversal of land erosion has greatly reduced the vulnerability of the community groups involved. After years of losing land they are currently gaining about 10-15 metres of land annually. Formerly, the floods caused huge losses of fish and shrimps that were washed out to the sea, and inflicted significant damage to human property. Currently such damage is virtually nonexistent.

After years of piloting, the community groups have successfully used the micro-credits to develop a whole range of economic activities, complementing the income generated from traditional activities, such as fisheries and agriculture. Most income generating activities have been adjusted to the ecosystem services provided by the mangrove system. Crabs, for example, are harvested from the mangroves and fattened in cages before being sold at a good price in local markets. Similarly, the community has developed a system for producing sea weed (*Garcelaria spec.*), used by the cosmetics industry. Sea weed production has become one of the major sources of income in the area and also makes a positive contribution to pond ecology as the plants provide a niche for various aquatic species and oxygenate the water. Agricultural activities developed under the project have met with varying success. Some activities such as chicken farming proved to have insufficient long-term economic potential and were replaced with other farming activities.

More research is needed to exactly quantify the benefits of these conservation and development activities upon local community livelihoods. Initial rapid inventories indicate an increase of 300

Bio-rights development activities in Pesantren: sea weed production and goat farming. Photos: Pieter van Eijk.

Box 11. The Pemalang mangrove management training centre

In recognition of the successful project outcomes, Pesantren community received some additional Bio-rights support in 2005. In return for the implementation of rehabilitation activities, the community received funding for the establishment of a *'community mangrove centre'*. This centre, managed by Pesantren community and situated in the middle of the ponds, is used as a field training centre on mangrove management, hosting schoolchildren, community groups, NGOs and government departments. This centre is also used by the group itself as a venue for meetings, accommodation of visitors and festivities such as weddings. Maintenance costs are covered through a small lease fee that is paid by users of the centre.

Mangrove training centre in Pesantren village. Photo: Nyoman Suriadiputra.

percent in household incomes since the start of the project, as well as a significant decrease in vulnerability to extreme events such as floods and storms, and (projected) future climate change. The percentage of school going children has increased significantly. Other indicators for improved livelihoods include the proportion of villagers owning TVs, bicycles and motorbikes, all of which have increased considerably. The project can thus be considered a success from both an environmental and socio-economic perspective. Nonetheless, community members have indicated a number of challenges that they faced during project implementation, which were experienced as hampering development opportunities. While the project provided much support to the development of income generating activities, community facilitators only paid limited attention to developing appropriate marketing chains for these products. As a result, communities were forced to sell their products at a low price to retailers, instead of earning additional money by reaching end-users. Particularly in the sea weed business, community groups miss out on a lucrative business opportunity. Although matters have improved significantly since the formation of official corporations, communities - several years after project implementation - still feel that they don't have optimal access to markets. Limited capacity to jointly save money, as a basis for developing new economic initiatives, was also mentioned as a development constraint. Community groups felt that there were no internal mechanisms to enable a durable and reliable savings scheme. By incorporating a revolving fund into the approach and by providing appropriate training on community-based savings, the project could have anticipated these needs.

Although the Bio-rights contracts formally ended in 2005, communities have continued with rehabilitation since then. Convinced of the benefits of reforestation, the groups still meet once every two weeks to discuss new rehabilitation plans. In 2008 a further 120 hectares of barren ponds were planted. Future activities will aim at maintaining the restoration works and expansion of the coastal mangrove belt, and the further accretion of the coastline. Community members have also continued to cooperate over development activities. The groups have formally registered themselves as cooperatives and have slowly expanded over time. This has enabled effective cooperation in fishing and crop harvesting activities and the marketing of products, and has facilitated the development of new income generating activities. For example, the group has set up a thriving nursery, which sells mangrove seedlings to community groups elsewhere. The efforts of the community groups involved have not gone unnoticed. In 2002 the national government of Indonesia awarded the communities in Pemalang the *'Green Award'*, a prize for local community excellence in environmental restoration. Through media coverage and effective sharing of experiences with specific target audiences, coastal areas in Pemalang have become best-practice sites for sustainable management of degraded coastal areas. Communities in surrounding villages have adopted both restoration and sustainable development activities without external incentives. The approach has also been replicated elsewhere in Indonesia, including the Green Coast project (*see Case II*). In recognition of the opportunities demonstrated by the Pemalang projects, a small exhibition and training centre has been built in Pesantren village, which regularly receives schoolchildren and national and international delegations of government officials, NGOs and donors (*see Box 11*). Leading community members are regularly requested to provide technical advice and training to rehabilitation sites elsewhere. Several community members have recently been hired as Local Programme Managers to guide mangrove rehabilitation works in Aceh Darussalam province, Sumatra.

LESSONS LEARNED:

+ The division of tasks within community groups and a focus on documenting project outcomes created responsibility, awareness and a feeling of project ownership among group members.

+ The adjustment of development activities to the ecosystem services generated by conservation actions provided additional incentives for the long-term sustenance of rehabilitation sites.

+ Creating awareness of the benefits of environmental conservation to local livelihoods increased long-term sustainability.

+ Extensive training and trust building in advance of project implementation contributed to overall project success.

+ Active dissemination of project experiences to different stakeholder groups facilitated regional and national replication of the approach.

- Restricted access to regional markets and limited capacity to develop market chains inhibited community development.

- Limited capacity to generate financial resources within the community groups inhibited income diversification and development after the project implementation period.

! More intense scientific monitoring during project implementation would have facilitated mainstreaming of the approach in regional and national policies.

! Starting small-scale and allocating sufficient time for project implementation was a key to success.

+ = 'positive lesson learned', - = 'negative' lesson learned, ! = key point

9. Case II. Restoration of Tsunami-impacted coastal areas on Sumatra, Indonesia

The project in brief:

Objective: *ecological restoration of tsunami impacted areas coupled to sustainable community development.* **Where?** Coastal areas in Nanggroe Aceh Darussalam and Nias, Sumatra (Indonesia). **Implemented by:** Wetlands International (lead partner), IUCN, WWF, BothEnds and 31 local NGOS and 29 independent community groups. **Funded by:** Oxfam Novib. **Implementation period:** 2005-2007 (Phase I), 2007-2008 (Phase II). **Budget Phase I:** € 850.000 (for Bio-rights activities), overall budget (targeting five countries) € 4.300.000. **Budget Phase II**: € 450.000 (for Bio-rights activities in Indonesia), overall budget (targeting Indonesia) € 1.300.000. **Main accomplishments:** rehabilitation of 1.000 hectares of mangrove and beach forest in 70 project sites; support to sustainable development activities for 5.000 people; improved livelihoods resulting from improved ecosystem conditions of 60.000 people. More information: *www.Greencoasts.org.*

9.1 Introduction

On 26 December 2004, following a powerful earthquake (force 9,1 - 9,3 on the Richter scale), a massive tsunami hit the coasts of many countries in South and South-east Asia. The tsunami caused extensive damage to infrastructure and human property, and claimed approximately 230,000 lives. Damage to the environment was significant as well. The waves swallowed entire stretches of mangrove, sand dunes and beaches, destroyed coral reefs and salinated inland water bodies, causing severe disruption of ecosystems throughout the region. Although heavily damaged, well-functioning ecosystems played a critical role in reducing the impact of the tsunami. Sand dunes functioned as physical barriers against the pounding waves and intact stretches of mangroves absorbed the power of the waves and prevented them from proceeding far inland. Natural ecosystems also provided essential products and services, such as construction materials and food, that enabled people to survive in the critical weeks following the tsunami. Despite the important role of natural ecosystems in mitigating the destructive impact of the tsunami, reconstruction works almost entirely focused on rebuilding the housing of tsunami victims and on *'hard-engineering'* reconstruction works. Ecosystem restoration was rarely considered, and when it was, the authorities often lacked the necessary technical capacity. Many of the mangrove restoration works that were initiated in the region in response to the tsunami were therefore unsuccessful. The wrong planting techniques were adopted and local communities were often insufficiently involved in planning and decision making.

Recognising the limited focus on ecosystem restoration and the many challenges faced by NGOs and governmental agencies in responding to accomplish nature-based disaster relief, Wetlands International, and several other conservation and development organisations initiated the Green Coast project. This tsunami response project, funded by Oxfam Novib, aimed to increase coastal resilience through community-based ecosystem restoration linked to sustainable development of local communities. The project targeted coastal areas in India,

Tsunami damage in Banda Aceh, Sumatra. Photo: Pieter van Eijk.

Sri Lanka, Malaysia, Thailand and Indonesia. A small-grant facility was developed to support a large number of local NGOs and CBOs to implement small-scale (€ 5,000-25,000) community projects targeted at ecosystem restoration and livelihood improvements. The small-grant initiatives in Indonesia were implemented through the Bio-rights approach, as a follow-up to successful Bio-rights initiatives in Pemalang, Java. This case description focuses on the Green Coast experiences from Indonesia.

9.2 Project initiation

Following the 2004 tsunami, several conservation and development organisations came together to identify how environmental aspects could be included in disaster risk reduction strategies. They considered a conservation focus important in addressing the tremendous environment damage that was inflicted by the tsunami. At the same time, they recognised the great importance of environmental conservation and restoration for creating resilient coastal communities. Ecosystem restoration was thus considered a critical aspect of disaster relief. Oxfam Novib, which was involved in these discussions and which played an important role in the disbursal of emergency aid money provided by the Dutch public, recognised these needs. The organisation contributed € 4.300.000 for a major coastal ecosystem restoration and sustainable development initiative and the Green Coast project, implemented under the lead of Wetlands International, together with IUCN, WWF and Both ENDS, was born. Wetlands International - Indonesia which had gained considerable experience with community-based conservation of coastal ecosystems and had piloted the Bio-rights approach in the late 1990s (*see Case I*) decided to upscale this approach in the Green Coast activities in Nanggroe Aceh Darussalam and Nias provinces, Sumatra.

The Green Coast partners concluded that a small-scale, community-level approach was likely to be most effective in accomplishing conservation and development objectives, and to ensure the involvement of community members in environmental restoration. To accommodate this, it was decided to establish a small grants fund to enable a large number of local NGOs and community-based organisations to implement small-scale initiatives. The first step undertaken by the project was a major inventory of the project area This rapid survey mapped the environmental damage inflicted by the tsunami and sought to assess options for rehabilitating the affected ecosystems. It also assessed community perceptions about engaging in ecosystem restoration and considered the overall suitability of potential project sites within the region. From August to October 2005 assessment teams, consisting of ecologists and socio-economists, visited as many coastal areas as possible in Aceh and Nias provinces (and also outside Indonesia in other target countries), to find out where small grant initiatives could be implemented and to identify specific conservation and development needs. Project sites were prioritised, according to their conservation values, the community's needs, the potential contribution of restored ecosystems to improving livelihoods and community motivation for engaging in a restoration project.

With relief aid for Aceh representing several billion euros and with hundreds of reconstruction agencies and NGOs active in the region, there were considerable risks of various restoration objectives coming into conflict with each other. The Indonesian government established the planning agency BRR as the regional body to coordinate all disaster relief efforts. The Green Coasts project worked closely with BRR to incorporate its conservation and development objectives in the overall reconstruction plan for Aceh. Through workshops and multi-sectoral meetings, BRR and other stakeholders were familiarised with Green Coast goals and with the need to incorporate environmental aspects in reconstruction activities. These meetings also enabled the building of a large network of governmental agencies, local and international NGOs and community representatives, which provided the project with the right mandate as well as an enabling environment to get started in the region. The network also enabled the selection of 31 local NGOs and 29 CBOs, which were appointed as the Local Programme Managers for no less than 70 small grant Bio-rights initiatives. Finding a sufficient number of local organisations with the right development and conservation capacity proved a great challenge. The Green Coast partners, in the role of the Bio-rights Project Manager, addressed this by setting up an intensive training programme for selected organisations. The programme focused on familiarising Local Programme Managers with the Bio-rights approach itself, as well as on techniques for ecosystem rehabilitation and approaches to sustainable livelihood development. In addition, various Local Programme Managers that had previously implemented Bio-rights in Pemalang, central Java (see case I) were hired to replicate the approach in project sites in Aceh and to provide technical support to the Local Programme Managers hired on-site. The project also recruited a number of community members from Pemalang, who, after intensive training were installed as Local Programme Managers in a number of villages.

9.3 Project development

A total of 60 local organisations acting as Local Programme Managers, together with Wetlands International and other consortium partners proceeded to develop 30 small (€ 5,000 to 10,000), 33 medium-sized (€ 10,000-20,.000) and 7 large (€ 35,000- 50,000) Bio-rights initiatives. First, community meetings were organised in the selected project sites to explain the Bio-rights approach and highlight the multiple objectives of the project. Subsequently, community groups of 15-40 interested people were established. Many communities were initially hesitant to participate

as they were hardly motivated to become involved in conservation activities as a precondition for receiving development support as other donors were providing such development support for free. By raising awareness about the importance of restoring mangroves, beach forests and other coastal ecosystems as a protective buffer against the sea, many communities were finally convinced to participate. However, some of the initial scepticism about the social and economic benefits of environmental conservation remained.

Workshops and consultations on the community group level arrived at a concrete Bio-rights plan for each initiative. The conservation actions identified by the different stakeholders included the construction of a protective coastal mangrove belt. Agreement was reached on the various mangrove species to be planted, including Rhizophora apiculata, *R. mucronata*, and *Avicennia sp*, among others. Similarly, planting plans were made for protective buffers on dry land, involving *Casuarina maritima*, Pandanus sp. *Hibiscus tiliaceus* and *Callophyllum inophylum*. Many coastal areas were already severely degraded before the 2004 tsunami. Hundreds of thousands of hectares of mangrove, for example, had been converted into tambak ponds for shrimp and milk fish aquaculture in the 1980s and 1990s (*also see the description under Case I*). This had led to significant biodiversity loss and vulnerability as a result of erosion and saline intrusion. These problems were addressed by introducing a silvo-fisheries system with mangroves planted along the fringes and in the centre of the shrimp ponds. This had proved highly successful in previous coastal restoration initiatives in central Java (*see Case I*). Other selected conservation measures included the establishment of marine protected areas, the banning of unsustainable fishery methods and the development of management plans for the new lagoons that had been created by the tsunami. Next, the different stakeholders agreed on sustainable development activities, which were supported in return for community involvement in the restoration measures. The community groups themselves played a key role in the selection of appropriate measures, by reflecting on their most urgent development needs in the wake of the damage inflicted by the tsunami. The Bio-rights Manager and the Local Programme Managers suggested a number of additional community development options which had proved successful in earlier initiatives elsewhere. This led to the identification of a variety of site-specific development activities, ranging from the procurement of goods, such as fishing vessels and motor cycles (to re-establish access to resources and markets), to the initiation of new income generating activities, such as handicraft production and the development of enterprises (as a substitute for day-to-day activities or as an alternative to unsustainable practices). Particular care was taken to ensure that the selected development activities would not negatively affect the environment or cause overexploitation of natural resources.

Wetlands International, as the Bio-rights Project Manager, decided not to provide the entire Bio-rights payment in advance. Instead, it was agreed that community groups would receive the payments in three instalments: one at the start of the project, one halfway through the project (after the implementation of several initial conservation measures) and one at the end of the project, upon the final delivery of conservation services. This was not as a result of mistrust towards the local communities, but rather due to the unfamiliarity of the Green Coast consortium with the Local Programme Managers that were hired. Each individual local organisation's capabilities of successful project management were insufficiently known; so to reduce financial risks, it was considered desirable to establish a multiple-payment scheme. Responding to donor requirements, a project duration of approximately three years was agreed. The monitoring of overall project outcome and subsequent micro-credit conversion was set to occur towards the end of the project. Seedlings survival rate was selected as a main indicator of success for the re-greening activities. It was agreed with local communities that survival rates exceeding 75%

towards the end of the contractual period would result in the conversion of the micro-credits into definitive payments. Lower survival rates would result in the reimbursement of a proportion of the micro-credits provided. It was agreed that project monitoring would take place under the lead of the Bio-rights Project Manager, supported by the community groups and Local Programme Managers. The overall project plan and associated payment conditions were consolidated in an activity plan containing concrete actions, overall sustainability criteria and obligations with regard to the provision and attendance of capacity building and awareness raising activities.

The development process took place in close cooperation with planning agency BRR and other relevant stakeholders by involving them in consultation meetings and by providing regular updates on progress and plans. This enabled mainstreaming of the individual small-grant initiatives with the overall reconstruction works and policies.

9.4 Contract development

Working together with the community groups, the project plans were formalised into contractual arrangements. By involving community group leaders, village elders and existing local natural resource management committees in this process, and by providing them with a facilitating role, the formal status of the contracts was enhanced. In some project sites the Panglima Laot, a traditional community-based fisheries resource management committee for Aceh province, which has existed for centuries, played a particularly important role in facilitating the negotiation process. The committee has extensive experience in working with fishery-dependent communities and is well respected in the region. Contracts were signed with individual community groups at official ceremonies attended by local officials and other important stakeholders.

9.5 Project implementation

Project implementation started with an intense capacity building and awareness raising programme. This programme was organised by the Local Programme Managers, but as a result of the limited capacity of some local NGOs, Wetlands International and other consortium partners also played an important role by developing and presenting training modules. Capacity building activities focused on the technical aspects of implementing the conservation and development measures. These included nursery development, planting and tending techniques for reforestation, and the development and implementation of management plans for marine protected areas. Development-oriented trainings introduced new techniques for agriculture and fisheries and provided capacity for the development of small enterprises such as shops and small food-processing factories. Linked to these technical trainings, awareness raising activities were organised, highlighting the importance of sound environmental management for local livelihoods. Particular attention was paid to creating understanding about the protective function of mangroves and beach forests against extreme events, such as storms and tsunamis, and the role of coastal ecosystems in supporting fisheries. The role of intact coastal wetlands in protecting local livelihoods was particularly well understood, because the devastating tsunami had confronted communities with their extreme vulnerability due to earlier environmental degradation. Besides workshops and trainings, the project established several field-training centres to demonstrate sustainable fisheries approaches and techniques for ecosystem rehabilitation.

Coastal mangrove buffer created in Aceh under the Green Coast project. Photo: Pieter van Eijk.

Next, the actual conservation and development activities were initiated. Reforestation activities started with the development of nurseries, which propagated approximately 1,500,000 mangrove trees and 350,000 beach trees. Over one hundred community groups in 54 sites planted trees over a total of 1000 hectares of land,. Mangroves were planted with the objective of creating dense forest stretches as protective buffers along the coastline, as well as to create a silvo-fisheries system in areas intensively used for aquaculture. The project established six community-based marine protected areas, involving communities in the development of management plans and in patrolling activities. A second phase of Green Coast was implemented in 2007-2008. Under this project an additional 587 hectares of mangroves were planted in 16 project sites. These projects were implemented with the Local Programme Managers and communities that demonstrated commitment and achieved high-quality conservation during the first phase of Green Coast. Several phase I projects received some additional support for maintaining the planting sites in the vulnerable months directly after termination of the project.

The development activities that were supported differed greatly among the individual projects, depending on the specific requirements of the communities involved. Loans were provided at both the community level and to individuals within communities. In most cases they related to the purchase of goods such as fishing equipment, livestock and seeds; but in some cases support was also provided for more complex development activities, such as the establishment of sustainable aquaculture systems and enterprises for food processing and handicraft production.

Mangrove nursery established under the Green Coast project. Photo: Pieter van Eijk.

To increase the sustainability of the development aspects of the project, it was decided in the second phase of Green Coast to use the micro-credits to create revolving funds within the communities. These funds enabled communities to borrow money for sustainable development activities, but required reimbursement of these loans so that other community members could borrow at a later stage. As a result, development activities do not end when the micro-credits are converted into one-off payments, but instead can be sustained for as long as the communities maintain the revolving funds.

The Bio-rights Project Manager monitored the overall progress of the conservation and development activities through regular field visits and discussions with the Local Programme Managers and communities. This enabled the provision of technical advice and the monitoring of compliance with formal obligations throughout the project. The Bio-rights initiatives implemented under the Green Coast project are part of a larger framework of activities and a major component of the project was dedicated to policy development and advocacy. Regular meetings and workshops with other stakeholders in the region were organised to build awareness of the importance of environmental rehabilitation as part of the overall reconstruction works and to adjust planned activities to each other. Attempts were made to mitigate the impact of other reconstruction works on the project's activities, while at the same time building momentum for the up-scaling of environmental rehabilitation efforts.

9.6 Project outcome

The project's outcomes were monitored upon termination of phase I, and one year later so as to acquire insights into longer-term outcomes. Phase II was still in progress when this case study was drafted and only intermediary results from this phase are available. Reforestation activities performed under phase I were very successful with average seedling survival rates well above 75%. There were, however, significant differences between, as well as within, replanting sites. In some places cattle grazing and trampling destroyed large numbers of seedlings. Some communities constructed fencing to protect against this hazard, but in most sites this was considered too costly. Instead, most groups decided to restock sites that were destroyed by animals. Similarly, barnacles, crabs, insects and various plant diseases caused locally high mortality rates. The nurseries proved sufficiently productive to enable replacement of seedlings

Duck farming as a sustainable development activity. Photo: Pieter van Eijk.

that were affected. In some areas erosion caused seedlings to be washed away and elsewhere, sand accretion buried and subsequently killed seedlings. Some communities were able to adapt to these challenges by relocating planting sites in time, but in other cases it was too late to find alternative locations. In December 2007 flash floods hit Aceh, sweeping away tens of thousands of newly planted seedlings. Although this was clearly a force majeure situation provided for in the contract signed with the communities, the groups demonstrated dedication by replanting these seedlings on a voluntary basis. Despite the fact that disaster risks were considered in the selection of project sites and conservation activities, the project did not sufficiently identify how to cope with unexpected events: no alternative conservation scenarios were identified that would enable easy adaptation to unexpected circumstances, nor were there sufficient resources allocated for emergency situations.

Replanting activities were unsuccessful in a small number of projects as a result of the limited technical capacity of several of the Local Programme Managers. Some groups, for example, planted mangroves on the beach or omitted to remove the plastic bags in which the seedlings were propagated. More intensive training and screening of local NGOs as Local Programme Managers could have avoided these problems. Considering the short timeframe available and recognising the difficult post-disaster conditions, however, it can be concluded that the project was generally successful in optimising recruitment of capable Local Programme Managers. In the process of selection of project sites in phase II, the capacity of Local Programme Managers (as well as the level of commitment of communities involved) was closely considered: only those Local Programme Managers that demonstrated sound implementation capacity were eligible for funding for additional projects or for an extension of support for phase I activities.

It was found that the Local Programme Managers recruited from Pemalang community in central Java - where Bio-rights was implemented several years before - were the most successful in delivering successful conservation outcomes. Their thorough practical knowledge and their experience in having been participants in a Bio-rights project themselves, proved to be of great value in support of community restoration activities. One drawback was that these Local Programme Managers were recruited from another region and, as a result, lacked familiarity with local site conditions and local cultural practices. In some villages (particularly those subject to political unrest in the pre-tsunami era) this led to some initial tensions and mistrust. Without exception, however, this eased off early in the project and the shared background as fisherman

and fishpond owners provided a sound basis for cooperation. Another factor that influenced success was the extent of guidance provided by the Local Programme Manager. Local Programme Managers permanently based within the target villages were much more successful in delivering high conservation outcomes than those based elsewhere who only visited the community intermittently.

Despite the efforts that were made to adjust conservation actions to other reconstruction activities, in several cases reforestation activities were negatively affected by the construction of barrages and fishponds within or near to planting sites. Subsequent monitoring of project sites, approximately one year after project implementation, demonstrated that most sites remain in good condition, despite some additional mortality, usually as a result of erosion and cattle browsing,. In response, Green Coast II has allocated some additional resources for additional protective measures in the most vulnerable sites. It is expected that the seedlings planted under phase I will soon reach a stage at which their vulnerability to environmental variables will be significantly reduced and that further (natural) regeneration will take place without further interventions. The (natural) recruitment of several new mangrove species in a number of replanting sites is a promising development in this respect. The main future threat to the replanting sites remains disturbance from anthropogenic activities. Future monitoring will demonstrate the interest that local communities show in continuing to maintain the replanting sites. Other conservation activities implemented under the project, including the establishment of community-based marine protected areas and the involvement of local communities in the management of existing protected areas, were generally successful. In some areas, local fishermen have already reported the reappearance of fish species that had previously disappeared from the area as a result of over-fishing. Future surveys should be performed to monitor the long-term spin-offs and sustainability of these measures, as well as the revival of ecosystem services associated with reforestation measures, including biodiversity, protection against erosion and buffering of wave and storm power.

Despite the success of the conservation interventions implemented under the project, it was found that many additional actions are still required to accomplish real, sustainable community-based coastal resource management. Despite being avid tree planters, some communities were, for example, found to still use large quantities of pesticides in their fisheries systems and to intensively hunt water birds, while others still collect sea turtle eggs from nearby beaches. It was concluded that future Bio-rights activities will have a much greater positive environmental impact if communities are to be given responsibility for a large range of environmental factors, rather than just engaging in restoration works. Green Coast made a first start in such a holistic approach by also setting up a number of community-based protected areas, but more efforts will be required to promote full sustainability.

The outcome of the various development activities initiated under the project differed greatly among project sites. Success stories include the development of enterprises for processing and marketing food items, which led to an increase of incomes of between 10 and 1,000 percent. Similarly, agricultural activities developed under the project significantly complemented traditional fisheries-based livelihoods. One farmer investing his € 200 micro-credit in goat farming activities has managed, in less than three years, to increase the total value of his goat business to € 2,000. Other development activities failed, including various projects aimed at setting up sustainable aquaculture as well as some of the farming activities. The capacity of the Local Programme Manager to appropriately support community-development actions proved to be an important determinant of success. The occurrence of extreme events was also an important factor, with

flash floods destroying aquaculture and farming systems on several occasions. Some projects were overly ambitious in their development objectives and were unable to deliver the desired project outcomes within the budget and timeframe available. One group, for example, which aimed to restore a fishpond that was destroyed by the tsunami, concluded towards the end of the project that the (human) resources available were insufficient to make the pond system operational again. Projects aimed at providing support for the procurement of goods (i.e. fishing gear, livestock, seeds) to individual members within community groups were generally successful, leading to a small but durable supplement to their daily income.

Project monitoring also sought to acquire insights into community attitudes and perceptions about sustainable resource management. It was found that awareness of the need for mangrove conservation greatly increased as a result of project activities and, in many cases, initial scepticism among communities disappeared in the course of the project. As in earlier mangrove restoration projects elsewhere in Indonesia, it is likely that the positive attitude towards conservation and restoration of coastal ecosystems will further increase once the socio-economic benefits of their conservation activities become more visible in the form of increased fish stocks, reduced erosion and other ecosystem services. Still, the evaluation also found that many communities tend to stick to former unsustainable management approaches such as intensive pesticide use and overexploitation. Three years has proved insufficient to change such well-established practices. In future projects, Green Coast will work towards full sustainability within and outside the selected project sites. Awareness raising will be an important pillar as well as the development of demonstration sites that show how sustainably managed land can contribute to improved livelihoods. One such demonstration site has already been developed, highlighting the possibilities for sustainable aquaculture development. The site currently serves as an on-the-ground training centre, demonstrating the benefits of ecological restoration. Similarly, exchanges with community members participating in earlier Bio-rights projects have proved successful in working towards sustainability, as community members tend to be very receptive to piloting approaches introduced by other community groups.

LESSONS LEARNED:

+ Hiring skilled community members from previous Bio-rights project sites as trainers or Local Programme Managers contributed to improved project outcomes.

+ Close cooperation with the planning agency BRR and other local stakeholders reduced negative interference with other local development activities to a minimum.

+ The establishment of a revolving fund for maintaining financial resources within communities has contributed to the increased long-term sustainability of the project.

+ The continuous presence of Local Programme Managers in the selected sites greatly increased project success.

- More intense screening and training of Local Programme Managers would have increased overall project success

- Identification of scenarios and allocating a budget for addressing the impact of unexpected events on conservation and development activities would have contributed to improved project outcomes.

! Addressing a wider range of environmental issues (besides tree planting and establishing protected areas) would have increased conservation outcomes.

! Accomplishing full sustainability of community activities requires an intense and long-term process of capacity building and training

+ = 'positive lesson learned', - = 'negative' lesson learned, ! = key point

10. Case III. Water bird conservation in the Inner Niger Delta, Mali

The project in brief:

Objective: *Reducing hunting pressure on migratory water birds; developing alternative income generating activities for women's groups involved in the bird trade.* **Where?** Inner Niger Delta, around Mopti town (Mali), **Implemented by:** Wetlands International - Mali, with local authorities. **Funded by:** Royal British Embassy. **Implementation period:** January - December 2000. **Budget:** € 25,000. **Main accomplishments:** Hunting pressure on migratory water birds decreased by > 90%; increased income, decreased vulnerability and improved social status for 565 women in 8 communities; overall improved livelihood security as a result of environmental conservation and sustainable development for 8 villages.

10.1 Introduction

Consisting of more than 3,000,000 hectares of lush floodplains, rivers and lakes, the Inner Niger Delta is of great importance for a large diversity of water birds. Each year millions of birds migrate from their Palaearctic breeding grounds to their wintering habitat in and around the delta. The delta also hosts large numbers of local breeding water birds that reside in the delta year-round, or migrate within the African continent. The rich biological diversity in the delta and the related ecosystem services are of great importance to the livelihoods of local people. More than one million farmers, pastoralists and fishermen directly depend on the resources of the delta.

Despite the evident value of the delta to these people, anthropogenic pressures are rising rapidly. Large-scale upstream irrigation and hydropower schemes have decreased water availability. Overexploitation of resources has led to ecosystem degradation and affected the delta's resilience and productivity. As a result, local communities face increasing difficulties in meeting daily needs and are forced to identify supplementary sources of income. Water bird hunting with hooks and nets is one of them. Particularly in dry years, when fish catches are low, fishing communities engage in this business. The hunting practices are facilitated by a limited number of well-respected women's groups - normally involved in the marketing of
fish - who provide hunters with shelter and catching equipment and organise the trade in regional markets. Monitoring in the target area (i.e., the central town of Mopti and surrounding areas) has shown that prior to 2000, no less than 62.500 birds were traded in dry years, mainly Ruff (*Philomachus pugnax*) and Garganey (*Anas querquedula*). These species have a very high conservation value in western Europe, where populations are rapidly decreasing, while representing a relatively low value in western Africa. In recognition of these threats and the (likely) favourable cost-benefit ratio of conservation investments, it was decided to initiate a small-scale project to reduce hunting pressures in the area.

The Inner Niger Delta in the dry season. Photo: Pieter van Eijk.

10.2 Project initiation

Wetlands International has a long history of working in the Inner Niger Delta. The earliest projects aimed to acquire insights into the functioning of the delta, through analysis of existing data, hydrological modelling studies, and ecological inventories, including monitoring of water bird populations and counting of birds traded at markets for consumption. The counts were undertaken throughout the delta and involved close cooperation with local communities, which provided site-specific information and logistical support. Initially, community members were hesitant to reveal their illegal poaching activities, but after realising that the information collected was not going to be used against them, they cooperated fully in the survey and provided details and quantified information on the trade. Over the years a relationship of trust developed between the community groups and the investigators, although community members found it hard to understand the rationale behind the dedicated bird inventories.

The bird counts revealed the high level of threat in the delta to migrant bird populations, as well as the inter-linkage between increased poverty due to environmental degradation and the increase in the unsustainable harvesting of water birds. Consequently, Wetlands International together with Alterra (Wageningen University) - in the role of Bio-rights Project Manager - developed plans for a small-scale conservation pilot, aimed at providing development support in return for community commitment to decrease hunting pressure. After the British Embassy agreed to finance the pilot, discussions were organised with a number of women's groups, to identify whether they were supportive of the proposed activities. This resulted in the selection of eight women's groups (totalling 565 individuals) that were heavily involved in the bird trade and

Overexploitation of birds (l) and fish (r) in the Inner Niger Delta. Photos: Leo Zwarts.

were willing to be involved in the project. The environmental department of local government agreed to participate, as well, by identifying options for linking the project's community conservation actions to local policies. The Wetlands International office in Mopti was identified as the most appropriate Local Programme Manager because of its excellent contacts with local communities.

10.3 Project development

Project development started with a number of meetings with the selected groups and other relevant stakeholders, such as government representatives, to explain the proposed concepts and share ideas about desirable conservation and development outcomes. Next, concrete project planning meetings were held to identify conservation and development actions. It was agreed that the involved community groups would stop trading birds in local markets and would refrain from providing hunters with hunting equipment (mainly nets and hooks) and shelter. To avoid new groups taking over their position, it was agreed that the women's groups would also be trained as *'eco-guards'*. This would enable them to work with the local government's environmental department to control illegal activities in their area, both during and after project implementation. In return it was agreed that each community group would receive a € 762 loan, in support of development activities. The women's groups were entirely free to identify and select their income generating activities, as long as sustainability criteria were taken into account. Their choices included poultry farming, the development of fish smoking enterprises and the establishment of seed and food banks in anticipation of the high risk of future food shortages.

Careful consideration was paid to the project's long-term sustainability. Accommodating the local community's need for sustained access to financial resources, it was agreed that micro-credits would be provided in the form of community-based savings funds. This would allow each community member to borrow from the fund, at a 10 percent interest rate. The interest rate leads to a steady growth of capital, while at the same time being much lower than the very high interest rates charged by external moneylenders. It was agreed that the community-based savings schemes would be maintained in the community as revolving funds after conversion of micro-credits upon meeting the conservation objectives. Micro-credits were provided at the start of the project, in response to the high level of enthusiasm and dedication of community

Bio-rights women's group in a replanted flood forest in Mali. Photo: Pieter van Eijk.

members during project development. The contractual period was restricted to one year, but regular subsequent visits were anticipated to provide technical advice, where needed, to the community groups, and to motivate them to maintain their sustainable practices. Project monitoring was implemented by the Local Programme Manager, together with the involved community groups, by means of intensive field observations during regular inventories. Visits were also paid to nearby markets in order to quantify regional bird trade activities. The level of cooperation of community groups with local authorities also served as a means to measure community involvement in conservation.

10.4 Contract development

A formal Bio-rights contract was signed with each of the women's groups. Local mayors, village heads and representatives of the local natural resource management department were also incorporated as signatories to the contracts. This enhanced involvement in and support of the project among different sectors and contributed to improved cooperation between local communities and government institutions.

Box 12. Working with a micro-credit institution

Development of sound, enforceable contracts is one of the most challenging elements of Bio-rights implementation. Implementing organisations are often insufficiently familiar with aspects of local legislation and sometimes lack the capacity to establish contracting formats and to formalise contractual agreements under government law. Weak institutional structures might further compromise the enforceability of contracts. One way of overcoming these difficulties is to make use of existing formats for small-scale contractual agreements with communities. In 2006-2008, under the Wetlands and Poverty Reduction Project (WPRP) this approach was piloted by working with CAMEC, a Malian micro-credit institution with extensive experience in establishing small-scale contracts with communities. After the signing of a memorandum of understanding between the WPRP consortium (Wetlands International and Care in Mali) and CAMEC, it was agreed that CAMEC would take responsibility for micro-credit dispersal, wih the WPRP partners providing technical support for on-the-ground implementation of the Bio-rights agreements. The pilot was implemented between 2006 and 2008 and was evaluated afterwards.

It was agreed that communities could borrow a certain amount from CAMEC, under the condition that this loan would be reimbursed at a certain interest rate within a given period. After delivery of successful conservation activities upon termination of the contractual period, communities were free to choose whether they wanted their micro-credit and associated interest to be paid out in cash, or whether they preferred to leave their capital in CAMEC's accounts and become a shareholder of the micro-credit institution. In the first case communities would have a relatively large amount of cash available upon termination of the contract, whereas in the latter case communities would be sure of annually receiving a certain fraction of the profits generated by their capital invested in the micro-credit institution. The approach proved very successful in that it relieved the field partners from the burden of dealing with complex paperwork, and also helped CAMEC to diversify its portfolio of financial products. The approach was attractive for local communities, as they were able to sign a contract with a renowned national institution and gave them the prospect of acquiring a long-term flow of income by becoming a (very small) shareholder in the micro-credit institution. Normally, the community groups involved would not be able to borrow from CAMEC, as their risk profile would be considered to be too high. However, after engaging in Bio-rights and demonstrating success to CAMEC by reimbursing the initial loans, these groups have been granted future access to CAMEC's financial products, and are now considered as trustworthy lenders. Following an evaluation of the approach in 2008, CAMEC decided to formally incorporate Bio-rights loans in their portfolio of products.

10.5 Project implementation

Before implementation of actual conservation activities, an extensive training scheme was initiated within each community group. Trainings were provided in the respective local languages (Bozo, Bambara and Fulani) of each women's group. First of all, awareness was raised on the role of water birds in relation to the sound functioning of the Inner Niger Delta. Earlier research indicated that water bird colonies perform a very important role as breeding grounds for a large number of fish species throughout the delta. Bird excrement is rich in nutrients and forms the basis of a healthy food chain, which greatly influences the development of fish stocks. Similarly, it was found that the occurrence of water bird concentrations serves as a good indicator of healthy systems that are rich in fish and other natural resources. Both findings were communicated as clear examples of the importance of sustaining water bird populations. Awareness was

also raised on the life histories of migratory birds. The large number of rings recovered from Eurasian migrants, served as an excellent means of illustrating their fascinating migration from distant regions to the delta. By highlighting these aspects, the project tried to inspire a sense of amazement as well as establish recognition of the fact that the community groups have a joint responsibility with people elsewhere in the world to wisely manage the populations of these vulnerable species. Together with the environmental department of the local government, the community groups were trained in aspects of natural resource management, including capacity building for the sustainable use of natural resources, community-based patrolling, monitoring and the enforcement of regulations. The training also taught community members about the most common bird species in the area, by producing a small identification guide in several local languages. Children in the community who could identify all the species in the booklet were awarded a T-shirt, with a painting of a Garganey (the flagship species of the project), that showed their involvement in the project. Such small incentives increased the enthusiasm and dedication of community members for the training sessions. Training was also provided to support the anticipated development activities and the establishment and maintenance of the community-based savings funds. Particular emphasis was placed on the organisation of group processes and the internal distribution of tasks.

The trainings created a firm basis for implementing the conservation and development activities. The conservation actions were quite straightforward, merely involving participating in community-based patrols and refraining from hunting and marketing birds. The development activities were rather more complex and involved a range of activities that required extensive planning and piloting. The development activities were closely guided by the Local Manager and care was taken to optimally align them to local field conditions.

School children, proudly showing their bird identification booklets and project T-shirts. Photo: Pieter van Eijk.

10.6 Project outcome

As soon as the contract was signed water bird hunting and trading was immediately halted in and around the villages of the community groups involved. The deal initially met with some resistance by villagers who were attached to their daily breakfast of fried Garganey or Ruff. However, the Bio-rights deals signed with the women's groups were generally considered beneficial to the entire village and most villagers were convinced to join conservation efforts. Following the trainings on wetland management and community-based patrolling, the women's groups paid a large number of visits to nearby communities, to raise awareness on the importance of water bird protection, urging them to stop overexploiting vulnerable species. Supported by the local government department of environmental conservation, they also engaged in regular field patrolling activities in the areas surrounding the target villages. This linkage between formal legislation and community-based enforcement proved highly effective, in that it greatly reduced illegal activities and contributed to increased community support for government policies. Monitoring activities during and after the project, indicate that the women's groups conservation activities have contributed greatly to reducing hunting pressure in the region. The number of water birds observed as being traded at local markets dwindled to several thousand individuals. However, it remains difficult to exactly quantify the decrease in hunting pressure, as other factors, such as flooding intensity, also determine differences in poaching rates between years. Since the end of the project, the women's groups have continued their role as wetland guards. The hunting of water birds is still banned among all eight groups and the groups still voluntarily perform regular field patrols. The groups estimate that they have decreased hunting pressures by around 90 percent since initiation of the project. The community groups have continued to protect water birds in the delta, as they recognise their importance as indicators of healthy systems and as important components within the Inner Niger Delta's natural ecosystem. They also recognise that they have a shared responsibility for protecting populations of migrating water birds. In recognition of the support provided by the British embassy, they also feel obliged to adhere to the conservation objectives set out in the contract, even though the official contracting period ended years ago.

The development activities implemented under the project significantly contributed to improving the livelihoods of the participating communities. Food banks have decreased vulnerability to famine, and agricultural activities and small enterprises developed under the project have raised families' incomes. Although the earnings generated by the development projects remain small,

Development activities supported under the project: education (l) and the establishment of food banks (r). Photos: Pieter van Eijk.

they are generated on a year-round basis, in contrast to the income generated from hunting and trading water birds, which only took place between December and April. The development activities implemented by the women's groups have considerably increased their level of financial independence, and the strengthening of the groups has contributed to increased involvement in decision making, both within communities and at the regional government level. The revolving fund established under the project provides sustained source of capital to implement further sustainable development activities. As a result, the community groups are continuously initiating new activities, based on their own needs and funding opportunities. This has significantly enhanced the long-term sustainability of the project. As the capital within the revolving funds has grown slowly over time, the community groups have been able to invite additional members to join their savings scheme. Most of the women's groups have continued to develop, undertaking new development activities and seeking to improve their technical skills. Some groups currently run classes several hours a week to learn basic writing and reading skills. With members paying for the costs of these classes themselves.

Two of the eight women's groups have been less successful in developing new sources of livelihoods. Their villages were hit by a famine in the first year of the project and they were forced to use the micro-credits to procure emergency food supplies. Although this enabled them to survive the harsh season, both groups were left with no money to develop new sustainable activities. As a result they were unable to establish activities that could reduce their vulnerability to extreme events. Despite these difficulties, the community groups have shown their dedication through continued recognition of the agreed ban on water bird hunting and trading practices.

LESSONS LEARNED:

+ Trust between community groups and the buying party was a key to successful project implementation.

+ Converting micro-credits into a community-based revolving fund greatly increased the sustainability of conservation and development interventions.

+ Extensive awareness raising and technical training activities contributed to the community groups' dedication to conservation activities and increased their capacity to successfully engage in conservation activities.

+ Linking formal government policy to community enforcement of legislations maximised the potential for implementing regulations and adjusting them to local needs and site conditions.

- The allocation of a budget for unexpected events could have avoided the failure of two communities to initiate development activities.

! Cooperation with an experienced micro-credit institution could have facilitated contractual arrangements and would have contributed expertise on the establishment of community funds

+ = 'positive lesson learned', - = 'negative' lesson learned, ! = key point

11. References

Amin, S., Rai, A.S. & Ropa, G. 2003. Does microcredit reach the poor and vulnerable? Evidence from Northern Bangladesh. Journal of Development Economics 70, pp. 59-82.

Asquith, N.M., Vargas, M.T. & Wunder, S., 2008. Selling two environmental services: in-kind payments for bird habitat and watershed protection in Los Negros, Bolivia. Ecological Economics 65, pp. 675-684.

Barrett, C.S. & Arcese, P., 1995. Are integrated conservation and development projects sustainable? On the conservation of large mammals in Sub-Saharan Africa. World Development 23, pp. 1073-1084.

Bennet, M.T., 2008. China's sloping land conversion program: institutional innovation or business as usual? Ecological Economics 65, pp. 700-712.

Bishop, J., Kapila, S., Hicks, F., Mitchell, P. & Vorhies, F., 2008. Building Biodiversity Business. Shell International Limited and the International Union for Conservation of Nature: London, UK, and Gland, Switzerland. 164 pp.

Brown, K., 1998. The political ecology of biodiversity, conservation and development in Nepal's Terai: confused meanings, means and ends. Ecological Economics 24, pp. 73-88.

Bulte, E.H., Lipper, L., Stringer, R. & Zilberman, D.,2008. Payments for ecosystem services and poverty reduction: concepts, issues, and empirical perspectives. Environment and Development Economics 13: pp. 245-254.

Chen, M.A. & Snodgrass, D., 2001. Managing resources, activities, and risk in urban India: the impact of SEWA Bank. AIMS, Washington D.C.

Coleman, B.E., 2004. Microfinance in Northeast Thailand: who benefits and how much? World development 34 (9): pp. 1612-1638.

Cornes, R. & Sandler, T., 1996. The theory of externalities, public goods and club goods (second edition). Cambridge University Press, Cambridge. 590 pp.

Edwards, P.J. & Abivardi, C.,1998. The value of biodiversity: where ecology and economy blend. Geobotanical Institute ETH, Biological Conservation 83 (3), pp. 239-249.

Engel, S., Pagiola, S. & Wunder, S., 2008. Designing payments for environmental services in theory and practice: an overview of the issues. Ecological Economics 65, pp. 663-675

Engel, S. & Palmer, C., 2008. Payments for environmental services as an alternative to logging under weak property rights: the case of Indonesia. Ecological Economics 65, pp. 800-810.

Ferraro, P.J. & Simpson, R.D., 2003. Protecting forests and biodiversity: are investments in eco-friendly production activities the best way to protect endangered ecosystems and enhance rural livelihoods?, resented at the conference *'Rural Livelihoods, Forests and Biodiversity'*, Bonn, Germany, sponsored by CIFOR, in collaboration with BMZ, DSE, and GTZ, 26-30 May.

Finlayson, C.M, D'Cruz R & Davidson, N.J. 2005. Ecosystem services and human well-being: water and wetlands synthesis. World Resources Institute, Washington DC, USA.

Franks, P. & Blomley, T., 2004. Fitting ICD into a project framework: A CARE perspective. In: Getting Biodiversity Projects to Work: Towards More Effective Conservation and Development. McShane, T.O. & Wells, M.P. (eds). Columbia University, New York, pp. 77-97.

Hulme, D. & Mosley, P., 1996. Finance Against Poverty. Vol. 1 and 2, Routledge, London. 215 pp (vol I) and 451 pp (vol II).

Khandker, S., 1998. Fighting poverty with microcredit: experience from Bangladesh, London.

McShane, T.O. & Wells, M.P. (eds), 2004. Getting Biodiversity Projects to Work: Towards more effective conservation and development. Columbia University Press, New York.

Millennium Ecosystem Assessment, 2005. Ecosystems and human well-being: Wetlands and water synthesis. World resources Institute, Washington, DC.

MkNelly, B. & Dunford, C.,1999. Impact of Credit with Education on Mothers and Young Children's Nutrition: CRECER Credit with Education Program in Bolivia. Freedom From Hunger Research Paper no 5.

MkNelly, B., Watetip, C., Lassen C.A. & Dunford, C., 1996. Preliminary evidence that integrated financial and educational services can be effective against hunger and malnutrition. Freedom From Hunger Research Paper no. 2.

Montgomery, H. & Weiss, J., 2005. Great Expectations: Microfinance and Poverty Reduction in Asia and Latin America. ADB Institute Research Paper Series no. 63. Oxford University Press for the World Bank, New York.

Mulder, I, 2004. Bio-rights - A concept for poverty-environment issues. What are the implementation possibilities? Wageningen University, Wageningen.

North, D., 1990. Institutions, Institutional Change and Economic Performance. Cambridge University Press, Cambridge.

Pagiola S., & Platais., G., 2007. Payments for Environmental Services: From Theory to Practice. World Bank, Washington.

Perrot-Maître, D., 2006. The Vittel Payments for Ecosystem Services: a 'Perfect' PES Case? Project Paper no. 3. IIED, London.

Pitt, M.M. & Khandker, S., 1998. The impact of group-based credit programs on poor households in Bangladesh: does the gender of participants matter? Journal of Political Economy 2, pp. 958-977.

Ravnborg, H.M., Damsgaard, M.G. & Raben, K., 2007. Payment for Ecosystem Services -issues and pro-poor opportunities for development assistance. DIIS Report. Danish Institute for International Studies, Copenhagen.

Sanjayan, M.A., Shen, S. & Jansen, M., 1997. Experiences with Integrated Conservation and Development Projects in Asia. Technical Paper no. 38. The World Bank, Washington DC.

Sayer, J. & Wells, M.P., 2004. The Pathology of Projects. In: Getting Biodiversity Projects to Work: Towards More Effective Conservation and Development. Columbia University Press, New York, pp. 35-48

Stavins, R., 2000. Experience with Market-Based Environmental Policy Instruments. In: Maler, K. & Vincent, J. (eds.) The Handbook of Environmental Economics. North-Holland/Elsevier Science, Amsterdam.

Stiglitz, J., 1986. The New Development Economics. World Development 14(2): pp. 257-65.

Stocking, M. & Perkins, S. 1992. Conservation-with-development: an application of the concept in the Usambara Mountains, Tanzania. Trans. Inst. British Geogr. 17, pp. 337-349.

Tattenbach, F., Obando, G. & Rodríguez, J., 2006. Mejora del excedente nacional del pago de servicios ambientales. FONAFIFO, San José.

United Nations, 2000. A. Resolution 55/L2: United Nations millennium declaration. United Nations, New York.

Williamson, O.,1985. The Economic Institutions of Capitalism. Free Press, New York.

World Bank Group, 2006. World Development Indicators 2006. World Bank Group, Washington DC.

Wunder, S., 2005. Payments for environmental services: some nuts and bolts. Occasional Paper no. 42. CIFOR, Bogor.

Wunder, S., S. Engel, S., & Pagiola, S., 2008. Taking stock: lessons learnt for the design of for environmental services programs. Ecological Economics 65, pp. 834-852.

Annex I

Assessing suitability of Bio-rights as a tool for project implementation

	YES	NO
Is poverty a main driver of degradation of the environmental services that are to be protected?	☐	☐
Would a match between conservation and development activities deliver optimal project outcomes at minimum cost?	☐	☐
Is it possible to develop sufficient management capacity within the target groups in the field to accomplish a durable transition towards sustainable development?	☐	☐
Can the anticipated conservation actions be successfully implemented through the knowledge, skills and human resources available within the community groups, or can these elements be established in the course of the project?	☐	☐
Do the target groups have sufficient power to reduce or prevent the external impacts that drive environmental degradation (e.g. industrial development, government development plans)?	☐	☐
Are there sufficient means to effectively prevent trade-offs between conservation and development? In other words: is it possible to promote development without compromising conservation and, vice versa, to conserve or restore environmental assets without inhibiting development opportunities?	☐	☐
Is there sufficient time available for rigorously addressing all the implementation steps?	☐	☐
Do the project implementers have sufficient multi-sectoral expertise, including knowledge about conservation, development and financial management?	☐	☐
Are there sufficient means to ensure long-term sustainability, i.e., through the availability of sustained funding to provide longer term payments (as with PES schemes) or, alternatively through addressing the poverty trap, restoring a lasting balance between conservation and development?	☐	☐
Are the right local contacts in place to implement a bottom-up field-based initiative?	☐	☐
Does the local governance context in the target area favour the implementation of Bio-rights?	☐	☐

	YES	NO
Would a Bio-rights initiative link well to other conservation and development approaches within the region?	☐	☐
Does the anticipated donor agency or investor allow for the disbursal of payments by means of the Bio-rights approach?	☐	☐

Note:

Above questions aim to guide overall assessment of the suitability of Bio-rights as a tool to address the conservation and development objectives identified within the concept project plan. In principle, all questions should be answered *'YES'* for Bio-rights to be an appropriate tool. The full potential of Bio-rights needs to be assessed in steps 1B to 2A and a number of criteria should be considered during the selection of project sites *(see annex 2)* to ensure local applicability.

Annex II

Decision support system for site selection

Part A. Selection of suitable sites within pre-selected target regions

ECOLOGICAL CONSIDERATIONS	*YES*	*NO*
Does the area provide the ecosystem service(s) targeted under the proposed action? If no: the project site is not suitable.	☐	☐
Is the ecosystem service targeted under the proposed action under threat (currently or potentially) or has it been degraded in the past? If no: no current need for Bio-rights implementation.	☐	☐
Can the ecosystem service targeted under the proposed action be realistically sustained or restored considering local site conditions and the resources available? If no: the project site is not suitable.	☐	☐
Are the project risks related to extreme events acceptable and if not, can they be sufficiently controlled either in advance of, or as part of, the anticipated intervention? If no: the project site is not suitable.	☐	☐
SOCIO-ECONOMIC CONSIDERATIONS		
Does the local community have full ownership over land and associated ecosystem services? If no: the project site is not suitable, unless i) land and resource ownership can be negotiated in advance of project initiation or ii) the formal land owner fully supports the proposed intervention and is included as a signatory to the contract. Contractual agreements with such a third partner should include an expression of agreement with local proposed activities and conservation measures as well as a promise to refrain from activities that would negatively effect the Bio-rights interventions.	☐	☐
Are there external factors (e.g. encroachment by outsiders, conflicting management plans etc.) that pose high risks to project success? If yes: the project site is not suitable, unless the external impacts can be reduced in advance of, or as part of, the proposed Bio-rights intervention, (e.g. through improved law-enforcement, stakeholder consultations etc.)	☐	☐

	YES	NO
Are there unacceptable risks of leakage that cannot be mitigated against in advance of, or as part of, the anticipated intervention? If yes: the project site is not suitable.	☐	☐
Is the community sufficiently homogeneous in terms of social, economic and ethnic composition, so as to allow equal participation of individuals in implementation Bio-rights and to allow the full support of the (majority) of the community for the proposed intervention? If no: the project site is not suitable.	☐	☐
Are there any unacceptable risks related to local governance (e.g. corruption, political tensions) or conflicts within and among communities? If yes: the project site is not suitable.	☐	☐
ENABLING ENVIRONMENT	**YES**	**NO**
Is the local community receptive to involvement in Bio-rights (including all of the major social, ethnic and religious groups represented)? If no: the project site is not suitable.	☐	☐
Are local government and other relevant stakeholders supportive of the proposed Bio-rights intervention? If no: the project site is not suitable, unless support can be raised through stakeholder meetings in advance of Bio-rights implementation.	☐	☐
Is there any legislation that would hamper successful Bio-rights implementation? If yes: the project site is not suitable, unless the legislation can be changed in advance of Bio-rights implementation.	☐	☐
Can the long-term sustainability of the project be sufficiently guaranteed given the socio-economic context of the proposed intervention and the resources available? If no: the project is not suitable. Project sustainability depends in part on the required project duration (sometimes a several-year project can accomplish a conversion to long term sustainable management)as well as on the amount of funding available (long-term projects require continuous funding).	☐ ☐	☐ ☐

Part B. Prioritisation

1. What are the expected costs for the provision of the targeted ecosystem service?

2. What are anticipated socio-economic and environmental costs and benefits and how do these relate to each other and to the target ecosystem service?

3. What are the long-term prospects for the proposed project, i.e., what is the anticipated sustainability?

4. What are the expected project duration and financial resources needed to accomplish long-term sustainability?

5. What is the level of project risk? Is this acceptable?

6. To what extent do the socio-economic and site conditions favour Bio-rights implementation?

7. To what extent are local governance structures supportive of Bio-rights implementation?

8. How does the proposed Bio-rights intervention match with existing conservation and development policies and plans?

9. To what extent is project implementation logistically feasible (access to project sites, management capacities of local field staff, availability of materials needed for implementation etc.)?

Annex III

Checklist for project development

1. Proposed conservation objectives have been identified and clarified to all involved stakeholders. ☐
2. Practical conservation activities and the role of local communities within these have been identified and designed. ☐
3. Lost opportunity costs resulting from the proposed conservation measures have been estimated. ☐
4. Community objectives for sustainable development have been identified. ☐
5. Practical sustainable development activities have been identified and designed. ☐
6. Payment conditions (timelines for micro-credit disbursal and modes of payment) have been set. ☐
7. A project monitoring plan has been developed. ☐
8. The role of different stakeholders in monitoring project outcomes has been identified. ☐
9. Measurable indicators for successful conservation (as a basis for micro-credit conversion) have been set. ☐
10. Project boundaries have been identified. ☐
11. Project duration has been set. ☐
12. Project risks have been identified and risk mitigation measures have been designed. ☐
13. A force majeure clause relating to natural (or other) disasters has been developed and agreed on. ☐
14. A time schedule for project implementation has been developed. ☐
15. Plans for technical support provision and awareness raising activities have been developed. ☐
16. The rights and obligations of stakeholders, with regard to capacity building and awareness raising activities, have been set. ☐

Annex IV

Checklist for contract development

1. Listing and short description of all signatories to the contract, including buyers, sellers, and any involved third parties (e.g., government). ☐
2. Description of the overall roles of contract signatories in the project and of the general project objectives. ☐
3. Description of the role and obligations of intermediaries (i.e. the Bio-rights Project Manager and the Local Programme Manager) ☐
4. The number of involved community members (including names where applicable) and description of how responsibilities for meeting obligations will be arranged within the group. ☐
5. Description of ecosystem service(s) to be delivered by the selling party including quantification of each service involved. ☐
6. Description of practical measures to be undertaken by the selling party to accomplish conservation objectives. ☐
7. Description of support provided by the buying party for sustainable development in return for community contribution to conservation, including quantification of (financial and non-financial) support that will be provided. ☐
8. Specification of materials to be provided by buying party in support of conservation activities. ☐
9. Specification of sustainable development measures to be implemented by the selling party. ☐
10. Description of conditions that should be complied with by contract signatories to ensure overall project sustainability. ☐
11. Description of the buyer's obligations to provide technical support and awareness-raising activities. ☐
12. Description of the seller's obligations to attend capacity building and awareness-raising activities. ☐
13. Specification of the measures to be undertaken to reduce project risks (e.g., related to disasters, leakage, immigration, outside impacts etc) and the role (obligations) of different signatories therein. ☐
14. Description of the quantity and number of payments provided by buying party (including timeline of disbursal). ☐

15. Description of the mode of payment from the buying party (in cash or in kind). ☐

16. Description of obligations among contract signatories with regard to project monitoring and evaluation. ☐

17. Description of conditions for micro-credit conversion. ☐

18. Description of potential measures in case of violation of contractual agreement by one of the parties involved, including details on project termination and (legal) enforcement of project obligations. ☐

19. Description of force majeure clause. ☐

20. In case of involvement of a third party as a contract signatory: description of their roles and obligations with regard to project implementation. ☐

21. Specification of project duration and description of project area. ☐

Annex IV

Bio-rights: summary of implementation steps and responsibilities

PROJECT INITIATION

Step 1 A. Concept development and assessment of appropriate approach:
- 0 establishment of concept idea (BPM)
- 0 assess the applicability of Bio-rights approach (BPM)
- 0 develop plan to integrate Bio-rights in a wider framework of activities (BPM)

Step 1 B. Generate funds:
- 0 mobilise internal funding or raise external funding from 'traditional' donors or ecosystem service buyers (BPM)

Step 1 C. Identification of other interested stakeholders:
- 0 identify stakeholders with similar conservation and development objectives (BPM)
- 0 assess options for generating co-funding through their donor network (BPM)
- 0 ensure inclusion of external experiences and skills (BPM)

Step 1 D. Selection of project sites:
- 0 select target country/region (BPM)
- 0 short-list potential project sites within target area by means of desk study (BPM)
- 0 assess the suitability of potential project sites through rapid inventory (BPM)
- 0 prioritise project sites based on project risks and cost-benefit ratio (BPM)

Step 1 E. Network development and stakeholder consultation (I):
- 0 organise joint and individual meetings to
- 0 develop network and identify project partners (BPM)
- 0 assess support among local actors for Bio-rights implementation (BPM); and
- 0 dentify options for mainstreaming Bio-rights in local policies and plans (BPM)

Step 1 F. Selection of Local Programme Manager:
- 0 select Local Programme Manager from local network or through tendering process (BPM)

Step 1 G. Training of Local Programme Manager:
- 0 familiarise Local Programme Manager with all aspects of Bio-rights implementation (BPM)

PROJECT DEVELOPMENT

Step 2 A. Stakeholder consultation (II): explanation of concept and group development: organise community consultations to:

- establish intent for cooperation (LPM with BPM)
- raise understanding of the concept (LPM with BPM)
- share needs and aspirations (LPM with BPM)
- form community groups (LPM)

Step 2 B. Stakeholder consultation (III): setting goals and plan development: develop concrete project plan with project partners (LPM with BPM)

- dentify needs of selling and buying parties (LPM with BPM)
- establish payment conditions (BPM with LPM)
- develop plan for monitoring and evaluation (BPM with LPM)
- identify project area and duration (BPM with LPM)
- develop risk mitigation strategy (BPM with LPM)
- develop overall implementation plan (BPM with LPM)

Step 2 C. Further field studies: optional:

- perform further field inventories to establish rigorous baseline (LPM or BPM)

Step 2 D. Fitting Bio-rights plan to the wider context:

- assess how Bio-rights can be linked to existing policies and plans and local conservation and development initiatives (BPM with LPM)

Step 2 E. Overcome policy hurdles:

- involve relevant government agencies in plan development (LPM or BPM)
- identify and solve obstructions to Bio-rights implementation (LPM with BPM)

CONTRACT NEGOTIATION

Step 3 A. Contract negotiation:

- develop contract format (BPM with LPM)
- negotiate contract with signatories (LPM with BPM)
- ensure compliance with local policies and legislations (LPM with BPM)

Step 3 B. Signing of Bio-rights contract:

- organise contract signing ceremony (LPM)
- actual signing of contract (LPM with BPM)

PROJECT IMPLEMENTATION

Step 4 A. Capacity building and awareness-raising:

- 0 organise capacity building and awareness raising activities (LPM or BPM, community groups might also provide trainings themselves)
- 0

Step 4 B. Issuing micro-credits:

- 0 disbursal of micro-credits for sustainable development (LPM)

Step 4 C. Initiating conservation and development activities:

- 0 refine conservation and development plans through community meetings (LPM)
- 0 provide the materials needed for implementing conservation activities (LPM)
- 0 provide technical support during implementation of conservation and development activities (LPM)

PROJECT MONITORING AND EVALUATION

Step 5 A. Monitoring project outcome and progress:

- 0 ongoing and final monitoring of project progress and final conservation and development outcomes (LPM or BPM, often involving the community groups)

Step 5 B. Micro-credit conversion:

- 0 use monitoring outcome to decide on micro-credit conversion (BPM with LPM)
- 0 micro-credits to be converted in case of successful conservation and reimbursed in case of failure (LPM with BPM). Where applicable:
- 0 reinvest money reimbursed as a result of failure to conservation measures in successful community initiatives (BPM with LPM)

Step 5 C. Evaluating lessons learned:

- 0 evaluate lessons learned (BPM with LPM)
- 0 assess project outcome against baseline (BPM with LPM)

BPM = Bio-rights Project Manager; *LPM* = Local Programme Manager. Note that exact responsibilities for the different implementation steps will depend on the specific expertise of the organisations involved and specific on-site circumstances. Often the steps are implemented jointly by the BPM and LPM, sometimes also involving other stakeholders.

Notes

Notes

Notes

Mission:

To sustain and restore wetlands, their resources and biodiversity for future generations.

Many poor communities in developing countries are entangled in the poverty trap: to meet short-term livelihood needs they are forced to unsustainably exploit the environment. This in turn deteriorates critical life-supporting ecosystem services, such as fisheries, timber resources, soil fertility and fresh water provision.

Bio-rights is an innovative financial instrument that addresses the poverty trap by integrating sustainable development and environmental conservation. In return for the provision of micro-credits, local communities involve in ecosystem protection and restoration. Upon successful delivery of conservation services these micro-credits are converted into definitive payments. Thus, the approach enables community involvement in conservation while providing sustainable alternatives to harmful development practices.

Bio-rights is a powerful tool towards addressing the environmental challenges of our age including climate change, biodiversity loss and rural poverty. With this report Wetlands International aims to introduce conservation and development practitioners, policymakers, scientific institutes and the corporate and finance to the rationale and theory behind Bio-rights and to provide extensive guidance for initiating and implementing the approach in practice. This is illustrated by a number of case examples from projects that have been implemented by Wetlands International over the last few years.

For further information please visit our website or contact our office.

Wetlands International
PO Box 471
6700 AL Wageningen
The Netherlands
Tel: +31 318 660 910
Fax: +31 318 660 950
E-mail: post@wetlands.org
Website: www.wetlands.org

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